University of Kentucky
Procurement Services

INVITATION FOR BIDS

CCK-2591.20-1-24
UK - Scovell Hall BP#01
ADDENDUM #3
03/08/2024

IMPORTANT: BID AND ADDENDUM MUST BE RECEIVED BY: 03/27/2024 @ 3:00 P.M. LEXINGTON, KY TIME

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

ITEM #1: MODIFICATIONS TO THE ORIGINAL BID DOCUMENTS AND QUESTIONS & ANSWERS

- Please review and incorporate into your bids the enclosed additional information, and questions and answers, from the project team.

OFFICIAL APPROVAL
UNIVERSITY OF KENTUCKY

Ken Scott 03/08/2024

Contracting Officer / (859) 257-9102

SIGNATURE

_____

_____
Typed or Printed Name

University of Kentucky
Purchasing Division
322 Peterson Service Building
Lexington, KY 40506-0005

ADDENDUM NO. 3.00

03/08/2024

FOR THE PROJECT TITLED:

RENEW/MODERNIZE FACILITIES
SCOVELL HALL
University of Kentucky
Lexington, Kentucky

To: Prospective Bidders

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

Project Contact: P. Matthew DeLuca, AIA

The Addendum will form a part of the Contract Documents and modifies the original Bidding Documents dated January, 2024.

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

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

GENERAL ITEMS:

ITEM NO. 3.01
Refer to the Specifications and attached additional documents – the following sections should be added to the table of contents:

01 9113 Commissioning Requirements
01 9119 Building Envelope Testing
10 1100 Visual Display Units

ARCHITECTURAL ITEMS:

ITEM NO. 3.02
Refer to specification 098433 – Sound Absorbing Wall Units, Section 2.1, A. The following manufacturer and product shall be added as an approved equal:

3. Folded Surfaces FF060 by CSI Creative

ITEM NO. 3.03
Refer to specification 095426 – Suspended Wood Ceilings, Section 2.1, A. The following manufacturer and product shall be added as an approved equal:

4. WaveFM by RealAcoustix

ITEM NO. 3.04
Refer to specification 057313 – Glazed Decorative Metal Railing, Section 2.2, A. The following manufacturer and product shall be added as an approved equivalent:

1. PanelGrip by Wagner Companies

ITEM NO. 3.05
Refer to specification 081113 – Hollow Metal Doors and Frames, Section 2.1, A. The following manufacturer shall be added as an approved equivalent:

6. De La Fontaine

ITEM NO. 3.06
Refer to the specifications. The following specifications have been revised and attached to this document:

1. 084113 – Aluminum Framed Entrances and Storefronts
2. 085113 – Aluminum Windows

ITEM NO. 3.07
Refer to the Ceiling Schedule on the Reflected Ceiling Plans:

WD-1 should read WPC-1. The Wood Panel Ceiling shall still match the finish of WD-1 per the finish schedule and specifications.

ITEM NO. 3.08
Refer to the finish schedule on A-621:

The specification section for BAF-1 and BAF-2 should reference “09 8436”

ELECTRICAL:

ITEM NO. 3.09
Refer to Drawings E011:

Remove the existing pedestrian light poles in the front lawn of the building facing Limestone Street – 5 total. New lighting fixtures are being installed to illuminate the sidewalk as shown on sheet E011. All associated wiring, conduit, and concrete bases are to be removed with these light poles.

STRUCTURAL:

ITEM NO. 3.10
Reference Detail M/S-406 and attachment SK-106

a. Corrected graphical error where original detail showed two HSS edge beams overlapping each other. Detail more clearly shows connection of HSS to bent plate.

ATTACHMENTS:
Drawings: SK-106
Specification: 019113, 019119, 084113, 085113, 101100

END OF ADDENDUM NO. 3.00

SECTION 019113 – COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and other Division 01 Specification Sections, apply to work of this Section.

B. Division 3 – Concrete

C. Division 4 – Masonry

D. Division 7 – Thermal and Moisture Protection

E. Division 8 – Openings

F. Division 22 – Plumbing

G. Division 23 – Heating Ventilating and Air Conditioning

H. Division 26 – Electrical

1.2 SUMMARY

A. Section includes commissioning process requirements for the following systems:

1. Building Envelope
2. Mechanical, including HVAC&R equipment and controls
3. Plumbing, including domestic hot water systems, pumps, and controls
4. Electrical Systems (Distribution Panels, Panelboards, Power Monitoring)
5. Lighting Controls

B. Section Includes:

1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings.
3. Commissioning documentation and scheduling commissioning.
4. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
5. Commissioning tests and commissioning test demonstration.
6. Adjusting, verifying, and documenting identified systems and assemblies.

1.3 REFERENCES

A. Drawings and general provisions of contract, including general and supplementary conditions, general mechanical provisions and Division-1 Specification sections, apply to work of this section.
B. AABC National Standards – 2016: For Total System Balance
C. ASHRAE Standard 202 – 2018; Commissioning Process for Buildings and Systems
D. ASHRAE Guideline 0-2019: The Commissioning Process
E. ASHRAE Guideline 1.1-2007: The HVAC&R Technical Requirements for the Commissioning Process
F. ASHRAE Guideline 1.3-2018: Building Operations and Maintenance Training for the HVAC&R Commissioning Process
G. ASHRAE Guideline 1.4-2014: Procedures for Preparing Facilities Systems Manuals
H. ACG Commissioning Guideline – 2005
I. ANSI/ASHRAE/IES Standard 90.1 – 2016; Energy Standard for Buildings Except Low Rise Residential Buildings (SI Edition)

J. ANSI/ASHRAE/IES Standard 189.1 – 2014: Standard for the Design of High-Performance Green Buildings
K. BCA New Construction Building Commissioning Best Practices –2018
L. BICSI: Telecommunications Distribution Methods Manual, 13th Edition – 2014
M. ICC G4 – 2018 Guideline for Commissioning
N. NECA 90: Commissioning Building Electrical Systems – 2015
O. NFPA 70: National Electrical Code – 2018
P. National Institute of Building Sciences (NIBS) Whole Building Design Guide
Q. USGBC LEED Reference Guide for Building Design and Construction Version 4 (v4) – 2013
R. ASTM E779-2019 – Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
S. ASTM E1186-2017 – Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
T. ASTM E1827-2017 – Standard Test Method for Determining Airtightness of Buildings Using an Orifice Blower Door
U. Infrared Training Center Infrared Thermography Certification Program
V. ISO 6781-1983: Thermal Insulation – Qualitative Detection of Thermal Irregularities in Building Envelopes – Infrared Method
W. ISO 10878-2013 Infrared Thermography – Non-Destructive Testing

1.4 DESCRIPTION OF WORK

A. The purpose of the commissioning process is to provide the owner/operator of the facility with a high level of assurance that the commissioned systems have been installed in the prescribed manner and operate within the performance guidelines set out in the Owner's Project Requirements (OPR). The Commissioning Provider (CxP) shall provide the owner with an unbiased, objective view of the system's installation, operation, and performance. This process is not intended to eliminate or reduce the responsibility of the design team or installing contractors to provide a finished product. Commissioning is intended to enhance the quality of system start-up and aid in the orderly transfer of systems for beneficial use by the owner. The CxP will be a member of the construction team, administrating and coordinating commissioning activities with the design team, construction manager, subcontractors, manufacturers and equipment suppliers.

B. The independent commissioning provider (CxP) is contracted directly with the owner for this project. This commissioning plan has been included for reference only to define contractors' responsibilities. Each contractor should review this procedure and include adequate time in their proposal.

1.5 INSTALLING CONTRACTORS CLOSE-OUT SUBMITTALS

A. Commissioning Report Supplemental Information:

1. During Construction Phase Commissioning, provide the following:

a. Startup reports
b. Approved test procedures
c. Test data forms, completed and signed
d. Controls point-to-point verification documentation
e. Preliminary test and balance report(s)
f. Progress reports
g. Commissioning issues reports showing resolution of issues
h. Correspondence or other documents related to resolution of issues
i. Other reports required by commissioning provider

B. Provide Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 ROLES OF THE COMMISSIONING PROVIDER

A. The primary responsibility is to inform the owner, the construction manager and design team on the status, integration, and performance of commissioned systems within the facility.

B. The CxP shall function as a catalyst and initiator to disseminate information and assist the design and construction teams in implementing completion of the construction process. This shall include system verification, functional performance testing, and conformance with the intended design of each system. Services include documenting construction observations, verification and functional performance testing, and documenting proper distribution of performance and operating information to the owner's O&M staff.

C. The CxP shall observe and coordinate testing as required to assure system performance meets the Basis of Design and Owner's Project Requirements.

D. The CxP shall provide technical expertise to oversee and verify the correction of deficiencies found during the commissioning process.

E. The CxP is to remain an independent party with specific knowledge of commissioned systems on the project. The CxP shall investigate the scope and extent of the problem and facilitate communication to determine responsibilities by delineating specifications. The CxP shall monitor resolution for conformance with design intent and prevailing industry standards.

F. The CxP shall document the date of acceptance as determined by the construction manager, owner and design team.

G. The CxP will review operation and maintenance materials for commissioned systems.

H. The CxP will review phasing plans as provided by the Construction manager relating to temporary use of HVAC equipment, O&M considerations, warranty issues, impact of construction sequencing on occupied areas, and interruption of services from the existing equipment.

3.2 SYSTEMS INCLUDED IN THE COMMISSIONING PROCESS

A. Building Envelope, including air barrier enclosure observations, building air leakage diagnostic tests and infrared thermal imaging

B. HVAC&R equipment and controls

C. Domestic Hot Water systems, pumps and controls

D. Electrical Systems (Distribution Panels, Panelboards, Power Monitoring)

E. Lighting Controls

3.3 CONTRACTOR SCHEDULING

A. Commissioning Schedule: Integrate commissioning into Contractor's construction schedule.

1. Include detailed commissioning activities in monthly updated Contractor's construction schedule and short interval schedule submittals.
2. Schedule the start date and duration for the following commissioning activities:
   a. Submittals.
   b. Preliminary operation and maintenance manual submittals.
   c. System verification checklists
   d. Operation and Maintenance Manuals

e. Startup
f. Functional performance tests
g. Operation and Maintenance Training
h. As-Built/Existing Conditions Documents
i. Near End of Warranty Review

B. Two-Week Look-Ahead Commissioning Schedule:

1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning.

C. Owner's Witness Coordination:

1. Coordinate Owner's witness participation via Architect.
2. Notify Architect of commissioning schedule changes at least one week in advance for activities requiring the participation of Owner's witness.

3.4 COMMISSIONING PLAN

A. Commissioning Team

1. The Commissioning Team (CT) shall consist of key parties involved in design, construction and testing of this facility. It is necessary for each agency to appoint team members that will have long-term commitments to this project. One team member shall be provided by each of the parties listed below:
   a. Owner Representative – University of Kentucky
   b. Architect – K. Norman Berry Associates Architects PLLC
   c. Design MEP Engineer – KFI Engineers
   d. LEED Administrator – Paladin, Inc.
   e. Commissioning Provider (CxP) – Facility Commissioning Group, Inc.
   f. General Contractor (GC)
   g. Mechanical Contractor (MC)
   h. Plumbing Contractor (PC)
   i. Sheet Metal Contractor (SM)
   j. Temperature Controls Contractor (TCC)
   k. Test and Balance Contractor (TABC)
   l. Electrical Contractor (EC)
   m. Lighting Controls Equipment Contractor (LCEC)
   n. Security System Contractor (SSC)

B. Owner's Project Requirements and Basis of Design Documents

1. The Owner's Project Requirements (OPR) is a written document prepared by the owner and the design team that details the functional requirements of a project and the expectations of how it will be used and operated.
2. The Basis of Design (BOD) is a document prepared by the design team that records the concepts, calculations, decisions, and product selections used to meet the Owner's Project Requirements and to satisfy applicable regulatory requirements, standards, and guidelines. This instrument contains narrative descriptions and supporting documentation.

C. The CxP will review the OPR and BOD documents for commissioning provisions, functional performance, optimizing of performance, accessibility, TAB provisions, testing provisions and O&M considerations.

D. Commissioning Meetings

1. Commissioning meetings will be held in conjunction with progress meetings as necessary. The CxP will be on site for the Cx meetings. Commissioning meetings will be used to address any problems that alter the design intent or affect the commissioning process.

E. Issues Resolution Log (IRL)

1. The use of an Issues Resolution Log is a method employed by the CxP to monitor and record problems, their causes, and solutions. The use of these lists promotes communication between the installing contractors, design team, commissioning agent, and owner, in order to expedite their resolution in a timely manner.
2. The CxP will regularly submit IRL to the Commissioning Team in order to document and resolve deficiencies as quickly as possible. The frequency of IRL submission will be adjusted as project conditions dictate.

