INVITATION FOR BIDS
CCK-2386-19
RENOVATE UKHC UNIVERSITY INN
ADDENDUM #1
3-8-19

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

IMPORTANT: BID AND ADDENDUM MUST BE RECEIVED BY 3-20-19 @ 3:00 P.M. LEXINGTON, KY TIME

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

Please the attached for clarifications, answers to the questions submitted and the Pre-Bid sign-in Sheet.

OFFICIAL APPROVAL
UNIVERSITY OF KENTUCKY

Jim Sutton

Contracting Officer / (859) 257-5406

SIGNATURE

Typed or Printed Name
Waller Health Care Annex
University of Kentucky HealthCare
Lexington, Kentucky

Addendum Number One

07 March 2019

SHA.UKY1703

TO ALL BIDDERS OF RECORD AND ALL REGULATORY AGENCIES

This Addendum forms part of the Contract Documents and modifies the Project Manual and/or Construction Drawings dated 12 February 2019.

GENERAL INFORMATION

1.01 Reference: Attached Written Questions and Answers.

A. Clarification: Reference attached answer(s) to written bidding question(s).

1.02 Reference: Attached Johnson Controls allowance.

A. Clarification: Reference attached allowance for revised number of $109,046.00

ARCHITECTURAL

1.03 Reference: Attached Architectural Specification 088713 Window Film

Clarification: Add attached specification 088713.

1.04 Reference: Attached ADD01-01

Clarification: Reference attached sketch ADD01-01 for location of construction fence.

1.05 Reference: Sheets ID1.0, ID1.1, ID1.2, ID1.3, A9.3 and ADD01-02

Clarification: Reference attached sketch ADD01-02 for revised vanity base design and finish material from L1 to SS1. Finish Note 6 on ID1.0, ID1.1, ID1.2, and ID1.3 revised to ‘Vanity to be SS1 base and SS1 counter’.

Clarification: Remove specification section 123200 from the Project Manual.

1.06 Reference: Specification Section 016000 – Material and Equipment.

Clarification: The following list represents Architect approved equal manufacturers, materials and systems submitted under the provisions of Section 016000 of the Project Manual. All approved equal materials and systems must meet or exceed all provisions and performance and warranty requirements of the specified systems...
listed within the Project Manual. Approval herein does not release the submitter from said provisions and requirements.

**Section 081113  Hollow Metal Doors and Frames**

Subject to full compliance with all specified requirements, details and warranties stated, illustrated or implied within the Construction Documents and Project Manuals for this project, Metal Products, Inc. (MPI) shall be considered as an approved manufacturer for the Flush Wood Doors specified within Section

**Section 081416  Flush Wood Doors**

Subject to full compliance with all specified requirements, details and warranties stated, illustrated or implied within the Construction Documents and Project Manuals for this project, Oshkosh Door Company shall be considered as an approved manufacturer for the Flush Wood Doors specified within Section

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**PLUMBING**

1.07 **Reference:** Mechanical Specifications 201300 - Piping

   A. **Clarification:** Hubless piping shall be for above grade only. Provide Hub and Spigot for piping below grade.

1.08 **Reference:** Sheet P2.0

   A. **Clarification:** Demolish three large existing water heaters currently located in area behind elevator. Demolish system back to source and patch all vent opening through walls.

   B. **Clarification:** Demolish all existing PVC plumbing stub ups in basement slab down below slab and cap.

1.09 **Reference:** Sheet P3.0

   A. **Clarification:** Omit graphical error of un-labeled piping running behind sinks and through Men’s Restroom 006 and Women’s Restroom 007. This piping is condensate piping and shown labeled on sheet M4.0

   B. **Clarification:** Refer to attached revision sheet P3.0R1 for sink sanitary connections.

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**MECHANICAL**

1.10 **Reference:** Mechanical Specification Section 20200 - Insulation

   A. **Clarification:** Provide insulation for all refrigerant piping. IMCOA, Nomaco, or Armacell closed cell polyethylene, 1.5 Lbs/ft³ density, .24 BTU-Hr-FT³- °F/in at 75°F thermal conductivity, zero vapor
permeance, 25/50 flame and smoke spread per NFPA 90 requirements. Elastomeric closed cell insulations that meet the above requirements are also allowed. Install insulation per the manufacturer’s requirements. Provide UV protective coating for all exterior refrigerant lines. All pipe sizes: 1-1/2” thick.

1.11 Reference: Mechanical Drawings Sheet M4.3
A. Clarification: Refer to the attached revision sheet M4.3R1.

1.12 Reference: Mechanical Drawings Sheet M5.0
A. Clarification: Provide 4” concrete housekeeping pad for AHU-1.

**ELECTRICAL**

1.13 Reference: ELECTRICAL SPECIFICATIONS
A. Clarification: Refer to attached specification 272423 for AV system.
B. Clarification: Add attached specification 282300 Video Surveillance.

1.14 Reference: All ELECTRICAL DRAWINGS
A. Clarification: Where wall coverings are used throughout project, contractor shall provide extension rings for all devices. Refer to IC drawings for all wall covering locations.
B. Clarification: Refer to architectural interior elevations for device heights. Pay special attention to all desk locations so that receptacles and date devices are located within the knee space for plug-in access. Do not install behind cabinet/drawer portions of furniture. Coordinate with architect and ORI.
C. Clarification: General note regarding conduit installation in wall shall read; “CONDUIT CANNOT BE INSTALLED HORIZONTAL IN WALLS BETWEEN DEVICES. ALL CONDUITS MUST BE INSTALLED VERTICAL IN WALLS. REFER TO UK STANDARDS.”

1.15 Reference: Sheets E2.0, E2.1, E2.2 and E2.3
A. Clarification: Refer to drawings ID1.0-ID4.0 for limits of fixtures F10 and F7 in walls.
B. Clarification: Where dimming switches are shown in rooms, contractor to provide low voltage dimming conductors in drivers.
C. Clarification: All low voltage cabling for drivers, occupancy sensors, relays, etc… shall be run in conduit to within 12” of end device location.

1.16 Reference: Sheets E2.0
A. Clarification: Fixture with missing tag in Computer Lab 018 shall be provided as F1E.
1.17 Reference: Sheets E2.1

A. Clarification: Delete center light fixture F1 in offices 108D and 108G.

B. Clarification: Provide single face exit sign with backing to eliminate backwards letter appearance between opening in Workroom 108M and Reception 108.

C. Clarification: Revise tagged note L2 to read: “EXISTING CANOPY MOUNTED LIGHTING TO REMAIN. INTERCEPT EXISTING CIRCUIT IN BUILDING AND PROVIDE LOW VOLTAGE RELAY. CONNECT RELAY TO LOW VOLTAGE TO NEW LOW VOLTAGE PHOTOCCELL FOR BUILDING CONTROL.

D. Clarification: Delete L7 tagged note in workroom 116.

E. Clarification: Refer to note L10. The word “BUS” in last sentence should be revised to BAS.

F. Clarification: Provide center fixture in Vestibule 100A as F1E and connect batter to unswitched hot.

G. Clarification: Delete low voltage connection between occupancy sensor in Lobby 102 and Corridor 100. Connect Lobby 102 occupancy sensor to relay in that space.

H. Clarification: Provide light fixture adjacent to exterior door at Stair B with L27 tag.

1.18 Reference: Sheets E2.2

A. Clarification: Provide (2) small light fixtures in Stair A with L27 tag.

B. Clarification: Provide homerun in room 212 with tagged note L14 and circuit to 222/N/P-4 – 41.

1.19 Reference: Sheets E2.3

A. Clarification: Refer to attached drawing E2.3R1 for lighting revisions in room 304 and associated offices.

B. Clarification: Provide (7) F3 fixtures and install with equal spacing through attic walk. Keep fixtures high to structure. Locate light switch at top of attic access. Provide 2#12, 1#12 ground for circuit and extend to 322/N/P-2 – 37.

C. Clarification: Provide exit sign in Workroom 320 above door leading into corridor.

D. Clarification: Refer to tagged note L15. In lieu of circuiting lighting to 322/N/P-3, circuit to panel 322/N/P-2.

E. Clarification: Locate all drivers, junction boxes, etc... needed in future for access directly off attic walk path.

1.20 Reference: Sheets E3.0

A. Clarification: Delete two above counter receptacles in Hall 006 associated with circuit 004A1/N/P-1 -51.
B. Clarification: Relocate circuits 004A1/N/P-1 (circuits 50, 52, and 53) to panel 004A1/N/P-2 (circuits 43, 44 and 45).

C. Clarification: Provide (14) 20A/1p breakers in panel 004A1/N/P-2 to accommodate relocation of existing load in existing panel 022A/N/SWBD-2. Verify all existing to remain circuits as noted on drawings and extend to new panel location 004A1/N/P-2.

1.21 Reference: Sheets E3.1

A. Clarification: Refer to sheet E3.1R1 for lobby power additions and revisions. Circuits added for power connection to furniture. Coordinate with furniture provider.

B. Clarification: Delete tagged note E24 at circuits 122/N/P-2 (circuits 27 and 28).

C. Clarification: Provide additional above counter receptacle above counter in Workroom 118.

D. Clarification: Revise tagged note E57 to read; “PROVIDE STANDARD RECEPTACLE AT THIS LOCATION, AND PROVIDE LOCKABLE GFI IN PANEL.”

E. Clarification: At location of Midmark casework on plan West wall, provide additional above counter receptacle on circuits 122/N/P-2 -4.

F. Clarification: Provide 20A circuit in 122/N/P-4 for exterior door at Stair A. Coordinate circuit installation with door hardware installer. Provide 2#12, 1#12 ground in 3/4” conduit.

1.22 Reference: Sheets E3.2

A. Clarification: Tagged note E56 in Meeting 209E and Conference 202 shall be note E66. Refer to E3.0 for E66 note.

B. Clarification: Revise tagged note E59 to read; “PROVIDE STANDARD RECEPTACLE AT THIS LOCATION, AND PROVIDE LOCKABLE GFI IN PANEL.”

C. Clarification: Relocate receptacle in Corridor 200 on Conference 202 wall to plan West wall in corridor as graphical wall covering will be installed on this wall.

D. Clarification: Refer to offices 204B and 204C. Modify circuits in area so that offices 204B and 204C are on circuit 222/N/P-2 -4.

E. Clarification: Refer to offices 204D and 204E. Modify circuits in area so that offices 204D and 204E are on circuit 222/N/P-2 -6.

1.23 Reference: Sheets E3.3

A. Clarification: Refer to attached drawing E3.3R1 for lighting revisions in room 304 and associated offices.

B. Clarification: Revise tagged note E60 to read; “PROVIDE STANDARD RECEPTACLE AT THIS LOCATION, AND PROVIDE LOCKABLE GFI IN PANEL.”
C. **Clarification:** Relocate receptacle in Corridor 300 on Conference 302 wall to plan West wall in corridor as graphical wall covering will be installed on this wall.

D. **Clarification:** Tagged note E56 in Multi-purpose 321 and Conference 302 shall be note E66. Refer to E3.0 for E66 note.

E. **Clarification:** Provide GFI receptacle on plan East wall of Lactation 305.

F. **Clarification:** Provide three general purpose receptacles spaced evenly on attic walk. Provide circuit in 322/N/P-2 -38 for devices and extend 2#12, 1#12 ground in ¾” conduit to all devices.

1.24 **Reference:** Sheets E4.0

A. **Clarification:** Locate motor rated switches in rooms 022, 010, and 004A so they are on associated HVAC units.

B. **Clarification:** Tagged note on water heater with circuit E53 shall be E54.

C. **Clarification:** Revised tagged note E54 to read: "PROVIDE 100A/3P NEMA 1 DISCONNECT FOR WATER HEATER. EXTEND CIRCUIT FROM DISCONNECT TO UNIT."

D. **Clarification:** Circuit WM-07 in Stair A to WM-12 in Elevator Equipment 001. Provide 2#12, 1#12 ground in 3/4” conduit from unit and provide local disconnect at WM-07 in stair.

E. **Clarification:** Revise note E9 to read; "PROVIDE NEW MECHANICAL PANEL 004A1/N/P-3 TO SERVE MECHANICAL EQUIPMENT ON THIS FLOOR."

F. **Clarification:** Provide 120V connection to recirculating pump in 004A1. Provide 20A/1p breaker at 004A1/N/P-3 – 42 and extend 2#12,1 #12 ground in 3/4” conduit to pump. Provide local disconnect at pump.

1.25 **Reference:** Sheets E4.1

A. **Clarification:** Revised tagged note E55 to read: "PROVIDE 100A/3P NEMA 3R DISCONNECT FOR HVAC CONDENSING UNIT. EXTEND CIRCUIT FROM DISCONNECT TO UNIT."

1.26 **Reference:** Sheets E4.2

A. **Clarification:** Locate motor rated switches in rooms 204, 204A, 209, 209E, and 212 so they are on associated HVAC units.

1.27 **Reference:** Sheets E4.3

A. **Clarification:** Refer to attached drawing E4.3R1, E4.3R2, E4.3R3, and E4.3R4 for HVAC power revisions in room 304 and associated offices as well as other office spaces.
B. **Clarification:** Provide circuit 322/N/P-3 – 9,11 for branch selector and associated Stair A unit. Provide 15A/2 breaker and extend 2#12,1#12 ground in 3/4” conduit.

1.28 **Reference:** Sheets E5.0

A. **Clarification:** Provide 2D on plan South wall in Hall 006 for copier/printer.

B. **Clarification:** Provide ladder tray in MDF as 18” x 6” with 12” rung spacing.

C. **Clarification:** Provide tamper/flow switches for dry system in attic.

D. **Clarification:** Relocate 2D in Computer Labs 014 and 018 shown near entrance to plan North wall directly behind teacher desk. Delete adjacent data symbol with no tag at each location.

