

# **Procurement Services**

# INVITATION FOR BIDS CCK-2563.30-7-25 CTC + AAC BP07 Core & Shell Group 2 Project# 2563.30 ADDENDUM #2 09/12/2024

# IMPORTANT: BID AND ADDENDUM MUST BE RECEIVED BY: 09/17/2024 @ 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: REVISIONS, UPDATES, & CLARIFICATIONS TO ORIGINAL BID DOCUMENTS**

 Refer to and incorporate within the offer the enclosed additional information from the project team.

# **ITEM #2: QUESTIONS AND RESPONSES**

• Refer to and incorporate within the offer, the enclosed Questions and Responses.

# OFFICIAL APPROVAL UNIVERSITY OF KENTUCKY

09/12/2024

Ken Scott / (859) 257-9102

Typed or Printed Name

SIGNATURE

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

Ken Scott

An Equal Opportunity University



# Addendum #02

Client	University of Kentucky Healthcare	Date	09/11/2024
Project	UK CTC BP-07 Core and Shell Group 2	UK Project #	2563.0
		Champlin Project #	514-5350

This addendum provides information to clarify or adjust construction items which may affect any or all trade contractors. The original documents for the referenced project are amended as noted in this addendum and made part of said documents and shall govern the work covered by the Form of Proposal. All work to be in strict accordance with the terms, stipulations and conditions of contract documents.

#### **CLARIFICATION:**

Drawings with revision clouds have changes as described below. Specifications have highlighted changes and revised issuance date.

# SUMMARY OF ATTACHMENTS

# PART A - DRAWINGS:

- A011 MATERIAL IDENTIFICATION CODES
  - 1. Revised color of Louvers LVR-1B and LVR-3
- A200.B-SHELL & CORE FLOOR PLAN LEVEL 00 AREA B
  - 1. Revise curtain wall elevation tags.
- A200.C-SHELL & CORE FLOOR PLAN LEVEL 00 AREA C
  - 1. Revise curtain wall elevation tags
- A201 OVERALL SHELL & CORE FLOOR PLAN LEVEL 01
  1. Added fin tubes along curtain wall openings adjacent to sunken garden (grid line 8).
- A201.B SHELL & CORE FLOOR PLAN LEVEL 01 -AREA B 1. Added fin tubes along curtain wall openings adjacent to sunken garden (grid line 8).
- A202.C-SHELL & CORE FLOOR PLAN LEVEL 02 AREA C 1. Revise curtain wall elevation tags.
- A207.B-SHELL & CORE FLOOR PLAN LEVEL 07 AREA B 1. Revise curtain wall elevation tags
- A208.B-SHELL & CORE FLOOR PLAN LEVEL 08 AREA B 1. Revise curtain wall elevation tags.
- A403 ENLARGED EXTERIOR SOUTH LINK ELEVATION
  - 1. Remove spandrel glass at top of curtain wall

# THINK CREATE REALIZE

T 513.241.4474 TF 800.925.4424 720 East Pete Rose Way, Cincinnati, OH 45202 thinkchamplin.com

- 2. Remove stone knee wall between column lines 16-17 and extend curtain wall down
- A404 ENLARGED EXTERIOR WEST AREA B ELEVATION
  - 1. Revised bottom of window types W49, W50 and W52 to include additional horizontal mullion and spandrel glass.
  - 2. Revise louver type tags to note correct "L3" and "L4" louvers.

# A405 – ENLARGED EXTERIOR WEST AREA A ELEVATION

1. Remove stone knee wall between column lines E to D and extend curtain wall down

# A407-ENLARGED EXTERIOR EAST AREA B ELEVATIONS

1. Add operable louver elevation detail reference and operable louver plan detail reference.

# A408-ENLARGED EXTERIOR NORTH ELEVATION

- 1. Revise curtain wall elevation tag.
- A409 ENLARGED EXTERIOR NORTH LINK ELEVATIONS
  - 1. Add exhaust fan louver.
  - 2. Revise curtain wall elevation tags

# A410 - ENLARGED EXTERIOR ELEVATIONS

- 1. Elevation 3: Remove spandrel glass at top of curtain wall.
- 2. Elevation 6: Add sill detail reference.
- 3. Added tag for louver type "L4." Added exterior elevations for main vestibule to cue in curtainwall types W87 and W88 and clarify metal panel finishes.

# A413-MAIN ENTRY CANOPY AND VESTIBULE ENLARGED PLANS, & SECTIONS

1. Revised elevation tags at main vestibule to align with new exterior elevations.

# A416-LINK CANOPY AND VESTIBULE ELEVATIONS

1. Revised exterior elevations for ambulatory vestibule to clarify metal panel finishes.

# A424-PEDESTRIAN WALKWAY WALL SECTIONS

1. Revised detail 4 to note correct (MP-2) finish at underside soffit; Revised details 2 and 4 to note correct (MP-2) finish at outside soffit corner.

# A454 – WALL SECTIONS

1. Section 2: Remove stone knee wall and extend curtain wall down

# A455 - WALL SECTIONS

1. Revised level 01 detail tags on sections 1 and 3.

# A456 – WALL SECTIONS

- 1. Sections 2 and 4, remove spandrel glass at top of curtain wall
- A459.E-PENTHOUSE SECTIONS
  - 1. Revised detail 3 to indicate correct (MP-2) finish.

# A459.F-PENTHOUSE DETAILS

1. Revised details to note correct (MP-4) corrugated metal panel finish.

# A466 – FOUNDATION DETAILS

1. Revise detail 8 to show stone sill unit.

# A469 - FOUNDATION DETAILS

1. Delete Detail 1.

# A473.E-EXTERIOR PLAN DETAILS

1. Revised detail 3 to indicate correct (MP-2) finish.

# A477 - EXTERIOR SECTION DETAILS

- 1. Added detail 8.
- 2. Revised details 2, 4, and 5 to clarify coping design intent.

# A477.A-EXTERIOR SECTION DETAILS - LOBBY CURTAINWALL

1. *Revised details to clarify coping design intent.* 

# A477.C-EXTERIOR SECTION DETAILS

- 1. Revised details 5 and 9 to note correct (MP-2) panel finish.
- 2. Detail previously indicated curtain wall extending the full height to the top of parapet. This has been revised to indicate metal panel with the false mullion snap cover.

# A478.C-LOUVER DETAILS

1. Added Louver door elevation and plan detail of roof access louver.

# A489 – EXTERIOR WALL MOCKUP

1. Add sub shade to mock-up.

# A490-EXTERIOR WINDOW AND CURTAINWALL TYPES

1. Revise curtain wall type elevations.

# A491 - EXTERIOR WINDOW AND CURTAINWALL TYPES

- 1. Revised window types W49, W50 and W52.
- 2. Deleted window type 51.

# A492-EXTERIOR WINDOW, CURTAINWALL, & LOUVER TYPES

1. Added "L16" louver type (was tagged/referenced on A410, but not represented in louver types).

# A493 - EXTERIOR WINDOW AND CURTAINWALL TYPES

1. Detail stone knee wall on Curtain Wall Elevation W81 and extend curtain wall down.

# A532-ENLARGED SHAFT SH10 PLANS AND SECTIONS

1. Revise bottom of shaft to indicate shaft closed off at floor level by slab and fire damper to be located in slab. Dog house below slab has been deleted.

# PART B - SPECIFICATIONS:

# 074213.23 METAL COMPOSITE MATERIAL WALL PANELS

1. Revised paragraph 2.5 A.1 Approved Fabricators.

### 075419 POLYVINYL-CHLORIDE (PVC) ROOFING

1. Revised paragraph 2.2.A.1 Basis of Design Product.

#### 084413 GLAZED ALUMINUM CURTAIN WALLS

1. Revised paragraph 2.1 I Energy Performance

#### 089119 FIXED LOUVERS

- 1. Revised paragraph 2.3 A Horizontal Drainable-Blade Louver, Extruded Aluminum
- 2. Revised paragraph 2.3 B Horizontal Drainable-Blade Louver
- 3. Revised paragraph 2.8.B.2 Color and Gloss

#### PART C - RESPONSES TO BIDDER QUESTIONS:

See attached responses to bidder questions.

# PART D - ADDITIONAL EXHIBITS

See attached Tower Crane Utilization Matrix

# PART E - SKETCHES

- 1. Crane Elevations
  - a. Shows conceptual elevations for footings and height above building and providing safe operations of multiple cranes on site. Final elevations to be coordinated based on equipment of final crane models as provided by successful bidder.
- 2. Vestibule Metal Panel Scope
  - a. This document shows additional scope of work for metal panel subcontractor inside the building vestibule. Metal Panel Subcontractor to provide all MP-1 panels as shown on the sketches plans, details, and elevations.

# PART F - UPDATED BID FORMS

UPDATED BID FORM TC22A07A7

• Added Breakout for Spray Foam

# End of Addendum

# EXHIBIT B.2

# TRADE CATEGORY SPECIFIC SCOPE SCOPE CLARIFICATIONS, ALTERNATES, UNIT PRICES, ALLOWANCES, AND CONTRACT BREAKDOWN

# Trade Category 07A.7 Water Proofing SEE ALSO EXHIBIT B.1 FOR BID SET SCOPE ITEMS

Provide labor, material, equipment, and all else necessary to furnish and install complete the Waterproofing and Air Barrier Work as required by the contract documents and as outlined below.

# 1. SPECIFICATION SECTIONS:

The following specification sections are listed as the responsibility of the Subcontractor in defining its area of work on this project:

Walsh Construction Bid Manual
Division 00 – Procurement and Contracting Requirements
Division 01 – General Requirements
01 91 15 – Building Enclosure Commissioning
01 91 17 – Building Enclosure Functional Performance Testing
07 13 26 – Self-Adhering Sheet Waterproofing
07 14 13 – Hot Fluid-Applied Rubberized Asphalt Waterproofing
07 21 00 – Thermal Insulation
07 27 26.04 - Fluid Applied Membrane Air Barriers
Appendix A – Geotechnical Report

Unless specifically indicated otherwise or excluded below, Subcontractor is responsible for the complete specification sections indicated above.

