ATTENTION: This is not an order. Read all instructions, terms and conditions carefully.

IMPORTANT: BID AND ADDENDUM MUST BE RECEIVED BY 1/23/2018 @ 3:00 P.M. LEXINGTON, KY TIME

Bidder must acknowledge receipt of this and any addendum as stated in the Invitation for Bids.

Please refer to and incorporate into the Offer the attached Addendum 3 from JRA Architects dated 1/11/18.

Bid date has been changed to January 23, 2018, Lexington, KY Time.
FOR THE PROJECT TITLED:

GRAIN CENTER OF EXCELLENCE AT PRINCETON, KY
PROJECT # 2458.0
CCK-2271-18
University of Kentucky
Lexington, Kentucky

To: Prospective Bidders

From: JRA Architects
3225 Summit Square Place, Suite 200
Lexington, KY 40509

Project Contact: D. Robert Deal, AIA, LEED AP

The Addendum will form a part of the Contract Documents and modifies the original Bidding Documents dated November 2017.

Bidders must acknowledge receipt of this Addendum in the space provided on the Form of Proposal. Failure to do so may subject the bidder to disqualification.

Bidding Documents, including the Drawings and Specifications, are amended as described herein.

ARCHITECTURAL ITEMS:

ITEM NO. 3.01
Bid date will be changed to January 23rd. Refer to cover page of addendum.

ITEM NO. 3.02
Refer to sheet A-121B. TComm Room B151 should have exposed ceiling and walls that go to deck.

ITEM NO. 3.03
Refer to specification 115300 – Laboratory Equipment. Delete 2.3.B Stainless Steel Wall Mounted Tank Restraint. Only the Painted Steel Floor Mounted Tank Restraint will be used.

ITEM NO. 3.04
Refer to specification 075323 – Ethylene Propylene Diene Monomer (EPDM) Roofing. Revise 2.2.A.1 to

1. Fire/Windstorm Classification: System must be designed to comply with ultimate wind speed according to Structural Wind Design Data.

ITEM NO. 3.05
Clarification for existing roof. Refer to attached Moisture Diagnostic Survey Report.

ITEM NO. 3.06
Clarification for wall tile in Shower Rooms C108A & C104A. Refer to Finish Plans for location of Tile.

ITEM NO. 3.07
Refer to requested Pre-Bid Sign in Sheet.
ITEM NO. 3.08
Refer to sheet A-601 Door Schedule & Door Frame Types. Revise doors A102B and B104 to 3'-0" in width. Refer to updated A-601 sheet.

ITEM NO. 3.09
Refer to sheet A-601 Door Schedule & Door Frame Types. Revise doors B100AB and C122C to include new remark #6 – Door Pair with uneven leaves. 3'-0" on one side, 2'-6" on other side. Refer to updated A-101B, A-101C and A-601 sheets.

ITEM NO. 3.10
Refer to specification 012100 – Allowances 3.3 Schedule of Allowances. Revise Item C “To be released by Addendum” shall be $49,250.00”. Refer to Tyco Simplex Grinnell material list scope document.

STRUCTURAL ITEMS:

ITEM NO. 3.11
Refer to Specification Section 316400– “STEEL PUSH PIERS”. The following manufacturers are approved:

- Magnum Piering
- Kent Companies
- Supportworks
- Earth Contact Products

ITEM NO. 3.12
Refer to Specification Section 051200– “STRUCTURAL STEEL FRAMING”. Replace part 1.6A with the following:

Fabricator Qualifications: The Fabricator shall have 10 years of comparable experience in installations of this type and shall employ labor and supervisory personnel familiar with the type of installation, experienced in fabrication and erection of structural steel for projects of similar size and complexity. At the time of bid the Fabricator shall be AISC certified to the Standard for Steel Building Structures (STD) and must submit proof of these qualifications. The Fabricator's qualifications shall be subject to review by the Design Professionals and Owner.

1. Fabricators without AISC Certification will be responsible to pay all costs associated for a third-party inspector to monitor the work in their shop. Prior approval of the third-party inspector is required by the architect and engineer.

ITEM NO. 3.13
Refer to Specification Section 051200– “STRUCTURAL STEEL FRAMING”. Replace part 1.6B with the following:

Installer Qualifications: The Installer shall have 10 years of successful experience erecting structural steel for structures of this type and complexity in the region of the project.

ITEM NO. 3.14
Refer to Sheet S-603 – Framing Sections. For framing detail 17, replaced the text “W30x108 steel lintel” with “W33x130 steel lintel.”

ITEM NO. 3.15
Refer to Sheet S-101A-1 – Foundation Plan – Area A (Base Bid). Add section mark as shown on sheet AD3 S1.1.

ITEM NO. 3.16
Refer to Sheet S-101A-2 – Foundation Plan – Area A (ALT. Bid). Add section mark as shown on sheet AD3S1.2.

**ITEM NO. 3.17**
Refer to Sheet S-701 – Structural Schedules. For the steel lintel schedule (SL) add the additional note below note 8:

“9.) Headed studs shall be 6” long min. and shall be placed at 16” o.c. max.”

**ITEM NO. 3.18**
Refer to Sheet S-401 – Typical Details. Revise detail 15 as shown on sheet AD3 S1.3.

**ITEM NO. 3.19**
Add two additional push piers for the interior corners near door A110C.

**CIVIL ITEMS:**

**ITEM NO. 3.20**
Question No. 12 regarding Clearing and Grubbing:

Tree debris is property of the Contractor, mulching is acceptable however all debris is to be removed from site.

**ITEM NO. 3.21**
Question No. 13 regarding waste blacktop/concrete:

No, waste blacktop/concrete may not be used as fill, all waste material must be removed from the site.

**ITEM NO. 3.22**
Question No. 14 regarding domestic water pipe material:

3” Sched. 40 pvc may be used as a substitute providing it is acceptable with the Capital Projects Management Division Project Manager.

**ITEM NO. 3.23**
Question No. 15 regarding the Acid Dilution tank:

We are making connection to that portion of the sanitary line at the Acid dilution tank. Please see Marcum for specs on the tank.

**ITEM NO. 3.24**
Question No. 41 regarding the schedules on sheets C-001, C-002:

Strike schedules from sheets, refer/coordinate civil with Phasing Schedule on sheet G-104.

**ITEM NO. 3.25**
Question No. 71 regarding the sanitary sewer manhole:

Due to the angle change that will take place with the new incoming pipe, the manhole will need to be demolished and replaced with new 4’ diameter concrete manhole.

Therefore note 11 on sheet C-102 is correct.

Note 5 on sheet C-701 should read “CONTRACTOR TO PROVIDE NEW MANHOLE AT THIS LOCATION. SEE DETAIL 5, SHEET C-703. CONTRACTOR SHALL FIELD VERIFY INVERT OF EXISTING EFFLUENT PIPE AT THE TIE IN LOCATION PRIOR TO ORDERING SANITARY
MATERIALS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.”

See attached detail for new sanitary manhole.

MECHANICAL ITEMS:

ITEM NO. 3.26
Refer to Drawing Sheet DU-101 – Site Utility Demo

A. Electrical Demolition Note 15 at plan south of building shall be changed to Electrical Demolition Note 16.

ITEM NO. 3.27
Refer to Drawing Sheet U-101 – Site Utility

A. Refer to scope of work document from Princeton Electric Plant Board, Items 1 through 8, and Concrete Pad Dimensions for Padmount Transformer.

ITEM NO. 3.28
Refer to Drawing Sheet FP-001 – Fire Protection Lead Sheet

B. Refer to Detail 1, Sprinkler Riser Diagram: Add branch line to riser diagram to serve B151 TComm double pre-action interlock system. Refer to Sketch XFP01.
C. Fire Suppression Design Criteria: Revise Static to “68”, revise Residual to “36”, and revise Water Flow to “570”.

ITEM NO. 3.29
Refer to Drawing Sheet H-101B – HVAC Ductwork First Floor Plan – Area “B”

A. Return ductwork serving Offices 118A, 118B, and 118C shall be flipped and connected to 26/16 return duct in B117 Faculty.

ITEM NO. 3.30
Refer to Drawing Sheet P-101C – Plumbing Floor Plan – Area “C”

A. Revise Mechanical Construction Note 13: Drop 1-1/4” cold water piping in new wall construction to serve new / existing autoclaves. Route 1” cold water piping to each autoclave with isolation valve.

ITEM NO. 3.31
Refer to Drawing Sheet H-101C – HVAC Ductwork First Floor Plan – Area “C”

A. Add Mechanical Construction Note 33 to Rooms C132A, C132B, C135, and C129A.

ITEM NO. 3.32
Refer to Drawing Sheet H-404 – HVAC Details

A. Refer to Variable Speed, Base Mounted Pump Detail: Add pressure gauge at inlet of suction diffuser.
ITEM NO. 3.33  
Refer to Drawing Sheet H-504 – HVAC Schedules  
   A. Refer to Condensing Boiler Schedule: Add “Raypak” and “Fulton” and “NTI” as approved equal.  
   B. Refer to Condensing Boiler Schedule: Revise Remark 6 to read, “Provide unit with modulating firing with a minimum 7:1 turndown.”  
   C. Refer to Air Cooled Screw Chiller Schedule: Revise remark 15 to read, “Provide unit with screw compressors”.  
   D. Refer to Glycol Make-Up Unit Schedule: Add “Skidmore” as approved equal.  

ELECTRICAL ITEMS:  

ITEM NO. 3.34  
Refer to Drawing Sheet E-001 – Electrical Symbol Legend, Power System.  
   A. The text “Indicates an existing receptacle location, reuse existing rough-in and install new device and branch circuit as required.” Shall be changed to “120V, 20A Special purpose receptacle. See detail indicating quantity of duplexes and instillation.”  

ITEM NO. 3.35  
Refer to Drawing Sheet E-101A – Electrical Lighting First Floor Plan – Area “A”  
   A. Refer to Room A100A1: Provide and install (2) exit fixtures “EX1”, (1) over door A100A1-A and (1) over door A100A1-B. Connect fixtures to circuit EA1-3.  

ITEM NO. 3.36  
Refer to Drawing Sheet E-101A – Electrical Lighting First Floor Plan – Area “A”  
   A. Refer to Canopy: Place lighting circuit for fixtures G1 and provide power from emergency circuit EA1-5.  

ITEM NO. 3.37  
Refer to Drawing Sheet E-101A – Electrical Lighting First Floor Plan – Area “A”  
   A. Refer to door A120-D: Provide and install (1) light fixture “J” above door and window approximately 12'-6” A.F.F. Provide (1) nPER relay pack to control fixture for dusk to dawn operation. Connect fixture to circuit EA1-1.  
   B. Refer to door A120-E: Install fixture “J” above door and window approximately 14'-6” A.F.F.. Provide (1) nPER relay pack to control fixture for dusk to dawn operation.  
   C. Refer to door A100C1: Install fixture “J” above door and window approximately 10'-6” A.F.F. Provide (1) nPER relay pack to control fixture for dusk to dawn operation.  

ITEM NO. 3.38  
Refer to Drawing Sheet E-101B – Electrical Lighting First Floor Plan – Area “B”  
   A. Refer to Loading Dock XA101: Provide and install (3) E1 recessed in canopy. Install 4’ from North wall to center of the loading dock. Each fixture shall be 6’ from center to the next. Connect to emergency circuit EC1-4. Provide (1) nPER relay pack to control fixtures for dusk to dawn operation.
ITEM NO. 3.39
Refer to Drawing Sheet E-101C – Electrical Lighting First Floor Plan – Area “C”

A. Refer to Mechanical C110, door C110C: Provide (1) fixture “EX1” and connect to circuit EC1-6.
B. Refer to Labs C112, C120, C1124, C125, C126, C127, C128, C129, C129A, C130, C131, C132, C133, C134, and C135. Provide power connection to light fixtures using available emergency circuits in panel EC1.

ITEM NO. 3.40
Refer to Drawing Sheet E-102A – Electrical Power and Special Systems – Area “A”

A. Refer to A/V Closet A111A: Each A/V rack shall have its own dedicated circuit and quadruplex. Provide Communication outlet with (1) Data drop at each.
B. Refer to Demonstration Classroom A105: Relocate South most duplex receptacle on West wall above the demonstration counter. Provide communication outlet to right of the duplex with (1) data drop. Provide 120/1, 20A power connection to motorized projection screen.
C. Refer to Active Learning Classroom A117: Provide communication outlet behind A/V rack with (1) data drop.
D. Refer to Executive Conference A113: Provide communication outlet behind A/V rack with (1) data drop.
E. Refer to Note 13: Power connection shall be fed from panel EA1 for life safety.
F. Provide Weather Proof, GFI protected duplex receptacle on nearest available exterior wall to door A120-D. Connect to nearest available circuit.
G. Provide Weather Proof, GFI protected duplex receptacle on nearest available exterior wall to door A120-E. Connect to nearest available circuit.
H. Provide Weather Proof, GFI protected duplex receptacle on exterior wall of IDF A117A. Connect to nearest available circuit.
I. Provide Weather Proof, GFI protected duplex receptacle on nearest available exterior wall to door A100B1-A. Connect to nearest available circuit.