E. **Clarification:** Where (3) S15 tagged notes are shown in Computer Lab 014, provide (1) device location with tagged note S5. S5 shall read: "PROVIDE PATCH PANEL IN AV RACK WITH 6 TERMINATED CAT6A CABLES FOR AV CONNECTIONS. PROVIDE (2) 1-1/2” CONDUITS TO BACKBOX”

F. **Clarification:** Where (3) S15 tagged notes are shown in Conference 023, provide (1) device location with tagged note S22. S22 shall read: “PROVIDE PATCH PANEL IN AV RACK WITH 8 TERMINATED CAT6A CABLES FOR AV CONNECTIONS. PROVIDE (2) 1-1/2” CONDUITS TO BACKBOX”

G. **Clarification:** REFER TO NOTE E65. PROVIDE FIBER CONNECTION TO FIRE ALARM CONTROL PANEL – COORDINATE WITH SIMPLEX.

1.29 **Reference:** Sheets E5.1

A. **Clarification:** Where 2D is shown above counter in Pre-employment workroom 109 adjacent to casework, provide at 18” for copier/printer.

B. **Clarification:** Provide microphone at FAA location.

C. **Clarification:** Provide tamper and flow switch at fire protection isolation valve location on floor.

D. **Clarification:** Refer to data device shown on plan West wall of Computer Training 115 and Training 119 next to 2D by teacher work station. Provide tagged note S7 at that location. S7 shall read: "PROVIDE (1) 5"X5" BACKBOXES (SAME AS BACKBOX REQUIRED FOR DATA ROUGH-IN) FOR AV CABLING. PROVIDE 1.5" CONDUIT TURNED OUT ABOVE CEILING FROM BACK BOX. REFER TO DETAIL 4 ON SHEET AV3.0.”

E. **Clarification:** Provide microphone at FAA location in Lobby 100 for voice evacuation functionality.

1.30 **Reference:** Sheets E5.2

A. **Clarification:** Provide ladder tray in MDF as 18” x 6” with 12” rung spacing.
B. Clarification: Provide tamper and flow switch at fire protection isolation valve location on floor.

1.31 Reference: Sheets E5.3

A. Clarification: Refer to attached drawing E5.3R1 for communications revisions in room 304 and associated offices.

B. Clarification: Provide tamper and flow switch at fire protection isolation valve location on floor.

1.32 Reference: Sheets E6.0

A. Clarification: For light fixtures F1E and F1BE provide remote test switch located in ceiling adjacent to fixture. Where lay-in ceilings are located, center in adjacent tile. Where hard ceilings are located, install at the end of each fixture with faceplate adjacent to fixture.

1.33 Reference: Sheets E6.1

A. Clarification: Provide #12 wire and ground and 3/4" conduit for circuits 004A1/N/P-1 (circuits 1-6).

B. Clarification: For circuits 004A1/N/P-1 13,15 and 14,16 provide 30A/2p receptacle and #10 wire and ground.

C. Clarification: Provide #12 wire and ground and 3/4" conduit for circuits 004A1/N/P-2 (circuits 1-3).

D. Clarification: Provide (14) 20A/1p breakers in panel 004A1/N/P-2 to accommodate relocation of existing load in existing panel 022A/N/SWBD-2. Verify all existing to remain circuits as noted on drawings and extend to new panel location 004A1/N/P-2.

E. Clarification: Refer to water heater circuits 004A1/N/P-3 (circuits 2,4,6 and 1,3,5). Provide 70A/3p breaker for each water heater in lieu of 30A/3p. Provide 4#4, 1#8 ground in 1-1/4" conduit to each water heater from panel in lieu of circuiting currently shown.

F. Clarification: Provide circuit 004A1/N/P-1 39,41,43 with #10 wire and ground.

G. Clarification: Provide 1-1/4" conduit in lieu of 1” conduit for circuits 004A1/N/P-3 (21,23,25 + 22,24,26 + 27,29,31 + 28,30,32 + 33, 35, 37).

H. Clarification: Relocate circuits 004A1/N/P-1 (circuits 50, 52, and 53) to panel 004A1/N/P-2 (circuits 43, 44 and 45). Provide 20A/1p spares at location of previous circuits in 004A1/N/P-1.

I. Clarification: When Contractor is filling out final panel schedules, exact equipment type shall be put in schedule in lieu of “EQUIP” such as “VRF UNIT,” “SYSTEMS FURNITURE,” etc…

J. Clarification: For clarification, Panel 004A1/N/P-1 should be provided as a new main lug only panelboard with breakers as seen on schedule and noted in addendum. Panel
shall be provided with hinged cover and top feeder entry. Do not install feeders in panel gutter. Provide with 22,000 AIC rating. Coordinate AIC ratings during coordination study.

K. Clarification: For clarification, Panel 004A1/N/P-2 should be provided as a new main lug only panelboard with breakers as seen on schedule and noted in addendum. Panel shall be provided with hinged cover and top feeder entry. Do not install feeders in panel gutter. Provide with 22,000 AIC rating. Coordinate AIC ratings during coordination study.

L. Clarification: For clarification, Panel 004A1/N/P-3 should be provided as a new main lug only panelboard with breakers as seen on schedule and noted in addendum. Panel shall be provided with hinged cover and top feeder entry. Do not install feeders in panel gutter. Provide with 22,000 AIC rating. Coordinate AIC ratings during coordination study.

M. Clarification: For clarification, Panel 002A/N/SWBD-1 is an existing to remain switchboard. Provide new breakers for new panels where noted.

N. Clarification: For clarification, Panel 002A/N/SWBD-2 is an existing to remain switchboard.

O. Clarification: For clarification, Panel 122/N/P-1 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

P. Clarification: For clarification, circuits 122/N/P-1 1,3,5 represent connection to AHU Wheel, 122/N/P-1 2,4,6 represent connection to AHU-1 return fan and 122/N/P-1 8,10,12 represent connection to AHU-1 supply fan and

Q. Clarification: For clarification, Panel 122/N/P-2 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

R. Clarification: For clarification, Panel 122/N/P-3 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all new loads from this panel and relocate loads seen in schedule to panel 122/N/P-1. This panel shall be utilized for future loads. Provide (42) 20A/1p breakers in existing pole and demolish all existing breakers.

S. Clarification: For clarification, Panel 122/N/P-4 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

1.34 Reference: Sheets E6.2

A. Clarification: Relocate (8) lighting circuits from 322/N/P-3 (circuits 9-16) to 322/N/P-2 (circuits 29-36).
B. Clarification: When Contractor is filling out final panel schedules, exact equipment type shall be put in schedule in lieu of “EQUIP” such as “VRF UNIT,” “SYSTEMS FURNITURE,” etc…

C. Clarification: Provide 30A/2p breakers in lieu of 20A/2p breakers for circuits 222/N/P-2 (36,38 + 40,42).

D. Clarification: For clarification, Panel 222/N/P-1 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

E. Clarification: For clarification, Panel 222/N/P-2 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

F. Clarification: For clarification, Panel 222/N/P-3 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all new loads from this panel and relocate loads seen in schedule to panel 222/N/P-1. This panel shall be utilized for future loads. Provide (42) 20A/1p breakers in existing pole and demolish all existing breakers.

G. Clarification: For clarification, Panel 222/N/P-4 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

H. Clarification: For clarification, Panel 322/N/P-1 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

I. Clarification: For clarification, Panel 322/N/P-2 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.

J. Clarification: For clarification, Panel 322/N/P-3 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all new loads from this panel and relocate loads seen in schedule to panel 322/N/P-1. This panel shall be utilized for future loads. Provide (42) 20A/1p breakers in existing pole and demolish all existing breakers.

K. Clarification: For clarification, Panel 322/N/P-4 represents an existing panel to reuse. Contractor shall utilize existing tub, cover, bussing, etc… for new breakers. Remove all existing breakers from panel and turn over to owner. Provide all new breakers as seen in schedule.
1.35 Reference: Sheets E6.3

A. Clarification: Fiber and copper between MDF and IDF shall be run in the same conduit leaving (1) 4” conduit completely spare.

B. Clarification: Maximum fill of 40% allowed in any j-hook path from MDF/IDF to drops. Where cable quantity will exceed 40%, provide additional j-hook paths.

C. Clarification: Refer to Q on General Communications Notes. Add sheet E4.0 to list of reference sheets.

1.36 Reference: Sheet E6.4

A. Clarification: There are four existing panels in room 222 and not three as indicated on riser. Panel not shown is 222/N/P-4.

B. Clarification: Provide 150A/3p main breaker in existing 1200A panelboard for panel 004A1/N/P-1. Provide 4#1/0, 1#6 ground in 2” conduit. Coordinate conduit installation with new and existing structure.

C. Clarification: Provide 150A/3p main breaker in existing 1200A panelboard for panel 004A1/N/P-2. Provide 4#1/0, 1#6 ground in 2” conduit. Coordinate conduit installation with new and existing structure.

D. Clarification: Provide 300A/3p main breaker in existing 1200A panelboard for panel 004A1/N/P-3. Provide 4#350, 1#4 ground in 3” conduit. Coordinate conduit installation with new and existing structure.

1.37 Reference: Sheets ESS1.0, ESS2.0, ESS3.0, and ESS4.0

A. Clarification: Paint all exposed conduits in stair – coordinate with architect.

1.38 Reference: Sheets ESS1.0

A. Clarification: Provide additional camera at landing between basement and first floor in Stair ST-B

1.39 Reference: Sheets ESS2.0

A. Clarification: Provide glass breaks in Mechanical 123, Restrooms 101 and 103.

B. Clarification: Provide door position switch rough-in and connections to access control system at exterior door in Stairs ST-A and ST-B.

C. Clarification: Provide camera in Northeast corner of Stair ST-B at first floor level facing exterior door.

D. Clarification: Provide camera in Southwest corner of Stair ST-A at first floor level facing exterior door.
1.40 Reference: Sheets ESS3.0
A. Clarification: Provide camera in Northeast corner of Stair ST-B at second floor level facing stairwell.
B. Clarification: Provide camera in Southwest corner of Stair ST-A at second floor level facing stairwell.

1.41 Reference: Sheet AV1.0
A. Clarification: Refer to AV Equipment List, AD-1 and AL-1, color of skin shall be Fusion Maple and metal surfaces shall be Silver Sparkle.
B. Clarification: Refer to AV Equipment List, SPK-1 basis of design shall be Klipsch model SLM-5400-C or equal. Speaker shall be 1.5” deep to fit in restricted ceiling space.

1.42 Reference: Sheets AV2.1
A. Clarification: Relocate touch panel and wall plate in Computer Training 115 from plan West wall to plan South wall to match Training 119.

List of Items Attached:

Written Questions and Answers
Johnson Controls Allowance
Architectural specification section 088713 Architectural Window Film
Architectural Sketches ADD01-01 and ADD01-02 dated 05 March 2019
Plumbing Sketch P3.0R1 dated 05 March 2019
Mechanical Sketch M4.3R1 dated 05 March 2019
Audio Visual specification section 272423 Audio Video Devices
Electronic Safety and Security specification section 282300 Video Surveillance
Electrical Sketches E2.3R1, E3.1R1, E3.3R1, E4.3R2, E4.3R3 dated 05 March 2019