Division 01 of the Specifications are general in nature and apply to all Subcontracts. These sections are included "complete" as part of this Subcontract Agreement.

The Subcontractor is also responsible for trade specifications not specifically listed above but required by reference in the listed specifications or as required to perform the scope of work described herein, as well as the Bidding Requirements, Contracting Requirements, and the use of the Construction Documents as a whole.

# 2. ADDENDUMS, BULLETINS, OR INFORMATION LETTERS:

1. See Exhibit B.1 for Complete List of Addendums, Bulletins, or Information Letters.

# 3. REQUESTS FOR INFORMATION (RFI):

The following RFIs were issued prior to award of this Subcontract and the scope specifically referred to in the RFI or any scope that is reasonable inferable from these RFIs are included in this Subcontract Agreement:

1. See 00 91 13 Bid Question Log for complete list of Bid RFI.

# 4. SMALL BUSINESS AND DBE SUBCONTRACTOR REQUIREMENTS:

1. No additional requirements other than those shown in Exhibit B.1 and in all other parts of the Contract.

# 5. LABOR AND MANPOWER:

1. No additional requirements other than those shown in Exhibit B.1 and in all other parts of the Contract.

# 6. UK HEALTHCARE SUSTAINABILITY and LEED REQUIREMENTS:

1. No additional requirements other than those shown in Exhibit B.1 and in all other parts of the Contract.

# 7. SCOPE CLARIFICATIONS-SCOPE SPECIFIC:

- Subcontractor shall provide (furnish and install) all labor, material, equipment, services, hoisting, storage and all else necessary to complete the Waterproofing Work as required by the Contract Documents and as outlined below including, but not limited to, the following items. Waterproofing, Drainage/Cover Board, Insulation, Flashings, Sheet Membranes, Termination Bars, Sealants and Air Vapor Barrier.
- 2. Subcontractor shall provide a complete air barrier system including any required insulation at the exterior framed walls, CMU walls, concrete walls, backside of parapets and soffits as indicated on the documents. Provide wall opening transition assemblies, transition membranes, and flashings at all openings in the exterior wall system. Provide sealants as required to provide a continuous air barrier. Provide the air/vapor barrier interface to all adjacent systems and components including, but not limited to the transitions at the windows, parapet walls, doors, etc. Subcontractor shall proactively work with the Contractor, the Design Team and the Consultants to improve the constructability of any air/vapor barrier details to achieve a complete seal.
- Subcontractor shall coordinate and assist the Construction Manager's waterproof ing consultant in reviewing all details in the Contract Documents and if requested, provide alternate details for review and approval by the Construction Manager's waterproof ing consultant and the designer of record. Subcontractor shall attend all meetings scheduled to review and discuss the waterproof system.
- 4. This Subcontractor is identified as the "Waterproofing Contractor" and shall perform all specified and required tasks and tests.
- 5. Subcontractor shall participate and assist the Commissioning Agent in the Building Enclosure Commissioning.
- 6. Subcontractor shall provide a mockup of each waterproofing system that is being used, and in each application (horizontal and vertical). The Subcontractor shall assume that the mockup will not be incorporated into the final and accepted Work. The mockup shall be its own mobilization.
- 7. Subcontractor shall provide systems that can be applied to horizontal or vertical concrete within three (3) days of the concrete being poured. Subcontractor shall provide, at no additional cost, any additional adhesives or concrete treatment required to apply the waterproofing systems to concrete three (3) days after the concrete is poured.
- 8. Subcontractor to furnish and install modified bitumen membrane waterproofing at below grade

foundation walls, concrete foundations, deep foundations, retaining walls, elevator pits walls, tunnel walls, below the tunnel concrete slab, and on the roof of the tunnel as specified. Include all required accessories integral with the waterproof system, this is including but not limited to, sealants for cracks, primer, bonding agents, water stop integral with the waterproof system, grout, adhesives, fasteners, composite drainage panels, filter fabric, butyl tape, rubber rod, protection board, rigid insulation, wood blocking, flashing, termination bars, expansion joint tube, etc. for a complete waterproof system.

- 9. Subcontractor shall detail around all form ties, wall penetrations or other items required to achieve a waterproof envelope.
- 10. The waterproofing membrane shall be installed "sandwiched" between two layers of a concrete mud mat. Subcontractor shall provide the waterproofing membrane on top of a concrete mud mat (provided by others). Subcontractor includes all required adhesives, primers, or bonding agents to adhere the waterproofing system. Subcontractor understands that the Concrete Subcontractor will provide the pour schedule and sequence, and the Subcontractor shall provide the appropriate labor (including overtime), and materials to maintain the concrete pour schedule for the concrete mud mat.
- 11. Subcontractor shall provide a continuous waterproofing system for the building foundations per the Contract Documents. Subcontractor includes cleaning dirt and mud from the foundations and providing any required adhesives, primers, or bonding agents to adhere the waterproof system.
- 12. Subcontractor shall connect the horizontal waterproofing system to the vertical waterproofing system on the concrete foundation walls so that there is a continuous waterproofing envelope. Systems used, if not identical, will be compatible products to provide a complete system.
- 13. Subcontractor shall furnish and install all AVB and Waterproofing on the roof and parapets and at all other roofing conditions required by Contract Documents.
- 14. Subcontractor shall provide repairs to modified bitumen membrane waterproofing as needed after placement of reinforcement bars.
- 15. Subcontractor is responsible for coordinating manufacturers' inspections with concrete pours.
- 16. Subcontractor to furnish materials to comply with one of the manufacturers listed in the specifications.
- 17. Subcontractor shall provide cleaning and preparation of the surfaces required by Subcontractors installation. This shall be per manufacturer's recommendations, prior to product application and as required by the Contract Documents.
- 18. Any mechanical abrading or shot blasting required for installation is included.
- 19. Subcontractor shall inspect substrate prior to application of waterproofing or dampproofing and shall notify Contractor of any deficiencies prior to starting work. Application of waterproofing or dampproofing constitutes acceptance of substrate.
- 20. Subcontractor shall provide the specified extended warranty on all waterproofing systems and products.
- 21. Subcontractor shall provide protection for the installed waterproofing system against exposure to weather, such as sunlight, rain, snow, etc., as required by the waterproofing manufacturer until the waterproofing is permanently covered. Subcontractor understands that the backfill of the concrete foundations may not be immediately following the waterproof membrane installation, and Subcontractor will provide any required temporary protection or attachment of the drainage board and/or insulation. Subcontractor shall provide long exposure products as necessary, if applicable.
- 22. Subcontractor shall provide labor, material, and equipment for all specified tests of the

waterproofing systems, and tests listed in the Building Enclosure Commissioning plan for the waterproofing system. This Subcontractor shall specifically be responsible for all coordination, scheduling, and completing all tests involving the waterproofing system.

- 23. Subcontractor shall coordinate installation of the waterproofing with other trades and the CM.
- 24. Subcontractor shall test the waterproofing and air barrier at a minimum of eight (8) locations determined by the Construction Manager. If repeated failures are found, the Subcontractor shall provide testing at all locations requested by the Construction Manager. Testing should be assumed to occur on 3 separate testing mobilizations.
- 25. Subcontractor shall clean all mud, dirt, and debris from the concrete foundations prior to applying the waterproofing system.
- 26. Subcontractor shall provide waterproofing at all penetrations, including but not limited pipes, conduits, etc., to achieve a continuous waterproofing system. Subcontractor includes all costs for returning to seal or patch in penetrations after the waterproof system is completed.
- 27. Subcontractor shall provide a continuous waterproof system at all construction joints, control joints, expansion joints, and isolation joints as required. Subcontractor shall provide a compatible substrate, if required, at all joints in order to provide support for the waterproof system.
- 28. Subcontractor shall provide labor and compatible products to transition between the two waterproofing systems and from the waterproofing system to the air/vapor barrier to maintain a continuous Air Vapor Barrier System (AVB). Subcontractor shall coordinate, attend meetings, and provide the above grade termination of the waterproofing system.
- 29. Subcontractor understands that additional mobilizations and site visits will be required to complete the termination of the waterproofing system to the AVB.
- 30. Subcontractor shall provide joint sealants for the waterproofing system as specified and as required.
- 31. Subcontractor shall seal shrinkage cracks in concrete as needed at no additional cost. All cracks should be addressed per the Contract Documents.
- 32. Subcontractor shall grout tie holes, rock pockets, bug holes, etc. as specified and as required.
- 33. Subcontractor shall provide repairs to self-adhered sheet waterproofing as needed after placement of reinforcement bars.
- 34. Subcontractor shall assist in the commissioning and testing of the Building Air Tightness testing by providing supervision and carpenters on site to help review, identify, and repair leaks in the air/vapor barrier.
- 35. Subcontractor shall install and remove protection for adjacent finish surfaces while installing their scope of work.
- 36. Subcontractor understands that AVB at exterior door thresholds/block outs in the foundation wall will not be installed until the adjacent slab or pavers are to be installed to prevent damage.
- 37. Subcontractor shall provide labor and compatible products to transition between the two waterproofing systems and from the Air Barrier to the Water proofing system to maintain a continuous Air Vapor Barrier System (AVB). Subcontractor shall coordinate, attend meetings, and provide the below grade termination of the AVB system as required per the design documents and approved submittals.
- 38. Subcontractor shall clean all mud, dirt, and debris from the concrete foundations prior to applying the AVB system.