ITEM NO. 3.41
Refer to Drawing Sheet E-102B – Electrical Power and Special Systems – Area “B”

A. Provide Weather Proof, GFI protected duplex receptacle on nearest available exterior wall to door B100B1. Connect to nearest available circuit.
B. Provide Weather Proof, GFI protected duplex receptacle on exterior wall of Faculty B170. Connect to nearest available circuit.
C. Provide Weather Proof, GFI protected duplex receptacle on exterior wall of Faculty B127. Connect to nearest available circuit.

ITEM NO. 3.42
Refer to Drawing Sheet E-102C – Electrical Power and Special Systems – Area “C”

A. Provide Weather Proof, GFI protected duplex receptacle on nearest available exterior wall to door C110A. Connect to nearest available circuit.
B. Provide Weather Proof, GFI protected duplex receptacle on exterior wall of Plant Disease Diagnostic Lab C120, please near CU units.
C. Provide Weather Proof, GFI protected duplex receptacle on exterior wall of Pre-Plant Crop Grain Lab C132A. Connect to nearest available circuit.
D. Provide Weather Proof, GFI protected duplex receptacle on nearest available exterior wall to door C122A. Connect to nearest available circuit.


F. Refer to Construction Detail 13: Service panel shall be provided by Electrical Contractor. Refer to detail 1/E-405.


ITEM NO. 3.43
Refer to Drawing Sheet E-201 – Electrical Enlarged Plans

A. Refer to Mechanical A110: Provide 120/1, 20A power connection to CP-1 fed from panel A1. Provide 120/1, 20A power connection to Fire Protection System Control Panel fed from panel A1. Provide an additional Flow and Tamper switch, for a total of (5) of each.

B. Refer to 4/ Enlarged MDF Room B155: Add (1) heat detector for this space.

ITEM NO. 3.44
Refer to Drawing Sheet E-301 – Electrical Riser Diagram

A. Refer to Sketches XE10, XE11, and XE11 for changes.

ITEM NO. 3.45
Refer to Drawing Sheet E-404 – Electrical Details

A. Refer to Detail 4: Revise “Quantity as required of 1-1/4"C to cable tray for voice/data and 2"C” to “1-1/4"C to cable tray for voice/data and 2"C for HDMI/VGA/etc.”

B. Refer to Detail 7: Revise “Quantity as required of 1-1/4"C to cable tray for voice/data and 2"C” to “1-1/4"C to cable tray for voice/data and 2"C for HDMI/VGA/etc.”

ITEM NO. 3.46
Refer to Drawing Sheet E-405 – Electrical Details

A. Refer to Sketch XE13 for changes.

ITEM NO. 3.47
Refer to Drawing Sheet E-407 – Electrical Details

A. Refer to XE04, XE05, XE07, XE08, and XE09

ITEM NO. 3.48
Refer to Drawing Sheet E-503, E-101B – Electrical Panel EB1

A. Panel EB1 shall be removed omitted from the project. Emergency lighting circuit shall be relocated to panel EC1.

ITEM NO. 3.49
Refer to Drawing Sheet E-503 – Electrical Panel Schedules

A. See Sketch XE01 for breaker and circuit changes to panel A1 and EA1.

B. See Sketch XE02 for breaker and circuit changes to panel B1.

C. See Sketch XE03 for breaker and circuit changes to panel C1 and EC1.
ITEM NO. 3.50
Refer to the Specification Section 211000 – “Water-Based Fire Suppression Systems”. Revise Section 3.9 Piping Schedule to the following:

A. Wet-pipe sprinkler system, less than NPS 2, shall be the following:
   1. Schedule 40, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.

B. Wet-pipe sprinkler system, NPS 2 to NPS 6, shall be the following:
   1. Schedule 10, black-steel pipe with roll-grooved ends; uncoated, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.

ITEM NO. 3.51
Refer to the Specification Section 233113 – “Metal Ducts”. Add to Section 3.5 Duct Schedule the following:

E. Ductwork Pressure Classification:

1. RTU-1 and RTU-2:
   a. Supply duct upstream of VAV terminal units  4” pressure class
   b. Supply duct downstream of VAV terminal units  2” pressure class
   c. Return duct main to RTU  4” pressure class
   d. Return air grille to main  2” pressure class

2. RTU-3:
   a. Supply duct  2” pressure class
   b. Return duct  2” pressure class

3. AC-1:
   a. Supply duct  4” pressure class
   b. Return duct  2” pressure class

4. AHU-1:
   a. Supply duct upstream of SAV terminal units  6” pressure class
   b. Supply duct downstream of SAV terminal units  2” pressure class
   c. Outside air duct  2” pressure class

5. FHEF-1A, 1b, 1C:
   a. Exhaust duct grille to FEV  2” pressure class
   b. Exhaust duct from EAV to exhaust main  4” pressure class
   c. Exhaust duct from main to FHEF  4” pressure class

6. General Exhaust Fans (EF-X), FHEF-2, RF-1, RF-2:
   a. Exhaust duct  2” pressure class

7. UEF’s:
   a. Exhaust duct  4” pressure class

8. FCU-1 and FCU-2:
   a. Supply duct  2” pressure class
   b. Return duct  2” pressure class
ITEM NO. 3.52
Refer to the Specification Section 235216 – “Condensing Boilers”. Add to Section 2.2.A.1 Manufacturers the following:
  d. Raypak
  e. Fulton
  f. NTI

ITEM NO. 3.53
Refer to the Specification Section 230548 – “Vibration and Seismic Controls for Mechanical Piping and Equipment”. Add to Section 2.1.A Manufacturers the following:
  5. VIMCO

ITEM NO. 3.54
Refer to the Specification Section 232113 – “Hydronic Piping”. Part 2 – Products, “Nexus” shall be an approved equal for valves.

ITEM NO. 3.55
Refer to the Specification Section 263213 – “Engine Generators”. Add to Section 2.9, furnish an onboard 120/208V, 3Ø, 4W, 100A M.C.B. branch panel, with grounding system per N.E.C. Art. 250 as required to support all auxiliary enclosure and generator loads.

ITEM NO. 3.56
Refer to the Specification Section 270610 – “Voice/Data System”. Add to Specification Section 27061 the following:
  1. Appendix B from University of Kentucky Information Technologies Services, Revision 6.0, dated October/July 2017, Page 40 and Page 41.

ITEM NO. 3.57
Refer to revised Specification Section 275116 – “Audio and Visual System”.

ITEM NO. 3.58
Refer to the Specification Section 282300 – “Video Surveillance”. Delete this section.

ITEM NO. 3.59
Refer to the Specification Section 270536 – “Cable Tray for Communication Systems”. Revise Section 2.2.B.1 to the following:
  1. Configuration: Center spine cable tray

END OF ADDENDUM NO. 3.00
<table>
<thead>
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<th>No.</th>
<th>Question</th>
<th>Responsible</th>
<th>Answer</th>
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<tbody>
<tr>
<td>1</td>
<td>I have begun looking into the spec and drawings for the project just let out in Princeton, Ky. I am interested in items found in division 28, particularly the video surveillance (282300) spec and the access control. The video spec makes reference to 281643 – Perimeter Security System and a quick, first glance at drawings E-102A through E-102C show access control items. But I have not seen the 281643 specification in the information package I downloaded from Lynn Imaging. Am I simply overlooking it? Is the access control spec located somewhere else? Is it not to be done on this project, just prepped for? It seems the door hardware schedule makes reference to card readers and electrified hardware, but no notes as to that specification.</td>
<td>Marcum</td>
<td>Specification Section 282300 – Video Surveillance shall be removed per Addendum 3. There is not a specification section 281643 – Perimeter Security Systems, disregard the reference. Refer to Specification Section 087100 – Door Hardware, which includes electric hardware. Electrical Contractor shall rough-in all conduit as noted on Electrical Plans and required for complete installation per 087100.</td>
</tr>
<tr>
<td>2</td>
<td>One more question. Upon looking into the drawings a bit more (E-102A through E-102C), despite there being a specification for video surveillance (282300), I am not seeing any cameras shown on these drawings. Are they not part of this project? Are they designated on other drawings?</td>
<td>Marcum</td>
<td>Specification Section 282300 – Video Surveillance shall be removed per Addendum 3.</td>
</tr>
<tr>
<td>3</td>
<td>Substitution request – Section 081416 Flush Wood Doors - We would like to request approval for a preferred manufacturer, Oshkosh Door Co.</td>
<td>JRA</td>
<td>Picked up in Addendum 1</td>
</tr>
</tbody>
</table>
Cornerstone is very interested in providing a quote for the Communications section of the UK Princeton Research Expansion. We have reviewed the Division 27 specs and have a question regarding the requirement for RCDD on staff. Per the attached pages as noted below, an RCDD on staff is required. We do not have an RCDD on staff but believe that we meet all other qualifications for this project. We are also local. Our office is less than 30 miles from Princeton KY. **Would we be able to get a waiver for the RCDD requirement?**

Page 1601 of specs – Page 3 of attached in 270610 Voice/Data System section has the following …

1.6 QUALITY ASSURANCE
A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.
1. Layout Responsibility: Preparation of Shop Drawings, Cabling Administration Drawings, and field testing program development by an RCDD on the permanent staff of installing Contractor.
2. Installation: Installation shall be under the direct supervision of a Level 2
3. Installer, who shall be present at all times when Work of this Section is performed at Project site. At least 50% of the Contractor’s technicians on site shall be BICSI Certified Installers.
4. Testing Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.
5. Installer shall be certified by the systems manufacturer as necessary to obtain the cabling system warranty as required by this specification.

Another question has come up as a result of our pre-bid meeting. Once the electronic security specs and drawings are finalized, to whom shall this be bid through? With the

Marcum These are the requirements of University of Kentucky and will not change.

Marcum Specification Section 282300 – Video Surveillance shall be removed per Addendum 3.