Total Items: 42
Items Attached: 14
06 March 2019
<table>
<thead>
<tr>
<th>NO.</th>
<th>QUESTION</th>
<th>RESPONDER</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spec 201300-4 Piping, Number 5. Applications item C. Soil Waste Vent Piping.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Spec calls for hubless for above grade and below grade? Normally it is hub &amp; spigot below grade and hubless above grade on Sanitary. Please clarify material desired for the DWV piping.</td>
<td>CMTA</td>
<td>Addressed in the addendum. Hub and spigot below grade.</td>
</tr>
<tr>
<td>3</td>
<td>Has the sanitary sewer and the water tap fees been addressed? Can this be clarified to whether this is needed and if needed can these fees be by allowance or paid by owner.</td>
<td>CMTA</td>
<td>No tap fees, tying to existing sanitary and water entrance remains.</td>
</tr>
<tr>
<td>4</td>
<td>Is BIM Coordination drawings required on this project?</td>
<td>UK</td>
<td>No, not for this project.</td>
</tr>
<tr>
<td>5</td>
<td>Who pays for the Commissioning for the project?</td>
<td>CMTA</td>
<td>Commissioning not required by energy code.</td>
</tr>
<tr>
<td>6</td>
<td>Will the Air Handling unit (AHU-1) in the mechanical room 123 on M5.0 require a concrete pad?</td>
<td>CMTA</td>
<td>Addressed in addendum. Concrete pad.</td>
</tr>
<tr>
<td>7</td>
<td>Please clarify to what extent the interior demo has already been completed if any.</td>
<td>CMTA</td>
<td>Refer to Demolition Plans. All demo has been completed other than what is shown on the drawings and addenda.</td>
</tr>
<tr>
<td>8</td>
<td>THERE ARE NO INSULATION SPECS FOR THE REFRIGERANT PIPING ON THIS PROJECT, WHAT TYPE OF MATERIAL DO YOU WANT IT INSULATED WITH, AND WHAT THICKNESS?</td>
<td>CMTA</td>
<td>Addressed in the addendum. Insulation spec has been added.</td>
</tr>
<tr>
<td>9</td>
<td>Is the Audio Visual integration is a part of this package or will it be bid?</td>
<td>CMTA</td>
<td>The complete AV system and integration is part of this project and should be included with the bid.</td>
</tr>
<tr>
<td>10</td>
<td>P3.0, detail 1. It appears to be a sink in the staff breakroom 022. But no DWV piping is shown anywhere and no fixture number attached but it does show water lines running to this item. Please advise.</td>
<td>UK/CMIA</td>
<td>Addressed in the addendum. Piping to this sink has been added.</td>
</tr>
<tr>
<td>11</td>
<td>P3.0 detail 3, shows a random SS line going via the men’s and women’s restrooms and going behind P-3 sinks. This is not shown on the plumbing SS riser diagram on P5.0 either. Please clarify.</td>
<td>CMTA</td>
<td>Addressed in the addendum. This is a graphical issue showing condensate piping not SS piping.</td>
</tr>
<tr>
<td>12</td>
<td>Clarification on a section that is shown on sheet S2.0. (9/SS.0) This shows a plate field welding to the bottom of the existing wide flange beam, is this on all beams on lines 2 and 3 or just on line 3 between E &amp; G? Any information would be greatly appreciated.</td>
<td>bfmj</td>
<td>This section on Sheet S2.0 only for the two beams along Grid 3 spanning Grid E to F and Grid F to G.</td>
</tr>
<tr>
<td>13</td>
<td>Can the project be pushed back a few days or week due to other projects being bid on the same day / week?</td>
<td>UK</td>
<td>the answer is we cannot move the bid date.</td>
</tr>
<tr>
<td>14</td>
<td>Door 120 is located under Hardware Set 02B and 07C without an A or B after to indicate which opening it is from the Opening Schedule; which only has door 120A and 120B. Please advise.</td>
<td>UK</td>
<td></td>
</tr>
<tr>
<td>BIDDER'S QUESTIONS</td>
<td>RESPONSE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>15. Can you provide a domestic water riser diagram? A lot of the domestic water piping does not have any sizes indicated.</td>
<td>CMTA Sizing will be clarified in the addendum.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Can you provide the vertical distance between all the floors?</td>
<td>SHA Per the existing drawings: Basement Elevation = 981’-9 1/2” First Floor Elevation = 991 - 6” Second Floor Elevation = 1001’ – 2 ½” Third Floor Elevation = 1010’ – 11” Top Plate Elevation = 1019’-9”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. What is the overall building elevation in feet?</td>
<td>SHA Per existing drawing it is 39'-9.75” from First Floor elevation to top of roof ridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Do we need to demo any existing plumbing or HVAC pipe, valves, fixtures, or equipment? Very little mechanical demo is indicated in the drawings. Please advise.</td>
<td>CMTA Demo has already occurred</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Who pays for the sewer tap fees?</td>
<td>CMTA No tap fees, tying to existing sanitary and water entrance remains.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. The sanitary sewer PVC stub ups in basement are not shown on plans. Please clarify how to address this item.</td>
<td>CMTA Addressed in the addendum. PVC stub ups will be demoed to below slab and cap.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. 270610-3 calls out 6A cable and mentions F/UTP. 270610-6 calls out Cat 6A U/UTP. Please clarify if this cable is to be shielded Cat 6A or Non-shielded Cat 6A.</td>
<td>CMTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Please clarify if Cat 6A cable is to be Plenum or non-Plenum.</td>
<td>CMTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Please confirm if contractor is to provide Cat 6A patch cords for this project. UK-CNS has taken over providing these on recent projects. Sheet E6.3, Riser note # calls for (3) racks per Comm Room. However, only (2) are shown on the typical drawings on the same page. Please confirm the number of racks per room.</td>
<td>CMTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Please clarify if that the back bone fiber is to be OM4.</td>
<td>CMTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Who is bringing the new fiber optic service into the building? If it is the contractor, what are the specs on this fiber?</td>
<td>CMTA UK will be bringing fiber and copper services to building and demarking them in MDF.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Please confirm that the University wants a 2U Horizontal Wire manager between each patch panel or (1) per each (3) panels as per new standards.</td>
<td>CMTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. The plans do not show any cable tray. Is the expectation for the Cat 6A cabling to be installed in a J-hook pathway throughout the building?</td>
<td>CMTA ladder tray in MDF and IDF and j-hooks everywhere else</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Johnson Controls Quotation

TO:  
CMTA Engineers  
2429 MEMBERS WAY  
LEXINGTON, KY 40504  

Project: UK Waller Health New Fire Alarm  
Customer Reference: UK Waller Health New Fire Alarm  
Johnson Controls Reference: 232426005  
Date: 03/20/2019  
Page 1 of 8

Johnson Controls is pleased to offer for your consideration this quotation for the above project.

Comments

The following allowance number is for the installation of a new fire alarm system for UK Waller Health at the old University Inn 1 location. Fire alarm shall be a voice 4100ES system and allow for announcements over the fire alarm system within the buildings. All notification and initiating devices shall be addressable. Allowance was based off drawings dated January 25th of 2019 and provided by CMTA. Changes to this design was the result of several conversations with the owner. These changes included the following items:

1. Added Amber strobes for any emergency events outside of a fire alarm. These strobes will be located at any location of a current fire alarm visual. With the exception being that of mechanical spaces and elevator machine rooms. Wall mount dual amber/clear strobes will be installed where drawings show a speaker/visual. Ceiling speakers will then be located above these devices. Valcom box will be installed at the panel in order to be tripped via UK Police Department by their RAVE system for the amber strobes during an emergency.

   Box sizes needed for dual amber strobes:
   SURFACE Mount Steel City 3G-1/2 (or 3/4), or Raco 952; 8-5/8" x 4-1/2" x 1-5/8" deep (219 mm x 114 mm x 41 mm)
   FLUSH Mount Steel City 4G4D 1/2; 7-5/8" x 4"x 2-1/8" D; (194 mm x 102 mm x 54 mm)

2. New Fire panel shall be tied into the existing UK Medical Center fire alarm network. Simplex shall only be responsible for providing the fiber from inside the Waller Health building over to the fire system. Others shall be responsible for pulling in 6 strands of multi-mode fiber from the Hospital over to the Waller Health building. That way we can tie in the new panel to the fire alarm network.

3. UK would like all fire alarm points to be transmitted over to Tridium via Bacnet. So I've included a module for the fire alarm panel in order to transmit the fire alarm points over.
   - One HVAC unit above 2000 was determined which will require a duct smoke detector
   - One PIV located near Waller Avenue which will require a surge protector and IAM to monitor this device.
   - Isolation valves for the sprinkler system on each floor with a tamper/flow will require an IAM for monitoring these devices.

Also included in this allowance are the following:

- State Submittal fees/Design/CAD
- Commissioning/Acceptance Testing

THIS QUOTATION AND ANY RESULTING CONTRACT SHALL BE SUBJECT TO THE GENERAL TERMS AND CONDITIONS ATTACHED HERETO.

Fire, Security, Communications, Sales & Service
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Johnson Controls Quotation

Comments (continued)

• One year standard warranty from substantial completion.
• Fire Alarm Panel and Equipment/Shipping
• 1 Year SimplexGrinnell Fire Alarm Monitoring Service
• Final check out once the system has been fully installed
• Installation of the fire alarm system
• Wiring/Material needed for Installation

• Annunciator with a 2 bay can with mic was added to the material list. This includes a display with switches for making announcements within the building from the lobby location.

Exclusions include any stub-ups, conduit, and back boxes that are needed for installation. 120VAC power for the fire alarm panel which shall be provided by the electrical contractor.
<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>MODEL NUMBER</th>
<th>DESCRIPTION</th>
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<tr>
<td>132</td>
<td>49HFV-APPLC</td>
<td>HIFI SV APPLIANCE ONLY CEILING</td>
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<td>132</td>
<td>49SVC-CWFIRE</td>
<td>SV COVER CEIL WHITE FIRE</td>
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<td>3</td>
<td>49HFV-APPLW</td>
<td>HIFI SPKR/VIS APPL ONLY WALL</td>
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<tr>
<td>3</td>
<td>49SVC-WWFIRE</td>
<td>SV COVER WALL WHITE FIRE</td>
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<td>3</td>
<td>49MP-SVWW</td>
<td>SV MOUNTING PLATE WALL WHITE</td>
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<td>59VO-WWF</td>
<td>VO LED WALL WHITE FIRE</td>
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<td>49SOC-CWFIRE</td>
<td>COVER SPKR ONLY CEIL WHIT FIRE</td>
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<td>9</td>
<td>4099-9004</td>
<td>STATION-LED, SA ADDR</td>
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<td>4098-9714</td>
<td>PHOTO SENSOR</td>
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<td>4098-9733</td>
<td>HEAT SENSOR</td>
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<td>132</td>
<td>4906-9207</td>
<td>AMBER ALERT MCVO CEILING WHT</td>
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<td>AMBER/CLEAR WHITE WALL MT VO</td>
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<td>VIP-801A-IC</td>
<td>IP PAGE ADAPTER ONE PORT</td>
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### Johnson Controls Quotation

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<td><strong>Basement Fire Panel Rm 004A1</strong></td>
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<td>EPS MASTER CONTROLLER 120V</td>
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<td>FACTORY USE ONLY-AUDIO SHIPKIT</td>
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<td>MESSAGE EXPANSION, 8 MINUTES</td>
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<td>2 BLANK DISPLAY MODULE</td>
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<td>4100-1280</td>
<td>8 SWITCH, 8 RED LED MODULE</td>
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<td>64/64 LED/SWITCH CONTROLLER</td>
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<td>DIG. 100W AMP, 6NAC, 120VAC, 70V</td>
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<td>EXPANSION BAY (PHASE 10 ONLY)</td>
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<td>4100-2303</td>
<td>LEGACY CARD STABILIZER BRKT</td>
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<td>EPS POWER SUPPLY 120V</td>
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<td>4120 MM-R DUPLEX FIBER MEDIA</td>
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<td>3 BAY BB/GDOOR/DRESS PNL RED</td>
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<td>BATTERY SHELF</td>
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</tbody>
</table>

### Professional Services

Professional Services - Professional Services
- DSGN LAB: DESIGN LABOR
- CAD LAB: CAD LABOR
- PM LAB: PROJECT/CONSTRUCTION MGMT

### Technical Services

Technical Services - Technical Services
- COMM LAB: Commissioning Labor

### Front Lobby Annunciator With M

Front Lobby Annunciator With Mic
- 1        | 4100-9611    | REMOTE ANNUN EXTERNAL POWER |
- 2        | 4100-0011    | FACTORY USE ONLY-AUDIO SHIPKIT |
- 1        | 4100-1244    | REMOTE AUDIO INTERFACE W/MIC |
- 1        | 4100-1252    | AUDIO IF MODULE, SGL CHANNEL |
- 4        | 4100-1279    | 2 BLANK DISPLAY MODULE |

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### Johnson Controls Quotation

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<td>1</td>
<td>4100-1284</td>
<td>8 SW, 16 RED/GREEN LED MODULE</td>
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<td>64/64 LED/SWITCH CONTROLLER</td>
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<td>REMOTE PANEL MOUNT LCD AUUNU</td>
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<td>4100-1294</td>
<td>LED/SWITCH SLIDE-IN LABEL KIT</td>
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**Installation**

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<tbody>
<tr>
<td>INST LAB</td>
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<tr>
<td>INSTALLATION LABOR</td>
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</table>

Total net selling price, FOB shipping point, $109,046.00
1. Payment. Payments shall be invoiced and due in accordance with the terms and conditions set forth above. Work performed on a time and material basis shall be at the Company's then-prevailing rate for material, labor, and related items, in effect at the time supplied under this Agreement. Company shall invoice Customer for progress payments to one hundred (100%) percent based upon equipment delivered or stored, and services performed. Customers without established satisfactory credit shall make payments of cash in advance, upon delivery or as otherwise specified by Company. Where Customer establishes and maintains satisfactory credit, payments shall be due and payable thirty (30) days from date of invoice. Company reserves the right to revoke or modify Customer's credit in its sole discretion. Customer's failure to make payment when due is a material breach of this Agreement. If Customer fails to make any payment when due, in addition to any other rights and remedies available, Company shall have the right, at Company's sole discretion, to stop performing any Services and/or withhold further deliveries of materials, until the account is current. In the event payment is not received when due, Company may, at its discretion, assess late fees at the rate of 1.5% per month or the maximum rate allowed by law. Customer agrees to pay all costs of collection, including without limitation costs, fees, and attorneys' fees. Customer's failure to make payment when due is a material breach of this Agreement until the account is current.

2. Pricing. The pricing set forth in this Agreement is based on the number of devices to be installed and services to be performed as set forth in the Scope of Work (“Equipment” and “Services”). If the actual number of devices installed or services performed is greater than that set forth in the Scope of Work, the price will be increased accordingly. If this Agreement extends beyond one year, Company may increase prices upon notice to the Customer. Customer agrees to pay all taxes, permits, and other charges, including but not limited to state and local sales and excise taxes, however designated, levied or based on the service charges pursuant to this Agreement. Prices in any quotation or proposal from Company are subject to change upon notice sent to Customer at any time before the quotation or proposal has been accepted. Prices for products covered may be adjusted by Company, upon notice to Customer at any time prior to shipment, to reflect any increase in Company’s cost of raw materials (e.g., steel, aluminum) incurred by Company after issuance of Company’s applicable proposal or quotation.

3. Alarm Monitoring Services. Any reference to alarm monitoring services in this Agreement is included for pricing purposes only. Alarm monitoring services are performed pursuant to the terms and conditions of Company’s standard alarm monitoring services agreement.

4. Code Compliance. Company does not undertake an obligation to inspect for compliance with laws or regulations unless specifically stated in the Scope of Work. Customer acknowledges that the Authority Having Jurisdiction (e.g., Fire Marshall) may establish additional requirements for compliance with local codes. Any additional services or equipment required will be provided at an additional cost to Customer.