F. System Verification Checklists (SVC's) / Manufacturers' Checklists

1. The CxP will write SVC's based on the contract documents. These tests will be created for systems and subsystems. See section 3.2 SYSTEMS INCLUDED IN THE COMMISSIONING PROCESS for list of systems to be commissioned. Draft copies will be submitted to the Commissioning Team for review and comment prior to placement on the job site. A master copy of the SVC's will be bound in a three-ring binder and placed on the job site for completion by the installing contractors. No system will be started until the appropriate SVC's have been completed.
2. The CxP will review the SVC for each piece of equipment prior to start-up.
3. The equipment manufacturers' checklists must also be reviewed by the CxP prior to start-up. These lists must be completed by the installing contractor and reviewed by the CxP before start-up commences.

G. Submittal Reviews

1. The CxP will review contractor submittals that apply to systems being commissioned for compliance with the owner's project requirements and basis of design, concurrent with the architect or engineer of record.

H. Systems Manual

1. The CxP or other project team members must develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems of the project.

I. Current Facilities Requirements (CFR) and Operations and Maintenance/Training Plan

1. Prepare and maintain a current facilities requirements and operations and maintenance plan that contains the information necessary to operate the building efficiently.

J. Start-Up

1. Start-up of major commissioned systems will be witnessed the CxP. The appropriate contractors and/or manufacturer's representative will be required on site to perform start-up. No system will be started until the appropriate SVC's have been completed.

K. Controls Monitoring

1. Close monitoring of the Control Supplier's (CS) progress will promote efficient coordination of the TAB work. The CS will be expected to submit point-to-point checklists verifying that his work has been completed and all systems are ready for TAB work and Functional Performance Tests.

L. Functional Performance Tests (FPT)

1. The CxP will write FPT's based on the OPR. These tests will be created for systems and subsystems. See section 3.2 'SYSTEMS INCLUDED IN THE COMMISSIONING PROCESS' for list of systems to be commissioned above. Each major system will be tested by the contractor. This will be coordinated and witnessed by the CxP and the owner's maintenance staff. Witnessing the FPT's will serve as a compliment to the O&M Training. No FPT's will be performed until the system and related subsystems SVC's are completed by installing contractors, startup reports have been submitted, the TAB report has been submitted and reviewed, and the completion of the control system has been documented through point-to-point checklists and other documentation.
2. Functional Performance Tests shall include:
   a. Building Envelope/Air Barrier Systems (Roof, Walls & Floors) will be tested by the CxP and Contractor in accordance with the construction documents, ASTM E779 and E1827 standards for building air leakage, ASTM C1060 and E1186 standards for detection of thermal anomalies through infrared imaging in order to achieve conformance with the OPR and BOD.
      i. Building Air Leakage Tests will document building enclosure quantitative performance characteristics for comparison with new building air leakage criteria of 0.40 CFM/SQ.FT. @ 75 Pa per Kentucky Building Code reference to IeCC 2012.
      ii. Infrared thermal imaging will be conducted in conjunction with building air leakage tests and according to ASTM Standard E1186 to qualitatively characterize building air leakage locations.
   b. Building Automation System will be tested as necessary to achieve OPR conformance.
   c. HVAC systems will be tested to assure that the building as an integrated system operates properly.
   d. Domestic Hot Water and Plumbing systems, pumps and controls will be tested under relevant operating conditions.
   e. Lighting and lighting controls will be tested to assure that the building as an integrated system operates properly. Luminaire/lamp combinations by inspection, operational tests for lighting control/dimming systems, and interior lighting control performance, including operation of occupancy sensors, automatic time controls, energy management control override timers, manual dimming control, multi-level switching, and other specified lighting controls.
   f. The electrical system trade representative will demonstrate to the CxP design intent conformance of service and distribution system operation, and with the CxP present the electrical Off-season mode testing will be implemented as necessary to assure conformance with the OPR. Installing contractors will be expected to participate as required by the project specifications.

3. Off-season mode testing will be implemented as necessary to assure conformance with the OPR. Installing contractors will be expected to participate as required by the project specifications.

4. Deferred Testing
   a. If tests cannot be completed because of a deficiency outside the scope of the responsible contractor, the deficiencies shall be documented and reported to the Owner. Deficiencies shall be resolved and corrected by the appropriate parties and test rescheduled.
   b. Off-season or Unoccupied mode testing will be implemented as necessary to assure conformance with the BoD. Installing contractors will be expected to participate as required by the project specifications.

5. Rescheduled Functional Performance Test
   a. During Functional Performance Testing period, it is assumed that the contractors will be complete with all checklists when the commissioning agents travel to site. If the work is not ready for commissioning when the commissioning personnel are on site, their time will be billed to the contractor as an additional fee.
   b. If the contractor has deficiencies that cannot be corrected at the time of the test, that part of the sequence will be retested at a later date. If the deficiency does not pass during the retest, the contractor will be billed for the commissioning personnel's return trip.

M. Building Turn-Over / Owner Orientation / User Training

1. The CxP will monitor contractors in preparing and coordinating O&M manuals, working closely with each contractor to achieve specificity and completeness.
2. The CxP will review as-built drawings, working closely with each contractor to achieve specificity and completeness.
3. The CxP reviews the Operation & Maintenance (O&M) documentation, project reports, and closeout documents for completeness.
4. The CxP reviews, pre-approves, and coordinates the training provided by the mechanical contractor, electrical contractor, plumbing contractor, and controls contractor and verifies that it was completed.
5. Owner training will be coordinated with the assistance of the CxP. The training will be provided by the installing contractor, or manufacturer's representative, and witnessed by the CxP. This training should include both classroom training and hands-on operational training. The owner may choose to videotape this training for future use. The CxP will visit the site during the Turn-Over and Training period to assure that any on-going problems related to commissioned systems are being addressed and corrected in a timely and efficient manner.
6. The CxP will assist the owner/user with warranty issues.
7. The CxP will assist in the coordination of off-season testing, calibrating, and servicing as specified in the contract documents.

N. Warranty Review

1. The CxP and Commissioning Team will participate in a near end of warranty review meeting to observe the operation of the commissioned systems. The following items will be reviewed and discussed: warranty issues, energy usage, maintenance practices, usage changes, training requirements have been met and chronic problems, as well as other issues affecting the owner and the operation of the commissioned systems. This will include that a plan to resolve outstanding commissioning-related issues has been pursued.

3.5 ROLES AND RESPONSIBILITES OF INSTALLING CONTRACTORS

A. Installing Contractor Roles

1. General Contractor (GC)
2. Mechanical Contractor (MC)
3. Sheet Metal Contractor (SMC)
4. Plumbing Contractor (PC)
5. Testing, Adjusting and Balance Contractor (TABC)
6. Temperature Controls Contractor (TCC)
7. Electrical Contractor (EC)
8. Lighting Controls Equipment Contractor (LCEC)
9. Building Envelope Contractors (BEC)

B. General Contractor Responsibilities (GC)

1. Assure acceptable representation, with the means and authority to prepare and coordinate execution of the commissioning program as described in the contract documents.
2. Assure that the CxP shall receive a copy of all construction documents, addenda, change orders and appropriate approved submittals and shop drawings for review and use in development of the commissioning plan.
3. Coordinate inclusion of commissioning activities in the construction schedule.
4. Facilitate resolution of deficiencies identified by observation or performance testing.

C. Mechanical Contractor (MC) Responsibilities

1. Include requirements for submittal data (including partial load data), O&M data, and training in each purchase order or sub-contract.
2. Assure cooperation and participation of specialty sub-contractors such as sheet metal, piping, refrigeration, temperature controls, and TAB in commissioning activities.
3. Assure participation of major equipment manufacturers in appropriate startup, training, and testing activities.
4. Attend commissioning meetings scheduled by the CxP.
5. Assist the CxP in system verification and performance testing.
6. Prepare preliminary schedule for commissioned system inspections, O&M manual submission, training sessions, pipe and duct system testing, flushing and cleaning, equipment start-up, system verification, performance testing, and system completion for use by the CxP. Update schedule as appropriate throughout the construction period.
7. Complete System Verification Checklists and manufacturer's pre-start checklists prior to scheduling startup of commissioned equipment.
8. Monitor and respond to Resolution Tracking Forms distributed by the CxP in order to expedite corrective actions necessary to achieve design intent.
9. Notify the CxP a minimum of two weeks in advance of scheduled system start-up.
10. Update drawings to as-built condition and review with the CxP throughout the construction process.
11. Schedule vendor and subcontractor provided training sessions as required by project specifications.
12. Provide written notification that the following work has been completed in accordance with the project specifications, and that the equipment, systems and sub-systems are operating in accordance with design intent.
    a. HVAC equipment including fans, air handling units, dehumidification units, ductwork, dampers, terminal devices, etc.
    b. Fire detection and smoke detection devices furnished under other divisions as they affect the operation of the HVAC systems.
    c. BAS is functioning in accordance with design intent.
13. Participate in the Functional Performance Tests as required to achieve design intent.
14. Participate in the off-season mode testing as required to achieve design intent.
15. Participate in O&M Training as required by project specifications.
16. Provide a complete set of as-built drawings and O&M manuals for review.

D. Sheet Metal Contractor Responsibilities (SMC)

1. Include requirements for submittal data (including partial load data), O&M data, and training in each purchase order or sub-contract.
2. Assure cooperation and participation of specialty sub-contractors such as piping, refrigeration, water treatment, temperature controls, and TAB in commissioning activities.
3. Assure participation of major equipment manufacturers in appropriate startup, training, and testing activities.
4. Attend commissioning meetings scheduled by the CxP.
5. Assist the CxP in system verification and performance testing.
6. Prepare preliminary schedule for commissioned system inspections, O&M manual submission, training sessions, pipe and duct system testing, flushing and cleaning, equipment start-up, system verification, performance testing, and system completion for use by the CxP. Update schedule as appropriate throughout the construction period.
7. Complete System Verification Checklists and manufacturer's pre-start checklists prior to scheduling startup of commissioned equipment.
8. Monitor and respond to Resolution Tracking Forms distributed by the CxP in order to expedite corrective actions necessary to achieve design intent.
9. Notify the CxP a minimum of two weeks in advance of scheduled system start-up.
10. Update drawings to as-built condition and review with the CxP throughout the construction process.

11. Schedule vendor and subcontractor provided training sessions as required by project specifications.
12. Provide written notification that the following work has been completed in accordance with the project specifications, and that the equipment, systems and sub-systems are operating in accordance with design intent.
    a. HVAC equipment including fans, air handling units, dehumidification units, ductwork, dampers, terminal devices, etc.
    b. Fire detection and smoke detection devices furnished under other divisions as they affect the operation of the HVAC systems.
13. Participate in the Functional Performance Tests as required to achieve design intent.
14. Participate in the off-season mode testing as required to achieve design intent.
15. Participate in O&M Training as required by project specifications.
16. Provide a complete set of as-built drawings and O&M manuals for review.

E. Plumbing Contractor (PC) Responsibilities

1. Include cost for commissioning requirements in the contract price.
2. Review design for provision of power to equipment.
    a. Verify proper hardware specifications exist for performance as defined by the OPR.
    b. Verify proper safeties and interlocks are included in the design of electrical connections for plumbing equipment.
3. Attend commissioning meetings scheduled by the CxP.
4. Verify proper installation and performance of all plumbing installation services provided.
5. Complete System Verification Checklists and manufacturer's pre-start checklists prior to scheduling startup of commissioned plumbing equipment.
6. Monitor and respond to Resolution Tracking Forms distributed by the CxP in order to expedite corrective actions necessary to achieve design intent.
7. Provide a plumbing system technician to assist during verification and performance testing.
8. Participate in the Functional Performance Tests as required to achieve design intent.
9. Participate in the off-season mode testing as required to achieve design intent.
10. Participate in O&M Training as required by project specifications.

F. Test and Balance Contractor Responsibilities (TABC)

1. Attend commissioning meetings scheduled by the CxP.
2. Submit the TAB procedures and preliminary TAB report to the CxP for review at least two weeks prior to beginning TAB work.
3. Notify the CxP a minimum of two weeks in advance of scheduled TAB work.
4. Provide partial, preliminary TAB Reports by phase, by building section, by system, or as required by the CxP.
5. Assist the CxP in system verification and performance testing.
6. Monitor and respond to Resolution Tracking Forms distributed by the CxP in order to expedite corrective actions necessary to achieve design intent.
7. Participate in verification of the TAB report, which will consist of repeating any selected measurement contained in the TAB report where required by the CxP for verification or diagnostic purposes.
8. Participate in the Functional Performance Tests as required to achieve design intent.
9. Provide sound and vibration measurements where required to assist in diagnosis of areas exhibiting unacceptable levels of noise or vibration.
10. Participate in the off-season mode testing as required to achieve design intent.
11. Participate in O&M Training as required by project specifications.