There is not a specification section
<table>
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<tr>
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<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>2</td>
<td>Are folks? Or might this be pulled out and bid directly to the GC?</td>
<td>281643 – Perimeter Security Systems, disregard the reference.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to Specification Section 087100 – Door Hardware, which includes electric hardware. This section shall be bid to the General Contractor.</td>
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<td></td>
<td>Electrical Contractor shall rough-in all conduit as noted on Electrical Plans and required for complete installation per 087100.</td>
</tr>
<tr>
<td>6</td>
<td>Wanted to reach out to ask permission to bid Price Lab Controls as an equal to the specification attached on your upcoming project at the Grain Center for Excellence Facility.</td>
<td>Marcum Refer to Addendum 1.</td>
</tr>
<tr>
<td>7</td>
<td>The electrical drawings have multiple sheets that have text conversion errors and are unreadable. Are they planning on reissuing these drawings?</td>
<td>Marcum Refer to Addendum 1.</td>
</tr>
<tr>
<td>8</td>
<td>Electrical spec 260533 states we are to provide Set screw fittings for 2” and larger. Compression for smaller. To save the owner money could we use set screw fitting for all EMT conduit.</td>
<td>Marcum No change will be considered. Furnish and install as specified.</td>
</tr>
<tr>
<td>9</td>
<td>Electrical spec 260533 states we are to use ¾” minimum conduit. Would ½” EMT be considered to save the owner money?</td>
<td>Marcum No change will be considered. Furnish and install as specified.</td>
</tr>
<tr>
<td>10</td>
<td>Electrical drawing E-301 show the incoming electrical service as a 1200-4W-G. The local utility does not want a ground wire pulled to their transformer. Can we remove the ground wire from the electrical service?</td>
<td>Marcum Refer to Addendum #3, for clarification and revision.</td>
</tr>
<tr>
<td>11</td>
<td>Electrical drawing E-406 shows incoming new incoming fiber. During the prebid the local utility stated they would be bringing the fiber and conduit all the way to the building. They will provide a price to do this scope. Is this a scope you want the electrical contractor to carry?</td>
<td>Marcum Yes, Electrical Contractor shall carry this scope of work. All utility costs are by respective contractors.</td>
</tr>
<tr>
<td>12</td>
<td>Clearing and Grubbing: Can we</td>
<td>BFW</td>
</tr>
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<td></td>
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<td>Tree debris is property of the Contractor,</td>
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<td>13</td>
<td>Can we use the waste blacktop/concrete for any fill areas that have 3’ or more of fill?</td>
<td>BFW</td>
</tr>
<tr>
<td>14</td>
<td>We are having trouble finding 3&quot; C900 pipe (domestic water). Can we substitute with equivalent?</td>
<td>BFW</td>
</tr>
<tr>
<td>15</td>
<td>We cannot find the dimensions/specs for the acid dilution tank. Page. 159 doesn’t detail. Any suggestions?</td>
<td>BFW</td>
</tr>
<tr>
<td>16</td>
<td>The following questions are in regards to the porcelain tile / flooring scope of work; RE: Plan Sheet A-621 Room Finish Schedule Keyed Remark #8 1) Should Room Finish Schedule Keyed Remark #8 apply to Room A100A2 Reception? If not, where would the transition occur between room A100A2 Reception &amp; A100A Lobby if the alternate is not accepted? 2) Please clarify if Keyed Remark #8 applies to rooms C100C, C132A, and C133 as noted on the finish schedule.</td>
<td>JRA</td>
</tr>
<tr>
<td>17</td>
<td>RE: Plan Sheet A-141C Floor Finish Plan, Elevation H/A-421, Elevation K/A-421 1) Please clarify the extent of wall tile at shower rooms C108A &amp; C104A. The floor finish plan indicates shower stalls only but the elevations show wall tile extending outside of the shower stalls.</td>
<td>JRA</td>
</tr>
<tr>
<td>18</td>
<td>RE: Specifications Section 093013-Ceramic Tiling, Item 3.7.A Interior Floor Installation 1) Specifications call for two installation methods for large format porcelain floor tile (thinset mortar and thinset mortar on waterproof membrane). Please clarify which areas are to receive waterproof membrane. Shower stalls only? Restrooms? Lobby areas?</td>
<td>JRA</td>
</tr>
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<td>Question</td>
<td>Answer</td>
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<td>--------------------------------------------------------------------------------------------</td>
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<tr>
<td>19</td>
<td>Would it be possible to get a copy of the list of attendees at the pre-bid conference (12/15/17) for the subject project? One of the general contractors who attended the meeting sent me information on the project on the 19th. I would like to reach out to all of the potential GC’s for the project.</td>
<td>UK</td>
</tr>
<tr>
<td>20</td>
<td>Does T Comm Room B151 have a ceiling or is the room exposed? Drawing A-121B indicates both.</td>
<td>JRA</td>
</tr>
<tr>
<td>21</td>
<td>Would a Panduit system be acceptable as an alternate to the Tyco/Amp system requirement?</td>
<td>Marcum</td>
</tr>
<tr>
<td>22</td>
<td>E-102-C; Can’t locate item # 13 - Service Panel</td>
<td>Marcum</td>
</tr>
<tr>
<td>23</td>
<td>E-102-C; Room C134, Note 9/E404, should this be 8/E404?</td>
<td>Marcum</td>
</tr>
<tr>
<td>24</td>
<td>E-102-C; are panels L1-L13 surface mounted?</td>
<td>Marcum</td>
</tr>
<tr>
<td>25</td>
<td>E-301; Need location for 480 volt disconnect feeding panel “B1”</td>
<td>Marcum</td>
</tr>
<tr>
<td>26</td>
<td>E-301; Section #1 indicates 45 amp breaker feeding ATS-2. Should this be 150 amp?</td>
<td>Marcum</td>
</tr>
<tr>
<td>27</td>
<td>E-301 Section #2 should 225 amp breaker be150 amp?</td>
<td>Marcum</td>
</tr>
<tr>
<td>28</td>
<td>E-402 detail indicates basket type cable tray; Spec 270536 indicates ladder tray.</td>
<td>Marcum</td>
</tr>
<tr>
<td>29</td>
<td>E-401 detail on device plate labels; engraved or “stick on”?</td>
<td>Marcum</td>
</tr>
<tr>
<td>30</td>
<td>E-404; verify quantity of 1-1/4” and 2” conduits from floor boxes.</td>
<td>Marcum</td>
</tr>
<tr>
<td>31</td>
<td>E-503, E-301; Panel EC1; should the 200 amp bkers feeding EA1, (1,3,5) and EB1(2,4,6) be 100 amp, as the feeders to these panels are 100 amp?</td>
<td>Marcum</td>
</tr>
<tr>
<td>32</td>
<td>E-505; No L12 panel schedule.</td>
<td>Marcum</td>
</tr>
<tr>
<td></td>
<td>Written Question</td>
<td>Answer</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>33</td>
<td>E-505; Section #3 &amp; #4; Breakers do not match the one-line on E-301.</td>
<td>Marcum</td>
</tr>
<tr>
<td>34</td>
<td>E-505; Section A3 not found on plans.</td>
<td>Marcum</td>
</tr>
<tr>
<td>35</td>
<td>Spec 260519-2; #12 and #10 conductors must be solid, not stranded?</td>
<td>Marcum</td>
</tr>
<tr>
<td>36</td>
<td>RE: Pg. 260519-2, Part 3.1A &amp; B May stranded wire be used for #10 and smaller as long as proper mechanical connections are made?</td>
<td>Marcum</td>
</tr>
<tr>
<td>37</td>
<td>Can you give more clarify to alternate #1?</td>
<td>JRA</td>
</tr>
<tr>
<td>38</td>
<td>This is to request approval for the manufacturers for Section 115313 Fume Hood BMC and Section 123553 Casework Metal Arc.</td>
<td>JRA</td>
</tr>
<tr>
<td>39</td>
<td>Several lights on the drawings appear to be designated as emergency lighting. However, they are labeled the same as the regular fixtures i.e. &quot;A1&quot;, &quot;A2&quot;, etc. Also, none of the catalog numbers listed on the lighting fixture schedule have an emergency option. Please clarify.</td>
<td>Marcum</td>
</tr>
<tr>
<td>40</td>
<td>Substitution request for Metal Laboratory Casework (123553) and the Laboratory Fume Hoods (115313)</td>
<td>JRA</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
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<td>--------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>41</td>
<td>On sheet C-002 of the plans, there are no dates listed for Phase 3,4,5,</td>
<td>BFW Refer to Architectural Phasing Schedules on G-104 for start and completion dates.</td>
</tr>
<tr>
<td></td>
<td>and 6 of the civil project schedule. Can you provide some kind of</td>
<td>Remove Civil Project Schedules from sheets C-001 and C-002</td>
</tr>
<tr>
<td></td>
<td>estimate on the timeframe of this work. Phase 2 (sheet C-001) shows a</td>
<td></td>
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<tr>
<td></td>
<td>completion date of September 2018. I’m assuming that these other phases</td>
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<tr>
<td></td>
<td>would be sometime in 2019, but would like some confirmation on this</td>
<td></td>
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<tr>
<td></td>
<td>please. Thanks</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Section 075323 Part 2.3. The specs call for a White Reinforced EPDM.</td>
<td>JRA Non-reinforced is ok in white.</td>
</tr>
<tr>
<td></td>
<td>The manufactures do not make a white reinforced EPDM. Do you want a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>standard black reinforced, or are you wanting a white non-reinforced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EPDM?</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Section 075323 part 2.2. The specs call for 180mph wind speed rating.</td>
<td>JRA System must be designed to comply with the ultimate wind speed of 115 as noted on</td>
</tr>
<tr>
<td></td>
<td>Is this what is required? Can this be reduced? This wind speed is very</td>
<td>structural drawings.</td>
</tr>
<tr>
<td></td>
<td>expensive to achieve.</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>What is the makeup of the existing roof system?</td>
<td>JRA Gravel surface built-up roof, 4 ½” perlite insulation over metal deck. Refer to Moisture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diagnostic Survey Report in Addendum 2</td>
</tr>
<tr>
<td>45</td>
<td>Is there a time for site visits scheduled?</td>
<td>UK Added per Addendum 2</td>
</tr>
<tr>
<td>46</td>
<td>Can we use the manufactures standard 2 coat kynar 500 paint finish in</td>
<td>JRA No</td>
</tr>
<tr>
<td></td>
<td>lieu of the 3 coat that is specified? This would be for the coping,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>drip edge, gutter, downspouts, counter flashing, soffits, etc.</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>On the areas that we are to save the existing insulation, can we</td>
<td>JRA Mechanically attach</td>
</tr>
<tr>
<td></td>
<td>mechanically attach the new insulation thru to catch the existing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>metal deck? We cannot adhere to the existing insulation.</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>On the new areas, can we mechanically attach all layers of insulation?</td>
<td>JRA Mechanically attach</td>
</tr>
<tr>
<td></td>
<td>If not, can we mechanically attach all layers except the top layer,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>which would be set in adhesive?</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Is the building to remain watertight during construction?</td>
<td>JRA</td>
</tr>
<tr>
<td>50</td>
<td>Detail C on A-3.55 is not a warrantable detail. The built in gutter should be widened so that an actual roof drain and piping can be installed to satisfy the manufactures requirements.</td>
<td>JRA</td>
</tr>
<tr>
<td>51</td>
<td>Communications Cabling: Cable tray is in Section 27, but want to confirm the EC will be installing cabling tray?</td>
<td>Marcum</td>
</tr>
<tr>
<td>52</td>
<td>Tyco/Amp is specified for cable type. Is Uniprise an approved equal since CommScope bought Tyco/Amp?</td>
<td>Marcum</td>
</tr>
<tr>
<td>53</td>
<td>Audio Visual: A120: Can you clarify the screen size? 112&quot; x 240&quot; is not a 16:10 format like the projector</td>
<td>Marcum</td>
</tr>
<tr>
<td>54</td>
<td>A120: ECHO 360 is listed as a source but it is not connected to the input of the switcher on the provided drawing. Can you clarify?</td>
<td>Marcum</td>
</tr>
<tr>
<td>55</td>
<td>A120: Are there any specs for the 17&quot; monitor for the Image Blender?</td>
<td>Marcum</td>
</tr>
<tr>
<td>56</td>
<td>A120: Equipment list says QTY 4 of the Crestron DM-RMC-SCALER-C but the drawing only shows QTY 1, Which is correct?</td>
<td>Marcum</td>
</tr>
<tr>
<td>57</td>
<td>A120: Are there any specs for the fiber runs to the Lecture Halls?</td>
<td>Marcum</td>
</tr>
<tr>
<td>58</td>
<td>A120: It is not listed in the Equipment List but is an antenna distribution system required for the wireless mics?</td>
<td>Marcum</td>
</tr>
<tr>
<td>59</td>
<td>A120: Is it the AV contractor’s responsibility to run network drops? If so, what are the specs?</td>
<td>Marcum</td>
</tr>
<tr>
<td>60</td>
<td>A105: Can you clarify screen size? 65&quot; x 108&quot; is not a 16:10 format like the projector.</td>
<td>Marcum</td>
</tr>
<tr>
<td>61</td>
<td>A105: Will a system line drawing be provided like the other rooms?</td>
<td>Marcum</td>
</tr>
<tr>
<td></td>
<td>Written Question</td>
<td>Answer</td>
</tr>
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</tr>
<tr>
<td>62</td>
<td>A117: The Equipment List shows QTY 12 of the Crestron DM-TX-201-C twice for a total of 24. The drawing only shows one of them per student table. What is the correct QTY?</td>
<td>Marcum</td>
</tr>
<tr>
<td>63</td>
<td>A117: The Equipment List shows QTY 7 of the Logitech cameras (mount on top of the TVs), but there are only 6 TVs. Which QTY is correct?</td>
<td>Marcum</td>
</tr>
<tr>
<td>64</td>
<td>A117: Are the table mics going to be used for voice lift in the room?</td>
<td>Marcum</td>
</tr>
<tr>
<td>65</td>
<td>A117: Does the program audio for an individual table need to be connected to the mixer before it hits the DSP?</td>
<td>Marcum</td>
</tr>
<tr>
<td>66</td>
<td>A102: Will a system line drawing be provided like the other rooms?</td>
<td>Marcum</td>
</tr>
<tr>
<td>67</td>
<td>A102: Are there minimum specifications for the soundbar?</td>
<td>Marcum</td>
</tr>
<tr>
<td>68</td>
<td>A113: The Drawing shows VGA and HDMI connected from each of the 4 TT-100 table cubbys. There are not enough VGA connections on the Crestron DMPS-300-C to support all 4 of them. It only has 3. DO we just need to put VGA in 3 of them?</td>
<td>Marcum</td>
</tr>
<tr>
<td>69</td>
<td>Digital Signage: Are there minimum specifications for the Intel NUC computer?</td>
<td>Marcum</td>
</tr>
<tr>
<td>70</td>
<td>Digital Signage: Just to clarify, the AV contractor is responsible for running the network drops?</td>
<td>Marcum</td>
</tr>
<tr>
<td>71</td>
<td>“As I look through the demo details, They are telling me to demo the existing SS man hole but on all other pages and details we are supposed to tie into the existing man hole just making sure that I am reading this correct. The only spec showing is a tie in. If you could just confirm that for me so I don’t over price on a man hole that I have no specs on.</td>
<td>BFW</td>
</tr>
<tr>
<td>72</td>
<td>Article 35 references builders risk insurance, but does not specifically mention if flood or earthquake are required. Special conditions also does not discuss this. Will flood and earthquake be required, and if so, what amount will be required?</td>
<td>UK</td>
</tr>
<tr>
<td>73</td>
<td>Can you please provide the specs for the vibration table?</td>
<td>JRA</td>
</tr>
<tr>
<td>74</td>
<td>Requesting approval for Kent Companies steel push pier.</td>
<td>BFW</td>
</tr>
<tr>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
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</tbody>
</table>
Moisture Diagnostic Survey Report

Kentucky Grain Research Facility

1205 Hopkinsville Street
Princeton, KY

Inspection Date: July 10th, 2017
Introduction to Moisture Diagnostics

The purpose of conducting a moisture diagnostic survey is to determine if the underlying roof insulation has been compromised due to water infiltrating the roof assembly. The information provided by this scan helps determine whether a given roof needs complete replacement, partial replacement, restoration, or simply preventive maintenance. In this way, resources can be focused where they are needed.