5. Limitation of Liability: Limitations of Remedy. It is understood and agreed by the Customer that Company is not an insurer and that insurance coverage shall be obtained by the Customer and that amounts payable to company hereunder are based upon the value of the services and the scope of liability set forth in this Agreement and are unrelated to the value of the Customer's property and the property of others located on the premises. Customer agrees to look exclusively to the Customer's insurer for recovery for injuries or damage in the event of any loss or injury and that Customer releases and waives all right of recovery against Company arising by way of subrogation. Company makes no guaranty or Warranty, including any implied warranty of merchantability or fitness for a particular purpose that equipment or services supplied by Company will detect or avert occurrences or the consequences therefrom that the equipment or service was designed to detect or avert. It is impractical and extremely difficult to fix the actual damages, if any, which may proximately result from failure on the part of Company to perform any of its obligations under this Agreement. Accordingly, Customer agrees that, Company shall be exempt from liability for any loss, damage or injury arising directly or indirectly from occurrences, or the consequences therefrom, which the equipment or service was designed to detect or avert. Should Company be found liable for any loss, damage or injury arising from a failure of the equipment or service in any respect, Company’s liability shall be limited to an amount equal to the Agreement price (as increased by the price for any additional work) or where the time and material payment term is selected, Customer's time and material payments to Company. Where this Agreement covers multiple sites, liability shall be limited to the amount of the payments allocable to the site where the incident occurred. Such sum shall be complete and exclusive. IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY DAMAGE, LOSS, INJURY, OR ANY OTHER CLAIM ARISING FROM ANY SERVICING, ALTERATIONS, MODIFICATIONS, CHANGES, OR MOVEMENTS OF THE COVERED SYSTEM(S) OR ANY OF ITS COMPONENT PARTS BY THE CUSTOMER OR ANY THIRD PARTY. (b) IN NO EVENT SHALL COMPANY BE LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO DAMAGES ARISING FROM THE USE, LOSS OF THE USE, PERFORMANCE, OR FAILURE OF THE COVERED SYSTEM(S) TO PERFORM. The limitations of liability set forth in this Agreement shall inure to the benefit of all parents, subsidiaries and affiliates of company, whether direct or indirect, company's employees, agents, officers and directors.

6. Reciprocal Waiver of Claims (SAFETY ACT). Certain of Company’s systems and services have received Certification and/or Designation as Qualified Anti-Terrorism Technologies (“QATT”) under the Support Anti-Terrorism by Fostering Effective Technologies Act of 2002, 6 U.S.C. § 441-444 (the “SAFETY ACT”). As required under 6 C.F.R. 25.5 (e), to the maximum extent permitted by law, Company and Customer hereby agree to waive their right to make any claims against the other for any losses, including business interruption losses, sustained by either party or their respective employees, resulting from an activity resulting from an “Act of Terrorism” as defined in 6 C.F.R. 25.2, where QATT have been deployed in defense against, response to, or recovery from such Act of Terrorism.

7. General Provisions. Customer has selected the service level desired after considering and balancing various levels of protection afforded, and their related costs. All work to be performed by Company will be performed during normal working hours of normal working days (8:00 a.m. – 5:00 p.m., Monday through Friday, excluding Company holidays), as defined by Company, unless additional times are specifically described in this Agreement. Company will perform the services described in the Scope of Work section (“Services”) for one or more system(s) or equipment as described in the Scope of Work section or the listed attachments (“Covered System(s)”). The Customer shall promptly notify Company of any malfunction in the Covered System(s) which comes to Customer’s attention. The Customer shall make payments of cash in advance, upon delivery or as otherwise specified by Company. Where wet pipe system is installed, Customer shall supply and maintain sufficient heat to prevent freezing of the system. Customer shall promptly notify Company of any malfunction in the Covered System(s) which comes to Customer’s attention. This Agreement assumes any existing system(s) are in operational and maintainable condition as of the Agreement date. If, upon initial inspection, Company determines that repairs are recommended, repair charges will be submitted for approval prior to any work. Should such repair work be declined Company shall be relieved from any and all liability arising therefrom. It is understood and agreed by the Customer that Company is not an insurer and that insurance coverage shall be obtained by the Customer and that amounts payable to Company hereunder are based upon the value of the services and the scope of liability set forth in this Agreement and are unrelated to the value of the Customer's property and the property of others located on the premises. Customer agrees to look exclusively to the Customer's insurer for recovery for injuries or damage in the event of any loss or injury and that Customer releases and waives all right of recovery against Company arising by way of subrogation. Company makes no guaranty or Warranty, including any implied warranty of merchantability or fitness for a particular purpose that equipment or services supplied by Company will detect or avert occurrences or the consequences therefrom that the equipment or service was designed to detect or avert. It is impractical and extremely difficult to fix the actual damages, if any, which may proximately result from failure on the part of Company to perform any of its obligations under this Agreement. Accordingly, Company agrees that, Company shall be exempt from liability for any loss, damage or injury arising directly or indirectly from occurrences, or the consequences therefrom, which the equipment or service was designed to detect or avert. Should Company be found liable for any loss, damage or injury arising from a failure of the equipment or service in any respect, Company’s liability shall be limited to an amount equal to the Agreement price (as increased by the price for any additional work) or where the time and material payment term is selected, Customer's time and material payments to Company. Where this Agreement covers multiple sites, liability shall be limited to the amount of the payments allocable to the site where the incident occurred. Such sum shall be complete and exclusive. IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY DAMAGE, LOSS, INJURY, OR ANY OTHER CLAIM ARISING FROM ANY SERVICING, ALTERATIONS, MODIFICATIONS, CHANGES, OR MOVEMENTS OF THE COVERED SYSTEM(S) OR ANY OF ITS COMPONENT PARTS BY THE CUSTOMER OR ANY THIRD PARTY. (b) IN NO EVENT SHALL COMPANY BE LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO DAMAGES ARISING FROM THE USE, LOSS OF THE USE, PERFORMANCE, OR FAILURE OF THE COVERED SYSTEM(S) TO PERFORM. The limitations of liability set forth in this Agreement shall inure to the benefit of all parents, subsidiaries and affiliates of company, whether direct or indirect, company's employees, agents, officers and directors.

8. Customer Responsibilities. Customer shall furnish all necessary facilities for performance of its work by Company, adequate space for storage and handling of materials, light, water, heat, heat tracing, electrical service, local telephone, sanitation, and means of protection and transportation, and necessary permits. Where wet pipe system is installed, Customer shall supply and maintain sufficient heat to prevent freezing of the system. Customer shall promptly notify Company of any malfunction in the Covered System(s) which comes to Customer’s attention. This Agreement assumes any existing system(s) are in operational and maintainable condition as of the Agreement date. If, upon initial inspection, Company determines that repairs are recommended, repair charges will be submitted for approval prior to any work. Should such repair work be declined Company shall be relieved from any and all liability arising therefrom. Customer shall further:

- supply required schematics and drawings unless they are to be supplied by Company in accordance with this Agreement;
- Provide a safe work environment, in the event of an emergency or Covered System(s) failure, take reasonable safety precautions to protect against personal injury, death, and property damage, continue such measures until the Covered System(s) are operational, and notify Company as soon as possible under the circumstances.
- Provide Company access to any system(s) to be serviced,
- Comply with all laws, codes, and regulations pertaining to the equipment and/or services provided under this agreement.

9. Excavation. In the event the Work includes excavation, Customer shall pay, as an extra to the contract price, the cost of any additional work performed by Company due to water, quicksand, rock or other unforeseen condition or obstruction encountered or shoring required.

10. Structure and Site Conditions. While employees of Company will exercise reasonable care in this respect, Company shall be under no responsibility for loss or damage due to the character, condition or use of foundations, walls, or other structures not erected by Company or resulting from the excavation in proximity thereto, or for damage resulting from concealed piping, wiring, fixtures, or other equipment or condition of water pressure. All shoring or protection of foundation, walls or other structures subject to being disturbed by any excavation required hereunder shall be the responsibility of Customer. Customer shall have all things in readiness for installation including, without limitation, structure to support the sprinkler system and related equipment (including tanks), other materials, floor or suitable working base, connections and facilities for erection at the time the materials are delivered. In the event Customer fails...
to have all things in readiness at the time scheduled for receipt of materials, Customer shall reimburse Company for all such extra work. Failure to have all material and necessary services available to Company during performance in accordance with schedules that are the basis for Company’s proposal shall be considered a failure to have things in readiness in accordance with the terms of this Agreement.

11. Confined Space. If access to confined space by Company is required for the performance of Services, Services shall be scheduled and performed in accordance with Company’s then-current hourly rate.

12. Hazardous Materials. Customer represents that, except to the extent that Company has been given written notice of the following hazards prior to the execution of this Agreement, to the best of Customer’s knowledge there is no:

• "permit confined space," as defined by OSHA,
• risk of infectious disease,
• need for air monitoring, respiratory protection, or other medical risk,
• asbestos, asbestos-containing material, formaldehyde or other potentially toxic or otherwise hazardous material contained in or on the surface of the floors, walls, ceilings, insulation or other structural components of the area of building where work is required to be performed under this Agreement.

All of the above are hereinafter referred to as “Hazards Conditions”. Company shall have the right to rely on the representations listed above. If hazardous conditions are encountered during the course of Company’s work, the discovery of such materials shall constitute an event beyond Company’s control and Company shall have no obligation to further perform in the area where the hazardous conditions exist until the area has been made safe by Customer as certified in writing by independent testing agency, and Customer shall pay disputation expenses and re-mobilization expenses as determined by Company. This Agreement does not provide for the cost of capture, containment or disposal of any hazardous waste materials, and materials encountered in any of the Covered System(s) and/or during performance of the Services. Said materials shall at all times remain the responsibility and property of Customer. Company shall not be responsible for the testing, removal or disposal of any hazardous materials.

13. OSHA Compliance. Customer shall indemnify and hold Company harmless from and against any and all claims, demands and/or damages arising in whole or in part from the enforcement of the Occupational Safety Health Act (and any amendments thereto) unless said claims, demands or damages are a direct result of causes within the exclusive control of Company.

14. Interferences. Customer shall be responsible to coordinate the work of other trades (including but not limited to ducting, piping, and electrical) and for additional costs incurred by Company arising out of interferences to Company’s work by other trades.

15. Modifications and Substitutions. Company reserves the right to modify materials, including substituting materials of later type of occupancy, to reasonably conform to its published specifications in effect at the time of delivery and for ninety (90) days after delivery. However, Customer agrees and acknowledges that the software may have inherent defects because of its complexity. Company’s sole obligation with respect to software, and Customer’s sole remedy, shall be to return the defective product to Company for replacement or repair. Customer shall indemnify and hold Company harmless from and against any and all claims, demands and/or damages arising in whole or in part from the defective product or any modification or substitution, with respect to the performance or failure of the Covered System(s) and equipment and components lies with Customer. Company warrants any equipment (as distinguished from the Covered System(s) and equipment and components) in the work of other trades (including but not limited to smoke detectors, sprinkler system components, extinguishers and hoses) from Company shall be passive infrared detectors, card readers, sprinkler system devices provided by Customer. If Customer requests warranty service at other than normal working hours, service will be performed at Company’s then current rates for after ours services. All repairs or adjustments that are or may become necessary shall be performed by and at the discretion of Company. Any repair performed by Company at will or at Customer's expense shall be reimbursed to Company at Company's current rates.

16. Changes, Alterations, Additions. Changes, alterations and additions to the Scope of Work, plans, specifications or construction schedule shall be invalid unless approved in writing by Company. Should changes be approved by Company, that increase or decrease the cost of the work to Company, the parties shall agree, in writing, to the change in price prior to performance of any work. However, if no agreement is reached prior to the time for performance of said work, and Company elects to perform said work so as to avoid delays, then when Company’s estimate as to the value of said work shall be deemed accepted by Customer. In addition, Customer shall pay for all extra work requested by Customer or made necessary because of incompleteness or inaccuracy of plans or other information submitted by Customer with respect to the location.
Customer’s premises or unavailability of parts.

26. Default. An Event of Default shall be 1) failure of the Customer to pay any amount within ten (10) days after the amount is due and payable, 2) abuse of the System or the Equipment, 3) dissolution, termination, discontinuance, insolvency or business failure of Customer. Upon the occurrence of an Event of Default, Company may pursue one or more of the following remedies, 1) discontinue furnishing Services, 2) by written notice to Customer declare the balance of unpaid amounts due and to become due under this Agreement to be immediately due and payable, provided that all past due amounts shall bear interest at the rate of 1 ½% per month (18% per year) or the highest amount permitted by law, 3) receive immediate possession of any equipment for which Customer has not paid. 4) proceed at law or equity to enforce performance by Customer or recover damages for breach of this Agreement, and 5) recover all costs and expenses, including without limitation reasonable attorneys’ fees, in connection with enforcing or attempting to enforce this Agreement.

27. Exclusions. Unless expressly included in the Scope of Work, this Agreement expressly excludes, without limitation, testing inspection and repair of duct detectors, beam detectors, and UV/IR equipment; provision of fire watches; clearing of ice blockage; draining of improperly pitched piping; replacement of batteries; recharging of chemical suppression systems; reloading of, upgrading, and maintaining computer software; system upgrades and the replacement of obsolete systems, equipment, components or parts; making repairs or replacements necessitated by reason of negligence or misuse of components or equipment or changes to Customer’s premises, vandalism, corrosion (including but not limited to micro-bacterially induced corrosion (“MIC”), power failure, current fluctuation, failure due to non-Company installation, lightning, electrical storm, or other severe weather, water, accident, fire, acts of God or any other cause external to the Covered System(s). Repair Services provided pursuant to this Agreement do not cover and specifically excludes system upgrades and the replacement of obsolete systems, equipment, components or parts. All such services may be provided by Company at Company’s sole discretion at an additional charge. If Emergency Services are expressly included in the scope of work section, the Agreement price does not include travel expenses.

28. No Option to Solicit. Customer shall not, directly or indirectly, on its own behalf or on behalf of any other person, business, corporation or entity, solicit or employ any Company employee, or induce any Company employee to leave his or her employment, for a period of two years after termination of this Agreement.

29. Force Majeure; Delays. Company shall not be liable for any damage or penalty for delays or failure to perform work due to acts of God, acts or omissions of Customer, acts of civil or military authorities, Government regulations or priorities, fires, epidemics, quarantine, restrictions, war, riots, civil disobedience or unrest, strikes, delays in transportation, vehicle shortages, differences with workmen, inability to obtain necessary labor, material or manufacturing facilities, defaults of Company’s subcontractors, failure or delay in furnishing complete information by Customer with respect to location or other details of work to be performed, impossibility or impracticability of performance or any other cause or causes beyond Company’s control, whether or not similar to the foregoing. In the event of any delay caused as aforesaid, completion shall be extended for a period equal to any such delay, and this contract shall not be void or voidable as a result of the delay. In the event work is temporarily discontinued by any of the foregoing, all unpaid installments of the contract price, less an amount equal to the value of material and labor not furnished, shall be due and payable upon receipt of invoice by Customer.