G. Temperature Control Contractor Responsibilities (TCC)

1. Review control sequence and component selection for conformance with design intent.
    a. Verify that specified safeties and interlocks have been selected.
    b. Verify proper selection of control valves and actuators based on design parameters.
    c. Verify proper selection of control dampers and actuators based on design parameters.

   d. Verify that sensor selection conforms to design intent.
2. Attend commissioning meetings scheduled by the CxP.
3. Provide the following submittals to the CxP:
   a. Hardware and software submittals.
   b. Control panel construction shop drawings.
   c. Narrative description of control sequences for each commissioned system and subsystem.
   d. Schematics showing all control points, sensor locations, point names, actuators, controllers and where necessary, points of access.
   e. A list of all control points, including analog inputs, analog outputs, digital inputs and digital outputs. Include the values of all parameters for each system point. Provide a separate list for each stand-alone control unit.
   f. A complete listing of all software routines employed in operating the control system. Also provide a program narrative that describes the logic flow of the software and the functions of each routine and sub-routine. The narrative should also explain individual math or logic operations that are not clear from reading the software listing.
   g. Hardware operation and maintenance manuals.
   h. Application software and project applications code manuals.
   i. Panel and equipment insert documents.
4. Verify that specified interfaces provided by others are compatible with BAS hardware and software.
5. Coordinate installation and programming of BAS with construction and commissioning schedules.
6. Complete System Verification Checklists and manufacturer's pre-start checklists prior to scheduling startup of commissioned equipment.
7. Provide control system technician to assist during equipment startup.
8. Monitor and respond to Resolution Tracking Forms distributed by the CxP in order to expedite corrective actions necessary to achieve design intent.
9. Participate in the Functional Performance Tests as required by the project specifications.
10. Provide a control system technician to assist during verification and performance testing.
11. Provide system modifications to achieve system operation as defined by the design intent.
12. Provide support and coordination for TAB contractor. Provide all devices, such as portable operator terminals and all software for the TAB to use in completing TAB procedures.
13. Provide written notification that the TCC scope of work has been completed in accordance with the project specifications, and that the equipment, systems and sub-systems are operating in accordance with design intent, and that BAS is functioning in accordance with design intent.
14. Participate in the Functional Performance Tests as required to achieve design intent.
15. Participate in the off-season mode testing as required to achieve design intent.
16. Participate in O&M Training as required by project specifications. Include training on hardware operations and programming.

H. Electrical Contractor Responsibilities (EC, LCEC)

1. Review design for provision of power to the commissioned equipment.
   a. Verify proper hardware specifications exist for performance as defined by the OPR.
   b. Verify proper safeties and interlocks are included in the design of electrical connections for HVAC equipment.
   c. Lighting Controls
2. Attend commissioning meetings scheduled by the CxP.
3. Verify proper installation and performance of all electrical services provided.
4. Complete System Verification Checklists and manufacturer's pre-start checklists prior to scheduling startup of commissioned equipment.
5. Monitor and respond to Resolution Tracking Forms distributed by the CxP in order to expedite corrective actions necessary to achieve design intent.
6. Provide an electrical system technician to assist during verification and performance testing.
7. Participate in the Functional Performance Tests as required to achieve design intent.
8. Participate in the off-season mode testing as required to achieve design intent.
9. Participate in O&M Training as required by project specifications.
10. Provide a complete set of as-built drawings and O&M manuals for review.

I. Building Envelope Contractors Responsibilities (BEC)

1. Include commissioning requirements in the building envelope contracts, as well as other subcontracts, to assure full cooperation of all parties in the commissioning process.
2. Assure acceptable representation, with the means and authority to prepare and coordinate execution of the mechanical commissioning program as described in the contract documents.
3. Assure that the CxP shall receive a copy of all construction documents, addenda, change orders and appropriate approved submittals and shop drawings for review and use in development of the commissioning plan.
4. Coordinate inclusion of commissioning activities in the construction schedule.
5. Manage participation of appropriate contractors and vendors according to the contract documents and construction schedule.
6. Furnish instrumentation required for demonstration of Owner's Project Requirements compliance of installed systems equipment and assemblies for systems to be commissioned, excluding building pressurization door blowers and thermography equipment noted in this specification.
7. Issue a statement when work has been completed, and that the final test reports have been submitted for review.
8. Facilitate resolution of deficiencies identified by observation or performance testing.
9. Provide the CxP with detailed manufacturer installation instructions, testing laboratory certifications/reports, and full warranty information, including clearly identified owner responsibilities required to keep the warranty in force for its duration.
10. Provide the CxP with logs of installation materials actually shipped with the exterior wall components and the actual field checkout sheet forms used by the manufacturer or field technicians.
11. Contractors shall assist the owner and design consultants in clarifying installation and operation of commissioned assemblies in areas where construction documents and/or installation, operation and maintenance (IO&M) documents are insufficient to write detailed testing procedures.
12. Provide limited assistance to the CxP in preparing specific performance test procedures.
13. Review test procedures for feasibility, safety, material protection, and economic efficiency.
14. Assemble and implement manufacturer installation and checkout plan procedures for commissioned assemblies. Submit these plans to the owner, designers, and the CxP prior to proceeding with installation of building envelope components.
15. Perform and clearly document completed checkout procedures, providing signed and dated copies to the CxP.
16. Exterior Wall Contractors will provide installation supervisors to witness execution of specified tests conducted on the mock-up assemblies to resolve installation issues and establish future installation practices necessary to correct deficiencies observed prior to commencing with installation of the exterior wall systems. Exterior Wall Contractors supervisors will be available and present during agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments, and problem solving.
17. Provide access to scaffolds, man-lifts, or other mechanical conveyances used by the exterior wall contractors to perform their work during specified performance testing. If subcontractor's schedule does not allow use of mechanical conveyances for commissioning activities, General Contractor is to provide necessary equipment for execution of specified commissioning tests.
18. Correct deficiencies discovered by the commissioning process.
19. Prepare Operations & Maintenance (O&M) documents as required by specification and contract documents, including accurate existing conditions.
20. Provide specified training of owner personnel and participate in the off-season mode testing as required to achieve Owner's Project Requirements.
21. Coordinate with product manufacturers to provide the owner with specific requirements for maintaining valid warranty conditions.
22. Prepare a preliminary schedule for exterior wall assemblies testing for use by the CxP, and update the schedule appropriately.
23. Notify General Contractor, Architect, and the CxP when exterior wall assemblies tests are ready to occur with responsible advance notification to allow interested parties to participate.

24. Following with the commissioning authority's guidance, contractor items to be performed prior to and after the building envelope/air barrier testing includes the following as applicable:
    a. Disable any HVAC ERUs, exhaust fans and outside air intake dampers and louvers to prevent air leakage or confirm the emergency shut off switch will disable each outside air systems and then re-enable the HVAC systems after the tests if needed.
    b. Remove one ceiling panel in each office and in large rooms, one ceiling panel per 500 SF of ceiling area and reinstall ceiling panels.
    c. Install and adjust door hardware and weather stripping on the exterior doors so they will latch closed and seal to prevent air leakage.
    d. Install blank covers or seal open electrical and data/communication junction boxes in the air barrier system.
    e. Disable specific door closure arms at the designated exterior doors that the blower door fan system will be installed and reinstall door closure arms after testing.
    f. Confirm each penetration in the building envelope/air barrier has been sealed.
    g. Open and/or install door stops at the conditioned rooms and close the doors to non-conditioned rooms and remove stops after testing.
    h. Confirm each floor drain, mop sink, sink, lavatory, urinal, shower, and/or water closet plumbing trap has water installed to prevent air leakage during testing.
    i. Confirm windows and exterior doors remain closed during the testing and no workmen are mobilizing in and out of the exterior doors during testing.
    j. Confirm that contractor would have access to a 20 AMP non GFIC receptacle within 100 LF of each blower door fan (BDF) location and would have minimal lighting in the area where contractor has the BDF control table located.

END OF SECTION

SECTION 019119 – BUILDING ENVELOPE TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and other Division 01 Specification Sections, apply to work of this Section.

B. 019113 – Commissioning Requirements

1.2 SUMMARY

A. Building Envelope Testing of the building enclosure systems will be performed for LEED requirements to provide evidence of performance testing and UK requirements. The General Contractor, Mechanical Contractor, Plumbing Contractor, Sheet Metal Contractor, Temperature Controls Contractor, Testing and Balancing Contractor, Electrical Contractor, and Building Envelope Contractors (BEC) shall assist the Commissioning Provider (CxP) as required in Section 019113 and herein.

B. This Section includes contractor commissioning process requirements and information for building envelope testing of the enclosure systems, assemblies, and equipment.

1.3 BUILDING ENVELOPE

A. Building Envelope systems: foundation walls, slab on grade exterior walls, exterior windows, exterior doors, louvers, vents and grilles, sealants and expansion joints, control joints, flashings, Roof System including parapet, roof openings including skylights, pipe chases, ducts, wire ways, etc. other special building exterior enclosure systems and equipment that may penetrate the air barrier systems.

1.4 QUALITY ASSURANCE

A. Building Envelope Kick-Off Meeting Conference: Conduct conference at Project site to comply with requirements of General and Supplementary Conditions pertaining to “Project Meetings.”

1. The CxP shall require reasonable representatives of every party who are concerned with the building envelope work to attend the Conference.
2. Minutes of the meeting shall be recorded, typed and printed by the CxP and distributed by him to all parties concerned within five days of the meeting. One copy of the minutes shall also be transmitted to the following for information purposes: Owner’s Representative and Architect.

1.5 CLIMATE CONDITIONS SUITABLE FOR PRESSURE TEST AND INFRARED THERMOGRAPHY

A. As the test date approaches, monitor the weather forecast for the test site. Avoid testing on days forecast to experience high winds, rain, or snow. Monitor weather forecasts prior to shipping pressure test equipment to the site. Preferred ambient weather test conditions as stated in ASTM E779 are 0 to 4 mph winds and an ambient temperature range of 41ºF to 95ºF. Based on current and forecast weather conditions, the Commissioning Team will coordinate scheduling for the test to occur.

B. Rain

1. Rain can temporarily seal roof and wall assemblies so that they leak less than under no-rain conditions. Do not test during rain or if rain is anticipated during testing. If pneumatic hoses are installed and exposed to rain observe the hose to insure rainwater has not migrated into the hose ends. Orient all exposed hose ends to keep them out of water puddles. Success in temporarily sealing outdoor ventilation components such as louvers and exhaust fans may also be compromised by rain. Don't seal roof-mounted ventilation components during times of potential lightning.

C. Snow

1. Snow piled against a wall or on top of a roof can make a building envelope appear to be more airtight than it actually is. Snow may also impact thermography readings. Remove snow from around and on top of the building prior to testing.

D. Wind

1. Because wind can skew pressure test results, test only on days and times when winds are anticipated to be the calmest. Avoid pressure testing during gusty or high wind conditions.

PART 2 - PRODUCTS

2.1 PRESSURE TEST AND INFRARED THERMOGRAPHY EQUIPMENT

A. The testing agency is to supply sufficient quantity of blower door equipment to produce a 75 Pa differential pressure between the envelope and outdoors at the calculated new building code air leakage rate criteria using the test methods described herein. Supplying additional blower door test equipment to provide additional airflow capacity or to act as a backup is recommended.

B. Blower Door Fans
1. Each airflow measuring system including blower door fans are to be calibrated within the last 3 years in accordance with ASTM E1827. Calibrated blower door fans must measure accurately to within plus or minus 5 percent of the flow reading. Blower door equipment and trailer mounted fans are to be specifically designed to pressurize building envelopes. Each set of blower door equipment assembly is to include fan(s), controllers, variable frequency drives, digital gage(s), door frame, door fabric and/or hard panels.

C. Digital Gages as Test Instruments

1. Use only digital gages as measuring instruments in the pressure test; analog gages are not acceptable. The gauges must be accurate to within 1.0 percent of the pressure reading or 0.15 Pa, whichever is greater. Each gage is to have been calibrated within two years of the test. The calibration is to be checked against a National Institute of Standards and Technology (NIST, formerly National Bureau of Standards) traceable standard.

2.2 THERMAL IMAGING INFRARED CAMERA REQUIREMENTS

A. The thermal imaging infrared camera used in the thermography test must have a thermal sensitivity (Noise Equivalent Temperature Difference.) of +/- 0.2°F at 18°F at 86°F or less. The camera's operating spectral range must fall between 2 and 15 micrometers. The camera's IR image viewing screen resolution must measure at least 240x180 pixels. The camera must have a means of recording thermal images seen on the camera viewing screen. The camera is to display output as individual still frame images that also can be downloaded and inserted into an electronic Thermographic Investigation Report. Submit camera make and model, and catalog information that defines the camera thermal sensitivity for approval.

2.3 PRESSURE AND THERMOGRAPHY TESTING BY THE TESTING AGENCY

A. Execute building air leakage diagnostic testing by fan pressurization for quantitative analysis and correlated thermography for qualitative analysis per ASTM E779 and ASTM E 1186/ISO 6781, respectively.