- 39. Subcontractor shall provide cleaning and preparation of the surfaces required by Subcontractors installation. This shall be per manufacturer's recommendations, prior to product application and as required by the Contract Documents.
- 40. Any mechanical abrading or shot blasting required for installation is included.
- 41. Subcontractor shall inspect substrate prior to application of AVB and shall notify Contractor of any deficiencies prior to starting work. Application of waterproofing or dampproofing constitutes acceptance of substrate.
- 42. Subcontractor shall provide AVB Sealant at all penetrations, including but not limited to pipes, conduits, etc., to achieve a continuous system. Subcontractor includes all costs for returning to seal or patch in penetrations after the waterproof system is completed.
- 43. Subcontractor has included all equipment necessary to complete work.
- 44. Subcontractor shall furnish and install all spray foam insulation as required in the contract documents. This includes spray foam insulation, Spray-applied closed-cell expanding polyurethane foam for use at openings, closed cell spray foam air barrier vapor barrier and ignition barrier, etc.
- 45. Subcontractor is responsible for any prep work that is required before the application of spray foam insulation, this includes but not limited to cleaning of dirt and debris, mechanical abrasions, etc.
- 46. Subcontractor is responsible for protecting adjacent work from any overspray that may occur.
- 47. Subcontractor is responsible for continuous cleaning as to not impact other trades.
- 48. Subcontractor includes that spray foam will need to be completed with multiple mobilizations and on off hours.
- 49. Subcontractor shall coordinate with surrounding trades for availability to install spray foam.

# 8. SPECIFIC EXCLUSIONS:

The following work is specifically excluded from this Subcontract Agreement and is not a part of this Agreement and/or will be performed by others as noted:

- 1. Onsite 3rd Party Material Testing & Inspections that will be performed by the Owner, all other inspections will be by this Subcontractor.
- 2. Under Slab On Grade Vapor Barrier

# 9. SAFETY:

1. FALLING OBJECT PREVENTION The Subcontractor/Seller is responsible for the implementation of a system of safety that will minimize the likelihood of objects being dropped and objects falling due to causes within the control of the Subcontractor/Seller. This system of safety must include daily planning for the implementation of safety strategies to minimize the likelihood of objects being dropped and objects falling due to causes within the control of the Subcontractor/Seller. This system of the Subcontractor/Seller. Elevated work areas should be enclosed to prevent objects from falling and impacting people and property below, unless such enclosure is not feasible then the perimeter protection must address the fall of material risk posed by stored or handled tools, materials, objects, and equipment to prevent these from being dropped, kicked, knocked, or bumped through openings or gaps. Tethers or lanyards must be used where the work area is at a height and is not fully enclosed, or

where tools or objects are required for use outside of the perimeter protection. A tether or lanyard must be used to separately secure each individual tool or object in use beyond edge protection or enclosures. The object must be secured prior to crossing through the edge protection or enclosures and or perimeter protection.

- 2. Subcontractor acknowledges that at no time will trades be stacked vertically on a single face of facade where falling objects from one crew could land on another. A horizontal offset (2H to 1V ratio) up to 50' horizontal feet shall be provided between crews working at different elevations.
- 3. Subcontractor shall have all temporary construction platforms and work areas engineered by a licensed Engineer. All temporary construction scaffolding and work platforms will be site specific drawings with stamped drawings. Engineer to be licensed in the Commonwealth of Kentucky. All connections back to building to be approved by Structural Engineer of Record.
- 4. Subcontractor shall provide all scaffolding and shoring to allow for installations of the brick facade from roof decks. This specifically applies to the metal roof decks, but may apply to concrete decks depending on subcontractor's material plan. Subcontractor shall not overload roof deck above designed loading.

# 10. QUALITY:

- 1. In additional to requirements of Specified Field Quality Control, Subcontractor shall have a manufacturer's technical representative attend the pre-installation meeting, inspect and provide a field report for the mock up, inspect and provide a field report for the initial installation and return to the site for follow up inspections as requested by the Construction Manager and as required to ensure a manufacturer's warranty will be issued.
- 2. Subcontractor shall employ installers and supervisors who are trained and approved by waterproofing manufacturer. Installer shall have 5 years of experience in applying the same or similar materials and shall be specifically approved in writing by the membrane manufacturer.
- 3. Subcontractor shall clean waterproofing and/or dampproofing from all surfaces not required to receive waterproofing and/or dampproofing.
- 4. Subcontractor acknowledges Specification Sections 019115 and 019117 and will participate fully in Building Enclosure Commissioning processes.
- 5. Subcontractor shall be responsible for all costs associated with Building Enclosure Commissioning rechecks on issues in subcontractor's system(s).
- 6. Subcontractor shall participate in Construction Manager's Building Enclosure Quality Program
- 7. Subcontractor is required to protect other surfaces and materials, including the glazing system, from damage during installation and cleaning.
- 8. Subcontractor shall include AVB products that have 180 day (or greater) UV exposure limits.
- 9. Subcontractor shall include 40 crew hours, with material and equipment costs, for miscellaneous scope of work on the Waterproofing. This shall be utilized at discretion of the CM and may include patching or accounting for non base scope work. Damage or deficient work by this subcontractor shall not be remedied using hours, materials, or funds from this scope of work.
- 10. Subcontractor shall include 40 crew hours, with material and equipment costs, for miscellaneous scope of work on the AVB. This shall be utilized at discretion of the CM and may include patching or accounting for non base scope work. Damage or deficient work by this subcontractor shall not be remedied using hours, materials, or funds from this scope of work.

# 11. SCHEDULE:

- 1. Subcontractor acknowledges the scope of work is phased per the project schedule.
- 2. Subcontractor shall be responsible for providing any weather protection, heat, and/or ventilation required to meet the project schedule and manufacturer's requirements.
- 3. Subcontractor acknowledges a conceptual installation sequence of: structure complete, CFMF and sheathing installation, Fluid Applied Air Barrier, Glazing (Water Tight Enclosure), Face Brick, metal panel, then final detailing by glazer.
- 4. Subcontractor acknowledges a conceptual installation sequence of enclosure being installed before the final roof on lower roofs is completed.
- 5. PROJECT CONSTRUCTION SEQUENCE: Subcontractor understands that the structure will be completed in a North to South manner with the 2/3 of the structure north of approximately "F" line being completed before Levels 2-9 south of "F" line. In the effort to complete the north part of the structure before the south part is complete, the structure may be "stair-stepped" from South to North or may be vertically sequenced above Level 1 on each floor at approximately "F" line.
- 6. Subcontractor includes all come back work necessary to complete and 'repair' the façade where project has hoists and other construction equipment. Skip Hoist(s) are anticipated on all levels of the building's west façade approximately between Column Line H and J. This occurs in the 'Sunken Garden' space. Other work in this area may be delayed as a result of the hoist schedule.
- 7. Subcontractor acknowledges that all work on pedestrian bridge in the Limestone street right of way cannot be done during standard working hours. Work Hours over the Limestone right of way are restricted to 7pm to 6am. Subcontractor includes all costs for their work over Limestone including any and all permits and road safety work to allow for temporary closures.

# 12. COORDINATION:

- 1. Subcontractor shall coordinate with sitework/excavation, concrete, earth retention, and underground MEP subcontractors for sequence and available work areas.
- 2. Subcontractor shall provide a protection layer appropriate to the material being protected at the completion of the work and prior to subsequent trades.
- 3. Subcontractor shall participate in ongoing collaborative discussions with the Construction Manager and other subcontractors to discuss and plan for site logistics, construction sequence, safety and quality procedures on site. These discussions will commence shortly after award and contracting and will extend through the completion of the project.

# 13. PAY APPLICATION PROCESS AND COST ITEMS:

1. No additional requirements other than those shown in Exhibit B.1 and in all other parts of the Contract.

# 14. ALTERNATES, ALLOWANCES, and UNIT PRICES:

The following items are considered to be fully loaded including but not, but are not limited to, labor, burden, insurance, transportation costs, small tools, incidentals, escalation, overhead, profit, etc.:

- 1. This section will be populated, as applicable, with information as submitted on Bid Form.
- 2. Overtime Allowance is defined as additional hours to be included with the bid that will be used, at the CM's sole discretion, to accelerate the project in advance of the construction schedule. Subcontractor may not use these hours for any base scope of work or corrections of defective work.
- 3. Peer Review Coordination and Enclosure Coordination Allowances are to be controlled by the CM and will not be utilized for any base scope work as noted in construction documents.

# 15. HOURLY RATES:

The following hourly rates are fully loaded rates that include, but are not limited to, labor, burden,

insurance, transportation costs, small tools, incidentals, escalation, overhead, profit, etc.:

Worker Category	Straight Time	Premium Time	Double Time
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1. This section will be populated with information as submitted on Bid Form.

# SECTION 074213.23 - METAL COMPOSITE MATERIAL WALL PANELS

# 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. Metal composite material (MCM) panels.
  - 2. Metal composite material (MCM) system.
- B. Related Requirements:
  - 1. Section 014339 "Mockups" for integrated exterior mockup requirements.
  - 2. Section 070543.11 Composite Metal Hybrid (CMH) Continuous Insulation Sub-Framing Support Systems.
  - 3. Section 019115 "Building Enclosure Commissioning."

#### 1.3 DEFINITIONS

- A. DBVC: Drained and back-ventilated cavity rainscreen system designed to drain and dry water entering cavity through drainage channels, weeps, and air ventilation.
- B. MCM: Metal composite material; cladding material formed by joining two thin metal skins to polyethylene or fire-retardant core and bonded under precise temperature, pressure, and tension.

### 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Meet with Owner, Architect, Owner's insurer if applicable, MCM system Installer, MCM system manufacturer's representative, and installers whose work interfaces with or affects MCM panels, including installers of doors, windows, and louvers.
  - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review methods and procedures related to MCM system installation, including manufacturer's written instructions.
  - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
  - 5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect MCM system.