Nuclear scanning uses a principle called neutron moderation. Tiny amounts of radiation can be used to detect hydrogen ions within a roof assembly. Neutrons emitted from the gauge’s fully contained source collide with the neutrons of hydrogen. These collisions slow their travel. The gauge detects the changes in speed and can accurately identify moisture damage deep within the roof assembly. Because water contains hydrogen, higher count values will be observed when moisture is present. High counts may also be obtained at any point where more hydrogen atoms are present. This can occur when there are changes in membrane thickness or insulation thickness.

Physical verification is preformed following the detection of anomalies from the nuclear inspection. This involves using an electronic moisture sensitive probe to examine the surfacing, felts, insulation, vapor barrier and the deck in suspected areas.

Inspection Details

Jacob Hébert is certified by American Portable Nuclear Gauge Association and is properly registered to perform nuclear moisture scans.

Moisture surveys were conducted on the low slope roof assembly at 1205 Hopkinsville Street, Princeton, KY on July 10th, 2017. The scan was performed using a Troxler 3216 Roof Reader Nuclear gauge. Data results and photos are included in the report to follow.
Environmental Conditions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Scan Date</td>
<td>July 10th, 2017</td>
</tr>
<tr>
<td>Temperature</td>
<td>94.4 F</td>
</tr>
<tr>
<td>Wind Speed</td>
<td>5.1 mph</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>48.8%</td>
</tr>
<tr>
<td>Overall Conditions</td>
<td>Clear</td>
</tr>
</tbody>
</table>

Roof Area Breakdown

<table>
<thead>
<tr>
<th>Roof Section</th>
<th>Total SQFT</th>
<th>Wet SQFT</th>
<th>% Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanned roof area</td>
<td>42,916</td>
<td>476</td>
<td>1%</td>
</tr>
<tr>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Total: 42,916</td>
<td>476</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Wet square footage is approximate. % Wet is +/- 3%
CORE SAMPLE RESULTS

C1 = GRAVEL SURFACE BUILT-UP
4-1/2' PERLITE INSULATION
METAL DECK

C2 = GRAVEL SURFACE BUILT-UP
4-1/2' PERLITE INSULATION
METAL DECK

C3 = GRAVEL SURFACE BUILT-UP
4-1/2' PERLITE INSULATION
METAL DECK

LEGEND

● VENT PIPE
× ROOF DRAIN
X CORE SAMPLE AREA
× ROOF CURB
3 AREA DESIGNATION
△ NET AREA(S)
□ WALKWAY PAD
□ ROOF HATCH

NOTES:
DRAWINGS ARE TO SCALE
WHEN PRINTED ON 11X17.
CONTRACTOR IS RESPONSIBLE
FOR VERIFICATION OF CONDITIONS.

TOTAL ROOF AREA:
± 42,416 SF

TOTAL WET AREA:
± 416 SF

DRAWING NO: A1

DATE: 7-11-17
SCALE: AS NOTED

KY GRAIN RESEARCH FACILITY
1205 HOPKINSVILLE ST.
PRINCETON, KY

BUILDING MANAGEMENT CONSULTANTS
6116 Shallowford Rd.
Chattanooga, TN 37421
WWW.BMCUSA.NET
This is an overview of the roof area.
This is an overview of the roof area.
This is core sample #1. This core was taken at an elevated nuclear reading. The core locations are noted on the drawing provided in the report.

The insulation and felts are probed during the nuclear scan to verify moisture in the system. This is core #1. There was no moisture present in the system at this core. The elevated readings was determined to be from thicker amounts of bitumen near the drain.
This is core sample #1. After the core was examined repairs were made. The core locations are noted on the drawing provided in the report.

The insulation and felts are probed during the nuclear scan to verify moisture in the system. This is core #2. There was no moisture present in the system at this core.
This is a photo of another core taken during the scan. There is no visible moisture present and the moisture probe confirmed there is no moisture in this core.

This is core sample #2. After the core was examined repairs were made. The core locations are noted on the drawing provided in the report.
This is core #3. The moisture probe was used and determined to be saturated in this area. The wet area was marked and it is noted on the roof drawing provided in the report.

This is wet area #2. It is identified on the roof and the roof drawing in the report.
This is wet area #4 as noted on the roof drawing.

This is an example of elevated readings in the wet area above. The typical readings on this roof were ranging from 6-10.
This is wet area #6 as noted on the roof drawing.

This is an example of elevated readings in wet area #6. The typical readings on this roof were ranging from 6-10.
Inspection Summary

Core Info:

- Core #1 (Dry - Drain) Gravel surface built-up roof / 4-1/2" perlite insulation / Metal deck.
- Core #2 (Dry - Flashing) Gravel surface built-up roof / 4-1/2" perlite insulation / Metal deck.
- Core #3 (Dry - Cricket) Gravel surface built-up roof / 4-1/2" perlite insulation / Metal deck.

A thorough evaluation of surface material, insulation, felts, and deck material were scanned, probed and visually inspected. The core samples were taken at locations of suspected “wet” area. The moisture probe was then used to confirm that the roof assembly was either wet or dry.

During the moisture survey conducted on the low slope roof assembly at the Kentucky Grain Research Facility, it was determined that approximately 1% of the roof system is currently holding moisture. The nuclear gauge was used on a 10’ x 10’ grid and also in 5’ sections around all units.
<table>
<thead>
<tr>
<th>COMPANY</th>
<th>REPRESENTATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Mudd</td>
<td>UK - Purchasing</td>
</tr>
<tr>
<td>STEVE GAMBLER</td>
<td>BFW ENGINEERS</td>
</tr>
<tr>
<td>B3 ELECTRIC</td>
<td>CHARLIE VICKERS</td>
</tr>
<tr>
<td>Mark Weinicki</td>
<td>Fusion Systems LLC</td>
</tr>
<tr>
<td>Airdrie Electric, Inc.</td>
<td>Gary Travis</td>
</tr>
<tr>
<td>John A. D. Myers</td>
<td>UK REC</td>
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<tr>
<td>John Earnest</td>
<td>UK REC</td>
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<tr>
<td>Chris Burton</td>
<td>PEPB</td>
</tr>
<tr>
<td>Russel Brandon</td>
<td>PEPB</td>
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<tr>
<td>Brian Hoepf</td>
<td>UK-CP10D</td>
</tr>
<tr>
<td>Murtec Inc.</td>
<td>Todd Fabris</td>
</tr>
<tr>
<td>Princeton Water</td>
<td>David Cotton</td>
</tr>
<tr>
<td>Princeton Water</td>
<td>Adam Ortiz</td>
</tr>
<tr>
<td>Johnson Packers - Wingel, Inc.</td>
<td>Maity L. Johnson</td>
</tr>
<tr>
<td>Calhoun Construction</td>
<td>Jeff Johnson</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
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<tr>
<td>18</td>
<td>Patrick Carver</td>
</tr>
<tr>
<td>19</td>
<td>Justin Perkins</td>
</tr>
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<td>20</td>
<td>Johnny Baum</td>
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<td>21</td>
<td>David Ury</td>
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<td>22</td>
<td>Chad Lee</td>
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<td>23</td>
<td>Dennis Smith</td>
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<tr>
<td>24</td>
<td>Travis Watkins</td>
</tr>
<tr>
<td>25</td>
<td>Jonathan Martin</td>
</tr>
<tr>
<td>26</td>
<td>Hanson Fuller, Jr.</td>
</tr>
<tr>
<td>27</td>
<td>Phillip Cumbo</td>
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<tr>
<td>28</td>
<td>Tom Hitchcock</td>
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SPECIALTIES & EQUIPMENT SCHEDULE

MARK DESCRIPTION COMMENTS

M1 MARKER BOARD 4' X 12'
M2 MARKER BOARD 20'-0" x 9'-4" (LOW GLOSS)

T1 GRAB BAR SET:  36" BACK, 42" SIDE, 18" VERTICAL
T2 AMBULATORY GRAB BAR SET: (2) 36" SIDE
T3 GRAB BAR - 48'
T4 TOILET PAPER DISPENSER - SINGLE ROLL
T5 SANITARY NAPKIN DISPOSAL - PARTITION MOUNTED
T6 SANITARY NAPKIN DISPOSAL - RECESSED
T7 SOAP DISPENSER - SURFACE MOUNTED, HORIZONTAL
T8 SOAP DISPENSER - SURFACE MOUNTED, VERTICAL
T9 FRAMED MIRROR - 24" x 36"
T10 UTILITY SHELF

F1 4413 - FIRE EQUIPMENT
F2 RECESSED FIRE EXTINGUISHER CABINET
F3 RECESSED SPILL KIT CABINET
F4 BRACKET MOUNTED CLEAN AGENT FIRE EXTINGUISHER
F5 KNOX BOX
F6 5113 - METAL LOCKERS
L1 DOUBLE TIER METAL LOCKER
L2 5116 - AUDIO & VISUAL SYSTEMS

O1 PLOTTER
O2 LARGE COPIER
O3 SMALL COPIER
O4 LAMINATOR

RS1 MANUAL ROLLER SHADE SURFACE MOUNTED
RS2 MANUAL BLACKOUT ROLLER SHADE SURFACE MOUNTED
RS3 MOTORIZED ROLLER SHADE SURFACE MOUNTED

V1 70" LCD SCREEN

OFFICE EQUIPMENT (N.I.C.)

PLANT / SOIL

RC / GRINDING

LOADING / UNLOADING

MECHANIZED SYSTEMS

PRE-PLANT / POST-HARVEST

DIAGNOSTIC ROOM

CHEMICAL STORAGE

MANUFACTURING / PROCESSING

LAB ADDITION SHOWN IS ACCEPTANCE OF ALTERNATE #1. REFER TO A/-A-101D

REUSE THESE DRAWINGS - IN ELECTRONIC OR ANY OTHER FORMAT - IN WHOLE, OR IN PART, FOR ANY PURPOSE OTHER THAN FOR THE PROJECT. THE CLIENT AGREES NOT TO OR REUSE OF THE ELECTRONIC FILES FOR ANY OTHER PROJECT BY ANYONE CONSENT OF THE ARCHITECT. THE CLIENT
SimplexGrinnell Material List (THIS IS NOT A PRICE QUOTATION)

TO: all bidders

Project: UK GRAIN FORAGE FA
Customer Reference:
SimplexGrinnell Reference: 232424975
Date: 01/09/2018
Page 1 of 4

Comments

SCOPE:

This quote is for SimplexGrinnell (SG) to provide the fire alarm system for the UK Grain Forage project. This design is based from drawing provided by Marcum Engineering dated 11/21/17. Conversations with Brandon Ernst were also taken into consideration concerning the use of horn/strobes instead of voice notification.

This price includes the following:

- Design / CAD / State submittal fees
- Equipment
- Shipping / handling
- Commissioning / acceptance testing
- Installation

The following items were added to the design:

- **Area A**
  - Visual notification device in reference reading A111
  - Visual notification device in family toilet room A106
  - Pull station in vestibule A100A1 beside the annunciator

- **Area B**
  - Visual notification device in conference room B111
  - Visual notification device outside office B118B
  - Visual notification device outside office B118E
  - Visual notification device outside janitor room B177
  - Visual notification device outside ukrec staff room B137

- **Area C**
  - Smoke detector over the FACP
  - Pull station in Lounge C102 @ the exit
  - Pull station in mechanical room C110 @ the exit
  - Visual notification device in the nursing room C106
  - Pull station in mechanized system lab C13? @ the exit
  - Pull station in primary sample prep grinding/drying room C134 @ the exit

The electrical contractor shall provide and install all conduit, back boxes, pathways, and 120v power per the approved SG drawings.

Revised price per request of engineer to provide additional monitor modules to monitor the
SimplexGrinnell Material List (THIS IS NOT A PRICE QUOTATION)

Comments (continued)

suppression system. 1/8/18
SimplexGrinnell Material List (THIS IS NOT A PRICE QUOTATION)

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**PROFESSIONAL SERVICES**

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**INSTALLATION**
## SimplexGrinnell Material List (THIS IS NOT A PRICE QUOTATION)

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PARTIAL FOUNDATION PLAN - AREA A (BASE BID)

1/8" = 1'-0"

PUSH PIERS @ 5'-0" O.C.
MAX. ALONG LENGTH OF
WALL FOOTING
RE: TYPICAL DETAIL

ML(B)

P2 (99'-4"
F4.12 (97'-6"

WF1 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"

C1

P2 (99'-4"
F4.12 (97'-6"
PARTIAL FOUNDATION PLAN - AREA A (ALT. BID)

1/8" = 1'-0"
EXIST. MASONRY VENEER
RE: ARCHITECTURAL

EXIST. FLOOR SLAB

EXIST. FOUNDATION WALL

EXISTING WALL FOOTING

PIER TO BRACKET CONNECTION BOLT (TYP.)

CONC. ANCHOR (TYP.)

PIER BRACKET

STEEL PUSH PIER DESIGNED BY MANUFACTURER TO SUPPORT 24 KIPS (SERVICE LOAD)

LOAD BEARING STRATUM

CONCRETE ANCHOR (TYP.)