B. Performance of the diagnostic test consists of measuring the flow rates by taking a minimum of ten (10) positive and ten (10) negative pressure test points of each building envelope. The induced envelope pressure test points shall be no lower than 20 Pa for the positive and negative tests and the highest point for the positive and negative tests must be at least 75 Pa. The maximum absolute

baseline pressure point value must not exceed 30% of the minimum induced envelope pressure test point used in the analysis.

C. Take infrared thermal images and photograph each of the exterior and interior wall surfaces taken during execution of the air leakage tests to determine if there are thermal irregularities or if each building has been constructed with an airtight air barrier system. These images are to exhibit if the air barrier is performing properly.

PART 3 - EXECUTION

3.1 CONTRACTOR SCHEDULING

A. Commissioning Schedule: Integrate commissioning into Contractor's construction schedule.

1. Include detailed commissioning activities in monthly updated Contractor's construction schedule and short interval schedule submittals.
   a. Submittals.

3.2 FIELD WORK

A. The lead pressure test technician and certified thermographer are to be present at the project site while testing is performed and are to be responsible for conducting and supervising their respective test work under management of the Commissioning Provider.

3.3 REPORTING WORK

A. The lead pressure test technician is to prepare, sign, and date the test agenda, equipment list, and submit an Air Leakage Test Report.
B. The thermographer is to prepare, sign, and date the test agenda, equipment list, and submit a Thermographic Infrared Imaging Report.

3.4 ENVELOPE SURFACE AREA CALCULATION

A. The architectural air barrier boundary includes the floor (slab on grade), exterior walls, and roof/ceiling. After construction of the air barrier envelope is complete, the contractor is to measure the envelope to ensure the physical measurements match the design drawings that the air barrier envelope surface area calculations are based on. If the measurements are not consistent with the defined air barrier boundary as indicated, re-calculate the envelope surface area and submit the envelope surface area calculation and results for review by the Designer of Record. If the air barrier was defined during design but the air barrier envelope surface area was not calculated, calculate it during construction and submit the envelope surface area calculations and result for review by the Designer of Record.

3.5 PREPARING THE BUILDING ENVELOPE FOR THE PRESSURE TEST

A. Testing During Construction

1. The pressure test cannot be conducted until components of the air barrier system have been installed. After sealing as described in related sections has been completed, the installer and CxP will observe the envelope to ensure it has been adequately prepared. During the pressure test, stop all ongoing construction within and neighboring the envelope, which may impact the test or the air barrier integrity. The pressure test may be conducted before finishes that are not part of the air barrier envelope have been installed. For example, if suspended ceiling tile, interior gypsum board or cladding systems are not part of the air barrier the test can be conducted before they are installed. Testing prior to installing the finished ceilings within the envelope and immediately surrounding it is recommended. The absence of finished ceilings allows for observation and diagnostic testing of the roof/wall interface and for implementation of repairs to the air barrier, if necessary.

B. Sealing the Air Barrier Envelope

1. Installers shall seal penetrations through the air barrier. Unavoidable penetrations due to electrical boxes or conduit, plumbing, and other assemblies that are not airtight are to be made so by sealing the assembly and the interface between the assembly and the air barrier or by extending the air barrier over the assembly. Support the air barrier so as to withstand the maximum positive and negative air pressure to be placed on the building without displacement or damage. The Contractor shall durably construct the air barrier to last the anticipated service life of the assembly and to withstand the maximum positive and negative pressures placed on it during pressure testing.

C. Minimize Potential for Blowing Dust and Debris

1. Because high velocity air may be blown into and out of the envelope during the test, debris, including dust and litter, may become airborne, debris may become trapped or entangled in test equipment, thereby skewing test results and possibly damaging the test equipment. Areas within and surrounding the envelope are to be free of dust, litter and construction materials that are easily airborne. If pressurizing existing, occupied areas, provide adequate notice to building occupants of blowing dust and debris, and general disruption of normal activities during the test.

D. Installing Blower Door Equipment in a Door Opening

1. Where blower door fans are used, before installing blower door equipment, select a door opening that does not restrict air flow into and out of the envelope and has at least 5 feet clear distance in front of and behind the door opening. Disconnect the door actuator and secure the door open to prevent it from being drawn into the fan by suction pressure.

E. Other Requirements for Preparing for Pressure Test

1. Reference section 019113-3.5 for other items the contractor will perform prior to and after the pressure testing.

3.6 BUILDING ENVELOPE AIR TIGHTNESS REQUIREMENTS

A. The purpose of the building air leakage test is to determine final compliance with the airtightness requirement by demonstrating the performance of the continuous air barrier. An effective air barrier envelope minimizes infiltration and exfiltration through unintended air paths (leaks).

B. This test envelope includes the architectural air barrier boundary as defined on the construction drawings plus HVAC supply, return and exhaust systems that penetrate and terminate within said architectural air barrier boundary and that extends outward from said boundary. All associated ductwork, intake and exhaust dampers, and air moving devices, including air handling units and fans, are included in this test envelope even if they are physically located outside of the architectural air barrier boundary. The boundary extends to and includes the low leakage outside air and exhaust dampers.

3.7 LOCATING LEAKS BY DIAGNOSTIC TESTING

A. Use diagnostic test methods described herein to discover obvious leaks through the envelope. Perform diagnostic tests on the building envelope regardless of the envelope meeting or failing to meet the designated leakage rate goal. Use diagnostic test methods in accordance with ASTM E1186 and in conjunction with pressurization equipment as necessary. Use the infrared thermal imaging diagnostic test to establish a baseline for envelope leakage. Pay special attention to locate leaks at interfaces where there is a change in materials or a change in direction of like materials. These interfaces, at a minimum, include roof/wall, wall/wall, floor/wall, wall/window, wall/door, wall/louver, roof mounted equipment/roof curb interfaces and all utility penetrations (ducts, pipes, conduits, etc) through the envelope’s architecture. Also use diagnostic tests to check for leakage between the air

duct and duct damper, when the damper, under normal control power, is placed in the closed position. Should leaks be discovered during diagnostic tests, thoroughly document their exact locations on a floor plan so that sealing can be later applied. If the envelope passes the leakage tests, use the diagnostic test procedure described above to identify obvious leakage locations. Seal the leaks at the direction of the Designer of Record based on the magnitude, location, potential for liquid moisture penetration or retention, potential for condensation, presence for condensation, presence of daylight through an architectural surface or if the leakage location could potentially cause rapid deterioration or mold growth of, or in the building envelope materials and assemblies.

B. Installer shall apply sealing measures after diagnostic testing is complete and all pressurization blowers are off.

C. To verify that the applied sealing measures are effective, re-test for leaks using the same diagnostic methods that discovered that leak. Reseal and retest until the envelope meets the leakage rate goal and all obvious leaks through the envelope are sealed.

D. Achieving successful test results in comparison to air leakage rate criteria does not relieve the Contractor of correcting major leaks diagnostically identified; however, retesting may not be required for mitigation of leaks associated with successful building air leakage tests.

E. Infrared Thermography Test

1. Coordinate thermography examination with the pressure test agency and the test agency's pressurization equipment as directed by the CxP. The pressure test agency is to allow adequate time for the thermographer to perform a complete examination, as described hereinafter, of the envelope interior under negative relative pressure conditions and exterior under positive relative pressure conditions.

F. Thermography Testing of the Air Barrier

1. Test the building envelope in accordance with ISO 6781 and ASTM E1186.
2. Perform a complete thermographic observation consisting of the full observation of the interior and exterior of the complete air barrier envelope. Document envelope areas that are inaccessible for testing. Use infrared thermography technology in concert with standard pressurization methods to locate leaks through the air barrier. Because thermography works best with at least an 18°F temperature difference between the envelope interior and the exterior, adjust the HVAC system if possible, to create or enhance this temperature differential. The minimum allowable temperature difference is 10°F. Maintain this temperature difference for at least 5 hours prior to the test. Use pressurization methods to establish a minimum of +40 Pa pressure difference with respect to the outdoors while using an infrared camera to view the envelope from outdoors. When viewing the camera from inside the envelope, keep the envelope at a pressure differential of -40 Pa with respect to the outdoors using pressure test equipment.

3.8 AIR BARRIER PERFORMANCE CRITERIA

A. Building Envelope/Air Barrier Systems (Roof, Walls & Floors) will be tested by the CxP in accordance with construction documents to achieve conformance with the OPR and ASTM E779 and E1827 Standards for Blower Door Testing, and E1186 Standards for Thermography Testing.

B. Building Air Leakage Tests will be conducted in accordance with ASTM E779 to document conformance with maximum allowable building air leakage of 0.40 CFM/SQ.FT. @ 75 Pa for the continuous air barrier installation per Kentucky Building Code 2012 IeCC reference.

C. Infrared Imaging Testing will be conducted in conjunction with building air leakage tests and according to ASTM Standard E1186 to qualitatively characterize the door blower test results by ASTM E779 methods.

D. The General Contractor, Controls Contractor and appropriate Building Envelope Contractors will participate in the air barrier/building envelope performance tests.

3.9 AFTER COMPLETION OF THE DIAGNOSTIC TESTS

A. After all pressure and/or diagnostic testing has been completed the Contractor will unseal all temporarily sealed items. Under direction of the Contractor, return all dampers, doors, and windows to their pre-test conditions. The Contractor shall remove taps and plastic from all temporarily sealed openings, being careful not to deface painted surfaces. If paint is removed from finished surface, the Contractor will repaint to match existing surfaces. Return all fans and air handling units to pre-test conditions. Reference section 019113-3.5 for other items the contractor(s) will perform after the pressure testing.

3.10 REPAIR AND PROTECTION

A. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for testing, observation, and similar services. Upon completion of observation, testing, or sample taking and similar services, repair damaged construction and restore substrates and finishes, protect construction exposed by or for quality control services activities, and protect repaired construction.

B. REPEAT TESTING

1. In the event the air barrier test fails then the building envelope failure locations will be found, repaired, removed or replaced and the air test performed again, at the Contractor’s expense, until it passes and achieves compliance with the specified air leakage for the entire building.

C. The General Contractor, Controls Contractor and appropriate Building Envelope Contractors will participate in the air barrier/building envelope performance tests.

END OF SECTION

SECTION **084113** - **ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Storefront framing.
   2. Manual-swing entrance doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Sustainable Design Submittals:
   1. Product Data: For sealants, indicating VOC content.
   2. Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.
   3. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.

C. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
   1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
   2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:
      a. Joinery, including concealed welds.
      b. Anchorage.
      c. Expansion provisions.
      d. Glazing.
      e. Flashing and drainage.
   3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
   4. Include point-to-point wiring diagrams showing the following:
      a. Power requirements for each electrically operated door hardware.
      b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

D. Samples for Initial Selection: For units with factory-applied color finishes.

E. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

F. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch lengths of full-size components and showing details of the following:
   1. Joinery, including concealed welds.
   2. Anchorage.
   3. Expansion provisions.
   4. Glazing.
   5. Flashing and drainage.

G. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

H. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
   1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

B. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency or a qualified testing agency.

C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

B. Maintenance Data for Structural Sealant: For structural-sealant-glazed storefront to include in maintenance manuals. Include ASTM C 1401 recommendations for post-installation-phase quality-control program.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
   1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures, including, but not limited to, excessive deflection.
      b. Noise or vibration created by wind and thermal and structural movements.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      d. Water penetration through fixed glazing and framing areas.
      e. Failure of operating components.
   2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
   1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
   2. Failure also includes the following:
      a. Thermal stresses transferring to building structure.
      b. Glass breakage.
      c. Noise or vibration created by wind and thermal and structural movements.
      d. Loosening or weakening of fasteners, attachments, and other components.
      e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members: At design wind pressure, as follows:
   1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
   2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.
      a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.
   3. Cantilever Deflection: Where framing members overhang an anchor point, as follows:
      a. Perpendicular to Plane of Wall: No greater than 1/240 of clear span plus 1/4 inch for spans greater than 11 feet 8-1/4 inches or 1/175 times span, for spans of less than 11 feet 8-1/4 inches.

E. Structural: Test according to ASTM E 330/E 330M as follows:
   1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
   1. Fixed Framing and Glass Area:
      a. Maximum air leakage of 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft..
   2. Entrance Doors:
      a. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

G. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:
   1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..

H. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:
   1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..
   2. Maximum Water Leakage: According to AAMA 501.1. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

I. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
   1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement and 1.5 times the design displacement.

J. Energy Performance: Certify and label energy performance according to NFRC as follows:

1. Thermal Transmittance (U-factor): Fixed glazing and framing areas as a system shall have U-factor of not more than 0.45 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
2. Solar Heat Gain Coefficient (SHGC): Fixed glazing and framing areas as a system shall have SHGC of no greater than 0.40 as determined according to NFRC 200.
3. Condensation Resistance: Fixed glazing and framing areas as a system shall have an NFRC-certified condensation resistance rating of no less than 55 as determined according to NFRC 500.

K. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows.
1. Outdoor-Indoor Transmission Class: Minimum 30.

L. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
   a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
   b. Low Exterior Ambient-Air Temperature: 0 deg F.
   c. Interior Ambient-Air Temperature: 75 deg F.

M. Structural-Sealant Joints:
1. Designed to carry gravity loads of glazing.

N. Structural Sealant: ASTM C 1184. Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed, aluminum-framed entrances and storefronts without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure.
1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate, because sealant-to-substrate bond strength exceeds sealant's internal strength.

2.3 STOREFRONT SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Cross Aluminum; T14000, or a comparable product by one of the following:
1. EFCO Corporation.
2. Oldcastle BuildingEnvelope™.
3. Trulite Glass & Aluminum Solutions, LLC.
4. U.S. Aluminum; a brand of C.R. Laurence.
5. YKK AP America Inc.
6. Kawneer North America

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Exterior Framing Construction: Thermally broken.
2. Interior Vestibule Framing Construction: Nonthermal.
3. Glazing System: Retained mechanically with gaskets on four sides.
4. Glazing Plane: Front.
5. Finish: Clear anodic finish .

6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide WST-500-DG from Cross Aluminum or comparable product by one of the following:
1. EFCO Corporation.
2. Kawneer North America, an Arconic company.
3. Oldcastle BuildingEnvelope™.
4. Trulite Glass & Aluminum Solutions, LLC.
5. U.S. Aluminum; a brand of C.R. Laurence.
6. YKK AP America Inc.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch- thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design: As indicated.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
    a. Provide nonremovable glazing stops on outside of door.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

B. Weather Stripping: Manufacturer's standard replaceable components.
1. Compression Type: Made of ASTM D 2000 molded neoprene or ASTM D 2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

C. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

D. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

E. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

2.6 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.
1. Sealant shall have a VOC content of 250 g/L or less.
2. Sealant shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

D. Structural Glazing Sealants: ASTM C 1184 chemically curing silicone formulation that is compatible with system components with which it comes in contact; specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in storefront system indicated.
1. Color: As selected by Architect from manufacturer's full range of colors.

E. Weatherseal Sealants: ASTM C 920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.
1. Color: Match structural sealant.

2.7 MATERIALS

A. Sheet and Plate: ASTM B 209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

C. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.

D. Structural Profiles: ASTM B 308/B 308M.

E. Steel Reinforcement:
1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
4. Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

F. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

G. Recycled Content of Aluminum Components: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
   1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
   2. Reinforce members as required to receive fastener threads.
   3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
   1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

E. Rigid PVC Filler.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:
   1. Profiles that are sharp, straight, and free of defects or deformations.
   2. Accurately fitted joints with ends coped or mitered.
   3. Physical and thermal isolation of glazing from framing members.
   4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
   5. Provisions for field replacement of glazing from interior for vision glass and exterior for spandrel glazing or metal panels.
   6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using screw-spline system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
   1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.10 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

2.11 SOURCE QUALITY CONTROL

A. Structural Sealant: Perform quality-control procedures complying with ASTM C 1401 recommendations, including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.3 INSTALLATION

A. General:
1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install glazing as specified in Section 088000 "Glazing."

F. Install weatherseal sealant according to Section 079200 "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.4 ERECTION TOLERANCES

A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:
   a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
   b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
   c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.5 MAINTENANCE SERVICE

A. Entrance Door Hardware:
1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.
2. Initial Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Use parts and supplies that are the same as those used in the manufacture and installation of original equipment.

END OF SECTION 084113

SECTION 08 5113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes aluminum windows for exterior locations.

B. Related Requirements:

1. Section 08 4113 "Aluminum-Framed Entrances and Storefronts" for coordinating finish among aluminum fenestration units.

2. Section 08 4413 "Glazed Aluminum Curtain Walls" for coordinating finish among aluminum fenestration units.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review and discuss the finishing of aluminum windows that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
3. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for aluminum windows.

B. Shop Drawings: For aluminum windows.

1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Samples: For each exposed product and for each color specified, 2 by 4 inches in size.

D. Samples for Initial Selection: For units with factory-applied finishes.

1. Include Samples of hardware and accessories involving color selection.

E. Samples for Verification: For aluminum windows and components required, showing full range of color variations for finishes, and prepared on Samples of size indicated below:

1. Exposed Finishes: 2 by 4 inches.
2. Exposed Hardware: Full-size units.

F. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of aluminum window, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.

B. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical wall area as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures including excessive deflection, water leakage, condensation, and air infiltration.
c. Faulty operation of movable sash and hardware.
d. Deterioration of materials and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: 10 years from date of Substantial Completion.

b. Glazing Units: 10 years from date of Substantial Completion.
c. Aluminum Finish: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain aluminum windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: AAMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: AW.
2. Minimum Performance Grade: 40.

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.32 Btu/sq. ft. x h x deg F <Insert value>.

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.

E. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 52.

F. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F ambient; 180 deg F material surfaces.

G. Sound Transmission Class (STC): Rated for not less than 31 STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.

H. Outside-Inside Transmission Class (OITC): Rated for not less than 25 OITC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E1332.

2.3 ALUMINUM WINDOWS

A. Manufacturers: Subject to compliance with requirements, provide Invent SERIES by Wausau or comparable product from one of the following:

1. EFCO Corporation.

2. Peerless Products Inc.

3. Wausau Window and Wall Systems; Apogee Wausau Group, Inc.

4. YKK AP America Inc.

B. Types: Provide the following types in locations indicated on Drawings:
1. Fixed.

C. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.

1. Thermally Improved Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.

D. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.

1. Kind: Fully tempered where indicated on Drawings.

E. Insulating-Glass Units: ASTM E2190.

1. Glass: ASTM C1036, Type 1, Class 1, q3.

a. Tint: Gray.
b. Kind: Fully tempered where indicated on Drawings.

2. Lites: Two.
3. Filling: Fill space between glass lites with air.
4. Low-E Coating: Sputtered on second surface.

F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

G. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.

H. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

2.5 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Weather strip each operable sash to provide weathertight installation.

C. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

D. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for

movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.

B. Testing Services: Testing and inspecting of installed windows shall take place as follows:

1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
2. Air-Infiltration Testing:

a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.

3. Water-Resistance Testing:

a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
b. Allowable Water Infiltration: No water penetration.

4. Testing Extent: Three windows of each type as selected by Architect and a qualified independent testing and inspecting agency. Windows shall be tested after perimeter sealants have cured.
5. Test Reports: Prepared according to AAMA 502.

C. Windows will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

B. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

1. Keep protective films and coverings in place until final cleaning.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 08 5113

SECTION **101100** - **VISUAL DISPLAY UNITS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Glass markerboards

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.

B. Sustainable Design Submittals:
   1. Product Data: For installation adhesives, indicating VOC content.
   2. Laboratory Test Reports: For installation adhesives, indicating compliance with requirements for low-emitting materials.

   Laboratory Test Reports: For composite wood products, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For visual display units.
   1. Include plans, elevations, sections, details, and attachment to other work.
   2. Show locations of panel joints. Show locations of field-assembled joints for factory-fabricated units too large to ship in one piece.
   3. Include sections of typical trim members.

D. Samples for Initial Selection: For each type of visual display unit indicated, for units with factory-applied color finishes, and as follows:
   1. Samples of facings for each visual display panel type, indicating color and texture.
   2. Include accessory Samples to verify color selected.

E. Product Schedule: For visual display units. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of tackboards.

B. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display units to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated visual display units completely assembled in one piece. If dimensions exceed maximum manufactured unit size, or if unit size is impracticable to ship in one piece, provide two or more pieces with joints in locations indicated on approved Shop Drawings.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install visual display units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Field Measurements: Verify actual dimensions of construction contiguous with visual display units by field measurements before fabrication.
   1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.9 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Surfaces lose original writing and erasing qualities.
      b. Surfaces exhibit crazing, cracking, or flaking.
   2. Warranty Period: 50 years from date of Substantial Completion.
   3. Warranty Period: Life of the building.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of visual display unit from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: 25 or less.
   2. Smoke-Developed Index: 450 or less.

2.3 GLASS MARKERBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, LLC.; Claridge Glass Whiteboard or comparable product by one of the following:

B. Glass Markerboards: Fabricated of low-iron glass with steel backing for use with magnets.
   1. Edge Treatment: Smooth polished edge with eased corners.
   2. Surface: Matte.
   3. Color: White

C. Mounting:
   1. Manufacturer's standard adhesive or adhesive-foam tape mounting.

D. Marker Tray: Aluminum, attached with magnet.

E. Size: 48 by 96 inches.

2.4 MAGNETIC MARKER BOARD TRAYS

A. Magnetic Markerboard Trays:
   1. Satin finish aluminum design to adhere to porcelain steel markerboards, equal to Claridge #264M2.
      a. Length: 2 feet.
      b. Quantity: Provide one tray at each markerboard, or one for each 12 linear feet of markerboard, whichever is greater.

2.5 MARKERBOARD PANELS

2.6 MATERIALS

A. Clear Tempered Glass: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality Q3, with exposed edges seamed before tempering

B. Extruded Aluminum: ASTM B 221, Alloy 6063.
   1. Adhesives shall have a VOC content of 50g/L or less.
   2. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.7 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motorized, sliding visual display units.

C. Examine walls and partitions for proper preparation and backing for visual display units.

D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances, such as dirt, mold, and mildew, that could impair the performance of and affect the smooth, finished surfaces of visual display boards.

C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.

D. Prime wall surfaces indicated to receive visual display units and as recommended in writing by primer/sealer manufacturer and visual display unit manufacturer.

E. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

B. Field-Assembled Visual Display Board Assemblies: Coordinate field-assembled units with grounds, trim, and accessories indicated. Join parts with a neat, precision fit.
   1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.
   2. Where size of visual display board assemblies or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

C. Factory-Fabricated Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than 16 inches o.c. Secure tops and bottoms of boards to walls.

D. Visual Display Board Assembly Mounting Heights: Install visual display units at mounting heights indicated on Drawings, or if not indicated, at heights indicated below.
   1. Mounting Height: 36 inches above finished floor to top of chalktray.

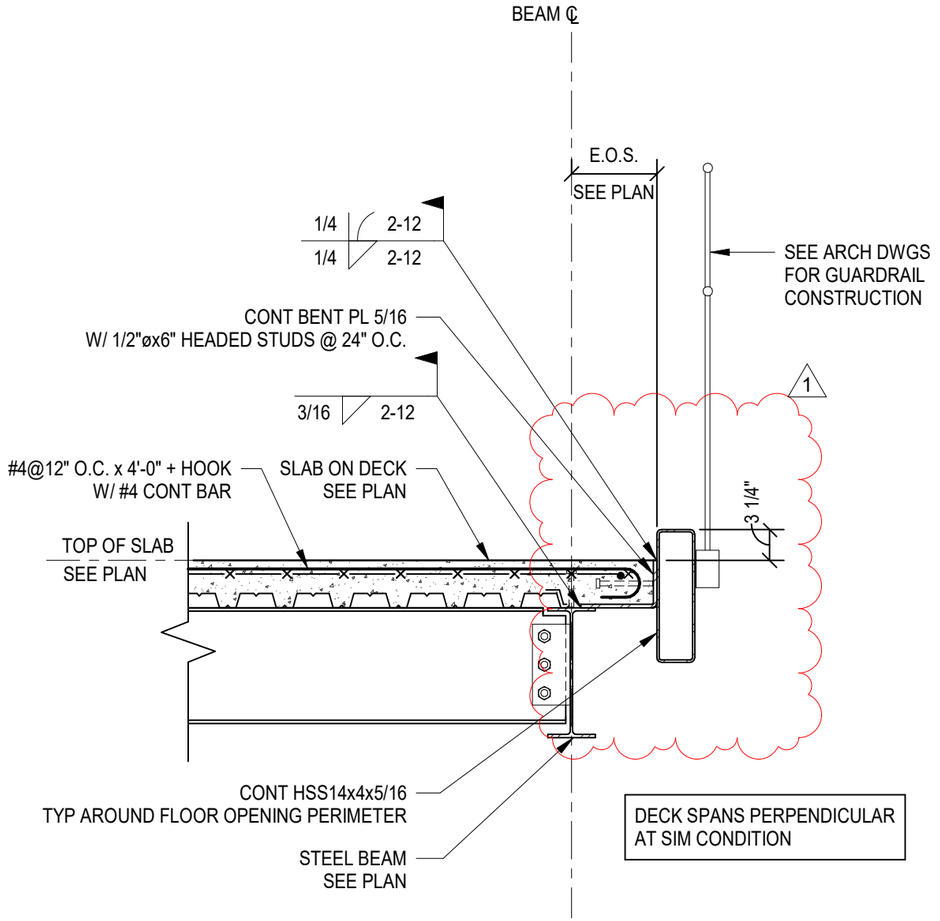
3.4 CLEANING AND PROTECTION

A. Clean visual display units according to manufacturer's written instructions. Attach one removable cleaning instructions label to visual display unit in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display units after installation and cleaning.