- 6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
- 7. Review temporary protection requirements for system assembly during and after installation.
- 8. Review procedures for repair of panels damaged after installation.
- 9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

# 1.5 ACTION SUBMITTALS

- A. Product Data: Include construction details, manufacturer's installation instructions, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel, system, and accessory.
  - 1. Metal composite material (MCM) panels.
  - 2. Metal composite material (MCM) system.
- B. Shop Drawings: Submit project specific shop drawings prepared by, or under supervision of, Structural Design Engineer as specified in Quality Assurance article below and including Structural Design Engineer's stamp or seal on all shop drawings including system attachments and anchors.
  - 1. Include fabrication and installation layouts of MCM system; project specific details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, accessories, and special details. Include details showing integration of metal composite material wall panel system with air barrier system such as back-sealing of fastener penetrations. Include integration with adjacent construction.
  - 2. Accessories: Include project specific details of flashing, trim, and anchorage, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
  - 3. Provide signed and sealed drawings, by a qualified design professional in Project jurisdiction, of MCM system showing compliance with performance requirements and design criteria identified for this Project.
- C. Samples for Initial Selection: For each type of MCM panel indicated, with factory-applied color finishes.
  - 1. Size: Manufacturers' standard size.
  - 2. Include Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of MCM panel and MCM system required, with factoryapplied color finishes.
  - 1. MCM Panel: Manufacturers' standard size.
  - 2. MCM System: 12 inches (305 mm) long by actual panel width, fabricated into panel systems indicated. Include fasteners, closures, and other MCM panel accessories. Panel sample need not be provided in the specified color.
- E. Delegated Design Submittals: For MCM system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- F. Sustainable Design Submittals:

- 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
- 2. Environmental Product Declaration: For each product.
- 3. Health Product Declaration: For each product.
- 4. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.

### 1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Exterior elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Wall panels and attachments.
  - 2. Girts.
  - 3. Wall-mounted items including doors, windows, louvers, and lighting fixtures.
  - 4. Penetrations of wall by pipes and utilities.
- B. Test and Evaluation Reports:
  - 1. Product Test Reports: For each MCM system, for tests performed by qualified testing agency.
    - a. MCM Panel Manufacturer's Material Test Reports: Certified test reports showing compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.
    - b. Fabricator's MCM System Test Reports: Certified test reports showing system compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.
      - 1) DBVC System: Tested to AAMA 509.
  - 2. Research Reports: For MCM systems, from ICC-ES showing compliance with .
- C. Field Quality-Control Submittals:
  - 1. Field quality-control reports.
- D. Qualification Statements: For manufacturer, fabricator, Installer and testing agency.
- E. Delegated design engineer qualifications.
- F. Sample warranties.
- G. Manufacturer's Certificates:
  - 1. Certification from manufacturers that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
  - 2. Provide certificates from manufacturer for each product required indicating that product complies with specified product requirements and is suitable for use indicated.

#### 1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For MCM panels.

- B. Warranty Documentation:
  - 1. Manufacturers' special warranties.
  - 2. Installer's special warranties.

### 1.8 QUALITY ASSURANCE

- A. Single Source Responsibility: Furnish each product from one manufacturer, unless otherwise acceptable to Architect.
- B. Manufacturer Qualifications: Minimum 5 years' experience. Provide representation by manufacturer's field representative during construction and provide written acceptance of installer and fabricator.
- C. Fabricator Qualifications: An entity specializing in fabrication of specified metal composite material wall panel components as indicated for installation as part of this project and who is acceptable to metal composite material wall panel manufacturer. Fabricator shall meet the standards of the Premium MCM Fabricator Certification program and be certified by Metal Construction Association (MCA) as a Premium MCM Fabricator.
- D. Installer Qualifications: An entity specializing in installation of metal composite material wall panel systems that employs installers and supervisors who are trained, licensed, certified and approved by manufacturer.
- E. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in state where Project is located and who is experienced in providing engineering services of the type indicated.
- F. Testing Agency Qualifications: An agency acceptable to authorities having jurisdiction.

#### 1.9 MOCKUPS

- A. Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects and to set quality standards for fabrication and installation.
  - 1. Build mockup as indicated on Drawings, including corner, soffits, supports, attachments, and accessories. Include integration with adjacent construction. Refer to Section 014339 "Mockups" for additional requirements.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, MCM panels, and other manufactured items so as not to be damaged or deformed. Package MCM panels for protection during transportation and handling.
- B. Unload, store, and erect MCM panels in a manner to prevent bending, warping, twisting, and surface damage.

- C. Stack MCM panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store MCM panels to ensure dryness, with positive slope for drainage of water. Do not store MCM panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on MCM panels during installation.
- E. Zinc Panels: Wear gloves and long sleeves when handling to prevent fingerprints and soiling of surface.

# 1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of MCM panels to be performed in accordance with manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Take field measurements prior to completion of shop fabrication of metal composite material wall panels. Coordinate panel fabrication schedule with construction progress schedule as established by Contractor to avoid delay in construction.
- C. Field Modifications: Metal composite material wall panels may be modified in field as required to ensure proper fit as acceptable to panel manufacturer and Architect. Keep field modifications to absolute minimum, ensuring majority of fabrication accomplished under manufacturer and fabricator-controlled conditions.

#### 1.12 COORDINATION

- A. Coordinate MCM panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.
- B. Coordinate metal composite material panel system installation in manner to ensure integrity of air barrier system is not disrupted. Provide monitoring and inspection of metal composite material panel system installation by air barrier system installer and manufacturer's representative.

#### 1.13 WARRANTY

- A. Panel Integrity Warranty: Manufacturer agrees to repair or replace components of MCM panels that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: 10 years from date of Substantial Completion.
- B. Panel Finish Warranty: Manufacturer agrees to repair finish or replace MCM panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

- a. Color fading more than 5 Hunter units when tested in accordance with ASTM D2244.
- b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
- c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
- 2. Finish Warranty Period: 20 years from date of Substantial Completion.
- C. MCM System Warranty: System manufacturer's standard form in which manufacturer agrees to repair or replace components of MCM systems that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

# PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal-faced composite wall panel assemblies shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Delegated Design: Design metal-faced composite wall panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 15 percent.
- D. Structural Performance: MCM systems to withstand the effects of the following loads, based on testing in accordance with ASTM E330/E330M:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Other Design Loads: As indicated on Drawings.
  - 3. Deflection Limits: For wind loads, no greater than 1/180 of the span.
- E. Provide DBVC system with V-axis classification number greater than or equal to W-axis classification number in accordance with AAMA 509.
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- G. Fire Propagation Characteristics: MCM system passes NFPA 285 testing.
- H. Air and Vapor Barrier: Where penetrations are to be made in the air and vapor barrier, provide testing or demonstrate how this system will maintain the integrity of the air and vapor barrier.

# 2.2 METAL COMPOSITE MATERIAL (MCM) WALL PANELS

- A. Metal Composite Material (MCM) Wall Panels: Provide MCM panels fabricated from two metal facings bonded to a solid, extruded thermoplastic core. Provide system where panels anchored to supporting construction without exposed fasteners.
  - 1. Basis-of-Design Product (MP-1): Subject to compliance with requirements, provide ALPOLIC Materials; Mitsubishi Chemical Composites; ALPOLIC/fr Natural Metals Series or a comparable product by one of the following:
    - a. ALUCOBOND; 3A Composites USA, Inc.; ALUCOBOND PLUS.
    - b. Arconic; Reynobond.
    - c. ACMpanelworx.
  - Basis-of-Design Product (MP-2, MP-3): Subject to compliance with requirements, provide ALUCOBOND; 3A Composites USA, Inc.; ALUCOBOND PLUS Route & Return or a comparable product by one of the following:
    - a. Arconic; Reynobond.
    - b. Mitsubishi Chemical Composites; ALPOLIC.
    - c. ACMpanelworx.
  - 3. Core: FR.
  - 4. Panel Thickness: 0.157 inch (4 mm).
  - 5. Bond Strength: 22.5 in-lb/in. (100 N x mm/mm) when tested for bond integrity in accordance with ASTM D1781.
- B. MCM Panel Materials:
  - 1. Zinc-Faced Panels (MP-1): ASTM B69 with 0.020-inch- (0.50-mm-) thick, zinc sheet facings.
    - a. Exterior Finish: ALPOLIC Natural Metal Series, Zinc Metal Plate; VM ZINC Quartz Natural Zinc Finish.
  - 2. Aluminum-Faced Panels (MP-2, MP-3): ASTM B209/B209M alloy as standard with manufacturer, temper as required to suit finish and forming operations with 0.020-inch-(0.50-mm-) thick, aluminum sheet facings.
    - a. Exterior Finish: Two-coat metallic fluoropolymer.
      - 1) Color (MP-2): Light Gray, Beachstone Gray Metallic.
      - 2) Color (MP-3): Dark Gray, *Basalt Gray*.

# 2.3 METAL COMPOSITE MATERIAL (MCM) SYSTEM

- A. DBVC MCM System: Provide factory-formed and -assembled, MCM panels formed into profile for DBVC system installation, drained at horizontal joints and at base of wall. Include attachment assembly components, panel stiffeners, and accessories required for weathertight system.
- B. System Panel Depth: As indicated on drawings.

- C. Attachment Assembly Components: Manufacturer's standard formed from material compatible with panel facing.
- D. Labeling: Comply with labeling requirement of applicable building code.

### 2.4 ACCESSORIES

- A. Metal Subframing and Furring: ASTM C955 cold-formed, metallic-coated steel sheet ASTM A653/A653M, G90 (Z275) hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard non-conductive sections as required for support and alignment of MCM system.
- B. System Accessories: Provide components required for a complete, weathertight wall system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, backer plates and similar items. Match material and finish of MCM panels unless otherwise indicated.
- C. Backer plates: Provide metal backing plates at panel edges, terminations, openings, splices, and where recommended by manufacturer, consisting of Zinc Plus or stainless steel sheet goods formed in configuration and thickness recommended by manufacturer.
- D. Flashing and Trim: Provide flashing and trim formed from same material as MCM panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent MCM panels.
- E. Panel Sealants: ASTM C920; silicone sealant; of type, grade, class, and use classifications required to seal joints at adjacent materials, flashings, copings, etc. and remain weathertight; and as recommended in writing by MCM system manufacturer. Color to match panel.