PIER BRACKET

STEEL PUSH PIER PER MANUFACTURER

LOAD BEARING STRATUM

CROSS SECTION VIEW

ELEVATION VIEW

TYPICAL PUSH PIER DETAIL

3/4" = 1'-0"
Princeton Electric Plant Board
University of Kentucky Research Project

1. Contractor must provide and install secondary pipe and secondary conductors from the pad mount transformer to the building panel. This is the customers property.

2. Customer is responsible for building the concrete pad for the transformer to sit on. Pad dimensions are found in the attachment on this email.

3. Customer must install the 4” rigid 90-degree elbow and 1 stick of 4” pipe feeding from the primary side of the concrete pad out to the overhead pole. This pipe is provided by the Princeton Electric Plant Board.

4. Pad mount transformer is provided and installed by the Princeton Electric Plant Board.

5. Secondary connectors must be provided by the contractor. If contractor is paralleling secondary conductors, the recommended connector is a Utilico model number USGL-750R84. The wire range for this connector is 750 MCM to 1/0.

6. Ground rods for transformer are provided by PEPB and installed by contractor.

7. Princeton Electric Plant Board will install the underground primary cable to padmount transformer.

8. Princeton Electric Plant Board will be responsible for purchasing and installing the primary metering.
Concrete Pad Dimensions
For Three Phase Padmount Transformer
750 KVA

First Section of Primary Conduit Out of Concrete Pad Provided by PEPB and Installed by Customer/Contractor

Overhead View

Secondary Conduit Provided and Installed by Customer/Contractor

Ground Rods Provided by PEPB and Installed by Customer/Contractor

Primary Conduit

Secondary Conduit(s)

Ground Rod

Chamfer Edge

Grade Level

3000 PSI Minimum Strength Concrete Wire Mesh or Rebar Reinforced

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Drawn By: K. Kizzee
NON-SUPERVISED PREACTION RISER DIAGRAM

SYSTEM COMPONENTS

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<td>SUPERVISED CONTROL VALVE (NORMALLY OPEN)</td>
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<td>LOCKING SOLENOID VALVE (NORMALLY CLOSED)</td>
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<td>ALARM TEST VALVE (NORMALLY CLOSED)</td>
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<td>UL LISTED SYSTEM CONTROL PANEL WITH BATTERY BACKUP (INSTALL IN PROTECTED SPACE)</td>
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<td>120 VOLT POWER (COORDINATE WITH ELECTRICAL CONTRACTOR)</td>
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<td>MANUAL EMERGENCY PULL STATION</td>
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NOTE:
DUAL-ACTION REQUIRED FOR RELEASE OF WATER THERBY GUARDING AGAINST INADVERTENT WATER DAMAGE.
### Electrical A1 Schedule

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### Electrical EA1 Schedule

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**Disclaimer**: Unauthorized changes to or reuse resulting in any way from any spare drawings - in electronic drawings. The client agrees not to reuse these drawings. The client agrees not to draw any plans for the project. The client agrees further to waive all claims against the architect for the project.
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**Electrical B1 Schedule**

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**Notes:**
- Total connected load includes all electrical loads.
- Receptacles (0 - 10 KVA) are connected to circuits 19 and 15.
- Receptacles (Over 10 KVA) are connected to circuit 19.
- Load category 500 is defined as 0.00 demand factor.

---

**Other Information:**
- The project is drawn to meet electrical engineering standards.
- The client agrees not to transfer these electronic files to others without prior consent.
- Marcum Engineering, LLC holds copyright on these electronic files.
ACTIVE LEARNING CLASSROOM A117 AV DIAGRAM

SHURE MX396/C-TRI TABLE MONITOR
LOGITECH TABLE MIC ME55C
LOGITECH TV CAM HD V-ROOO2
HDMI 20 AWG 6 - 8 CH
TABLE MIC (3 OUTPUTS) 3X1 MIXER (X6)
INSTRUCTORS MIC
OWNER SUPPLIED TABLE RACK
HDMI INSTRUCTORS CAMERA RCA out to ECHO 360
SONY SNC-DH140 ECHO 360 ROOM CAMERA
HDMI DOCUMENT CAMERA (Lumens Ladibug DC192)
ROOM PC GUEST LAPTOP HDMI
GUEST AUDIO GUEST VGA
ASSOCIATED CABLES
PROGRAM AUDIO TO TVS ECHO 360
TST-902 WIRELESS FROM MULTI PURPOSE A120 TO MULTI PURPOSE A120
33" FLAT L5-FLKIT-33

Crestnet HDMI DM-TX-201-C DM-RMC-SCALER-C HDMI RS-232 HD-MD8x1
ETHERNET POWER MODULE FT-TSC600 FLIPTOP CONTROL PANEL/TABLE BOX
INSTRUCTOR CONTROL LAN INPUT HDMI AND RS-232 PROJECTOR
TABLE INPUTS x6 PROJECTOR SCREEN
INPUTS OUTPUTS
TABLE OUTPUTS x6 WIRELESS BP
6 SPEAKERS
BIAMP DSP AMP
ROOM PC GUEST LAPTOP DOCUMENT CAMERA

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500 SOUTH 17TH STREET PADUCAH, KENTUCKY 42002-0120 PHONE - 270.444.9274 FAX - 270.443.1904

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CEILING PANEL SYETEM

NO SCALE

1 PROVIDE ALPHA SYSTEM CEILING PANEL 1'X2', REFER TO ARCHITECTURAL DRAWINGS FOR QUANTITIES.

CEILING PANEL SYETEM

1 PROVIDE ALPHA SYSTEM SINGLE CIRCUIT W-5622-72 TWIST LOCK POWER CORDS PER CEILING PANEL.

SPARE OUTLET

CAT6 JACKS FOR DATA AND VIDEO.

RECEPTACLE WITH FACEPLATE.

SERVICE CUT OUT
## APPENDIX B

### Parts Listing

#### Horizontal Cabling

- **UTP 4/24 Category 6 PVC Cable (Green)**
  - Commscope NetConnect 1-219560-4
- **F/UTP 4/24 Category 6A PVC Cable (Green)**
  - Commscope NetConnect 4-1499389-2

#### Horizontal Termination Hardware

- **6 Port Faceplate**
  - Commscope 2111012-X
- **4 Port Faceplate**
  - Commscope 2111011-X
- **2 Port Faceplate**
  - Commscope 2111009-X
- **Cat 6 Modular Outlet**
  - Commscope 1375055-X
- **Cat 6A XG Shielded Modular Jack**
  - Commscope 1711342-2
- **Blank Inserts**
  - Commscope 406339-X
- **Green Data Icons**
  - Commscope 558198-3
- **Back Box for Cat 6A Outlets 5” x5”x2 7/8”**
  - Randl 1375014-1
- **24 Port Category 6 Patch Panel**
  - Commscope 569446-1
- **48 Port Cat 6A XG Angled Patch Panel**
  - Commscope 569440-1
- **Cat 6 Patch Cable**
  - Commscope TCPC-6RUVB-XXXXF
- **Cat 6A Patch Cable**
  - Commscope TCPC-6ARFVB-XXXXF
- **Horizontal Cable Mngmnt Panels 1 RMS**
  - Panduit CMPH1
- **7” Blank Panel Kit**
  - Commscope 556965-4
- **300 pr 110 Block Kit w/ legs**
  - Commscope 558635-1
- **100 pr 110 Block Kit w/legs**
  - Commscope 558635-1
- **Rack Mount 100 Pr 110 Block**
  - Commscope 558635-1

#### Copper Backbone Cabling

- **300 pr UTP Riser Cable**
  - General Cable 2133373
- **200 pr UTP Riser Cable**
  - General Cable 2133323
- **100 pr UTP Riser Cable**
  - General Cable 2133144
- **25 pr UTP Riser Cable**
  - General Cable 2133033
- **900 pr OSP Armored 24 AWG**
  - General Cable 7525876
- **600 pr OSP Armored 24 AWG**
  - General Cable 7525868
- **300 pr OSP Armored 24 AWG**
  - General Cable 7525843
- **25 pr OSP Armored 24 AWG**
  - General Cable 7525785

#### Optical Fiber Cabling and Termination Hardware

- **24 Strand OFNR Fiber Cable SM**
  - Corning Cable Systems 024E81-33131-24
- **24 Strand OFNR Fiber Cable 62.5 MM**
  - Corning Cable Systems 024K81-33130-24
- **24 Strand OFNR Fiber Cable OM4 MM**
  - Corning Cable Systems 024T81-33190-24
- **12 Strand OFNR Fiber Cable SM**
  - Corning Cable Systems 012E81-33131-24
- **12 Strand OFNR Fiber Cable 62.5 MM**
  - Corning Cable Systems 012K81-33130-24
- **12 Strand OFNR Fiber Cable OM3 MM**
  - Corning Cable Systems 012T81-33190-24
- **6 Strand OFNR Cable MM**
  - Corning Cable Systems 006K81-31130-24
- **Outdoor Hybrid Fiber 48MM/48SM**
  - Corning Cable Systems 096XU4-XXXXXD20
- **Outdoor Hybrid Fiber 24MM/24SM**
  - Corning Cable Systems 048XU4-XXXXXD20
- **Outdoor Hybrid Fiber 12MM/12SM**
  - Corning Cable Systems 024XU4-XXXXXD20
- **Outdoor Hybrid Fiber 6MM/6SM**
  - Corning Cable Systems 012XU4-XXXXXD20
- **1” Innerduct (orange)**
  - Corning Cable Systems CCH-04U
- **Fiber Connector Housing**
  - Corning Cable Systems CCH-02U
- **Fiber Connector Housing**
  - Corning Cable Systems CCH-01U
- **Connector Housing Panels (12 SM fiber)**
  - Corning Cable Systems CCH-CP12-59
- **Connector Housing Panels (12 MM fiber)**
  - Corning Cable Systems CCH-CP12-91
- **Connector Housing Panel (12 LOMMF)**
  - Corning Cable Systems CCH-CP12-E7
- **Connector Housing Panels (6 SM fiber)**
  - Corning Cable Systems CCH-CP06-59
- **Connector Housing Panels (6 MM fiber)**
  - Corning Cable Systems CCH-CP06-91
| Fiber SC Unicam Connector MM | Corning Cable Systems | 95-000-41 |
| Fiber SC Connector SM | Corning Cable Systems | 95-200-41 |
| Fiber SC Connector LOMMF | Corning Cable Systems | 95-050-41-X |
| Buffer Tube Fan Out Kit | Corning Cable Systems |

**Telecommunications Room Racks**

| 7' floor rack | Legrand | Mighty Mo MM6716 |
| Vertical Wire Manager | Legrand | MM6VMD706 |

**Telecommunications Room Ladder Runway**

| Black 12" | CPI | 10250-712 |
| Black 18" | CPI | 10250-718 |

**Cable Tray**

- 4" deep Cable Tray (6" rung spacing)
- Horizontal Elbows, Vertical Risers, Ts, Radius Drop Out

**Connection components**

**Surface Raceway – Metal Only**

| Size to be determined | Wiremold |

**Protection**

| Terminal Protection Block 100 pr | Marconi | R-355 |
| Solid State Protector Modules | Corning Cable Systems | 6SPE-BT |
| Bldg Entrance Protector Panel (100 pr) | Avaya | 489BCB1-100 |
| Solid State Protector Module | Avaya | 4C1S |

**Infrastructure Splice Components**

| Splice Closure | Preformed | 8000635 |
| Splice Closure End Plate Kits | Preformed | 800081098 |
| MS² Splicing Module (Dry) | 3M | 4000-D/TR |
| MS² Splicing Module (Filled) | 3M | 4000-D |

**Coaxial Cable**

| Horizontal RG-6 | Belden | 1189A |
| Riser 540 | Commscope | QR 540 JCAR |
| Outside 540 Aerial | Commscope | QR 540 JCA |
| Outside 540 Buried | Commscope | QR 540 JCSS |
SECTION 275116 – AUDIO AND VISUAL SYSTEM

PART 1 - GENERAL

1.1 DEFINITIONS

A. “Owner” shall be:
   University of Kentucky

B. “Contractor” shall be:
   Audio/Video Contractor

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Standard Division 1 Specification Sections, apply to this Section.

B. Reference and coordinate work as required with Owner.

C. Electrical Drawings

1.3 REGULATORY REQUIREMENTS

American National Standards Institute (ANSI)
Audio Engineering Society (AES)
ANSI/INFOCOMM 2M-2010
Electronic Industries Association (EIA)
Federal Communications Commission (FCC)
International Standards Organization (ISO)
National Electric Code (NEC/NFPA)
National Association of Broadcasters (NAB)
Underwriters Laboratories, Inc. (UL)

1.4 WORK BY OTHERS

A. Electrical Contractor to provide:
   1. 120VAC Power.
   2. Conduit, backboxes, & raceway systems with pull wires.

1.5 SCOPE OF WORK

A. Control Systems

B. Audio Systems

C. Video Projection Systems

D. Digital Signage System
Note:
1. This is a performance based specification. It is the contractors’ responsibility for a complete functioning system as described in the specification and drawings. Equal substitutions can be provided if equivalent functionality and quality is maintained. These substitutions must be approved by owner & consultant.
2. Bids to include either Crestron or Extron system product quotes.
3. Refer to both Crestron & Extron drawings and quotes for clarification.