30. One-Year Limitation on Actions; Choice of Law. It is agreed that no suit, or cause of action or other proceeding shall be brought against either party more than one (1) year after the accrual of the cause of action or one (1) year after the claim arises, whichever is shorter, whether known or unknown when the claim arises or whether based on tort, contract, or any other legal theory. The laws of Massachusetts shall govern the validity, enforceability, and interpretation of this Agreement.

31. Assignment. Customer may not assign this Agreement without Company’s prior written consent. Company may assign this Agreement to an affiliate without obtaining Customer’s consent.

32. Entire Agreement. The parties intend this Agreement, together with any attachments or Riders (collectively the “Agreement”) to be the final, complete and exclusive expression of their Agreement and the terms and conditions thereof. This Agreement supersedes all prior representations, understandings or agreements between the parties, written or oral, and shall constitute the sole terms and conditions of sale for all equipment and services. No waiver, change, or modification of any terms or conditions of this Agreement shall be binding on Company unless made in writing and signed by an Authorized Representative of Company.

33. Severability. If any provision of this Agreement is held by any court or other competent authority to be void or unenforceable in whole or in part, this Agreement will continue to be valid as to the other provisions and the remainder of the affected provision.

34. Legal Fees. Company shall be entitled to recover from the customer all reasonable legal fees incurred in connection with Company enforcing the terms and conditions of this Agreement.

35. License Information (Security System Customers): AL Alabama Electronic Security Board of Licensure 7566 Vaughn Road, Pmb 392, Montgomery, Alabama 36116 (334) 264-9388; AR Regulated by: Arkansas Board of Private Investigators And Private Security Agencies, #1 State Police Plaza Drive, Little Rock 72209 (501)618-8600: CA Alarm company operators are licensed and regulated by the Bureau of Security and Investigative Services, Department of Consumer Affairs, Sacramento, CA, 95814. Upon completion of the installation of the alarm system, the alarm company shall thoroughly instruct the purchaser in the proper use of the alarm system. Failure by the licensee, without legal excuse, to substantially commence work within 20 days from the approximate date specified in the agreement when the work will begin is a violation of the Alarm Company Act; NY Licensed by N.Y.S. Department of the State: TX Texas Commission on Private Security, 5805 N. Lamar Blvd., Austin, 78752-4422, 512-424-7710.License numbers available at www.jci.com or contact your local Johnson Controls office.

IMPORTANT NOTICE TO CUSTOMER

In accepting this Proposal, Customer agrees to the terms and conditions contained herein including those on the following pages of this Agreement and any attachments or Riders attached hereto that contain additional terms and conditions. It is understood that these terms and conditions shall prevail over any variation in terms and conditions on any purchase order or other document that the Customer may issue. Any changes in the system requested by the Customer after the execution of this Agreement shall be paid for by the Customer and such changes shall be authorized in writing. ATTENTION IS DIRECTED TO THE LIMITATION OF LIABILITY, WARRANTY, INDEMNITY AND OTHER CONDITIONS ON THE FOLLOWING PAGES. This proposal shall be void if not accepted in writing within thirty (30) days from the date of the Proposal.

Offered By: Johnson Controls Fire Protection LP
License#: 973 Beasley St Ste 150
LEXINGTON, KY 40509-4262
Telephone: (859) 294 7233
Representative: Gary Steven Pinson
Email: Gary.pinson@jci.com

Accepted By: (Customer)

Company:
Address:
Signature:
Title:
P.O. #: Date:

Fire, Security, Communications, Sales & Service
Offices & Representatives in Principal Cities throughout North America

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SECTION 088713

ARCHITECTURAL WINDOW FILM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Decorative Window Films.

1.02 RELATED SECTIONS

A. Section 072100 – Building Insulation: Curtainwall insulation at windows to receive spandrel film.

B. Section 08800 - Glass and Glazing

1.03 REFERENCES

A. ASHRAE - American Society for Heating, Refrigeration, and Air Conditioning Engineers; Handbook of Fundamentals.

B. ASTM International (ASTM):

2. ASTM D 1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
3. ASTM D 1044 - Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).
5. ASTM D 4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
7. ASTM E 308 - Standard Recommended Practice for Spectrophotometry and Description of
Color in CIE 1931 System.


C. Window 5.2 - A Computer Tool for Analyzing Window Thermal Performance; Lawrence Berkeley Laboratory.


F. GSA Standard Test for Glazing and Glazing Systems Subject to Airblast Loadings.


1.04 PERFORMANCE REQUIREMENTS

A. Fire Performance: Surface burning characteristics when tested in accordance ASTM E 84:

1. Flame Spread: 25 maximum.
2. Smoke Developed: 450 maximum.

1.05 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Selection Samples: For each film specified, submit film samples representing manufacturer's film type and full range of colors/patterns for the project.

D. Verification Samples: For each film specified, submit two samples representing film color and pattern.

E. Performance Submittals: Provide laboratory data of emissivity and calculated window U-Factors for various outdoor temperatures based upon established calculation procedure defined by the ASHRAE Handbook of Fundamentals, Chapter 29, or Lawrence Berkeley Laboratory Window 5.2 Computer Program.

F. Provide a Glass Stress Analysis of the existing glazing assemblies and proposed glass/film combinations specified within this Section as recommended by the film manufacturer(s).

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten years experience.

B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

1. Provide documentation that the installer is authorized by the Manufacturer to perform Work specified in this section.

2. Provide a commercial building reference list of 3 properties where the installer has applied window film similar to product(s) specified. This list will include the following information:
a. Name of building.
b. The name and telephone number of a management contact and/or project design architect.
c. Type of glass.
d. Manufacturer and type of film installed.
e. Amount of film installed.
f. Date of completion.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship for each type of Product specified within this Section.

1. Provide (1) minimum mock-up of each type of Architectural Window Film specified within this Section at existing glazing panels for review by Architect and Owner.
2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Remove and/or correct mock-ups as directed by Architect and Owner to produce acceptable work.
4. Approved mock-ups may remain as part of finished work.

1.07 DELIVERY, STORAGE AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.09 WARRANTY

A. Submit under provisions of Section 01700.
B. At project closeout, provide to Owner or Owners Representative an executed current copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Madico, Inc. (Woburn, MA).

B. Substitutions: Under provisions of Section 01600. All requests for material substitutions must be received and approved by architect ten (10) working days prior to bid - no exceptions.
2.02. (Type 1) - DECORATIVE WINDOW FILMS

A. Decolite Series/Frosted by Madico, Inc. (Woburn, MA).

1. Color/finish: To be determined by Architect from full range of Manufacturer’s Standard colors/finishes; submit samples for evaluation/selection.

2. Physical / Mechanical Performance Properties:
   
   a. Structure: Single-ply
   b. Thickness: .003" min.
   c. Peel Strength: 3.5 lbs/inch min.
   d. Adhesive Type: Acrylic PSA
   e. Density: 1.40 g/cc min.
   f. Yield Strength: 14,000 psi.
   g. Fallout (ASTM C-1048): Pass

3. Compatibility: Furnish Light Management Window Films that are compatible with existing window glazing and framing types at specified areas of installation, under conditions of service and application, as demonstrated by the window film manufacturer based upon testing and field experience.

PART 3 EXECUTION

3.01 EXAMINATION

A. If preparation of glass surfaces is the responsibility of another installer, notify Architect in writing of deviations from manufacturer’s recommended installation tolerances and conditions.

   1. Glass surfaces receiving new film should first be examined to verify that they are free from defects and imperfections, which will affect the final appearance:

B. Do not proceed with installation until glass surfaces have been properly prepared and deviations from manufacturer’s recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the
project conditions.

C. Commencement of installation constitutes acceptance of conditions.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Cut film edges neatly and square at a uniform distance of 1/8 inch (3 mm) to 1/16 inch (1.5 mm) of window sealant. Use new blade tips after 3 to 4 cuts.
C. Spray the slip solution, composed of one capful of baby shampoo or dishwashing liquid to 1 gallon of water, on window glass and adhesive to facilitate proper positioning of film.

D. Apply film to glass and lightly spray film with slip solution.

E. Squeegee from top to bottom of window. Spray slip solution to film and squeegee a second time.

F. Bump film edge with lint-free towel wrapped around edge of a 5-way tool.

G. Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

3.04 CLEANING AND PROTECTION

A. Remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.

B. Touch-up, repair or replace damaged products before Substantial Completion.

C. After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents and bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.

END OF SECTION
TAGGED NOTES

P11 2" VENT UP IN SHAFT AND THRU ROOF. REFER TO FLOOR ABOVE FOR CONTINUATION. FIRE CAULK AND SEAL SHAFT PENETRATION.

P24 WATER CONNECTION FOR ICE MACHINE ABOVE SINK. PROVIDE ICE MACHINE FILTER BELOW SINK IN LOCKABLE CABINET.

P25 WATER CONNECTION FOR REFRIGERATORS.
SECTION 27 2423 – AUDIO VIDEO DEVICES

1. AUDIO-VISUAL INFRASTRUCTURE
   a) SCOPE OF WORK
      i) The work described in this section includes the furnishing of all components, software
         licensing, materials, equipment, installation and technical labor and the performance of all
         operations necessary for the complete installation of audio visual equipment in operating
         condition as indicated on the drawings and/or specifications.
      ii) Warranty Period shall consist of full parts, labor and programming shall include 1 full year of
          this service.
          (1) As part of the Bid, the AV Integrator shall provide the Owner with an attached proposal to
              extend the warranty out to Year 2, Year 3 and Year 4 of operation.
      iii) In general, the conduit and/or cable tray, junction boxes, electrical power circuits and outlets
          have been installed by others. The entire responsibility for the system, its installation,
          operation and function shall be that of the Systems Contractor. Additional rough-ins, line
          voltage connections or pathways if needed, are the responsibility of the Contractor.
      iv) Contractor shall take full responsibility for communicating all necessary requirements from
          the Owner including but not limited to:
          (1) Access to the building, this building is occupied and fully functional with scheduled events
              taking place. Coordinate all working times and building availability prior to starting work.
          (2) Following Information Technology space/infrastructure requirements shall be coordinated
              and agreed to by Owner’s IT staff:
              (a) IP addresses
              (b) Rack space
              (c) Cable tray space
   b) SECTION INCLUDES
      i) Work consists of new A/V equipment including:
         (1) Data projectors complete with wall/ceiling mounting hardware and connection to the local
             audio/video system as detailed on the drawings and as specified herein.
      ii) A/V Distribution Systems are required to be complete with sources, inputs, displays,
          distribution, controls and connection to the data network and video distribution system as
          detailed on the drawings and specified herein.
      iii) All material and/or equipment necessary for proper operation of the system(s), not specified
          or described herein, shall be deemed part of these specifications
   c) QUALITY ASSURANCE
      i) All equipment shall be UL listed.
      ii) All equipment and Installation Practices shall comply with the latest ANSI/NFPA-70 National
          Electric Code.
      iii) All equipment Installation Practices shall comply with the Local Electric Code.
      iv) All equipment and installation practices shall comply with ANSI/INFOCOMM 2M-2010
          Standard Guide for Audiovisual Systems Design and Coordination Processes
      v) All equipment and Installation Practices shall comply with the latest BICSI
          Telecommunications Distribution Methods Manual (TDMM).
      vi) All equipment shall comply with the latest ANSI TIA/EIA-568, 569, 606, 607, 862, standards
          as applicable.
      vii) Performance Verification: All digital video systems shall be pre-tested to verify the complete
          compatibility of all sending, receiving and distribution components and the performance and
          integrity of the transmission media. The performance of each system shall be demonstrated,
with all proposed components, in the presence of the Design Engineer and/or Owner prior to approval and installation. Any system failing to meet the specified performance requirements shall be rejected and re-configured as required prior to re-testing.

viii) All equipment described herein or otherwise required to perform the specified system functions shall be a regular product line, produced by the system manufacturer.

ix) All materials furnished under this contract shall be new, of highest quality and shall be of a regularly manufactured line, currently in production at the time of installation.

d) CONTRACTOR QUALIFICATIONS

i) The A/V equipment package shall be furnished and installed by a contractor who meets all the requirements listed herein. It shall not be acceptable for the A/V contractor to utilize a Subcontractor for any portion of the work, unless the Subcontractor has been approved in writing by the Design Engineer or owner based upon adherence to the qualifications listed herein.

ii) The Contractor shall have on staff an InfoComm International certified CTS-I or CTS-D AV systems engineer or project manager responsible for overseeing the project. In addition, the lead technician on the project shall have a CTS certification.

iii) The Contractor shall have certification for AV over IP equipment that is being proposed. (Crestron NVX, Extron NAV, etc.)

e) SHOP DRAWINGS

i) A complete and comprehensive list of materials with quantity, manufacturer, model and part number and reference to the Part 2 specification paragraph number for each item.

ii) Manufacturers Data Sheets of all products and cabling, specific to the project. Data sheets shall show the exact parts, with model numbers and options as required and clearly identified.

iii) Qualifications: A statement of contractor’s qualifications to verify compliance with other provisions within the specifications, unless the contractor has been pre-approved.

iv) Job specific diagrams.

1) This indicates a block schematic diagram that shows all major items of equipment required for the contract project and the actual interconnections that will be installed, including details of interconnection with other systems.

2) Rack elevations showing the configuration of all rack mounted equipment.

3) Loudspeaker layouts

4) Cabling schedule

5) Structural anchorage

6) Technical furniture

7) 30x42 floor plans at a scale of not less than 1/8" = 1'-0" showing the location of all items of equipment. Drawings shall also indicate each location where electrical power is required, and the specific configuration of that power connection (voltage, plug type, mounting height, etc.)

8) Network Coordination – the Contractor shall provide network topology diagram illustrating complete network plan for the project. The contractor shall work with the Owner’s IT department to identify all PoE, VLAN, firewall and other networking requirements to provide a fully functioning AV system.

(a) The Contractor shall obtain blocks of static IP addresses from the Owner’s IT department in a timely fashion ahead of implementation as to give the Owner’s IT department ample time to develop these IPs.