# 2.5 FABRICATION

- A. Composite Panel Fabricators.
  - 1. Approved Fabricators:
    - a. Royalton Architectural Fabrication, Inc.
    - b. Sobotec, Ltd., Ontario, Canada.
    - c. East Coast Metal Systems.
    - d. Universe Corporation.
    - e. Architectural Metals North America (AMNA).
    - f. Tremco CPG Inc.
- B. Fabricate and finish MCM panels at the factory, by panel manufacturer's standard procedures and processes, as necessary to fulfill indicated panel performance requirements demonstrated by laboratory testing.
- C. Shop-fabricate MCM systems and accessories by fabricator's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with requirements of MCM panel manufacturer, of indicated system profiles, and with dimensional and structural requirements.

- 1. Fabricate panels to dimensions indicated on Drawings based on an assumed design temperature of 70 deg F (21 deg C). Allow for ambient temperature range at time of fabrication.
- 2. Formed MCM panel lines, breaks, and angles to be sharp and straight, with surfaces free from warp or buckle.
- 3. Fabricate panels with sharply cut edges and no displacement of face sheet or protrusion of core.
- 4. Fabricate panels with panel stiffeners, as required to comply with deflection limits, attached to back of panels with structural silicone sealant or bond tape.
- 5. Fabricated Panel Tolerances: Shop-fabricate panels to sizes and joint configurations indicated on Drawings.
  - a. Width: Plus or minus 0.079 inch (2 mm) at 70 deg F (21 deg C).
  - b. Length: Plus or minus 0.079 inch (2 mm) at 70 deg F (21 deg C).
  - c. Squareness: Plus or minus 0.079 inch (2 mm) at 70 deg F (21 deg C).
  - d. Panel Bow: 0.8 percent maximum of panel length or width.
- 6. Fabricate MCM panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- 7. Attach routed-and-returned panel flanges to panel clips with manufacturer's standard fasteners.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
  - 1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
  - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flatlock seams.
  - 4. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal manufacturer for application, but not less than thickness of metal being secured.

# 2.6 FINISHES

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

- C. Coil-Coated Metal Finish:
  - 1. PVDF Fluoropolymer: AAMA 2605, two-coat metallic fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- D. Zinc Finish: As noted above.

# PART 3 - EXECUTION

- 3.1 EXAMINATION
  - A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, MCM system supports, and other conditions affecting performance of the Work.
    - 1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by MCM system manufacturer.
    - 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by MCM system manufacturer.
      - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
  - B. Examine roughing-in for components and assemblies penetrating MCM system to verify actual locations of penetrations relative to seam locations of MCM panels before installation.
  - C. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 INSTALLATION OF MCM SYSTEM

- A. General: Install MCM system in accordance with system manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor MCM system securely in place, with provisions for thermal and structural movement.
  - 1. Shim or otherwise plumb substrates receiving MCM system.
  - 2. Flash and seal MCM system at perimeter of all openings. Fasten with self-tapping screws.
  - 3. Install screw fasteners in predrilled holes.
  - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
  - 5. Install flashing and trim as MCM system work proceeds.
  - 6. Align bottoms of MCM panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  - 7. Provide weathertight escutcheons for all items penetrating system.
  - 8. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by MCM system manufacturer.

- 9. Attach MCM panels to supports at locations, spacings, and with fasteners recommended by manufacturer to meet listed performance requirements.
- B. Attachment Assembly, General: Install attachment assembly required to support MCM panels and to provide a complete weathertight wall system, including tracks, drainage channels, anchor channels, perimeter extrusions, and panel clips.
  - 1. Install subframing, furring, and other panel support members and anchorages in accordance with ASTM C955.
  - 2. Install support system at locations, at spacings, and with fasteners recommended by MCM system manufacturer to meet listed performance requirements.
  - 3. Air Barrier: After installation of attachment assembly and prior to installing metal composite material wall panels and at no additional cost to owner, provide the following;
    - a. In accordance with recommendations of air barrier manufacturer and as directed by air barrier installer, seal penetrations in air barrier created by screws used to secure wall panel system support structure as required to ensure air barrier warranty is not compromised.
    - b. In accordance with recommendations of air barrier manufacturer and as directed by air barrier installer, seal holes or tears in air barrier created by installation of metal composite material wall panels as required to ensure air barrier warranty is not compromised.
    - c. After repairs to air barrier system, retest air barrier system for air and water tightness in accordance with requirements in Specification Section where applicable air barrier is specified and submit field reports of all retesting demonstrating compliance with requirements specified in Specification Section where applicable air barrier is specified.
    - d. Prior to proceeding with metal composite material wall panel installation:
      - 1) Repeat repair and testing process until testing results comply with requirements specified in Specification Section where applicable air barrier is specified as acceptable to Architect.
      - 2) Arrange for inspection of all repairs to air barrier by air barrier manufacturer and air barrier installer and obtain written acceptance of air barrier system with repairs.
- C. DBVC MCM System: Install vertical tracks or drain channels and horizontal tracks or channels at locations, at spacings, and with fasteners recommended by system manufacturer.
  - 1. Insert matching MCM spline into tracks at joint reveal locations.
- D. Install panels to allow individual panels to "free float" and be installed and removed without disturbing adjacent panels.
- E. Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
  - 1. Install accessory components required for a complete MCM system assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by MCM system manufacturer.
- F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

- 1. Install exposed flashing and trim that is without buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install trim to fit substrates and to result in waterproof performance.
- 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 ft. (3 m) with no joints allowed within 24 inches (605 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- G. Provide separation between zinc panels and aluminum.

# 3.3 INSTALLATION TOLERANCES

A. Shim and align MCM panels within installed tolerance of 1/4 inch in 20 ft. (6 mm in 6 m), nonaccumulative, on level, plumb, and location lines as indicated, and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles. Locate shims on the surface of the girts where possible. If shims are required to be located on the surface of the AVB they must be solid shims to gasket the penetrations.

# 3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect completed MCM system installation, including accessories.
- B. MCM system will be considered defective if it does not pass inspections.
- C. Prepare inspection reports.

# 3.5 CLEANING

- A. Remove temporary protective coverings and strippable films as MCM panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, clean finished surfaces as recommended by MCM panel manufacturer. Maintain in a clean condition during construction. Do not mark on protective film as this can stain zinc panels.
- B. After installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

# 3.6 PROTECTION

A. Replace MCM panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

# END OF SECTION 074213.23

# SECTION 075419 - POLYVINYL-CHLORIDE (PVC) ROOFING

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Polyvinyl chloride (PVC) roofing system.
  - 2. Accessory roofing materials.
  - 3. Substrate board.
  - 4. Vapor retarder.
  - 5. Roof insulation.
  - 6. Insulation accessories and cover board.
  - 7. Asphalt materials.
  - 8. Electronic leak detection (ELD) materials.
  - 9. Walkways.
  - 10. Safety stripping.
- B. Related Requirements:
  - 1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
  - 2. Section 072100 "Thermal Insulation" for insulation beneath the roof deck.
  - 3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
  - 4. Section 077100 "Roof Specialties" for premanufactured copings and roof edge flashings.
  - 5. Section 077129 "Manufactured Roof Expansion Joints" for premanufactured roof expansion-joint assemblies.
  - 6. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

# 1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

# 1.3 PREINSTALLATION MEETINGS

- A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
  - 1. Meet with Owner, Architect, Construction Manager, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  - 3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

- 4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
- 5. Review structural loading limitations of roof deck during and after roofing.
- 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
- 7. Review governing regulations and requirements for insurance and certificates if applicable.
- 8. Review temporary protection requirements for roofing system during and after installation.
- 9. Review roof observation and repair procedures after roofing installation.
- B. Preinstallation Roofing Conference: Conduct conference at Project site.
  - 1. Meet with Owner, Architect, Construction Manager, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  - 3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
  - 5. Review structural loading limitations of roof deck during and after roofing.
  - 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
  - 7. Review governing regulations and requirements for insurance and certificates if applicable.
  - 8. Review temporary protection requirements for roofing system during and after installation.
  - 9. Review roof observation and repair procedures after roofing installation.

# 1.4 ACTION SUBMITTALS

- A. Product Data:
  - 1. Polyvinyl chloride (PVC) roofing system.
  - 2. Accessory roofing materials.
  - 3. Substrate board.
  - 4. Vapor retarder.
  - 5. Roof insulation.
  - 6. Insulation accessories and cover board.
  - 7. Asphalt materials.
  - 8. Electronic leak detection (ELD) materials.
  - 9. Ballast.
  - 10. Walkways.
  - 11. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav listing.
- B. Sustainable Design Submittals:

- 1. Product Test Reports: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirements.
- 2. Product Data: For adhesives and sealants, indicating VOC content.
- 3. Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-emitting materials.
- 4. Environmental Product Declaration: For each product.
- 5. Health Product Declaration: For each product.
- 6. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.
- C. Shop Drawings: Project specific. Include roof plans, sections, manufacturer's installation instructions, project specific details, transitions to other systems that comprise the air and water control layers, and attachments to other work, including the following:
  - 1. Layout and thickness of insulation.
  - 2. Base flashings and membrane terminations.
  - 3. Flashing details at penetrations.
  - 4. Tapered insulation thickness and slopes.
  - 5. Roof plan showing orientation of steel roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
  - 6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
  - 7. Tie-in with air barrier.
- D. Samples for Verification: For the following products:
  - 1. Roof membrane and flashing, of color required.
  - 2. Walkway pads or rolls, of color required.
- E. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, manufacturer and testing agency.
- B. Manufacturer Certificates:
  - 1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
    - a. Submit evidence of compliance with performance requirements.
  - 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- C. Product Test Reports: For roof membrane and insulation, tests performed by independent qualified testing agency indicating compliance with specified requirements.
- D. Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Field Test Reports:
  - 1. Concrete internal relative humidity test reports.