1.6 SCOPE OF WORK (Description)
A. Lecture Halls and classrooms, etc. to provide inputs from Apple MAC, iPAD, Android Tablets, DVD/BLU-Ray and Windows PC’s to main projection system.
B. System to provide required input wall jacks, WiFi connectivity to allow for presentations to also be streamed to outside locations (via ECHO 360) as well as iPad’s and Tablets.
C. Connections for Video & Teleconferencing Systems to also be provided in A102 Seminar Classroom, A105 Demonstration Classroom, A120 Large Multi-Purpose Room, A113 Executive Conference, and A117 Active Learning Classroom.
D. Required audio DSP, auto mixers, amplifiers and speakers required to provide even coverage for the entire room with maximum gain and frequency response.
E. All microphones are to be wireless (except as noted).
F. Touch panel control system for all items as detailed.
G. Touchscreens to be programmed for ease of use with graphical control of all devices. Simple selection screens will be programmed as per owner and consultant requirements.
H. Provide with graphical table layout for all rooms.
I. Provide with Crestron Fusion Management Software (or Extron equivalent).
J. Must have DMC-E certified personnel on staff (or Extron XTP equivalent).
K. Provide one year of free re-programming (minor changes) to owner after initial acceptance of system.
L. Contractor to provide list of certified programmers (min. two) for both Crestron & Extron systems.
M. It is recommended that contractors have an office located within 300 miles of the campus.

1.7 MATERIALS AND EQUIPMENT REQUIREMENTS
A. Manufacturers’ model numbers hereinafter listed are for reference and are used, as a basis of minimum standards and performance required. Exact system requirements shall be determined by the entirety of the bidding documents, including the specification and drawings.
B. Equipment equal in performance & scope from other manufacturers is encouraged to be submitted and will be actively entertained, but only those items judged by the Consultant to be
equal to or superior to the specified items (in any/all aspects relating to this project), will be approved. Features, functions, and performance shall remain essentially the same regardless of equipment manufacturer. Should any model numbers be obsolete or superseded, it shall be understood that the newest equivalent model shall be furnished.

C. The Contractor shall be the **authorized** distributor of equipment and shall maintain a service department, stock sufficient replacement parts & equipment, and be authorized to provide warranty service.

### 1.8 CONTRACTORS REQUIREMENTS

A. All Contractors submitting proposals for this work shall first examine the site if applicable and all bid documents that may affect the scheduling and completion of their work as it relates to this contract. Contractors shall coordinate construction schedules with the Owner so work can be performed to meet completion schedules with a minimum interruption of the normal operation of the facility. Submitting a bid shall indicate acceptance of the specifications, drawings, existing conditions, and any released addenda unless specifically described in the submittal.

B. Notwithstanding the detailed information contained in this specification, **it is the responsibility of the Contractor to supply a working overall system.** The Contractor shall notify the Consultant of any possible discrepancies of the specifications prior to bid. Failure of such notification before bid date holds the Contractor responsible to supply all items and quantities as specified and/or interpreted by the Consultant, without claim for additional payment.

C. It is the contractor’s responsibility to assure safe installation practices for all installed equipment. The contractor is to include in their bid, any related costs to provide structural engineering review and acceptance of their work prior to commencing of such work.

### 1.9 BIDDING CONTRACTORS REQUIREMENTS

A. The work performed under this section shall be performed by a sound systems contractor, normally engaged in the business of sound systems installation. The prospective contractor shall show proof, as part of the bid, which the contractor has been in the sound systems installation business for a period of not less than five (5) years and has successfully, completed projects of similar size and scope.

B. All bidding contractors must be factory authorized representatives of all major systems of this project at time of bid. Including: Speaker Systems, Digital Signal Processing Systems, Touch Screen Control Systems, Amplification Monitoring Systems, Theatrical Lighting and Dimming Systems.

C. All bidding contractors must be factory authorized to provide field or in shop service for all major systems of this project at time of bid. Including Speaker Systems, Digital Signal Processing Systems, Touch Screen Control Systems, Amplification Monitoring Systems.

D. The Owner, Architect and Consultant reserve the right to reject any bids submitted by firms without sufficient experience in projects of similar size and scope.
1.10 WARRANTY

A. All equipment (and installation thereof) will have a three (3) year warranty commencing on the date of system(s) acceptance by Owner (in writing). Exclude warranties for units purchased by owner except in the event of damage by contractors.

B. During the warranty period, report to the site and repair or replace any defective materials or workmanship without cost to the Owner. Warranty service shall be rendered within 48 hours after requested by the Owner. Equivalent replacement equipment shall be temporarily provided when immediate on-site repairs cannot be made.

C. Where warranties on individual pieces of equipment exceed twelve months, the guarantee period shall be extended to the warranty period of the particular items.

D. Be of maximum assistance to the Owner during the guarantee period of the system, to the degree that maximum Owner satisfaction is assured. Included as part of the “assistance” is the contractor’s efforts to remove and delivery of the units should they be required to be returned to the manufacturer for warranty servicing.

E. After completion of the work, the Installer shall submit a Certificate of Warranty. Warranty period shall begin with the commencement of the date/s noted in the certificate of substantial completion of the project.

1.11 MISC. REQUIREMENTS

A. It is understood that the terms herein are defined as such:

1. Provide: Contractor is to furnish, install, test, & train Owner.
2. Furnish: Contractor is to supply equipment/material only.
3. Install: Contractor is to properly connect, make functional (proper & required operation), test, & instruct Owner in proper operation of equipment/system(s).

1.12 SUBMITTALS

A. Within 21 days of award of contract, Contractor is to arrange a meeting with the consultant.

B. Within 14 days of award of contract, provide the following for approval:

1. Shop drawings containing literature describing each item of equipment proposed for use. **Equipment list to match spec. sections.** Bind all information in a spiral bound booklet, or in PDF electronic format. Three-ring binders are not allowed.
2. Include specifications for all proposed connectors.
3. A list of instrumentation currently possessed by the Contractor as required for test measurements (if requested).
4. Initial construction schedule for all work the contractor will be performing.
5. Custom rack panels, power switch panels, and connector plate details with labeling to scale.
6. Arrangement of equipment in racks.
7. Rack locations and connections to installed conduit system.
8. Mounting details for loudspeakers. Drawings shall show the weights of individual components.
9. Rough-in containing 1/8"= 1'0" scale drawings of Architect's building floor plans indicating all conduit sizes and runs, quantity and types of cables, equipment locations, rack layout,
terminal cabinet locations, etc., system block diagram (not terminal connection diagrams) showing cable tag numbers and impedance of speaker lines, and any other special details required to coordinate the work. These rough-in drawings shall be separate from general power and light, or other shop drawings.

10. Rough-in of device programming for digital signal processing, and automated control systems

C. Completely detailed shop drawings, as described above, shall be prepared prior to the procurement of equipment or commencement of work. A minimum of 3 sets of drawings and submittals are to be provided to the Consultant.

D. Provide all submittal drawings separate from other trades

E. Revise and resubmit submittals as required; identify all changes made since previous submittal.

F. All drawings shall be revised to "As-Built" at the project completion, and the Contractor shall submit to the Architect up to four (4) complete sets of prints and one set of electronic files on CD for his record files. "As-Built" drawings should include: all conduit sizes and runs, quantity and types of cables, equipment locations, actual rack layout, terminal cabinet locations, actual measured impedance of speaker lines, copies of DSP configuration and settings.

G. As-Built documentation CD shall include pdf and dwg files for all final As-Built drawings, any software programs needed to access installed systems, programming files for all applicable components (DSP, Control System, etc.), System “How-To” document detailing basic power up and operation procedures for all installed systems.

H. The Contractor is to keep a set of approved submittals & drawings on the job, noting all changes made with the final installation upon prior approval,

I. Prior to final system check out, the contractor shall present a completed package to the consultant containing the following information in an 8 1/2 X 11 binder and in PDF electronic format.

1. A list of all equipment installed with corresponding equipment operation & applicable service manuals; including all speakers, microphones, and ancillary items.
2. Installed equipment list to be listed by room with manufacturers’ names, model numbers, serial numbers, and quantities of each.
3. Accurate block diagram of all new and existing equipment and their interconnections complete with all cable tag numbers and input/output levels.
4. Equipment levels and adjustment settings.
5. Equipment passwords and IP addresses.
6. Operation instructions for complete system(s).
7. Manufacturer’s warranties and operating instructions for each and every equipment item furnished. Include a copy of the certificate of warranty, signed by both parties.

PART 2 - PRODUCTS

2.1 EQUIPMENT – A120 LARGE MULTI-PURPOSE CLASSROOM

A. Video Projectors (1 unit)

1. WUXGA 14,000 center lumens, 2100:1 contrast, 1920 x 1200 native resolution, 3-chip DLP
a. Dual lamp
b. 16:10 format
c. RS-232 control
d. HDMI input
e. Provide with required ILS zoom lens
f. Reference: Christie WU14K-M
g. Provide with required iso-mount

B. Projection Screen
1. 112" H X 240" W
   a. 16:10 format
   b. XT1000X surface
   c. APPROXIMATE OVERALL FRAME AREA: 128" H X 256" W
d. Draper Lace & Grommet TECVISION

C. Image Blender
1. Analog Way Ascender 32 (4k version) (or approved equal)
   a. Provide with 17" preview monitor in rack

D. Equipment Rack
1. Provide the following:
   a. Provide adequate spacing and ventilation. MAP QBP-2 fan unit per rack.
   b. Provide rack layout detail with submittals.
   c. Contractor to provide rack space and depth as needed for all equipment.
   d. Drawer for wireless mic’s and other cables, etc.
   e. Provide with MAP WRK-SA Series rack

E. EMI/RFI Surge Protection (2 per rack)
1. MAP PD-920R-SP

F. Source Devices:
1. Denon Professional DN-500BD Blu-ray/DVD player
2. Lumens Ladibug DC192 Document Camera
3. ECHO 360

G. Video Conferencing System: (or approved equal)
1. ClearOne Collaborate Room HD or approved equal
   a. 4 endpoint operation
   b. HDMI output

H. Crestron Digital Media System - Video processing and Control (or equal by Extron)
1. PRO3/10+ 3-Series Control System®
2. CEN-SW-POE-5 5-Port PoE Switch
3. TSD-2020-B V-Panel&#153; 20" VESA Mount HD Touch Screen Display
4. DM-MD16X16 16x16 DigitalMedia™ Switcher
5. DMCO-5533 4 DM 8G+ w/2 HDMI & 4 HDMI w/4 Stereo Analog Audio Output
6. DMCO-4433 4 DM 8G Fiber w/2 HDMI & 4 HDMI w/4 Stereo Analog Audio Output Card
7. DMC-HD HDMI® Input Card for DM® Switchers (10 units)
8. DMC-VGA/Video Input Card for DM® Switchers
9. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler (1 unit)
10. DVPHD-CUSTOM-GB High-Definition Digital Video Annotator with Guidebar™ includes (1) output card, no input cards
11. DHDC-RGBO-R DVI/QM Output Card for DVPHD-GB
12. DHDC-HDRGBVI DVI/HDMI® Dual Video Input Card for DVPHD
13. KRAMER VIA COLLAGE Presentation Gateway with 21” monitor & 4 port LAN switch
14. DMC-S DigitalMedia 8G™ Fiber Input Card for DM® Switchers (4 units)
15. DM8G cable
16. Fiber (x8) to connect other rooms noted
17. Verify all quantities and model numbers required
18. Provide power strips as required.

I. Vaddio Camera Systems (or approved equal)
1. AutoTrak 2.0 with HD-20 Camera
2. Vaddio ClearVIEW HD-20 (1 unit)
3. ProductionVIEW Precision Camera Controller (for ClearVIEW cameras)
4. Provide presets as per owner

J. Digital Signal Processor:
1. BIAMP, Symetrix, BSS London or approved equal
   a. Provide Mic-Line inputs & outputs as required
   b. Acoustic Echo Cancelling
   c. 12 x 10
2. DSP configuration to include labels and meters for all inputs and outputs
3. Provide Yamaha Portico 5045 for the (2) wireless body packs

K. Loudspeakers: (or approved equal)
1. Renkus Heinz VA101-22 powered speakers (8 units)
2. (2) clusters of 4 units
3. Color as per architect

L. Microphones, etc.
1. Shure QLXD2/SM58 Handheld Mic System (4 units)
2. Shure QLXD14/93 wireless body pack mic system (2 units)
3. Mogan Elite ICE Earset for bodypack (2 units)
4. Audix OM3s handheld mic (4 units)
5. Gator GFW-MIC-1001 mic stand (4 units)

M. Miscellaneous Requirements:
1. All equipment is to be rack mounted unless otherwise specified.
2. Label all equipment as per Owner.
3. Provide all devices, etc. with proper cables and interconnect devices.
4. Verify all device locations.

N. Lectern

1. Middle Atlantic L5-TURFR-33
   a. Provide with: GOOSENECK LIGHT, MONITOR MOUNT, SHOCKMOUNT MICROPHONE HOLDER, CLOCK TIMER, CONNECTIVITY PANEL (HDMI, CAT6, 3.5mm, VGA), MILLWORK KIT
   b. Provide all cables to laptop for use by presenter
   c. COLOR & FINISHING KIT AS PER Architect
   d. All cables to be installed in Loom jacketing with heat shrink on both ends.