(b) A meeting with the Owner’s IT department is required to discuss plan of implementation and procedure.
v) Software data – The data package shall consist of manufacturer’s data sheets of all system and application software being provided with sufficient information to verify that all specified features and functions are being addressed.

vi) Submittals that do not contain all the required information will be REJECTED unless prior approval for partial submittals has been approved.

f) O & M MANUALS – FINAL DOCUMENTATION
   i) Copies of all approved shop drawings with the project engineer’s specific approval clearly indicated.
   ii) Comprehensive Bill of Materials with manufacturers, model numbers, quantities and descriptions.
   iii) Owner’s manuals for every item of equipment, when available from the manufacturer.
      (1) These shall be the technical manuals provided by the manufacturer and shall not consist of generic sales brochures. Technical manuals shall provide complete specifications for the equipment as well as complete operating, maintenance, troubleshooting and product repair/replacement information.
   iv) Provide statement of warranty with O&M Manuals.

g) WARRANTY
   i) Warranty the entire system, including all equipment and wiring, to be free of mechanical and electrical defects for a period of three (3) year from the date of system completion and acceptance.

2. AUDIOVISUAL MOUNTS AND MOUNTING PRODUCTS
   a) PRODUCT EQUIVALENCY
      i) Where products are listed with multiple manufacturers, these manufacturers will be approved as equals if all specified features and performance targets are provided. Any equipment not specifically approved in writing prior to the bid date will not be considered, regardless of qualifications. Failure to provide the "precise functional equivalent" shall result in the removal of the alternate equipment at the Contractor’s expense.
      ii) Different manufacturers may require various options, accessories, converters, patch cables, etc. to perform the specified features and functions. Therefore, all material and/or equipment necessary for proper operation of the system shall be deemed part of these specifications.

b) LED AND FLAT PANEL DISPLAY MOUNTS
   i) Rated for commercial use and for the specified display size
   ii) Manufacturer’s mount load rating shall be a minimum of five times the actual weight of the display
   iii) Articulating arm display mounts shall provide 20 degrees of forward tilt and 180 degrees of side to side swivel.
   iv) Hardware used to attach wall mounts shall be ASTM and/or SAE hardware no less than Grade 5 or ISO-rated 8
   v) Mounts shall be installed in strict compliance with the manufacturer’s instructions. Mounting configuration, method, and exact location of mounts to be approved prior to installation.
   vi) Manufacturers: LegrandAV, Peerless, or Premier

3. AUDIOVISUAL IMAGE CONTRAST RATIO, DISPLAY SIZE AND DISPLAY ASPECT RATIO
   a) THE FOLLOWING VIEWING REQUIREMENT CATEGORIES SHALL BE OBSERVED
      i) Passive Viewing
         (1) The viewer is able to recognize what the images are on a screen and can separate the text or main image from the background under typical lighting for the viewing
environment. The content does not require assimilation and retention of detail, but the general intent is understood.

ii) Basic Decision Making
   (1) The viewer can make basic decisions from the displayed image. The decisions are not dependent on critical details within the image, but there is assimilation and retention of information. The viewer is actively engaged with the content (e.g., information displays, presentations containing detailed images, classrooms, boardrooms multi-purpose rooms, product illustrations).
   (2) The viewer should be able to understand what is being communicated. Graphic images and text are legible to the extent that the viewer can make basic decisions on the basis of what is being seen. Decisions made are based on comprehending the informational content itself and are not dependent on the resolution of every element of detail.
   (3) Basic decision-making viewing applications include the presentation of photographs, detailed graphic images, product illustrations and information displays such as airline departures, sports score or stock quotes. In this scenario, the information obtained from the projected image informs a basic decision by a fully engaged viewer.

iii) Analytic Decision Making
   (1) The viewer is fully engaged with minute detail present in the content and needs to be able to resolve every element of the projected image.
   (2) Analytical decision-making environments support professional assessments, such as the examination of medical imaging, engineering or architectural drawings, electrical schematics, photographic image inspection, forensic evidence or failure analysis.

b) DISPLAY SIZE, SIGHT LINES AND DISTANCES
   i) Image sight lines shall be referenced 90-degrees perpendicular to the center-bottom of the screen.
   ii) The closest viewer to the screen shall be no less than 1 times the screen’s width away from the surface of the screen.
   iii) The top of the screen will be no more than 30-degrees above the line of sight for the closest viewer.
   iv) For installations identified to serve a Passive Viewing audience, the furthest viewer shall be no more than 8 times the image height from the surface of the screen.
   v) For installations identified to serve a Basic Decision Making audience, the furthest viewer shall be no more than 6 times the image height from the surface of the screen.
   vi) For installations identified to serve an Analytic Decision Making audience, the furthest viewer shall be no more than 4 times the image height from the surface of the screen.

c) IMAGE CONTRAST RATIO SHALL BE INFORMED BY ANSI/INFOCOMM 3M-2011

d) IMAGE ASPECT RATIO SHALL BE 16:10 UNLESS OTHERWISE SPECIFIED

4. AUDIOVISUAL SYSTEM CONNECTIVITY AND SIGNAL INFRASTRUCTURE
   a) PRODUCT EQUIVALENCY
      i) Where products are listed with multiple manufacturers, these manufacturers will be approved as equals if all specified features and performance targets are provided. Any equipment not specifically approved in writing prior to the bid date will not be considered, regardless of qualifications. Failure to provide the “precise functional equivalent” shall result in the removal of the alternate equipment at the Contractor’s expense.

b) SIGNAL TRANSPORT FORMATS AND TRANSPORT DISTANCES
   i) For installations where digital A/V signals must be transported to lengths of 10 meters or less, passive DisplayPort and HDMI connectivity may be used
(1) Passive copper DisplayPort and HDMI cables up to 3 meters in length shall feature UltraHD capability and a minimum wire gauge of 32AWG

(2) Passive copper DisplayPort and HDMI cables from 3 meters up to 10 meters in length shall be Hi Speed rated and feature HDMI(e) capability with operational audio return channel or high speed Ethernet extension (HEAC) feature set

(3) All passive copper cables shall support a minimum content demand of 3840 x 2160 @ 60 fps

(4) For installations where HDMI signals must be transported more than 10 meters, but less than 20 meters, passive copper HDMI connectivity may be used. HDMI cables from 10 meters to 20 meters in length shall have a minimum of 23AWG copper conductors and must be minimally HDMI LLC Standard Speed Rated

(5) For installations where DisplayPort and HDMI signals must be transported more than 10 meters but less than 30 meters, hybrid Active-Optical cables may be used

(6) For installations where DisplayPort and HDMI signals must be transported more than 10 meters but less than 100 meters, HDBaseT solutions may be used
   (a) ALL HDBaseT solutions, regardless of transport distance, must be installed using an HDBaseT.org certified fully shielded or non-continuous shielded F/UTP Cat6 cable

(7) For installations where DisplayPort and HDMI signals must be transported more than 100 meters but less than 300 meters, fully optical solutions that support UltraHD performance levels of 2160p may be used. Such fully optical solutions may be used for installations demanding transport lengths from 10 meters to 100 meters at the A/V design engineer’s discretion

   ii) Manufacturers: Legrand, C2G, Middle Atlantic, Superior Essex, Quiktron

5. Universal Serial Bus (USB) and System Interactivity
   a) Devices that feature interactive capability, or devices that operate to capture content such as lecture capture products, may demand USB as a connectivity channel. The following parameters shall be met when installing USB connectivity solutions.
      i) Devices operating in class 01h (audio device), 03h (human interface device), 0Ah and 02h (communications and CDC control) will be compliant with a minimal level of USB 1.1 performance
      ii) HID class devices used with interactive flat panel displays will be compliant with a minimal level of USB 2.0
      iii) Devices operating in class 09h (USB hub) will be compliant with a minimal level of USB 3.0 or 3.1 Gen 1
      iv) USB passive copper connections shall not exceed 5 meters in total link length
      v) USB connections more than 5 meters but less than 12 meters in total length may be connected using USB Active Extender Cables or boosters
      vi) USB connections more than 12 meters in total length shall be connected using USB “Super Booste” technology over Cat5e cabling for lengths up to 100 meters
      vii) In all USB installations, not more than three (3) tiers of USB connectivity shall be allowed without inclusion of a powered hub to restore full USB bus (Vbus) power for proper operation of downstream devices and links
      viii) All USB hubs used in A/V installations will be powered hubs that are capable of delivering a minimum of 500mA at 5 volts +/- 5% over the length of the link
      ix) Manufacturers: Legrand, C2G, Middle Atlantic, Superior Essex, Quiktron

6. CONFERENCE 015 (4 bay), 014/ 018 (2 bay) – Divide Combine Functionality
   a) Display(s) to be installed, tested and operational to the following parameters
i) Appropriate to generate image contrast ratio appropriate to the image size and accounting for ambient light and mounting consideration as dictated by owner provided drop screen. Image contrast ratio shall comply with item 3 above: see AUDIOVISUAL IMAGE CONTRAST RATIO, DISPLAY SIZE AND DISPLAY ASPECT RATIO

1) Video performance 3840 x 2160 pixel, minimum resolution, 60Hz minimum refresh rate, minimal 24-bit RGB video performance

2) Display shall feature minimum of two (2) HDMI inputs, at least one of which shall be MHL compliant

3) Display shall feature infra-red remote control and RS232 control capability

4) Display may feature HDBaseT input port

   a) Such HDBaseT input port shall be compliant with generic industry HDBaseT transmitters, minimum performance example C2G 29224 or equivalent

5) Mount shall be appropriate to display as identified in manufacturer’s projector user and installation documentation and shall follow all other guidelines identified herein.

ii) Manufacturers: NEC, Sony, LG, Samsung or equivalent

b) Signal transport from presentation furniture or wall-plate input shall be via video over IP encoders and decoders. Refer to section 7 for requirements.

i) A/V connectivity to follow all other guidelines identified herein.

ii) A/V system shall support integrated distribution of signals from multiple inputs to multiple outputs

iii) The Encoder/Decoder shall support JPEG 2000 encoding that overlaps scaling and encoding latencies – 30 ms at 60 fps max latency.

   1) Manufacturers: Crestron NVX, Extron NAV or equivalent

c) Control System shall operate display(s), encoder/decoders, source devices, lighting and light control devices as identified by the needs analysis and owner requirements

i) Control system shall be wall mounted or otherwise associated with this system in such a way as to not operate, be operable or interfere with the operation of any systems or devices not in the specific space(s) identified for the installation of this system

ii) Control system shall feature easy operation

   1) Installing company will provide sufficient training of owner’s personnel and stakeholders who shall regularly be tasked with system operation

      a) Specific team members or surrogates or approximate number of users to be trained shall be identified by owner prior to installation

   2) Control system shall feature “macro” command capability to simplify system operation

      3) Manufacturers: Crestron, Extron or equivalent

d) Audio support for installation shall deliver program sound within the following parameters:

i) Installation or supplier shall determine the proper number and placement of speakers in order to realize the following performance:

   1) Maximum undistorted sound pressure level at any listener position shall meet or exceed 100 decibels

   2) Frequency response of the installed audio system, including amplification, speakers and connectivity shall meet or exceed 100Hz to 10KHz, +/- 6dB measured 1 meter from the speaker

   3) Sound system may be equalized as appropriate

   4) Speakers shall be installed in ceilings

      a) Speakers shall be plenum space compliant
(b) Speakers shall be installed such that in-room sound pressure level does not vary more than 6dB from the average program listening level at any point in the identified listening area.

(5) Manufacturers: Biamp, TOA, Extron or equivalent

7. ENCODER/DECODER UNIT TYPE 1
   i) Real-Time 4K60 Video Distribution
      (1) The Encoder/Decoder shall support JPEG 2000 encoding that overlaps scaling and encoding latencies, achieving an ultra-low end-to-end latency of 30 ms at 60 fps.

   ii) Single Component Design
       (1) In a single card, the Encoder/Decoder shall be configurable to operate as:
           (a) Network AV encoder
           (b) Network AV decoder
       (2) The encoder/decoder mode shall be switchable while in use via a control system.

   iii) Standard 1Gb network operation
       (1) 4K60 Video distribution
       (2) Web based control and management

   iv) Scalable network distribution system
       (1) System of encoder/decoder units shall be scalable via network switch.

   v) Auto-Switcher
      (1) The Encoder/Decoder shall include two HDMI inputs. Switching between inputs shall be performed:
          (a) Automatically using an auto-switching mode
          (b) Programmatically via a control system
          (c) Through a web browser

   vi) HDMI Output
       (1) When configured as a decoder, the HDMI output is scaled up or down to match the native resolution of the display device.
       (2) When used as an encoder, the HDMI output shall function as a pass through output, with resolution matched to the encoded source.

   vii) USB and KVM Integration
        (1) The Encoder/Decoder shall support the extension of USB signals, which may be switched and routed alongside the AV signal or separately via a compatible control system.
(2) USB 2.0 host and device ports are provided on each Encoder/Decoder, allowing a USB mouse, keyboard, or other device to be connected at one DM NVX endpoint and routed to a computer or other host at any other endpoint.