- 2. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.
- F. Field quality-control reports.
- G. Sample Warranties: For manufacturer's special warranties.
- H. Manufacturer's Certificates:
  - 1. Certification from manufacturers that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
  - 2. Provide certificates from manufacturer for each product required indicating that product complies with specified product requirements and is suitable for use indicated.
- 1.6 CLOSEOUT SUBMITTALS
  - A. Maintenance Data: For roofing system to include in maintenance manuals.
- 1.7 QUALITY ASSURANCE
  - A. Qualifications:
    - 1. Manufacturers: A qualified manufacturer that is listed in FM Approvals' RoofNav for roofing system identical to that used for this Project.
    - 2. Installers: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty. Five years installation experience with specified roof system and specific manufacturer.
- 1.8 DELIVERY, STORAGE, AND HANDLING
  - A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
  - B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
    - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
  - C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
  - D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

# 1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Safety requirements:
  - 1. All applications, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
  - 2. Comply with federal, state, local and owner fire and safety requirements
  - 3. Advise owner when any work is expected to be hazardous to owner or employees
  - 4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
  - 5. Maintain fire extinguisher within easy access whenever power tools and torches are being used.
- C. Environmental requirements:
  - 1. Do not work in rain, snow, or in presence of water.
  - 2. Do not work in temperatures below 40 F without permission from architect and roof manufacturer
  - 3. Do not install materials marked "keep from freezing" when daily temperatures are scheduled to below 40 F.
  - 4. Remove any work damaged by freezing
  - 5. Advise the Owner when volatile materials are to be used near air ventilation intakes so that they can be shut down or blocked as owner requires.

# 1.10 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
  - 1. Special warranty includes roof membrane, base flashings, roof insulation, adhesives, fasteners, cover boards, vapor retarders, substrate boards, copings, walkway products, fascias, cants, nailers, blocking, as well as all metal work and other components of roofing system.
  - 2. Warranty Period: 20 years from date of Substantial Completion. No dollar limit.
- B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashings, roof insulation, adhesives, fasteners, cover boards, substrate boards, vapor retarders, copings, walkway products, fascias, cants, nailers, blocking as well as any metal work, and other components of roofing system for the following warranty period:
  - 1. Warranty Period: Five years from date of Substantial Completion.

# PART 2 - PRODUCTS

# 2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing and base flashings to withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings to remain watertight.
  - 1. Accelerated Weathering: Roof membrane to withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
  - 2. Impact Resistance: Roof membrane to resist impact damage when tested according to ASTM D3746, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Material Compatibility: Roofing materials to be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- C. Wind Uplift Resistance: Design roofing system to resist wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897. Refer to Structural Drawings for design criteria.
- D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and are listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.
  - 1. Fire/Windstorm Classification: Class 1A-120.
  - 2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 SH.
- E. Solar Reflectance Index (SRI): Three-year-aged SRI not less than 64 or initial SRI not less than 82 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- F. Energy Performance: Roofing system to have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested in accordance with ANSI/CRRC S100.
- G. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- H. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

# 2.2 POLYVINYL CHLORIDE (PVC) ROOFING SYSTEM (PVC-1 & PVC-2)

- A. PVC Sheet Type III, Fabric Backed: ASTM D4434/D4434M, fabric reinforced and fabric backed.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Duro-Last Inc.; Duro-Fleece or a comparable product by one of the following:

- a. Carlisle Syntec Systems.
- b. Sika Corporation.
- c. Johns Manville: a Berkshire Hathaway company.
- 2. Membrane Thickness: 80 mils (2.0 mm).
- 3. Exposed Face Color: PVC-1: White, PVC-2: Light Gray.
- B. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.

# 2.3 ACCESSORY ROOFING MATERIALS

- A. General: Accessory materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
  - 1. Adhesives and Sealants: Comply with VOC limits of authorities having jurisdiction.
  - 2. Verify adhesives and sealants comply with the following limits for VOC content:
    - a. Plastic Foam Adhesives: 50 g/L.
    - b. Gypsum Board and Panel Adhesives: 50 g/L.
    - c. Multipurpose Construction Adhesives: 70 g/L.
    - d. Fiberglass Adhesives: 80 g/L.
    - e. Contact Adhesives: 80 g/L.
    - f. PVC Welding Compounds: 510 g/L.
    - g. Other Adhesives: 250 g/L.
    - h. Single-Ply Roof Membrane Sealants: 450 g/L.
    - i. Nonmembrane Roof Sealants: 300 g/L.
    - j. Sealant Primers for Nonporous Substrates: 250 g/L.
    - k. Sealant Primers for Porous Substrates: 775 g/L.
- B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Bonding Adhesive: Manufacturer's standard.
- E. Low-Rise, Urethane, Fabric-Backed Membrane Adhesive: Roof system manufacturer's standard spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with fabric-backed membrane roofing.
- F. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors an integral caulk ledge.
- G. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.
- H. Miscellaneous Accessories: Provide manufacturer recommended preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

# 2.4 SUBSTRATE BOARD

- A. Glass-Mat Gypsum Roof Substrate Board: ASTM C1177/C1177M, water-resistant gypsum board.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Certainteed; SAINT-GOBAIN; GlasRoc Sheathing Type X.
    - b. Georgia-Pacific Gypsum LLC; Dens Deck Prime.
    - c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
    - d. USG Corporation; Securock Glass Mat Roof Board.
  - 2. Thickness: Type X, 5/8 inch (16 mm).
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosionresistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

# 2.5 VAPOR RETARDER

- A. Butyl-Rubber-Sheet Vapor Retarder, Self-Adhering: Polyethylene film laminated to layer of butyl rubber adhesive, minimum 30-mil (0.76-mm) total thickness; maximum permeance rating of 0.1 perm (6 ng/Pa x s x sq. m); cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor retarder manufacturer.
  - 1. Basis-of-Design Product: Duro-Last Inc.; Vapor Barrier (DL VB).

# 2.6 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by PVC roof membrane manufacturer, approved for use in FM Approvals' RoofNav listed roof assemblies.
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 3, felt or glass-fiber mat facer on both major surfaces.
  - 1. Compressive Strength: 25 psi (172 kPa).
  - 2. Size: 48 by 48 inches (1219 by 1219 mm).
  - 3. Thickness:
    - a. Base Layer: 1-1/2 inches (38 mm).
    - b. Upper Layer: As indicated on Drawings.
- C. Tapered Insulation: Provide factory-tapered insulation boards.
  - 1. Material: Match roof insulation.
  - 2. Minimum Thickness: 1/4 inch (6.35 mm).
  - 3. Slope:
    - a. Roof Field: 1/4 inch per foot (1:48) unless otherwise indicated on Drawings.
    - b. Saddles and Crickets: 1/2 inch per foot (1:24) unless otherwise indicated on Drawings.

# 2.7 INSULATION ACCESSORIES AND COVER BOARD

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosionresistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.
- C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
  - 1. As recommended by Manufacturer.
  - 2. Verify adhesives and sealants comply with the following limits for VOC content:
    - a. Plastic Foam Adhesives: 50 g/L.
    - b. Gypsum Board and Panel Adhesives: 50 g/L.
    - c. Multipurpose Construction Adhesives: 70 g/L.
    - d. Fiberglass Adhesives: 80 g/L.
    - e. Contact Adhesives: 80 g/L.
    - f. PVC Welding Compounds: 510 g/L.
    - g. Other Adhesives: 250 g/L.
    - h. Single-Ply Roof Membrane Sealants: 450 g/L.
    - i. Nonmembrane Roof Sealants: 300 g/L.
    - j. Sealant Primers for Nonporous Substrates: 250 g/L.
    - k. Sealant Primers for Porous Substrates: 775 g/L.
- D. Glass-Mat Gypsum Cover Board: ASTM C1177/C1177M, water-resistant gypsum board.
  - 1. Thickness: 1/2 inch (13 mm).

# 2.8 ELECTRONIC LEAK DETECTION (ELD) MATERIALS

- A. Conductive Medium: Materials providing less than 10<sup>4</sup> ohms per square as determined in accordance with ASTM D4496 and approved by roof membrane manufacturer.
  - 1. Electrically Conductive Primer: Water-based, non-flammable, nonmetallic, low-VOC primer, UL listed and FM Global approved.
  - 2. Grounding Screen: Welded, stainless steel mesh, for use with vector mapping system, FM Global approved.
- B. Leak Detection and Moisture-Monitoring System (where indicated on Drawings): Permanent, embedded leak detection and moisture-monitoring system.
  - 1. Sensors measuring moisture content, placed below roof insulation and connected to a monitoring program, with a notification indicating location of breach.

#### 2.9 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.

1. Color: As selected by Architect from manufacturer's full range of color selections.

# 2.10 SAFETY STRIPPING

- A. Safety stripping: Safety Stripping composed of a laminated yellow PVC film on the top and a white PVC film on the bottom of a weft-inserted reinforcement fabric. The PVC film is a proprietary thermoplastic formulation that is resistant to ultraviolet rays, microorganisms, caustic chemicals, petroleum products, animal fats and acids. Install safety stripping to membrane per Manufacturer's written instructions using a hot-air welder. Refer to Drawings for location and extents.
  - 1. Basis-of-Design Product: Duro-Last Safety Stripping.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
  - 1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
  - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
  - 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
  - 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
  - 5. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75 percent, or as recommended by roofing system manufacturer, when tested according to ASTM F2170.
    - a. Test Frequency: One test probe per each 1000 sq. ft. (93 sq. m), or portion thereof, of roof deck, with no fewer than three test probes.
    - b. Submit test reports within 24 hours of performing tests.
  - 6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

# 3.3 INSTALLATION OF ROOFING, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- C. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier specified under Section 072726.04 "Fluid-Applied Membrane Air Barriers."