END OF SECTION 101100



A
SK-106

REVISED SECTION M/S-406

3/4" = 1'-0"

3/8/2024 9:37:55 AM

JRA architects
3225 Summit Square Place, Suite 200
Lexington, Kentucky 40509
859.252.6781

PHASE 3 -CONSTRUCTION DOCUMENTS

RENEW / MODERNIZE FACILITIES UK
SCOVELL HALL
UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY

PROJECT	202340
DATE	02/28/2024
DRAWN	TJW
CHECKED	ASR

REVISED FRAMING SECTION

SK-106

UK SCOVELL HALL

TRADE SCOPE CLARIFICATIONS
Congleton – Hacker Company

Issued with Addendum #3
03/8/24

Attachments to Addendum #3

- Attachment #1 – Supplemental Sketch 01 – Temporary Construction Stone
- List of Questions and Answers – items with no answer will be addressed in Addendum #4.

Clarifications for All Trade Packages

Link to Historic Drawings of Scovell Hall https://congletonhacker.egnyte.com/fl/kGRbj0DqGa

Clarifications for Individual Trade Packages

TC – A – Earthwork

1. Added: Item 25: Include cost to construct 10’ wide access ramp made of #2’s capped with #57’s from subgrade of -14'0" SOG to subgrade of -11'6" SOG to allow for equipment to move from the lower excavated area to the upper excavated area.

2. Revise SOW Item #20 – this should read “TC-A shall be responsible for…”, not “TC-B”

TC – B – Demolition and Shoring

1. In the design of the shoring system, it is necessary to design a system that does not conflict with the installation of the new steel building structure. (Added as SOW Item #7 part C).

TC – C – Concrete

1. This bidder shall include the cast in place chilled water vault (Added to SOW Item #34).

2. Added: Item 40: All pier caps and grade beams must be formed. Include excavation and backfill of pier caps. Prior to placement of pier caps, protect threads of anchor bolts with aluminum foil.

3. Added: Item 41: Include removal of the 10’ wide access ramp constructed by TC-A.

TC – D – Masonry

TC – E – Steel

1. Coordinate detailing of steel members to ensure that members scheduled to receive spray applied cementitious fireproofing are not prime painted. (Added to SOW Item #3)

TC – F – Casework & Millwork

TC – G – Roofing

TC – H – Doors, Security, Div 10

TC – J – Glass, Glazing, Metal Panels

TC – K – Drywall & Ceilings

TC – L – Tile & Terrazzo

TC – M – Resilient Flooring & Carpet

TC – N – Painting

TC – P – Roller Shades

TC – Q – Kitchen Equipment

TC – R – Plumbing & Mechanical

1. Cast-in-place concrete chilled water and steam vaults will be excavated and installed by TC-C Concrete. TC-C will install the vault structure and lids, ladders, grating. TC-R shall provide all piping and other vault accessories. (Added to SOW Item #7)

TC – S – Fire Protection

TC – T – Electrical and Low Voltage

1. Replaced: fire alarm allowance of "TBD" with "373,979" (ref. SOW Item #8)

2. Replaced: UK direct purchased "TBD" items with "Generator, ATS, and Medium-Voltage Transformer (ref. SOW Item #2)

3. Include filling the generator fuel tank after installation, and include topping off the tank following testing and commissioning. (Added to SOW Item #2)

4. Added: Item 47: The fiber work shown on site utility plans must be completed by May 24th, 2024 to allow for the demolition of Scovell Hall.

TC – U – Elevator

TC – V – Drilled Piers

TC – W – Decorative Glass Handrails

1. Added: Item 7: Include furnish and install of all interior aluminum handrails, including in areas without decorative glass handrail.

TC – X – General Trades

1. Include an allowance of $10,000 for patching damages to intumescent. Include an allowance of $20,000 for patching damages to spray applied. In addition, include 40 crew hours and 40 bags of spray applied fireproofing in addition to the base scope to be used at the CM's discretion. (Added to SOW Item #9).

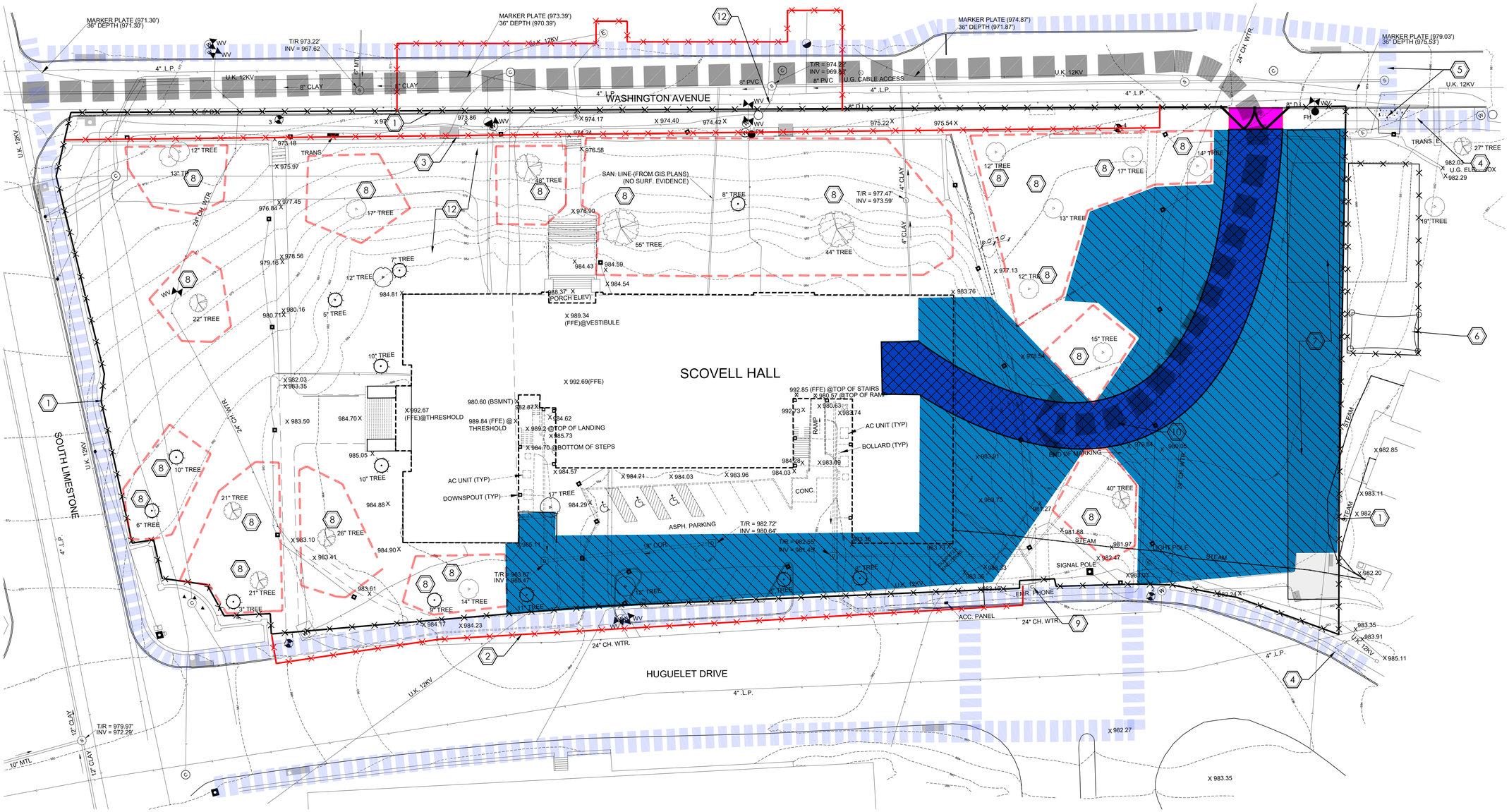
2. Include any patching of the building slabs needed after removal of the support angles. Include construction and maintenance of wooden handrail at all interior stairs. (Added to SOW Item #31)

3. Added: Item 34: TC-X shall include the removal and re-installation of the historic entry doors at the west and north entrances to Scovell Hall. After removal, turn doors over to TC-N Painting for restoration work to be performed. Take care during the removal process to ensure that all original hardware is salvaged for re-use. Any hardware damaged or lost in this process will be the responsibility of TC-X to replace with a product approved by the architect. Following restoration work, TC-X shall store doors until they can be re-installed at the entrances.

4. Added: Item 35: Provide stair tower scaffold to be located in the 4-story open area near the elevators. Provide 4-story motorized buckhoist also located in the 4-story open area. The intended purpose of the buckhoist is material conveyance, the buckhoist shall accommodate at minimum 10' length materials. Provide walkie talkies at all landings for the buckhoist. Both the stair tower and buckhoist will be needed immediately after placing the SOG through the completion of the elevator cabs for construction use.

5. Added: Item 36: Provide construction and removal of (3) 10' x 10' temporary enclosure doors at levels 2-4 on the east elevation of the building to allow for material hoisting and delivery. Each opening should have a pair of 5' lockable doors.

TC – Y – Landscape



Supplemental Sketch 01 - Temporary Construction Stone

Legend

TEMPORARY CONSTRUCTION DRIVE - PROFILE TO CONSIST OF 8" #2 STONE CAPPED WITH 4" #57 STONE

TEMPORARY CONSTRUCTION AREA - PROFILE TO CONSIST OF 4" #2 STONE CAPPED WITH 4" #57 STONE

TEMPORARY CONSTRUCTION ENTRANCE - REMOVE EXISTING SIDEWALK AND CURB

Print Date:	UK Scovell Hall				
3-8-2024	Q & A				
	Add #3				

Date Asked	Scope of Work	Question #	Question	Responsibility	Response
2/9/24	TC-R Plumbing & Mechanical TC-F Casework & Millwork	1	Dyson airblade faucets are specified in the restrooms. It appears that type WD-04 does not have a concealed motor housing, making the motor visible under the vanity top. Please review this detail.	Design Team	This is correct. The housing will be visible, but it is designed to be seen.
2/9/24	TC-R Plumbing & Mechanical TC-T Electrical & Low Voltage	2	Dyson airblade faucet power does not appear to have any GFI protection, please confirm.	Design Team	All of the breakers feeding these faucets and the mirrors will be required to be GFCI type.
2/9/24	TC-J Glass, Glazing, Metal Panels	3	Please show penthouse metal panels on Elevation D/A201	Design Team	This is correct on the bid documents. No changes necessary.
2/15/24	TC-A Sitework	4	Please show hatched areas for new asphalt on L-400	Design Team	New asphalt will be required at new drop off area along Huguelet, this will be shown with a hatch in an updated L400 drawing in the next addendum. Additional asphalt repair will be required at utility work in Washington Street and asphalt patching as required where new curb is installed at Huguelet Drive and Washington Street. Refer to MEP plans for final locations of utility work in Washington Street.
2/19/24	TC-H Doors, Security, Div 10	5	Please verify the Door Type for the openings below. The Door Schedule has them marked as flush but also assigns a Glazing Type. 100E,114-A,114-B,115-A,115-E,118,122-B,ST-C1,206-A,206-B,210-A,210-B,215-A,215-B,309,310A,310B,310C,310D,310E,310F,310G,310H,310K,310L,310M,310N,310P,310Q,310R,311,313,314,315,316,317,319,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,338,340,342,344,348,350,356,358,360,361,362,363,364,365,366,368,372,374,376,377,378,379,380,381,382,384,386,390,394	Design Team	This was addressed with an updated door schedule in Addendum 2
2/19/24	TC-H Doors, Security, Div 10	6	Substitution request made for 81113 HMF/Doors - De La Fontaine	Design Team	De La Fontaine is an acceptable manufacturer and will be added to the specification via addendum 3.
2/19/24	TC-H Doors, Security, Div 10	7	Substitution request made for 81416 wood doors - Masonite	Design Team	Masonite is not an acceptable manufacturer.
2/19/24	All Trade Contracts	8	Who should the bid bond be made out to: University of Kentucky or Congleton Hacker?	CM	Bid bonds are to be made out to the University of Kentucky
2/20/24	TC-H Doors, Security, Div 10	9	Please provide jamb and head details for 1" HM Frames	Design Team	Refer to the door schedule. Detail codes refer to the drawings, which show typical HM head and jamb details.
2/21/24	Specifications	10	Please remove 14 4321 Maintenance Platform Lifts from Project Specifications	Design Team	The owner has not confirmed this change. If necessary, this can be addressed with the final addendum.
2/21/24	Specifications	11	Please provide referenced "Appendix" specifications for "kitchen equipment, basis of design cutsheets" and "sustainability project narrative"	Design Team	Disregard. These are addressed elsewhere in the specifications. There is no "appendix" in the bid documents.
2/23/24	TC-H Doors, Security, Div 10	12	Is FRP-1 Plastic Paneling to be half height or full height?	Design Team	FRP Paneling shall be full panel height (8') at all locations, U.N.O.
2/23/24	TC-H Doors, Security, Div 10	13	Rooms 115G Dishwash and 115 Teaching Kitchen are noted on the Finish Schedule to receive FRP-1 on the walls but both rooms are also noted as receiving Wall Flashing in the Foodservice plans. Please clarify which walls are to receive FRP-1 Plastic Paneling.	Design Team	All walls in 115G and 115 will receive FRP, except where noted otherwise on the Foodservice Drawings or finish plans. Tile walls (WT-5) on A-141 shall be prioritized first. Except where conflicting with WT-5 locations, the locations and extents for Wall Flashing are detailed in accordance with the Foodservice elevations. All other walls will receive FRP.
2/23/24	TC-H Doors, Security, Div 10	14	Corridor 115H is noted on the Finish Schedule to receive FRP-1. Please clarify the extent of Corridor 115H. Does it extend over to Opening 115-D? Does it extend up to Opening 115-A?	Design Team	FRP Paneling will make up the entire extent of 115H.
2/28/24	TC-T Electrical and Low Voltage	15	Drawing E-011 note #23 states to provide lighting and power connections similar to steam vault detail. Drawing M-701 #1 steam vault detail does not identify fixture types, power requirements, loads or voltages. Please provide fixture types, equipment loads and which panels to feed the devices from.	Design Team	Connections to vault lighting, sump pump, exhaust fan, and receptacles is shown on the "Typical Vault Enlarged Plan - Steam and Chilled Water" Detail on sheet E-013. Detail includes specification of light fixture and devices. Steam and Chilled water vault to be powered from separate 60A 2P breakers in distribution panelboard 1DP1 located in main electric room.