(3) USB peripherals switching functionality shall support:
   (a) Whiteboards
   (b) Touch screens
   (c) Game controllers
   (d) Cameras
   (e) Mobile devices
   (f) Headsets
   (g) Flash drives

viii) 7.1 Surround Sound Audio with Downmixing
   (1) The Encoder/Decoder shall support lossless transport of 7.1 surround sound audio signals, including:
      (a) Dolby TrueHD
      (b) Dolby Atmos
      (c) DTS-HD
      (d) DTS:X
      (e) Uncompressed linear PCM.
   (2) The Encoder/Decoder shall include the ability to decode the incoming multichannel surround sound signal, from the network or an HDMI input, and downmix that signal to stereo. The stereo downmix signal is automatically routed to the onboard analog output, while the HDMI output can be configured to output either stereo or multichannel.
   (3) As an encoder, the Encoder/Decoder unit distributes both stereo and multichannel signals simultaneously over the network, allowing either signal to be selected at any decoder on the network.

ix) Analog Audio Embedding or De-embedding
   (1) A balanced stereo analog audio port shall be included, which may be configured as either an input or output.
      (a) As an input, it allows a stereo audio source to be connected and combined with the video signal from either HDMI input or the incoming network video stream.
      (b) As an output, it can provide a stereo line-level signal to feed a local sound system or analog audio switcher. The output volume is adjustable via a compatible control system or web browser.

x) Breakaway Audio
   (1) In decoder mode the Encoder/Decoder may select and combine separate video and audio signals from two different inputs, including two different encoders.
xi) Text Overlay
   (1) The Encoder/Decoder shall be capable of displaying dynamic or fixed text on screen.

xii) Video Wall Processing
   (1) The Encoder/Decoder shall support video wall functionality.
   (2) Video walls composed of up to 64 individual displays shall be supported with configurations using multiple Encoder/Decoder units.
   (3) Each Encoder/Decoder shall provide fully-adjustable zoom capability and bezel compensation.
   (4) One Encoder/Decoder is required per display, supporting configurations of up to eight wide by up to eight high.

xiii) Copper or Fiber LAN Connectivity
   (1) The Encoder/Decoder includes two RJ45 1000Base-T LAN ports. Either port may be used as the primary LAN connection, allowing the other to be used to provide a network connection for an additional device. These ports may also be used to daisy-chain multiple Encoder/Decoder units feeding a single-source video wall or individual displays all showing the same video image.
   (2) Encoder/Decoder unit shall support connection to a fiber optic network by inserting an appropriate SFP transceiver module into the SFP port on the Encoder/Decoder.
   (3) Encoder/Decoder manufacturer shall offer a selection of modules to accommodate various multimode and single-mode fiber types. An RJ45 module is also offered to provide a third RJ45 LAN port.

xiv) Enterprise-Grade Security
   (1) Encoder/Decoder shall employ advanced security features and protocols including:
      (a) 802.1x authentication
      (b) Active Directory credential management
      (c) LDAP directory management
      (d) PKI certification
      (e) AES encryption
      (f) TLS, SSH
      (g) HTTPS
   (2) Encoder/Decoder shall run on a dedicated AV network, with fully-managed access to, or isolation from, the user’s LAN or the Internet.

xv) CEC Device Control
   (1) Through a compatible control processor, the Encoder/Decoder unit shall include a gateway for controlling devices through their HDMI connections using the CEC signal embedded in HDMI.

xvi) Device Control
(1) The Encoder/Decoder Unit shall include built-in RS-232 and IR control ports for control of the connected display or device.

xvii) Web-Based Setup
(1) Setup of the Encoder/Decoder unit shall be accomplished using a computer web browser.
(2) Full control and monitoring of the Encoder/Decoder unit is enabled through integration with a compatible control processor.

xviii) Low-Profile Installation
(1) The Encoder/Decoder Unit mounts conveniently to a flat surface or rack rail. All connections and LED indicators are positioned on the top and bottom.
(2) Power is provided using the included 100-240V universal power pack or an optional power injector.

xix) Encoding/Decoding
(1) Video Compression: JPEG 2000
(2) Video Resolutions: Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10 and Deep Color support
(3) Audio Formats: Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound), secondary 2-channel LPCM
(4) Bitrates: 100 to 990 Mbps
(5) Streaming Protocols: RTP, RTSP, SDP
(6) Container: MPEG-2 transport stream (.ts)
(7) Session Initiation: Multicast via RTSP
(8) Copy Protection: HDCP 2.2

xx) Video
(1) Input Signal Types: HDMI w/HDR10, Deep Color, and 4K60 4:4:4 support (Dual-Mode DisplayPort and DVI compatible)
(2) Output Signal Types: HDMI w/HDR10, Deep Color, and 4K60 4:4:4 support (DVI compatible)
(3) Switcher: 2x1 auto-switching
(4) Scaler: 4K60 4:4:4 video scaler with motion-adaptive deinterlacing, intelligent frame rate conversion, Deep Color support, HDR10 support, widescreen format selection (zoom, stretch, maintain aspect-ratio, or 1:1), video wall processing up to 8 wide x up to 8 high, static or dynamic text overlay
(5) Copy Protection: HDCP 2.2

xxi) Maximum Resolutions
(1) Maximum Common Resolutions
### Audio Video Devices

<table>
<thead>
<tr>
<th>Scan Type</th>
<th>Resolution</th>
<th>Frame Rate</th>
<th>Color Sampling</th>
<th>Color Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive</td>
<td>4096x2160 DCI 4K &amp; 3840x2160 4K UHD</td>
<td>24 Hz</td>
<td>4:4:4</td>
<td>36 bit</td>
</tr>
<tr>
<td>Progressive</td>
<td></td>
<td>30 Hz</td>
<td>4:4:4</td>
<td>36 bit</td>
</tr>
<tr>
<td>Progressive</td>
<td></td>
<td>60 Hz</td>
<td>4:2:2</td>
<td>36 bit</td>
</tr>
<tr>
<td>Progressive</td>
<td></td>
<td>60 Hz</td>
<td>4:4:4</td>
<td>24 bit</td>
</tr>
<tr>
<td>Progressive</td>
<td>2560x1600 WQXGA</td>
<td>60 Hz</td>
<td>4:4:4</td>
<td>36 bit</td>
</tr>
<tr>
<td>Progressive</td>
<td>1920x1080 HD 1080p</td>
<td>60 Hz</td>
<td>4:4:4</td>
<td>36 bit</td>
</tr>
<tr>
<td>Interlaced (Input only)</td>
<td>1920x1080 HD 1080i</td>
<td>30 Hz</td>
<td>4:4:4</td>
<td>36 bit</td>
</tr>
</tbody>
</table>

(2) Encoder/Decoder unit shall support other custom resolutions at pixel clock rates up to 600 MHz

xxii) Audio

(1) Input Signal Types: HDMI (Dual-Mode DisplayPort compatible [10]), analog stereo

(2) Output Signal Types: HDMI, analog stereo


(4) Analog Formats: Stereo 2-channel

(5) Analog-To-Digital Conversion: 24-bit 48 kHz

(6) Digital-To-Analog Conversion: 24-bit 48 kHz

(7) Analog Performance:

(8) Frequency Response: 20 Hz to 20 kHz ±0.5 dB

(9) S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted

(10) THD+N: <0.005% @ 1 kHz

(11) Stereo Separation: >90 dB

(12) Analog Output Volume Adjustment: -80 to +20 dB

xxiii) Communications

(1) Ethernet: 10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1x, IPv4, HTTPS web browser setup and control, Crestron control system integration

(2) USB: USB 2.0 host or device signal extension

(3) HDMI: HDCP 2.2, EDID, CEC

(4) Integrated Control (via Ethernet): HDCP 2.2, AES, RTP, RTSP, SDP, ONVIF, IGMPv3, SMPTE 2022

(5) Management of HDCP and EDID
(6) Management of CEC between the connected HDMI devices and a control system

(7) RS-232: 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking (via control system); computer console (for setup)

(8) IR/Serial: 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 Volts) up to 19.2k baud (via compatible control system)

xxiv) Connectors

(1) USB DEVICE:
   (a) (1) USB Type B female;
       (i) USB 2.0 device port;
       (ii) USB signal extender port for connection to a computer or any other USB 2.0 host

(2) USB HOST:
   (a) (1) USB Type A female
   (b) USB 2.0 host port
   (c) USB signal extender port for connection of a mouse, keyboard, or any other USB 2.0 device
   (d) Available Power: 500 mA at 5 Volts DC

(3) LAN 1 – 2:
   (a) (2) 8-pin RJ45 female
   (b) 10Base-T/100Base-TX/1000Base-T Ethernet ports

(4) LAN 3:
   (a) (1) SFP port
   (b) Accepts one SFP transceiver module

(5) HDMI OUTPUT:
   (a) (1) 19-pin Type A HDMI female
       (i) HDMI digital video/audio output (DVI compatible)

(6) HDMI INPUT 1 – 2:
   (a) (2) 19-pin Type A HDMI female
       (i) HDMI digital video/audio inputs
       (ii) (DVI & Dual-Mode DisplayPort compatible)

(7) AUDIO I/O:
   (a) (1) 5-pin 3.5 mm detachable terminal block
       (i) Balanced/unbalanced stereo line-level audio input or output
       (ii) Input Impedance: 24k Ohms balanced/unbalanced
       (iii) Maximum Input Level: 4 Vrms balanced, 2 Vrms unbalanced
       (iv) Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced
(v) Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

(8) CONSOLE, SERIAL:
   (a) (1) 8-pin RJ45 female
      (i) RS-232 computer console port (for setup)

(9) CONSOLE, USB:
   (a) (1) USB Type B female
      (i) USB 2.0 computer console port (for setup)

(10) IR 1 – 2: (1) 4-pin 3.5 mm detachable terminal block
    (a) Comprises (2) IR/Serial ports
       (i) IR output up to 1.1 MHz
       (ii) 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud

(11) COM: (1) 5-pin 3.5 mm detachable terminal block
    (a) Bidirectional RS-232 port
       (i) Up to 115.2k baud, hardware and software handshaking support

(12) 24VDC 2.0A: (1) 2.1 x 5.5 mm DC power connector
    (a) 24 Volt DC power input
    (b) PW-2420RU power pack included

(13) Chassis ground lug

xxv) Controls & Indicators

(1) TX: (1) Green LED, indicates unit is in transmitter (encoder) mode
(2) RX: (1) Green LED, indicates unit is in receiver (decoder) mode
(3) OL: (1) Green LED, indicates an online connection to a control system via Ethernet
(4) LAN 1 – 2: (4) LEDs, green indicates Ethernet link status, amber indicates Ethernet activity
(5) LAN 3 LNK: (1) Green LED, indicates Ethernet link status
(6) LAN 3 ACT: (1) Green LED, indicates Ethernet activity
(7) HDMI OUTPUT: (1) Green LED, indicates video signal transmission at the HDMI output
(8) HDMI INPUT 1 – 2: (2) Green LEDs, each indicates sync detection at the corresponding HDMI input
(9) PWR: (1) Bi-color green/amber LED, indicates operating power supplied via the power pack or injector, illuminates amber while booting and green when operating
(10) SETUP: (1) Red LED and (1) recessed pushbutton for Ethernet setup
(11) RESET: (1) Recessed pushbutton for hardware reset
(12) INPUT SEL: (1) Pushbutton for manual input selection and (2) bi-color green/amber LEDs to indicate the current active input and signal presence at each corresponding input
xxvi) Power

(1) Power Pack (included):
  (a) Input: 1.5 Amps maximum @ 100-240 Volts AC, 50/60 Hz
  (b) Output: 2 Amps @ 24 Volts DC

(2) Power over Ethernet:
  (a) Power Consumption: 35 Watts typical

(3) Environmental
  (a) Temperature: 32° to 104° F (0° to 40° C)
  (b) Humidity: 10% to 90% RH (non-condensing)
  (c) Heat Dissipation: 85 BTU/hr

xxvii) Enclosure

(1) Chassis: Metal, black finish, integral mounting flanges, fan cooled; vented top, front, bottom, and sides

xxviii) Mounting: Freestanding, surface mount, or attach to a single rack rail

xxix) Basis of design product: Crestron DM-NVX-351

(1) Product Description: DigitalMedia 4K60 4:4:4 HDR Network AV Encoder/Decoder w/Downmixing
SECTION 282300 - VIDEO SURVEILLANCE

PART 1 - GENERAL

1.1 SCOPE

This section details product and execution requirements for VIDEO MANAGEMENT SYSTEM for the project.

Work includes furnishing all labor, materials, tools and equipment, and documentation required for a complete turnkey working system as specified in this Section. VMS shall consist of but not be limited to, Cameras, Monitors, Conduit, Boxes, Cable and Wired Devices. Programming work sheets and camera view setup is considered part of installation as well as coordination with UKPD, Stanley Security and Salient Systems.

Unless noted otherwise, "Contractor" shall refer to VMS Integrator & Installer.

Communications routing from VMS Servers to Cameras shall be via Owner LAN.

Coordinate with any and all trade contractors as required to provide a fully functioning system.

Unless noted otherwise, "Contractor" shall refer to security system integrator & installer.

Applicable provisions of Division 1 shall govern all work under this section.

Video surveillance can be restricted or prohibited by law. This document details technical considerations only. It is assumed that registration, licensing, policies regarding disclosure and privacy (notification, processing of images, time and date stamping, recording of sound, etc.), and or legal obligations are responsibility of Owner.

1.2 RELATED WORK

Related Division 28 Sections include:

1. 281643 - PERIMETER SECURITY SAFETY

Related Sections in other divisions of Work:

2. 087100 - DOOR HARDWARE
3. 260000 - ELECTRIC
4. 270000 - COMMUNICATIONS

1.3 REFERENCES AND STANDARDS

Work under this Section is subject to requirements of Contract Documents including General Conditions, Supplementary Conditions, and sections under Division 1 General Requirements.

All work and materials shall conform in every detail to rules and requirements of National Fire Protection Association, Kentucky Electrical Code, University of Kentucky Standards and University of Kentucky ITS Standards. UKITS standards can be found online at the following link: https://www.uky.edu/cpmd/design-standards/divisions-20---29---facility-services-subgroup and click on Division 270000 to find the latest version.

All materials shall be listed by UL and shall bear UL label. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label entire system shall be so labeled.

Other applicable standards are as follows:

2. NFPA 70-1999 - National Electrical Code
4. NTSC/EIA RS-170A Video Standard
5. IEEE 802.3 standards for CSMA/CD (Ethernet) based LANs
7. CE: EN50082-01 (Immunity)
8. CE, UL 1950; CUL 1950 CE: EN60950 (Safety)
9. State of Kentucky
10. City of Lexington, KY

1.4 DEFINITIONS AND ABBREVIATIONS
VMS – Video Management System
LAN – Local Area Network

1.5 WORK BY OWNER
Owner shall provide:
1. Verify exact security device mounting locations.
2. Verify Acceptable per-camera field-of-view information.
3. Enterprise-wide Data Network / LAN to be utilized by VMS system.
4. Cross-connections from VMS components to building LAN, contractor provides all interconnection cables (Patch Cables) as needed but may not connect to LAN without ITS oversight and approval.
5. All active LAN components (switches, routers) as required for Security system function.
6. IP-address allotment and management for VMS devices as needed.