# 3.4 INSTALLATION OF SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches (610 mm) in adjacent rows.
  - 1. At steel roof decks, install substrate board at right angle to flutes of deck.
    - a. Locate end joints over crests of steel roof deck.
  - 2. Tightly butt substrate boards together.
  - 3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
  - 4. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29.
  - 5. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions.

# 3.5 INSTALLATION OF VAPOR RETARDER

- A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install selfadhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches (90 and 150 mm), respectively.
  - 1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board and to marry with the roofing membrane if the materials are compatible.
  - 2. Seal laps by rolling.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

# 3.6 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Installation Over Metal Decking:
  - 1. Install base layer of insulation with joints staggered not less than 24 inches (610 mm) in adjacent rows or end joints staggered not less than 12 inches (305 mm) in adjacent rows and with long joints continuous at right angle to flutes of decking. Stagger board joints in each direction.
    - a. Locate end joints over crests of decking.
    - b. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
    - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - d. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    - e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
      - 1) Trim insulation so that water flow is unrestricted.
    - f. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
    - g. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
    - h. Mechanically attach base layer of insulation and substrate board using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.
      - 1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
      - 2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
  - 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.
    - a. Staggered end joints within each layer not less than 24 inches (610 mm) in adjacent rows.
    - b. Install with long joints continuous and with end joints staggered not less than 12 inches (305 mm) in adjacent rows.
    - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - d. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    - e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
    - f. Trim insulation so that water flow is unrestricted.
    - g. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
    - h. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
    - i. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm

Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

- 1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
- D. Installation Over Concrete Decks:
  - 1. Install base layer of insulation with joints staggered not less than 24 inches (610 mm) in adjacent rows or end joints staggered not less than 12 inches (305 mm) in adjacent rows.
    - a. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - b. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    - c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
      - 1) Trim insulation so that water flow is unrestricted.
    - d. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
    - e. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
    - f. Adhere base layer of insulation to vapor retarder according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
      - 1) Prime surface of concrete deck with primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m), and allow primer to dry.
      - 2) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
  - 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.
    - a. Staggered end joints within each layer not less than 24 inches (610 mm) in adjacent rows.
    - b. Install with long joints continuous and with end joints staggered not less than 12 inches (305 mm) in adjacent rows.
    - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - d. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    - e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
      - 1) Trim insulation so that water flow is unrestricted.
    - f. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

- g. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
  - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

### 3.7 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction.
  - 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
  - 2. At internal roof drains, conform to slope of drain sump.
    - a. Trim cover board so that water flow is unrestricted.
  - 3. Cut and fit cover board tight to nailers, projections, and penetrations.
  - 4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
    - a. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

#### 3.8 INSTALLATION OF ELD COMPONENTS

- A. Install conductive medium over cover board and on vertical locations to receive roof membrane in accordance with manufacturer's written instructions.
- B. Install sensors, wire loop, connections, and accessory items required for complete system in accordance with manufacturer's written instructions.

#### 3.9 INSTALLATION OF ADHERED ROOF MEMBRANE

- A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. Start installation of roofing in presence of roofing system manufacturer's technical personnel Owner's testing and inspection agency.
- D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

- E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- F. Fabric-Backed Roof Membrane Adhesive: Apply to substrate at rate required by manufacturer, and install fabric-backed roof membrane.
- G. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.
- H. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- I. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roof membrane and sheet flashings to ensure a watertight seam installation.
  - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
  - 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
  - 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

#### 3.10 INSTALLATION OF BASE FLASHING

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars. Seal top of termination bar with sealant bead.

#### 3.11 INSTALLATION OF WALKWAYS

- A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.
  - 1. Install flexible walkways at the following locations: As indicated on Drawings.
  - 2. Provide 1-inch clearance between adjoining pads.
  - 3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

#### 3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect. Perform welded seam testing regularly to evaluate the seam integrity such as at the beginning of each work day, after substantial pauses in installation activities, and if notable changes in weather occur.
- B. Perform the following tests:
  - 1. Low-Voltage ELD Testing: Testing agency surveys entire roof area and flashings to locate discontinuities in the roof membrane using low-voltage horizontal membrane scanning platform membrane electric field vector mapping or vertical membrane scanning in accordance with ASTM D8231.
    - a. Perform tests before overlying construction is placed.
    - b. After testing, repair areas of discontinuities, repeat tests, and make further repairs until roofing and flashing installations are contiguous.
      - 1) Cost of retesting is Contractor's responsibility.
    - c. Testing agency to prepare survey report indicating locations of initial discontinuities, if any.
- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
- D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

#### 3.13 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

#### 3.14 ROOFING INSTALLER'S WARRANTY

A. WHEREAS \_\_\_\_\_\_ of \_\_\_\_\_, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

- 1. Owner: <Insert name of Owner>.
- 2. Owner Address: <Insert address>.
- 3. Building Name/Type: <Insert information>.
- 4. Building Address: <Insert address>.
- 5. Area of Work: <Insert information>.
- 6. Acceptance Date: \_
- 7. Warranty Period: <Insert time>.
- 8. Expiration Date: \_\_\_\_\_
- B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
- D. This Warranty is made subject to the following terms and conditions:
  - 1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
    - a. lightning;
    - b. peak gust wind speed exceeding <Insert mph (m/s)>;
    - c. fire;
    - d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    - e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    - f. vapor condensation on bottom of roofing; and
    - g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
  - 2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
  - 3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
  - 4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
  - 5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall

become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

- 6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
- 7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.
- E. IN WITNESS THEREOF, this instrument has been duly executed this \_\_\_\_\_ day of
  - 1. Authorized Signature: \_\_\_\_\_

\_, \_\_\_

- 2. Name: \_\_\_\_\_\_.
- 3. Title: \_\_\_\_\_

END OF SECTION 075419

### SECTION 084413 - GLAZED ALUMINUM CURTAIN WALLS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Glazed aluminum curtain wall systems:
    - a. Conventionally glazed.
    - b. Two-sided, structural-sealant-glazed.
- B. Related Requirements:
  - 1. Section 014339 "Mockups".
  - 2. Section 019115 "Building Enclosure Commissioning."
  - 3. <u>Section 019117 "Building Enclosure Functional Performance Testing."</u>
  - 4. Section 072100 "Thermal Insulation" for insulation materials field installed with glazed aluminum curtain wall systems.
  - 5. Section 078443 "Joint Firestopping" perimeter fire-containment systems field installed with glazed aluminum curtain walls.
  - 6. Section 079200 "Joint Sealants" for installation of joint sealants installed with glazed aluminum curtain walls and for sealants to the extent not specified in this Section.
  - 7. Section 084213 "Aluminum-Framed Entrances" for entrance systems installed with glazed aluminum curtain-wall systems.
  - 8. Section 088000 "Glazing" for curtain wall glazing.
  - 9. Section 089119 "Fixed Louvers" for louvers installed in glazed aluminum curtain wall systems.

#### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site. Confirm participants with Construction Manager.
  - 1. Discussion topics shall include;
    - a. Schedule.
    - b. Sequence.
    - c. Coordination of trades.
    - d. Substrate review and acceptance.
    - e. Protection
    - f. Shop drawings and submittals.
    - g. Interface condition and details.
    - h. Environmental constraints.
    - i. Mockups.
    - j. Testing requirements.
    - k. Field quality control efforts.

### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, most current version of the manufacturer's installation instructions, 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 lowemitting materials.
  - 3. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
  - 4. Environmental Product Declaration (EPD): For each product.
  - 5. Environmental Product Declaration: For each product.
  - 6. Health Product Declaration: For each product.
  - 7. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.
- C. Shop Drawings: For glazed aluminum curtain walls, including sunshades. Include project specific plans, elevations, sections, full-size details, and attachments to other work. Prepared by or under the supervision of a qualified professional engineer licensed in the State of Kentucky detailing fabrication and assembly of glazed aluminum curtain-wall systems.
  - 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 glazed aluminum curtain walls, 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 and adjacent construction.
- 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 12inch (300-mm) 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. Delegated-Design Submittal: For glazed aluminum curtain walls and sunshades, including analysis data signed and sealed by the qualified professional engineer licensed in the State of Kentucky responsible for their preparation.
- H. Provide THERM: Two-Dimensional Building Heat-Transfer Modeling at <u>thermally-broken</u> <u>sunshade connections and at</u> interfaces with adjacent opaque walls, roofs or slabs. Frame temperatures shall be confirmed to be maintained above the dew point temperature during design conditions.
- 1.4 INFORMATIONAL SUBMITTALS
  - A. Qualification Data:
    - 1. For Installer and field testing agency.
    - 2. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.
  - B. Energy Performance Certificates: For glazed aluminum curtain walls, accessories, and components from manufacturer.
    - 1. Basis for Certification: NFRC-certified energy performance values for each glazed aluminum curtain wall.
  - C. Product Test Reports: For glazed aluminum curtain walls, for tests indicated in "Performance Requirements" section and performed by a qualified testing agency. Test reports shall be project specific and performed within the past 2 years.
  - D. Quality-Control Program: Developed specifically for Project, including fabrication and installation, in accordance with recommendations in ASTM C1401. Include periodic quality-control reports.
  - E. Source quality-control reports.
  - F. Field quality-control reports.
  - G. Sample Warranties: For special warranties.
  - H. Manufacturer's Certificates:
    - 1. Certification from manufacturers that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
    - 2. Provide certificates from manufacturer for each product required indicating that product complies with specified product requirements and is suitable for use indicated.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For glazed aluminum curtain walls to include in maintenance manuals.
- B. Maintenance Data for Structural Sealant: For structural-sealant-glazed curtain walls to include in maintenance manuals. Include ASTM C1401 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 and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AGM) contractors and that employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.
- B. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025 and acceptable to Owner and Architect.
- C. 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.
- D. Structural-Sealant Glazing: Comply with ASTM C1401 for design and installation of structuralsealant-glazed curtain wall assemblies.
- E. Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