2/20/24	TC-K Drywall & Ceilings	16	REF: SPECIFICATION 098433 PART 2.3A In this section you list Zintra as the basis of design and in part 2.3A you require “digitally printable”, However in the finish legend the AWP-1 is listed as Fitzfelt Aro Plank 5 #272 Royal color, which is not “digitally printable”. Do you want a “printable” panel or the Aro Plank 5 design? Please advise.	Design Team	The spec lists Filzfelt Aro Plan 5 as the Basis-of-Design. Zintra is listed as an alternate. The panels are not required to be digitally printable
2/28/24	TC-H Doors, Security, Div 10	17	MB1 Glass Markerboard is noted as CFCI on sheet A-422 but Section 10 1100 Visual Display Surfaces is not listed under any Trade Contract nor is it included in the Technical Specs. Please verify who is providing this material and provide Spec Section 10 1100.	Design Team	The specification has been added to Addendum 3
	TC-H Doors, Security, Div 10	18	Detail B on Sheet A-424 applies to both Classroom 206 & 210 but in Classroom 210, there’s a support column where the markerboard would be mounted and no markerboard is shown on the floor plan. Please verify if a markerboard is required in this location.	Design Team	Drawings show elevation B at classroom 210 to be opposite handed, meaning it should be the reverse layout of elevation B in classroom 206. The markerboard should be mounted on the lefthand side in 210.
	TC-H Doors, Security, Div 10	19	Openings 140-D, 140-F, 473, 475, 476, 477, 478, and 481 are listed in Door and Frame Schedule – Specialty Doors but door type is not marked and the openings are not called out on the Floor Plans. Are these access panels?	Design Team	Yes, these are the 2x4 access panels keyed on the floor plans.
	TC-H Doors, Security, Div 10	20	Note 9 in the Scope of Work for TC-K implies all access panels on the plans are to be provided by TC-K. If the aforementioned openings (Openings 140-D, 140-F, 473, 475, 476, 477, 478, and 481) are access panels, please verify if they are the responsibility of TC-K or TC-H.	CM	
	TC-E Steel	21	I’m trying to look ahead on this project. Is there a published schedule for this project? I didn’t see one in the Lynn imaging download. The reason for asking besides trying to get a feel when the project will be expected to start for the Steel portion. Line 7 of our bid description has a shop drawing fee for everyday the shop drawings are late. I just want to check on the time expectancy for this submittal.	CM	The project schedule has been provided via Addendum #2
	TC-E Steel	22	Trade Contract E – Steel: page 4, please confirm the two bid alternates are not part of steel package E	CM	It is the responsibility of each bidder to review the scope of each alternate and determine whether or not they have cost.
	TC-E Steel	23	Trade Contract E – Steel: page 12, item #7, please provide project schedule referenced	CM	The project schedule has been provided via Addendum #2
	TC-E Steel	24	Trade Contract E – Steel: page 12, item #4, please define what is expected for “**temporary protection**” of AESS framing	CM	No additional protection will be required for AESS members beyond the touch-up of any damage to prime painting and prime painting of all field welds immediately following erection of these members. The intent is to ensure rust does not develop on these surfaces between erection and installation of final finish coatings.
	TC-E Steel	25	Trade Contract E – Steel: page 12, item #8, Trade Contract C-Concrete item 15 states concrete package which installs anchor bolts will provide anchor bolt survey. Please confirm steel contractor does not need to carry additional cost provide same anchor bolt survey too ?	CM	Both TC-C and TC-E will be required to provide anchor bolt surveys.
	TC-E Steel	26	Trade Contract E – Steel: page 12, item #15, please provide details of what steel framing is required for “**Project Mockup**”	Design Team	See question #75. Only steel elements within architetctural mockup panels on A-721 are required.
	TC-E Steel	27	S406 section M: please show better view of detail, showing how tube steel connects to bent plate pour stop	Design Team	Revised detail correcting graphical errors will be added to addendum #2. Tube steel is field welded directly to bent plate per detail M/S406.
	TC-E Steel	28	A121: steel noted to have certain fire ratings, etc. please confirm that these members will be un-primed as other steel that is to receive standard fire proofing	Design Team	Follow the requirements of the drawings and specifications. It is unclear what is meant by "standard fire proofing"
	TC-E Steel	29	A401 thru A417: aluminum and glass rails, please confirm that these rails are by **Contract-W Decorative Rails** or another bid package (not steel-E)	CM	Confirmed

	TC-E Steel	30	A401 section F: (05 7500) Decorative Aluminum Break Metal, please confirm that this material is by **Contract-W Decorative Rails** or another bid package (not steel-E)	CM	
	TC-E Steel	31	A406 section E: (09 3013) stair tread nosings, please confirm that this material is by another bid package (not steel-E)	CM	Confirmed, the nosings will be provided by TC-L
	TC-E Steel	32	A406: (05 5213) aluminum rails, please confirm that this material is by **Contract-W Decorative Rails** or another bid package (not steel)	CM	Confirmed, the aluminum rails will be provided by TC-W
	TC-E Steel	33	A419, A420: please confirm there are **no elevator guide rails required** ? (none shown or sized)	Design Team	Specifications require guide rails per manufacturer product. This is not referenced on the Drawings.
	TC-E Steel	34	Spec 055000, 1.2 A5: please define **what steel is required** if it is not shown and sized on structural steel bid drawings	Design Team	055000 references steel which is specified on the Architectural drawings. Refer to the Architectural drawings and specifications for the extents and the delegated design requirements.
	TC-X General Trades	35	Is the duration of the project to be used for equipment like the Yard Boss and skytrak lift...988 days, 32.5 months, 141 weeks? Substantial completion is listed at Feb 13, 2026. That is much less than 988 days. Please confirm duration so all bidders can have same duration.	CM	The "yard boss" is a person that they General Trades will need to provide to manage parking, deliveries, and waste management. The lift will need to be provided on site ffrom the start of construction on site until final completion.
	TC-X General Trades	36	Trade Contract X, SOW item #1 - All layout for all trades?	CM	TC-X shall be responsible for establishing and maintaining (4) permanent building control benchmarks.
	TC-X General Trades	37	Trade Contract X, SOW line item #3. Verify duration of Lull. Does fuel also need to be covered?	CM	Yes, fuel needs to be included
	TC-X General Trades	38	Trade Contract X, SOW line item #5. Is the blue fence screening also required for the moveable fencing jersey barriers?	CM	Yes
	TC-X General Trades	39	Trade Contract X, SOW item #8 - Quantity and type of ladders?	CM	Include (2) 16' wooden job-built ladders. Refer to scope clarifications for added requirements regarding scaffold stair tower and buckhoist.
	TC-X General Trades	40	Please confirm the reference to 07 9200 applies to everyone's respective trade contract and that General Trades is NOT providing joint sealants for every trade contract.	CM	Correct, each trade is responsible for their own joint sealants
	TC-X General Trades	41	Trade Contract X, SOW item #13 - Earthcam details. How many cameras? Location? Mounting type? Camera type (solar or hard wired)?	CM	
	TC-X General Trades	42	Trade Contract X, SOW item #16 - Please detail the time expectation for handling these LEED submissions. Is this contractor responsible for being the “middle man” between each trade contractors submissions to the LEED AP?	CM	The LEED submission will need to be ready to send for review within (30) days after final completion of the project. CM will assist with gathering product data sheets through the material submittal process. TC-X will be responsible for compiling this information from eComm into the submission, as well as collecting photos and documentation to support the other LEED category submissions (IAQ, Watse Management, etc.).
	TC-X General Trades	43	Trade Contract X, SOW item #22. Who is responsible for the drainage system under the pavers?	CM	Refer to scope item #23
	TC-X General Trades	44	Trade Contract X, SOW item #24 - Material keynote 7 on L-400 says bike racks are furnished and installed by owner. Please confirm. Are the trash cans also owner provided? If not, please provide specs. Also, on L-400, in the permeable pavers, there looks to possibly be a trash station drawn by the keynote 10 is not assigned to it.	Design Team	
	TC-X General Trades	45	Trade Contract X, SOW item #25 - Keynote 10 on L-000 does not indicate if the tree will need tobe stored and cared for prior to it's final location. Will there be a location idenfied in time to have the tree replanted in a timely manner without the cost of storing it?	Design Team	
	TC-X General Trades	46	Steel Bollards: Sheet L-602. Are there meant to be a total of 4 each bollards inside the compactor enclosure?	Design Team	
	TC-X General Trades	47	Trade Contract X, SOW item #32. Maintenance of BMP Measures. Can an allowance be created for this scope of work? Labor and material. This is difficult to define at bid time.	CM	No. For the duration specified include a minimum of (1) inspection of the BMP measures per week and additionally inspect the BMP measures after every major rain event (precipitation of > 1" over a 24 hour period).