2.2 EQUIPMENT – A105 DEMONSTRATION CLASSROOM

A. Video Projectors

1. WUXGA 7000 color lumens, 8000:1 contrast, 1920 x 1200 native resolution
   a. Laser Diode
   b. 16:10 format
   c. RS-232 control
   d. HDMI input
   e. Provide with required zoom lens
   f. Reference: Sony VPL-FHZ700L/W (white)
   g. Provide CAT6 for management software
   h. Provide with required iso-mount

B. Projection Screen

1. 65" H X 108" W
   a. 16:10 format
   b. XH900X surface
   c. 6" drop
   d. Draper Access V Electric Tab-tensioned

C. Image Blender

1. Analog Way Ascender 32 (4k version) (or approved equal)
   a. Provide with 17" preview monitor in rack

D. Equipment Rack

1. Provide the following:
   a. Provide adequate spacing and ventilation. MAP QBP-2 fan unit per rack.
   b. Provide rack layout detail with submittals.
   c. Contractor to provide rack space and depth as needed for all equipment.
   d. Drawer for wireless mic’s and other cables, etc.
   e. Provide with MAP WRK-SA Series rack

E. EMI/RFI Surge Protection (2 per rack)
1. MAP PD-920R-SP

F. Source Devices:
   1. Denon Professional DN-500BD Blu-ray/DVD player
   2. Lumens Ladibug DC192 Document Camera
   3. ECHO 360

G. Video Conferencing System: (or approved equal)
   1. ClearOne Collaborate Room HD or approved equal
      a. 4 endpoint operation
      b. HDMI output

H. Crestron Digital Media System - Video processing and Control (or equal by Extron)
   1. PRO3/10+ 3-Series Control System®
   2. CEN-SW-POE-5 5-Port PoE Switch
   3. TSD-2020-B V-Panel/#153; 20” VESA Mount HD Touch Screen Display
   4. DM-MD16X16 16x16 DigitalMedia™ Switcher
   5. DMCO-5533 4 DM 8G+ w/2 HDMI & 4 HDMI w/4 Stereo Analog Audio Output
   6. DMCO-4433 4 DM 8G Fiber w/2 HDMI & 4 HDMI w/4 Stereo Analog Audio Output Card
   7. DMC-HD HDMI® Input Card for DM® Switchers (10 units)
   8. DMC-VGA VGA/Video Input Card for DM® Switchers
   9. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler (1 units)
10. DVPHD-CUSTOM-GB High-Definition Digital Video Annotator with Guidebar™ includes (1) output card, no input cards
11. DHDC-RGBO-R DVI/QM Output Card for DVPHD-GB
12. DHDC-HDRGBVI DVI/HDMI® Dual Video Input Card for DVPHD
13. KRAMER VIA COLLAGE Presentation Gateway with 21” monitor & 4 port LAN switch
14. DMC-S DigitalMedia 8G™ Fiber Input Card for DM® Switchers (4 units)
15. DM8G cable
16. Fiber (x8) to connect to noted rooms
17. Verify all quantities and model numbers required
18. Provide power strips as required.

I. Vaddio Camera Systems (or approved equal)
   1. AutoTrak 2.0 with HD-20 Camera
   2. Vaddio ClearVIEW HD-20 (1 unit)
   3. ProductionVIEW Precision Camera Controller (for ClearVIEW cameras)
   4. Provide presets as per owner

J. Digital Signal Processor:
   1. BIAMP, Symetrix, BSS London or approved equal
      a. Provide Mic/Line inputs & outputs as required
      b. Acoustic Echo Cancelling
      c. 12 x 10
   2. DSP configuration to include labels and meters for all inputs and outputs
   3. Provide Yamaha Portico 5045 for the (2) wireless body packs
K. Loudspeakers: (or approved equal)
   1. JBL Control 45C/T (4 units)
      a. 120 degree dispersion
      b. 70v

L. Microphones, etc.
   1. Shure QLXD2/SM58 Handheld Mic System (2 units)
   2. Shure QLXD14/93 wireless body pack mic system (2 units)
   3. Mogan Elite ICE Earset for bodypack (2 units)
   4. Audix OM3s handheld mic (2 units)
   5. Gator GFW-MIC-1001 mic stand (2 units)

M. Miscellaneous Requirements:
   1. All equipment is to be rack mounted unless otherwise specified.
   2. Label all equipment as per Owner.
   3. Provide all devices, etc. with proper cables and interconnect devices.
   4. Verify all device locations.

N. Lectern
   1. Middle Atlantic L5-TURFR-33
      a. Provide with: GOOSENECK LIGHT, MONITOR MOUNT, SHOCKMOUNT MICROPHONE HOLDER, CLOCK TIMER, CONNECTIVITY PANEL (HDMI, CAT6, 3.5mm, VGA), MILLWORK KIT
      b. Provide all cables to laptop for use by presenter
      c. COLOR & FINISHING KIT AS PER Architect
      d. All cables to be installed in Loom jacketing with heat shrink on both ends.

2.3 EQUIPMENT – A117 ACTIVE LEARNING CLASSROOM

A. Video Projectors
   1. WUXGA 7000 color lumens, 8000:1 contrast, 1920 x 1200 native resolution
      a. Laser Diode
      b. 16:10 format
      c. RS-232 control
      d. HDMI input
      e. Provide with required zoom lens
      f. Reference: Sony VPL-FHZ700L/W (white)
      g. Provide CAT6 for management software
      h. Provide with required iso-mount

B. Projection Screen
   1. 65" H X 108” W
      a. 16:10 format
      b. XH900X surface
      c. 6” drop
d. Draper Access V Electric Tab-tensioned

C. Equipment Rack

1. Provide the following:
   a. Provide adequate spacing and ventilation. MAP QBP-2 fan unit per rack.
   b. Provide rack layout detail with submittals.
   c. Contractor to provide rack space and depth as needed for all equipment.
   d. Drawer for wireless mic’s and other cables, etc.
   e. Middle Atlantic SRSR-X-17

D. EMI/RFI Surge Protection

1. MAP PD-920R-SP

E. Source Devices:

1. Lumens Ladibug DC192 Document Camera
2. ECHO 360

F. Crestron Digital Media System - Video processing and Control (or equal by Extron)

1. HD-MD8X1 QuickSwitch HD® 8x1 HDMI® Switcher (6 units)
2. PW-2420RU Power Pack, Desktop, 24VDC, 2A (50 Watts), (6 units)
3. DM-TX-201-C DigitalMedia 8G+™ Transmitter 201 (6 units)
4. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler (6 units)
5. PRO3/10+ 3-Series Control System®
6. DM-MD16X16 16x16 or 32x32 DigitalMedia™ Switcher);
7. DMCO-5555 8 DM 8G+ w/4 HDMI Output Cards for DM-MD16X16
8. DMCO-3000 2 HDMI w/2 Stereo Analog Audio Output Card for DM-MD16X16 or 32x32
9. DMC-C DigitalMedia 8G+™ Input Card for DM® Switchers (12 units)
10. DMC-HD HDMI® Input Card for DM® Switchers (3 units)
11. DMC-DVI DVI/RGB Input Card for DM Switchers
12. CEN-SW-POE-5 5-Port PoE Switch
13. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler
14. PWE-4803RU PoE Injector, universal 100-250 Volts AC (6 units)
15. TST-902-B Tilt Touchscreen
16. CEN-ERFGW-POE Extended Range RF Wireless Gateway
17. CEN-WAP-1500 High Power Dual-Band Wireless Access Point
18. FT-TSC600-B FlipTop #153; Touch Screen Control System, Black Anodized (6 units)
19. FTA-PWR-102 FlipTop™ AC Power Outlet Module, Dual, US NEMA 5, Type B (12 units)
20. Cable Retractor for FlipTops #153; HDMI® (36 units)
21. CBLR-CAT5E Cable Retractor for FlipTops #153; CAT5e (6 units)
22. DM8G cable
23. Verify all quantities and model numbers required
24. Contractor to provide table cutouts for Flip-Top Control Panels. Coordinate with owner.
25. Provide with transmitter/receivers as required for all inputs/outputs. Verify cable lengths.
26. Provide power strips as required.

G. Lectern

1. Middle Atlantic L5-TURFR-33
a. Provide with: GOOSENECK LIGHT, MONITOR MOUNT, SHOCKMOUNT MICROPHONE HOLDER, CLOCK TIMER, CONNECTIVITY PANEL (HDMI, CAT6, 3.5mm, VGA), MILLWORK KIT
b. Provide all cables to laptop for use by presenter
c. COLOR & FINISHING KIT AS PER Architect
d. All cables to be installed in Loom jacketing with heat shrink on both ends.

H. Camera Systems (or approved equal)
1. Sony SNC-DH140 (camera for Echo 360)
2. Logitec TV CAM HD V-R0002 (mount on top of TV's) (6 units)

I. TV Monitor – 55"
1. Samsung ME55C (6 units)
a. Provide with Table mount

J. Digital Signal Processor:
1. BIAMP, Symetrix, BSS London or approved equal
   a. Provide Mic/Line inputs & outputs as required
   b. Acoustic Echo Cancelling
   c. 8 x 8
   d. When table mic is activated, associated speaker turns off
2. DSP configuration to include labels and meters for all inputs and outputs

K. Loudspeakers: (or approved equal)
1. JBL Control 45C/T (4 units)
a. 120-degree dispersion
b. 8 ohm
c. Requires 20 awg twisted pair cable

L. Amplifier: (or approved equal)
1. Crown CT8150 8 ch amp

M. Mixer: (or DSP approved equal)
1. Ashley MX206 (6 units)

N. Microphones, etc.
1. Shure MX396/C-TRI (6 units)
2. Shure QLXD14/93 wireless body pack mic system
3. Mogan Elite ICE Earset for bodypack

O. Miscellaneous Requirements:
1. All equipment is to be rack mounted unless otherwise specified.
2. Label all equipment as per Owner.
3. Provide all devices, etc. with proper cables and interconnect devices.
4. Verify all device locations.

2.4 EQUIPMENT – A102 SEMINAR CLASSROOM

A. TV 70" (3 Units)
   1. Visio M701I-A3 or approved equal
      a. Provide with mount that can accommodate the Kramer VIA behind TV.
      b. Provide with Bose Sound Touch 300 Soundbar

B. Equipment Rack
   1. Provide the following:
      a. Provide adequate spacing and ventilation. MAP QBP-2 fan unit per rack.
      b. Provide rack layout detail with submittals.
      c. Contractor to provide rack space and depth as needed for all equipment.
      d. Drawer for wireless mic's and other cables, etc.
      e. Middle Atlantic SRSR-X-17

C. EMI/RFI Surge Protection
   1. MAP PD-920R-SP

D. Video Conferencing System: (or approved equal)
   1. ClearOne Collaborate Room HD or approved equal
      a. 4 endpoint operation
      b. HDMI output

E. Source Devices:
   1. ECHO 360
   2. Sony SNC-DH140 (camera for Echo 360)

F. Crestron Digital Media System - Video processing and Control (or equal by Extron)
   1. DMPS-300-C DigitalMedia™ Presentation System 300
   2. TST-600-B-S 5.7" Wireless Touch Screen, Black Smooth; includes
      a. TST-600-DS, TST-600-IMCW, PW-2407WU, TST-600-BTP, TST-600-FP-NB
   3. ST-600-FPW-S Button Bezel Kit w/Custom Engraving for TST-600, White
   4. CEN-ERFGW-POE Extended Range RF Wireless Gateway
   5. CEN-SW-POE-5 5-Port PoE Switch
   6. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler
   7. KRAMER VIA COLLAGE Presentation Gateway w/USB extenders and & USB powered Hub
   8. TT-100-B-T Crestron Connect It™ Presentation Interface w/120V Outlet (4 units)
   9. DM8G cable
   10. Verify all quantities and model numbers required
11. Contractor to provide table cutouts for TT-100. Coordinate with owner.
12. Provide required connectors and associated cables from Floorbox to floor rack.
13. Provide power strips as required.

G. Crestron Digital Media System - Video processing and Control (or equal by Extron)
   1. PRO3/10+ 3-Series Control System®
   2. DM-MD16X16 16x16 or 32x32 DigitalMedia™ Switcher;
   3. DMCO-5555 8 DM 8G+ w/4 HDMI Output Cards for DM-MD16X16
   4. DMCO-3000 2 HDMI w/2 Stereo Analog Audio Output Card for DM-MD16X16 or 32x32
   5. DMC-C DigitalMedia 8G+™ Input Card for DM® Switcher
   6. DMC-HD HDMI® Input Card for DM® Switcher
   7. DMC-DVI DVI/RGB Input Card for DM Switcher
   8. CEN-SW-POE-5 5-Port PoE Switch
   9. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler
   10. PWE-4803RU PoE Injector, universal 100-250 Volts AC (6 units)
   11. TST-902-B Tilt Touchscreen
   12. CEN-ERFGW-POE Extended Range RF Wireless Gateway
   13. CEN-WAP-1500 High Power Dual-Band Wireless Access Point
   14. DM8G cable
   15. Verify all quantities and model numbers required
   17. Provide power strips as required.