1.6 SUBMITTALS
Product Data: For each type of product indicated.
System Design drawings with cable routing, device location and labeling.
Communication and Security Closet layouts.
Camera View Modeling.

1.7 QUALITY ASSURANCE
Video Management System Contractor shall:
1. Have successfully completed two (2) Salient Systems projects in equal magnitude of the system specified in following sections. Be fully certified by Salient Systems for Sales and Installation of Salient equipment. Proper proof of certification with Salient will be submitted at time of Bid.

1.8 GUARANTEE
Warranty requirements for Video Management System (VMS) shall be two (2) years on all parts and labor commencing on Date of Substantial Completion. Those requirements apply to all components covered in this section.
PART 2 - PRODUCTS

2.1 GENERAL

VMS system shall deliver high quality; color video over an IP, UTP structured cable system using H.264 /H.265 compression and shall provide for monitoring and recording of all cameras in system as indicated herein and on project Drawings. The VMS allows event-based monitoring of campus and situational awareness though IP cameras centrally managed from the University of Kentucky Police Department Operations Center. The VMS utilizes analytics to identify potential situations on campus and preserving evidence for authorities to review. The Salient VMS has the capability to be securely monitored via mobile devices or off-campus locations, video sharing with outside public safety first responders.

Video shall be configurable from a workstation on the University LAN using standard Browser software.

2.2 IP VIDEO CAMERA (FIXED)

Interior Camera shall be: Sony SNC-VM601, Axis P3374-V, Samsung SND-7084 or approved equivalent.

Elevator Cameras shall be: Axis M3047-P or approved equivalent.

Camera shall:
1. Be ceiling / wall mountable dome-type.
2. Be IP-native.
3. Utilize Power-over-Ethernet (PoE) for device power.
4. Be designed to provide video streams at the minimum HDTV 720p (1280x720) resolution at 30 frames per second using H. 264 / H.265.
5. Be equipped with Day/Night functionality, Wide Dynamic Range (WDR), color video to ½ lux, black and white below ½ lux and feature remote back focus capabilities.
6. Be provided complete with standard interior (3-9 mm nominal) auto-iris lens.
7. Per-camera lens selection dependent upon Owner-required field-of-view.
8. Have a smoked bubble.
9. Have housing and mount color to match surrounding architectural colors.

2.3 NETWORK VIDEO SERVER:

Security Cameras shall be connected to the owners Security LAN by UKCNS personnel and SMS VAR of Record, Stanley Security. Cameras shall be routed to Management Servers and Recording Servers via the Owners Security VAN. Installing Integrator shall complete all Camera Programing worksheets and provide to Stanley Security for System Programing and addition of Cameras to the Campus VMS. Integrator shall coordinate with VAR of Record, Stanley Security to include the cost of this programing in their bid for project.

2.4 WIRE AND CABLE

General

1. Provide and install all device DATA cables as per UKITS and Division 270000 requirements. DATA cabling for Security cameras shall be terminated in each DATA Closet, in approved labeled patch panels (As per Division 270000 requirements). Camera cabling should be terminated in jacks at the camera device. Contractor to provide all patch cables. All exterior camera cables shall be provided with Surge protection units on each
cable. Proper cable types must be as per UKITS standards and Division 270000 requirements.

2. Provide all interconnecting system cabling at Security Closets and Communication Closets as well as security device end points. All UKITS standards must be followed. Exterior cameras that exceed the normal distance for copper cable must be installed with Fiber Cable as per UKITS Standards and Division 270000 requirements. At these fiber locations a Rugged / Hardened Switch is required, this switch should be provided by contractor by purchase thru UKITS.

3. Bond metallic system components in all Communications Closets and Security Closets to existing in-room ground bar.

4. Confirm and provide any necessary interface cabling with existing Access Control system.

PART 3 - EXECUTION

3.1 GENERAL

Work performed for installation of VMS system shall be performed by Security System Integrator – “Contractor”.

Provide equipment as indicated on Drawings and specified herein.

Provide all labor and materials necessary to construct systems as described herein to include furnishing and installing all system equipment, interconnecting cabling, programming and start-up, software (including software upgrades and reprogramming as necessary), termination components, mounting hardware, incidentals, accessories, testing, labeling, documentation and training as detailed in following sections.

1. Neatly lace, dress and support cabling.
2. Coordinate any downtime with Owner.

Prior to installation:

3. Conduit and equipment back boxes are as required. Contractor is responsible for coordination with all trades to ensure that conduit and back boxes are correctly placed for VMS use. Contractor is responsible for coordinating installation of conduit and boxes to make sure they are installed on schedule with other trades and are coordinated as to not interfere with other systems or pathways.

4. 120V AC Power is as required and is properly located.
5. LAN structured cabling is as required and properly located and installation has been coordinated with other trades.
6. Coordinate all devices and locations prior to equipment installation with owner.
7. Coordinate Owner-desired camera views, providing camera modeling prior to installation.
8. Coordinate Camera housing and mount finishes with Architect and Owner.

Install and wire equipment in accordance with University of Kentucky ITS Standards, manufacturer’s recommendations, and accepted engineering and installation practices.

Mount system components as recommended by manufacturer. All equipment mounting in Communication Closets must be approved by UK ITS prior to installation.

9. Arrange equipment to facilitate permanent access for use and maintenance.

3.2 CABLE INSTALLATION

Neatly lace, dress and support cabling.

Pull cables in accordance with cable manufacturer’s recommendations and ANSI/IEEE C2 Standards as well as University of Kentucky ITS Standards and all Division 270000 requirements.
1. Do not exceed manufacturer's recommended pulling tensions.
2. Do not install bruised, kinked, scored, deformed, or abraded cable.
3. Do not splice cable between indicated termination, tap, or junction points.
4. Remove and discard cable where damaged during installation and replace it with new cable.
5. Pull all cable by hand unless installation conditions require mechanical assistance.

Run all wire and cable continuous from device location to final point of termination. No mid-run cable splices shall be allowed.

Furnish and install all cable such that ample slack is supplied at device terminating end of cable to compensate for any final field modifications in camera location.

6. Loosely coil slack in “Figure-eight” in a manner that prevents kinking.
7. Loop radius shall be at least 4X minimum bend radius for cable.
8. Slack length of cable shall be 4 feet (minimum).

Provide code compliant fire proofing techniques for all penetrations of fire rated partitions and slabs, where penetrations are made by or used for installation of Video System.

Coordinate routing of wire and cable requiring isolation from power, radio frequency (RF), electromagnetic interference (EMI), telephone, etc. with Engineer.

At no time shall any cable be subjected to a bend less than manufacturer’s specified minimum radius. Also refer to UKITS Standards.

Provide grommets and strain relief material where necessary to avoid abrasion of wire and excess tension on Wire and Cable.

Make connections with solder-less devices, mechanically and electrically secured in accordance with manufacturers’ recommendations. Wire nuts shall not be an acceptable means of connecting wire and cable.

### 3.3 IP VIDEO CAMERAS

Mount Video Cameras per project drawings.

Field-verify exact locations and field-of-views with Owner prior to installation.

Provide video camera lenses to accommodate Owner-coordinated field-of-view per camera.

1. Field verify and confirm views with Owner prior to procurement and final installation and adjust camera positions and lens sizes as required upon installation.

Configure resolution, frame rate, password, etc. to match existing system installation, coordinate with UKPD.

Coordinate with Owner prior to installation to confirm required parameters.

Wire interface(s) to external alarms.

### 3.4 NETWORK CONNECTION

Cross-connections to building LAN by Owner, NO EQUIPMENT MAY BE CONNECTED TO UK NETWORKS BY ANY SUB CONTRACTOR, ONLY BY UK ITS personnel.

### 3.5 LABELING AND IDENTIFICATION

Labeling protocols to match all UK Security System installations.
1. Cabling, Hardware, and Equipment shall be clearly labeled using a Code identifying each piece as unique throughout Video Camera System. This code will aid in identifying hardware for servicing and maintenance.

2. Labels and Tags shall be machine-generated using English character set in black ink on white background labels and Tags.
   - Self-laminating permanent labels are required on cables; permanent non-marring labels are required on all other hardware/cabinets.
   - No hand-written Labels or Tags shall be allowed.
   - Dymo or Kroy type adhesive backed lettering is not acceptable.

Identify and tag all cables to denote function.

3. Tag shall indicate:
   - System of which cable is a part,
   - Indication of cable destination (e.g. room or component), and
   - Unique alpha-numeric identifier that distinguishes cable from all others in system.

All labels shall be machine generated. Handwritten labeling is not acceptable.

Label all front panel controls used in normal operation of system using plastic laminate engraved labels or approved equal.

4. Firmly affix to panel or device.

Labeling Formats

5. To be defined by Owner prior to construction following practice for all campus Security System installations.

3.6 SYSTEM TESTING AND ACCEPTANCE

System shall be complete and fully operational before requesting final acceptance and scheduling system integration into the Campus VMS.

Installation of all field devices will be inspected by Owner or Owner’s representative. Inspection will consider overall neatness and quality of installation, functionality of each individual device, mounting, wiring, and labeling.

Conduct a seven-day burn-in test. Intent of burn-in test shall be to prove System by placing it in near real operating conditions prior to connection to Campus VMS.

1. During this period System shall be fully functional and programmed so that all points, controls, messages, prompts, etc. can be exercised and validated.

Provide written notification to Owner that system is completely installed, integrated, burn-in testing completed and is fully functional as specified herein.

2. Submit schedule for acceptance testing. Representatives of Owner, UKPD and/or representative may witness test procedures.

3. Notify Owner UKPD and the representative in writing a minimum of two weeks in advance to allow for such participation.

4. Describe test procedures prior to testing and submit sample test form to Owner / Representative.

Prior to final acceptance test, equipment rooms and similar areas should be free of accumulation of waste materials or rubbish caused by operations under Contract.

Equipment shall be on and fully operational during any and all testing procedures.
5. Provide all personnel, equipment, and supplies necessary to perform site testing.
6. Supply a form of communication with remote parties in the team for use during test.
7. A manufacturer’s representative shall be present on site to answer any questions that may be beyond technical capability of Contractor’s employees, if Contractor so elects or by specific request of Representative Owner, at no charge to Representative or Owner.

During course of final acceptance test, Contractor shall be responsible for demonstrating that, without exception, provided VMS complies with contract requirements.

Testing shall include but not be limited to:

8. Continuity and conductor/connector integrity on all cables.
9. Demonstrate functionality of all cameras including:
   a. Owner-acceptable field of view.
   b. Response to alarms.
   c. Response to Access Control System inputs.
10. Confirm remote viewing, configuration and camera control via Browser and in the UKPD Operations Center. Confirm all Analytic uses on Cameras programmed for Analytic use.
    a. Confirm system rights settings for authorized users.
11. Demonstrate storage and retrieval of recorded video by date/time.
12. In event it becomes necessary to suspend test, Contractor shall work diligently to complete / repair all outstanding items to condition specified in Specification and as indicated on Security Drawings.
13. All of Owner’s / Representative Fees and expenses related to suspended test will be deducted from Contractor’s retainage.
14. Contractor shall supply Owner with a detailed completion schedule outlining phase by phase completion dates and a tentative date for a subsequent punch list retest.
15. During final acceptance test, no adjustments, repairs or modifications to system will be conducted without permission of Owner.

Upon successful completion of final acceptance test (or subsequent punch list retest) Owner or Representative will issue a letter of final acceptance.

Records of Test Results shall be included in System Documentation and submitted as detailed below.

3.7 OWNER TRAINING

Training course for system covered in this section shall be a minimum of 6-hours.

Maximum number of students to be (6).

1. Training materials shall be provided to all students.

Record, label, and catalog all training on DVD Videodiscs. Provide discs to Owner for future in-house training sessions and / or reviews. Furnish all temporary equipment necessary for taping all training sessions. Maintain accurate and up-to-date time sheets of all training sessions.

Contractor shall be on call during Warranty period to answer any questions Owner might have. The Owner reserves the right to use any excess training hours, not used by time of system completion, for future training as requested by Owner until total number of training hours has been completed.
3.8 DOCUMENTATION

All Owners manuals and or maintenance information shall be provided in printed form as well as electronic PDF format to the owner and owner representative.

3.9 WARRANTY AND SUPPORT

Unless otherwise noted, Contractor shall guarantee all materials, equipment, etc., two (2) years from date of final Owner acceptance of system. This guarantee shall include all labor, material and travel time.

Contractor/Integrator and/or manufacturer(s) of system equipment must offer:

1. Technical Support Capabilities (Technician onsite) response time onsite within 4 hours, 24-hours/7-days per week (“24/7”), and 365 days per year.
2. 24-hour turn-around (from receipt of item) for Repair or Replacement of failed components, 7-days per week.

END OF SECTION
TAGGED NOTES

L15 UTILIZE 20A/1P BRAKER IN PANEL 322/N/P-2 FOR NEW LIGHTING LOAD.

THIRD FLOOR LIGHTING
1/8" = 1'-0"
THIRD FLOOR MECHANICAL POWER
1/8" = 1'-0"
# Sign-In Sheet

<table>
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<tr>
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<tr>
<td>Jim Sutton</td>
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<td>Thomas Steele</td>
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<td>Chuck Coplon</td>
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SIGN-IN SHEET

40. Damon Edwards
41. John Stippix
42. Jim Taylor
43. Samantha Currant
44. Glen Osmond
45. Jeryd Flynn
46. Jamie Randall
47. David Stricker
48. Mike Sherman
49. Sand J Construction
50. Turbo Construction
51. Turbo Constr.
52. MR HVAC
53. BFM
54. Brett Construction
55. TP Mechanical
56. EGC Mural
57. EGC Construction
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