	TC-T Electrical and Low Voltage	48	Drawing E-011 note #23 states to provide lighting and power connections similar to steam vault detail. Drawing M-701 #1 steam vault detail does not identify fixture types, power requirements, loads or voltages. Please provide fixture types, equipment loads and which panels to feed the devices from.	Design Team	Connections to vault lighting, sump pump, exhaust fan, and receptacles is shown on the "Typical Vault Enlarged Plan - Steam and Chilled Water" Detail on sheet E-013. Detail includes specification of light fixture and devices. Steam and Chilled water vault to be powered from separate 60A 2P breakers in distribution panelboard 1DP1 located in main electric room.
	TC-R Plumbing & Mechanical	49	Can tap fees be by allowance or paid by owner?	CM	No, see scope item #24 for listed square footages.
	TC-E Steel	50	Questions after Addendum#2. Schedule on Page one: Please confirm if Trade Contract E-Steel will be one of “Award Early Subcontracts”	CM	Confirmed
	TC-E Steel	51	S205, Framing Legend, note “D” (in circle): Is there a specification for the roof tie-off anchors ? : a) Please confirm that site load testing after steel contractor shop or field installs anchors is by other trade contract (not Trade Contract E-Steel) b) Please confirm that lifelines, annual inspection and maintenance, etc after steel contractor shop or field installs anchors is by other trade contract (not Trade Contract E- Steel)	Design Team	The roof tie-off anchors are specified in 07 7200 per note on the architectural roof plans.
	TC-E Steel	52	S205 line 2 and S402: Please provide **moment connection detail** for “tube steel beam to round pipe columns”	Design Team	See detail E/S407; cut ends of HSS steel beams to fit round HSS columns. Weld all around to column with 1/4" fillet weld.
	TC-E Steel	53	S407 sections C, D: Please confirm **16 GA Bent PL** that connects with **CFS framing is not** in Trade Contract E-Steel	CM	Correct, this 16 ga bent plate will be supplied by TC-K.
	TC-E Steel	54	S402: please confirm steel fabricator could elect to provide “field welded moment connections” per A/S402 vs “field bolted moment connections” per B/S402 ?	Design Team	Moment connections must be furnished as designed and shown on the framing plans and sheet S402 of the construction drawings.
3/5/24	TC-K Drywall & Ceilings	55	There are (2) specs for ceiling products: • 095426 Suspended Wood Ceilings WPC-1 (not listed in the finish schedule but found in the drawings on A-561) • 098436 Sound Absorbing Ceiling units (not listed in the finish schedule but found in the drawings on A-561and A-562) • 095423 is not in the spec documents but it is listed on the finish schedule as perforated metal baffles – is this the “Unlit” baffles on A-561 and supposed to be 098436? • Can you please provide some clarity on what is what please?	Design Team	In the ceiling schedule on the RCP sheets, WD-1 will change to WPC-1 to match the specifications and revised finish schedule. The sound absorbing ceiling units are listed on the finish schedule, the spec section will be corrected to 09 8436. They have their own schedule on sheet A-561.
	TC-K Drywall & Ceilings	56	Substitution request - Specification 095426 Suspended Wood Ceilings. Product: WaveFM Manufacturer: RealAcoustix	Design Team	WaveFM RealAcoustix is an acceptable substitute. See Addendum 3.
	TC-K Drywall & Ceilings	57	Substitution request - Specification 098436 Sound Absorbing Ceiling Units. Product: 500 Acoustic Baffles Manufacturer: SAS International Product Warranty up to 25 years	Design Team	This product does not list available finishes and therefore it cannot be determined if it can meet the design intent. Until that information is provided, this product is not approved.
	TC-E Steel	58	S206, note 3 and A/A451: need more info on the ladder type requested or manufacture (never seen one like this detail)? a) Do not know of a supplier for a “stainless ladder” not to mention the cost it could be, please confirm aluminum would be acceptable ? b) Most ladder suppliers (example: Precision Ladders) furnish a “aluminum” type ladder with some variances to detail shown but very similar ? c) Please note detail A/A451 does not show rungs on short side to access roof ? d) Please confirm if we could provide ladder that would not require attachment thru roof at D/A451(attachment would be like other side to wall) but would have rungs to access roof	Design Team	The ladders should be built and are not specified pre-formed from a manufacturer. They follow specification 05 5000 per the architectural drawings. Neither the spec nor the architectural drawings make mention of "stainless" steel - only galvanized. A graphical error on A/A-451 lost the rungs on the high roof side, but they should mirror the opposite side. If the contractor can provide an appropriate flashing detail at the wall connection and calculations to ensure stability, the upper roof connection can be made at the wall in lieu of the roof deck.
	TC-E Steel	59	A-401, “terrazzo treads”: please confirm that these treads are by another bid package (not Trade Contract E- Steel)	CM	Confirmed, the terrazzo treads will be supplied by TC-L
	TC-E Steel	60	A-406, section E “loose stair treads nosings strips”: please confirm that these nosings are by another bid package (not Trade Contract E- Steel)	CM	Confirmed, the nosings will be supplied by TC-L

	TC-E Steel	61	I do not see sheet L-701 in the bid documents. Will this come out in an addendum?	Design Team	
	TC-J Glass, Glazing, Metal Panels	62	Door 414: Door Schedule at A-601 indicates HM Type 43. A-608 frame types denotes Type 43 as GIW framing system. Please clarify.	Design Team	414 will be an aluminum GIW frame per the elevation.
	TC-J Glass, Glazing, Metal Panels	63	Door 470: Door Schedule at A-601 indicates Alum Type 45. No Type 45 framing elevation is shown with framing types at A-609. Please clarify.	Design Team	Door 470 should reference Type 43 in the schedule. There is no Type 45.
	TC-J Glass, Glazing, Metal Panels	64	Door 310-A: Door Schedule at A-601 indicates Alum Type 31. Floorplan at A-103 show Type 35. Please clarify.	Design Team	Door 310-A is Type 35 per floor plan tag.
	TC-J Glass, Glazing, Metal Panels	65	Door Hardware clarifications: a. Trade Contract J, Scope Summary Item 8 requires contractor to provide and install any door hardware required on aluminum doors and frames. b. Trade Contract J, Scope Summary Item 9 requires contractor to provide and install door operators for aluminum entrance doors as required. c. Trade Contract H, Scope Summary Item 4 requires contractor to furnish and install finish hardware for all doors …. Aluminum door hardware shall be installed by others …. d. Trade Contract H, Scope Summary Item 7 requires contractor to furnish and install all electrified door hardware including, but not limited to … swing door operators …. e. Trade Contract H, Scope Summary Item 36 indicates that this scope is responsible for installation of all automatic operators per specification sections 087100-Door Hardware and 087121 Automatic Operators. Please provide clarification of the above items to ascertain the final scope of work required for the respective scopes of work for Trade Contract H and Trade Contract J.	CM	
	TC-J Glass, Glazing, Metal Panels	66	Specification 084113: Item 2.3 B.5. requires a High-performance organic finish (painted finish). Item 2.10 A. requires a Clear Anodized finish. Other aluminum products for this project have a clear anodized finish. Please clarify finish requirements for 084113 materials.	Design Team	Requires clear anodized per 2.10A
	TC-J Glass, Glazing, Metal Panels	67	Specification 084113: Item 1.7 B.2. requires a 20 year special finish warranty. If the required finish for 084113 materials is clear anodized, the maximum available finish warranty is 10 years. Please clarify finish warranty requirements for 084113 materials.	Design Team	Warranty period is amended to 5 years in revised spec.
	TC-J Glass, Glazing, Metal Panels	68	Specification 085113: Item 2.2 I. requires materials to meet requirements for Windborne-Debris Impact Resistance and Small-Missile Test requirements. Performance Class/Grade AW40 window products will not meet these requirements, which require special reinforced aluminum materials and specialty glazing materials. These requirements are not required for other aluminum framing materials for this project. Please clarify these requirements for 085113 products.	Design Team	Project location does not reach the wind zone minimums of ASTM e1996. This requirement is deleted from the spec.
	TC-J Glass, Glazing, Metal Panels	69	Specification 085113: Item 2.5 B. requires factory glazing for aluminum window products. Factory glazing of aluminum windows will necessitate a receptor system for anchorage of factory-glazed aluminum windows creating additional sightlines around the framing perimeter. Please clarify the requirements for factory glazing and receptor system for 085113 products.	Design Team	Factory glazing is not a requirement and has been removed from the specification.

	TC-J Glass, Glazing, Metal Panels	70	Specification 085113: Item 2.7 B. requires a Clear Anodized, Class II finish for aluminum window products. Item 2.7 C. requires a 3-coat High-performance painted finish (Linetec Sunrise Silver Metallic 281607) for aluminum window products. Please clarify finish requirements for 085113 aluminum window products.	Design Team	Provide clear anodized, the reference to Sunrise Silver Metallic coating has been removed.
	TC-J Glass, Glazing, Metal Panels	71	Specification 085113: Item 3.3 requires a variety of field quality control testing for aluminum window products. None of the other aluminum framing / glazing specifications for the project require similar field quality control testing. Please clarify field quality control testing for 085113 aluminum window products as well as other aluminum framing / glazing materials for the project.	Design Team	Glazing products within this specification sections are to be installed in existing historic walls. Further testing is required per the specification.
	TC-J Glass, Glazing, Metal Panels	72	Specification 089119: Item 2.8 B. requires a High-Performance 3-coat painted finish for Louver materials. All other framing for the project is a clear anodized finish. Please confirm painted finish will be required for Louver materials for this project.	Design Team	Louvers will have a coated finish per the specification.
	TC-J Glass, Glazing, Metal Panels	73	Trade Contract descriptions / Badging Requirements: Only select Trade Contract scope of work descriptions include a provision indicating that the trade contractor is responsible for purchasing identification badges for all of their construction personnel. Please clarify if this requirement is only for trade contractors where this provision is specifically listed in the trade contract scope of work or if required for all trade contractors on the project.	CM	All trade contractors will be responsible for purchasing identification badges for their construction personnel. See "Requirements Common to all Work Categories" subpart E. Safety item #3.
	TC-E Steel	74	RFI'S = HSS12X3-1/2X3/8 FOR STRINGERS, NEEDS TO BE HSS12X4X3/8 OR HSS12X3X3/8 DUE TO 3-1/2" SIZE NOT EXISTING.	Design Team	Stringers labeled HSS12x3 1/2x3/8 are to change to HSS12x4x3/8. NOTE: outside dimensions of stairs will stay consistent while inside dimensions will extend inward by 1/2" at each stringer. This reduces overall tread width from 4'-6" to 4'-5". Coordinate with terazzo tread contractor.
	TC-E Steel	75	MOCKUP FOR AESS LVL 4 TUBES @ 2ND FLOOR ONLY? OR WILL A MOCKUP BE REQUIRED FOR AESS LVL 4 PIPE COLUMNS AS WELL?	Design Team	See architectural mock up panels on sheet A-721. Only exposed structural steel elements labeled "AESS" are required within mockup panels.
	TC-E Steel	76	CLARIFY TC-U4A WELD DETAIL ON BOLTED END PLATE MOMENT CONNECTIONS, CAN A BACKER BAR BE USED IN LIEU OF THIS WELD SCHEDULE?	Design Team	Backer bar can be used.
	TC-E Steel	77	ON DETAIL A/S-404, CAN WE USE GALVANIZED THREADED RODS INSTEAD OF S.S. THREADED RODS @ THE L5X3-1/2X3/8?	Design Team	Galvanized threaded rods are acceptable.
	TC-E Steel	78	ARE WE ALLOWED TO SHOP ATTACH BENT PLATE ON THIS PROJECT?	Design Team	Bent plates can be shop attached to structural steel at contractor's own risk.
	TC-E Steel	79	Liquidated damages for shop drawing submittals seems excessive, will damages be assessed if submittals are late out of the steel subcontractors control?	CM	No. The purpose of the LD's is to ensure timely submission of the shop drawings.
	TC-E Steel	80	Can asphaltic coating be removed from the steel bid category put into the general trades bid category? Asphaltic coating is usually performed by general trades or concrete.	CM	No. This will be the responsibility of TC-E
	TC-E Steel	81	Where will intumescent coatings be required? Asking due to the primer compatability statement in bid scope.	Design Team	Intumescent coating will be required at all rated steel exposed to view at final construction. Reference rating requirements on A-121 with the rest of the Drawings.
	TC-E Steel	82	Can non exposed steel be mill finish instead of primed? Will save the project money.	Design Team	No, unless noted to receive a specific coating i.e. galvanized or sprayed fireproofing, steel must have primer.
	TC-E Steel	83	What portions of the project will require a mock up in the steel bid category?	Design Team	See question #75. Only steel elements within architetctural mockup panels on A-721 are required.
	All Trade Contracts	84	TREES IN THE WAY OF BUILDING ENVELOPE, EXTENT OF PRUNING FOR THESE TREES?	Owner	
	All Trade Contracts	85	NO PARKING ALLOTTED, PARKING PASSES WILL BE REQUIRED, WHAT IS THE COST FOR PARKING PASSES?	CM	No parking passed have been allotted for this project. Parking is not guaranteed. Trade contractors and their personnel are encouraged to shuttle to the josite from an off-campus location.
	TC-E Steel	86	OVERHANG MADE OF TUBES AT ROOF LEVEL TO BE PRIMED OR GALVANIZED?	Design Team	Tubes at overhang roof trellis not required to be galvanized; tubes shall receive high performance coating instead.

	TC-E Steel	87	A steel sequencing plan was brought up at the pre-bid meeting, is that sequencing plan available? and it the sequencing plan able to be changed upon input from the steel scope of work?	CM	Yes. The planned sequence is working from west to east.
	TC-T Electrical & Low Voltage	88	The drawings show a new fault indicator being used with the pad mount gear. Should S&C include provisions to allow this indicator to be installed inside the switch enclosure?	Design Team	Yes - new fault indicator to be installed inside the switch enclosure. This has previously not been an issue with S&C standard enclosure.
3/5/24	TC-W Decorative Glass Handrails	89	Tuttle Railings (a Dant Clayton Division) formally requests approval to quote the decorative metal railings on the #2591.20 UK - Scovell Hall BP#01 University of Kentucky - Lexington KY project. Wagner PanelGrip meets or exceeds all specifications listed in section 057313 Glazed Decorative Metal Railings. Our proposal will meet all local and national building codes and will aesthetically meet the basis of design Hollaender Structural Glass Railing. Attached you will find the formal Tuttle Railings Submittal form.	Design Team	The Tuttle Railing system is approved as submitted.
2/9/24	TC-K Drywall & Ceilings	90	I wanted to inquire about the design using Filzfelt and see if we could save the Owner some money. Our products in the specialty acoustic category typically save 15% or more in projects like these. We are looking to get approved as a manufacturer so that we can work with the General Contractor awarded the project. For UK-Skovell Hall, we will be utilizing our Folded Surfaces FF060. Substitution Request form and documents are attached. Let me know directly or via project Addendum.	Design Team	Folded Surfaces FF060 is approved as submitted.