H. Lectern
   1. Middle Atlantic L5-TURFR-33
      a. Provide with: GOOSENECK LIGHT, MONITOR MOUNT, SHOCKMOUNT MICROPHONE HOLDER, CLOCK TIMER, CONNECTIVITY PANEL (HDMI, CAT6, 3.5mm, VGA), MILLWORK KIT
      b. Provide all cables to laptop for use by presenter
      c. COLOR & FINISHING KIT AS PER Architect
      d. All cables to be installed in Loom jacketing with heat shrink on both ends.

I. Loudspeakers: (or approved equal)
   1. JBL Control 45C/T (4 units)
      a. 120 degree dispersion
      b. 70v

J. Miscellaneous Requirements:
   1. All equipment is to be rack mounted unless otherwise specified.
   2. Label all equipment as per Owner.
   3. Provide all devices, etc. with proper cables and interconnect devices.
   4. Verify all device locations.

2.5 EQUIPMENT – A113 EXECUTIVE CONFERENCE ROOM

A. TV 70"
   1. Visio M701I-A3 or approved equal
a. Provide with mount that can accommodate the Kramer VIA behind TV.
b. Provide with Bose Sound Touch 300 Soundbar

B. Equipment Rack

1. Provide the following:
   a. Provide adequate spacing and ventilation. MAP QBP-2 fan unit per rack.
   b. Provide rack layout detail with submittals.
   c. Contractor to provide rack space and depth as needed for all equipment.
   d. Drawer for wireless mic's and other cables, etc.
   e. Middle Atlantic SRSR-X-17

C. EMI/RFI Surge Protection

1. MAP PD-920R-SP

D. Video Conferencing System: (or approved equal)

1. ClearOne Collaborate Room HD or approved equal
   a. 4 endpoint operation
   b. HDMI output

E. Source Devices:

1. ECHO 360
2. Sony SNC-DH140 (camera for Echo 360)

F. Crestron Digital Media System - Video processing and Control (or equal by Extron)

1. DMPS-300-C DigitalMedia™ Presentation System 300
2. TST-600-B-S 5.7" Wireless Touch Screen, Black Smooth; includes
   a. TST-600-DS, TST-600-IMCW, PW-2407WU, TST-600-BTP, TST-600-FP-NB
3. ST-600-FPW-S Button Bezel Kit w/Custom Engraving for TST-600, White
4. CEN-ERFGW-POE Extended Range RF Wireless Gateway
5. CEN-SW-POE-5 5-Port PoE Switch
6. DM-RMC-SCALER-C DigitalMedia 8G+™ Receiver & Room Controller w/Scaler
7. KRAMER VIA COLLAGE Presentation Gateway w/USB extenders and & USB powered Hub
8. TT-100-B-T Crestron Connect It™ Presentation Interface w/120V Outlet (4 units)
9. DM8G cable
10. Verify all quantities and model numbers required
11. Contractor to provide table cutouts for TT-100. Coordinate with owner.
12. Provide required connectors and associated cables from Floorbox to floor rack.
13. Provide power strips as required.

G. Miscellaneous Requirements:

1. All equipment is to be rack mounted unless otherwise specified.
2. Label all equipment as per Owner.
3. Provide all devices, etc. with proper cables and interconnect devices.
4. Verify all device locations.
2.6 EQUIPMENT - Digital Signage System at A100A Lobby

A. TV’s 70”

1. Visio M701I-A3 or approved equal (1 unit)
   a. Provide with Premier Mount P5080F
   b. Provide with Intel Next Unit DCCP847DYE
   c. Provide HDMI cable from Intel unit to TV
   d. Provide CAT6 cabling as required to MDF/IDF as noted.
   e. Owner to connect cables at MDF/IDF locations.

2.7 EQUIPMENT - Digital Signage System at A100B Pre-Function / Gallery

A. TV’s 50”

1. Visio M501I-A3 or approved equal (2 units)
   a. Provide with Premier Mount P5080F
   b. Provide with Intel Next Unit DCCP847DYE
   c. Provide HDMI cable from Intel unit to TV
   d. Provide CAT6 cabling as required to MDF/IDF as noted.
   e. Owner to connect cables at MDF/IDF locations.

PART 3 - EXECUTION

3.1 EXECUTION

A. Contractor to be in attendance at (2) formal programs utilizing each facilities system to provide any assistance necessary.

B. Provide Friction-Wedge shaft locks or security covers on all non-user operated equipment. Mark all user controls for normal operating conditions.

C. All connections are to be made with rosin core solder, crimp type connectors, ratchet-crumped spade lug types, or other appropriate termination devices

D. Mark all equipment and user controls for normal operating conditions as per Owner.

E. Provide necessary AC power outlets inside equipment racks for all equipment.

F. Legibly identify input and output controls with lamicoid or other permanent labels. Use similar permanent means to identify all controls and electronic components (front and rear) in the system. Embossed "Dymo tape" labels, etc. are not acceptable.

G. Pre-set levels throughout each system and permanently mark equipment for future reference.

H. Fasteners and their supports shall be adequate to support their load with a safety factor of at least five (5). All mounting hardware to have an SAE rating of 5 or better. Licensed structural engineer must approve all structural and rigging components. All components shall be secured plumb and square. Provide detail for review.
I. Verify location of all equipment/devices with the architect/owner.

J. Minor items of equipment, etc. needed to fulfill the specifications and requirements and to provide a complete working system, even if not specifically mentioned herein, are to be supplied under this contract without additional claim for payment.

K. All equipment to be mounted in equipment racks/turrets with Torx-Post Security Screws.

L. All empty rack spaces are to be filled with blank or vented security covers. Appropriate type of security panel to be determined by method or rack cooling and method of nearby component cooling.

M. Provide permanent operational instruction guide in equipment rack(s).

N. All loose cables entering or exiting an equipment rack are to be contained in split loom tubing, or alligator skin wrap.

O. All loose cables entering or exiting an equipment rack are to lay flat on the floor and not interfere with full operation of the equipment rack doors.

P. Install wiring in strict conformity with state-of-the-art practice. All work is to be performed with a high degree of craftsmanship. Current broadcast standards, current recording studio practice and techniques outlined in "A Clean Audio Installation Guide" by Allen H. Burdick; and the specification contained herein, shall serve as guidelines.

Q. Verify that conduits have been mechanically and electrically connected to receptacle boxes and building ground. Do not splice any lines in conduit.

R. Install all equipment neatly, plumb, square and true to line and level.

S. Execute, without claim for extra payment, moderate moves or changes as necessary to accommodate other equipment, proper viewing, or to preserve symmetry and pleasing appearance, and as required by engineer.

T. Approval by Owner & Consultant is required for any changes necessitated by field conditions.

U. Maintain the same individual in charge of work throughout execution, unless illness, loss of personnel, or other circumstances beyond the control of the Audio Contractor intervene.

V. All data and network installation associated with the audio system to be completed by BICSI certified technicians. Documented proof of certification to be provided upon request.

W. Leave job site and all equipment, air filters, and materials clean and free from marks, blemishes, dust, and debris.

3.2 CONNECTORS AND DEVICES:

A. Microphone Receptacles: Neutrik D-L-1series or approved equals, on plates as specified

B. Microphone Cable Connectors: Neutrik NC3F/NC3M type.

C. Monitor Speaker Receptacles: Neutrik NL2/4 series on plates as specified.

D. Monitor Speaker Connectors: Neutrik NL2/4 series.
E. Panel Mount RJ-45 Connectors: Neutrik EtherCon

F. Auxiliary Input Receptacles: Neutrik NP3x and NP2x 1/4" TRS/TS; 3501FR RCA phono; on plates as specified.

G. Spade Lug Connectors: AMP/3M slotted tongue, compression type connectors, or approved equal.

H. Displacement type connectors (audio cables 22–18 AWG excluding speaker cables): Entrelec ADO terminal blocks (either standard size or mini) Ref. 12.0.G

I. Screw Type Terminal Strips (speaker cables only; voice coil or 70V): Cinch-Jones barrier strips, or approved equivalent. Ref. 12.0.

J. S-Video Receptacle: L-Com MD44FT field installable s-video jack or approved equivalent


L. Employ the use of recessed panel connectors for all BNC, RCA, and F type connectors.

3.3 WIRING METHODS:

A. Install all audio system wiring in conduit or wiremold below 10’ A.F.F. or as specified. All exposed cable not in conduit is to be a color approved by owner/architect.

B. Maximum cross-sectional area fill of conduits not to exceed 40% of internal area of conduit. Provide pullboxes at maximum intervals of 200’ and every 270 degrees of bends.

C. Isolate all wiring, jacks, panels, etc. from conduit ground.

D. All microphone (low level) cables shall be continuous, without splices (joints), from point of origin to point of termination.

E. Splices in speaker and control cable will not be permitted, except within equipment cabinets, terminal cabinets, accessible junction boxes, or speaker backboxes.

F. Provide cable marker labels (equal to Brady B-500 series) at each end and at each splice in equipment cabinets, terminal cabinets and accessible junction boxes to correspond to circuit designations indicated on "As Built" drawings. Secure labels with clear heat shrink tubing. Use of Brady self-laminating labels is approved.

G. Terminate all audio cables within equipment racks, junction boxes, and terminal cabinets with spade-lug connectors, screw type terminal strips, or displacement type terminal strips. Connect spade lugs to cables by soldering or by crimping with Ratchet type compression crimpers.

H. Except when located in the equipment cabinets or junction boxes, make all audio splices/connections with rosin core solder or compression fittings made with compression crimpers.

I. Utilize 60% tin, 40% lead rosin-core solder for all solder type connections.
J. All a/c wiring within electronics equipment racks shall be installed in conduit in accordance with current NFPA, including all supplements. All plugs and receptacles used shall be of the isolated grounding type.

K. When conduit attaches to equipment racks or junction boxes, employ isolation fittings to prevent signal path ground loops.

L. All electronic cables within equipment racks, housings, and terminal cabinets shall be neatly tied with nylon cable ties at not more than 3" intervals, and shall be installed in accordance with the latest AES installation standards.

M. Label all cables (including power) at both ends and record on As-built drawings & details.

3.4 CABLE (provide plenum rated cable where required)

A. Mic/Line Cable to be No. 22/2 sh w/jacket low capacitance cable manufactured by West Penn (452) or approved equal by Belden.

B. Mic/Line Rack Interconnect Cable to be No. 22/2 sh w/jacket manufactured by West Penn (CL2 291) or approved equal by Belden. *Colors as per engineer.*

C. Speaker Cable (cluster) to be No. 12/2 w/jacket manufactured by West Penn (CL2 227) or approved equal.

D. Speaker Cable (Low Freq.) to be No. 10/2 w/jacket manufactured by West Penn (C210) or approved equal.

E. Speaker Cable (Monitor/Special Effects/Playback) to be No. 14/2 w/jacket manufactured by West Penn (CL2 226) or approved equal.

F. Speaker Cable (Distributed Speakers) to be No. 18/2 w/jacket manufactured by West Penn (CL2 224) or approved equal. Or as per drawing.

G. Intercom Cable (Cue System) to be (2) individually shielded pairs 20/2 manufactured by West Penn (430) or approved equal.

H. Baseband Video Cable to be 18 AWG RG-6 coax manufactured by West Penn (806) or approved equal.

I. Broadband Video Cable to be 20 AWG RG-59 coax manufactured by Belden (1505A) or approved equal.

J. (HD and SDI Digital Coaxial Cable)

K. RGBHV Video cable to be (5) 25AWG coax overall shield manufactured by West Penn (WP8255) or approved equal.

L. CATV Cable: or approved equal
   1. West Penn 843/25843 RG-59U
   2. West Penn 841/25841 RG-6U
   3. West Penn 821/25821 RG-11U

M. Portable CAT6 cable to be ProCo proCAT or approved equal.
N. DMX cable to be (2) pairs 22 AWG with overall shield manufactured by West Penn (3651) or approved equal

O. Other equipment control cables shall be stranded wire, appropriately shielded, of gauge and number of conductors required by the manufacturer for proper operation of the system or equipment item furnished.

P. Provide equivalent plenum rated cable as required.

Q. All supplied loose cables to be provided with velcro fasteners attached to the male end of the cable. Fastener color according to the following color code:

- 5’ cables - White
- 15’ cables - Red
- 25’ cables - Blue
- 50’ cables - Green
- 75’ cables - Yellow

3.5 ACCEPTANCE

A. Upon completion of all tests and system set-up, Contractor is to notify the Consultant that the system is ready for final approval and test. At this time, system binder is to be presented to the Owner for prior evaluation.

1. If final acceptance is significantly delayed because of defective equipment or because of installation not in accordance with Contract Documents (as deemed by the consultant), the Contractor shall directly pay for all additional time and expenses (including legal) of the Owner, Architect, & Consultant representatives during any resultant extensions of the acceptance testing period. This will include any/all costs associated with but not limited to additional site visits, travel, meetings, and coordination.

END OF SECTION 275116