#### 1.7 MOCKUPS

- A. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation. Mockups will also be used to evaluate system installation and integration with the surrounding materials/systems.
  - 1. Build mockup of typical wall area. <u>Size of mockup to be determined by Architect and</u> <u>Construction Manager.</u> Refer to Section 014339 "Integrated Exterior Mockups" for additional requirements. Refer to Drawing A489 for scope of on-site standalone mockup.
  - 2. Testing shall be performed on mockups in accordance with requirements *in "Field Quality Control" Article. in Section 019117 "Building Enclosure Functional Performance Testing".*
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.8 WARRANTY

- A. Special Assembly Warranty: Manufacturer agrees to repair or replace components of glazed aluminum curtain wall 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: 10 years from date of Substantial Completion.
- B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.
  - 1. Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Warranty Period: 20 years from date of Substantial Completion.
- C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.
  - 1. Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, peeling, or chipping.
  - 2. Warranty Period: 10 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer licensed in the State of Kentucky, as defined in Section 014000 "Quality Requirements," to design glazed aluminum curtain walls.
- B. General Performance: Comply with performance requirements specified, as determined by testing of glazed aluminum curtain walls representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
  - 1. Glazed aluminum curtain walls shall withstand movements of supporting structure, including, but not limited to, story drift, 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 Supporting Glass: At design wind load, as follows:
  - 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans of greater than 13 feet 6 inches (4.1 m).
  - 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 (3.2 mm).
    - a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.
  - 3. Cantilever Deflection: Limited to 2l/175 at unsupported cantilevers.
- E. Structural: Test in accordance with ASTM E330/E330M as follows:
  - 1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
  - 2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including 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. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:
  - 1. No evidence of water penetration through fixed glazing and framing areas when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 15 lbf/sq. ft. (720 Pa).
- G. Water Penetration under Dynamic Pressure: Test in accordance with 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 15 lbf/sq. ft. (720 Pa).
  - 2. Maximum Water Leakage: In accordance with AAMA 501.1 No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters or water that is drained to exterior.
- H. Interstory Drift: Accommodate design displacement of adjacent stories indicated.
  - 1. Design Displacement: H/500 with connections capable of not less than 1/2" between stories.

- 2. Test Performance: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.4 at design displacement and 1.5 times the design displacement.
- I. Energy Performance: Certified and labelled by manufacturer for energy performance as follows:
  - 1. Base thermal movement on a minimum of temperature differential: 170 degrees to  $\frac{4}{-25}$  with nominal at  $\frac{74}{72}$  degrees and interior RH at  $\frac{60}{30}$  percent.
  - 2. Thermal Transmittance (U-factor):
    - a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.38 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.
    - b. Approximate calculated U Value of Basis-of-Design: 0.32. Refer to exterior glass types for additional information.
  - 3. Solar Heat Gain Coefficient (SHGC):
    - a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.36 (South, East and West faces) and 0.48 (North face) as determined in accordance with NFRC 200.
    - b. Approximate calculated SHGC of Basis-of-Design: 0.21. Refer to exterior glass types for additional information.
  - 4. Air Leakage:
    - a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 6.24 lbf/sq. ft. (300 Pa) when tested in accordance with ASTM E283.
  - 5. Condensation Resistance: When tested to AAMA Specification 1503, the Condensation Resistance Factor (CRF) shall not be less than: CRF glass 1-inch Double Glazed HP = 76, CRF frame = 79.
    - All openings (vision glazing, spandrel glazing, glazed in IMP, etc.) shall be condensation free at <u>4</u> -25 degrees F at interior conditions of <u>74</u> <u>72</u> degrees F and <u>60%</u> <u>30%</u> RH.
  - 6. Maintain continuous air and vapor retarder throughout assembly located in a line even with inside line of glass and heel bead of glazing sealant.
- J. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
  - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), 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 in accordance with AAMA 501.5.
    - a. High Exterior Ambient-Air Temperature: That which produces an exterior metalsurface temperature of 180 deg F (82 deg C).
    - b. Low Exterior Ambient-Air Temperature: 0 deg F (minus 18 deg C).

- K. Structural-Sealant Joints:
  - 1. Designed to carry gravity loads of glazing.
- L. Structural Sealant: ASTM C1184. Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed curtain walls 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.

#### 2.2 SOURCE LIMITATIONS

- A. Obtain all components of curtain-wall system and storefront system, including framing spandrel panels, venting windows, entrances, sun control, and accessories, from single manufacturer.
- 2.3 GLAZED ALUMINUM CURTAIN WALL SYSTEMS (CW-1 Unitized; Steel-reinforced, CW-2 Unitized)
  - A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer Company, Inc.; Arconic Corporation; 2500 UT Unitwall System or a comparable product by one of the following:
    - 1. EFCO Corporation; 8750XD Unitized Curtain Wall System.
    - 2. Wausau Window and Wall Systems; Apogee Wausau Group, Inc.; 7250i-UW Unitized Curtain Wall System.
    - 3. <u>Fabricator's proprietary systems will be considered if they are in compliance with</u> <u>requirements of this specification.</u>
  - B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
    - 1. Construction: Ultra-thermally broken.
    - 2. Glazing System: Retained mechanically with gaskets on two sides and structural sealant on two sides (horizontal and corners as indicated on Drawings).
    - 3. Glazing Plane: Front.
    - 4. Split finish: Custom anodized finish to match Architect's sample (exterior) and custom color high-performance organic finish to match Architect's sample (interior).
    - 5. System: Unitized system.
    - 6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
    - 7. Steel Reinforcement: As required by manufacturer.
    - 8. Double gasketed and pressure equalized internal chambers with integrated continuous gutters at each floor.
    - 9. Both vertical and horizontal mullion profiles are two piece design to accommodate differential movement within profile section and not within glazing pocket. Complete with thermally separated snap on custom profile mullion caps.

- 10. Energy efficient thermal separation between exterior and interior elements to reduce thermal transmission.
- 11. Face dimension of profile: As indicated on Drawings.
- 12. Panel Size: As Indicated on Drawings.
- 13. Anchorage: Adjustable system at each floor slab to allow for 1-inch tolerance in all directions (lateral, vertical, and orthogonal), plus up to 10 degrees out of plumb (vertical).
- 14. Mullion covers as selected by architect from the curtain wall Manufacturers profiles.
  - a. Provide Custom thin-profile mullion extension cover profiles as indicated on Drawings.
  - b. Provide custom jamb extension cover profiles as indicated on the drawings.
- 15. <u>Curtain Wall (CW-1) will require some modification/customization as required to</u> <u>accommodate sunshade attachment, structural support and thermally-broken</u> <u>connections.</u>
- 16. <u>At Curtain Wall (CW-1) locations field fabricated (stick-built) systems are acceptable in lieu of unitized systems as long as the mullion sightlines are consistent between adjacent unitized and field-fabricated (stick built) systems and performance requirements are met.</u>
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Venting Windows:
  - 1. Manufacturer's standard units, complying with AAMA/WDMA/CSA 101/I.S.2/A440, with self-flashing mounting fins, and as follows:
    - a. Window Type: Casement.
    - b. Minimum Performance Class: AW.
    - c. Minimum Performance Grade: 90.
    - d. Hardware: Manufacturer's standard; of aluminum, stainless steel, die-cast steel, malleable iron, or bronze; including the following:
      - 1) Cam handle keyed locking system.
      - 2) Steel or bronze operating arms.
    - e. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
    - f. Glazing: Same as adjacent glazed aluminum curtain-wall glazing.
    - g. Finish: Match adjacent glazed aluminum curtain-wall finish.
- E. Entrance Door Systems: Comply with Section 084213 "Aluminum-Framed Entrances".

#### 2.4 SUN CONTROL (SCD-1)

- A. Sunshades: Assemblies consisting of manufacturer's outrigger brackets and aluminum sunshade blades, designed for attachment to curtain wall with mechanical fasteners.
  - 1. Orientation: As indicated on Drawings.
  - 2. Projection from Wall: As indicated on Drawings.
  - 3. Outriggers: As indicated on Drawings. Cantilevered aluminum plate outriggers to be delegated design by curtain wall manufacturer. Provide concealed aluminum splines and fasteners. *Provide thermally-broken connections.*

- 4. Finish: Custom color. Match Architect's sample.
- 5. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
- 6. Steel Reinforcement: As required by manufacturer.

#### 2.5 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: ASTM C509 or ASTM C864. Comply with Section 088000 "Glazing.".
- C. Flashing and sealant for perimeter of curtain wall:
  - 1. Basis-of-Design Product: Tremco Proglaze ETA; 6-inch wide Extruded Silicone Rubber gasket with preformed corners; installed to curtain wall using extruded aluminum curtain wall glazing raceway or Tremco TR 15265 extruded aluminum adaptor, mechanically attached at 6-inch centers with Tremco 440 taped seal.
  - 2. Gasket extends from curtain wall framing covering gap and sealing to moisture barrier using Tremco Spectrum 1 Silicone sealant. (Perform adhesion compatibility test prior to selection of sealant.)
  - 3. Color: As selected by Architect from Manufacturer's full range.
- D. Glazing Sealants: As recommended by manufacturer. Comply with Section 088000 "Glazing."
  - 1. Verify sealant has a VOC content of 250 g/L or less.
- E. Structural Glazing Sealants: ASTM C1184, chemically curing silicone formulation that is compatible with system components with which it comes into contact, specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in curtain-wall assembly indicated.
  - 1. Color: Black.
- F. Weatherseal Sealants: ASTM C920 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 into contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed curtain-wall manufacturers for this use.
  - 1. Color: Match structural sealant.

#### 2.6 MATERIALS

- A. Sheet and Plate: ASTM B209 (ASTM B209M).
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).
- C. Structural Profiles: ASTM B308/B308M.
- D. Steel Reinforcement:
  - 1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
  - 2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.

- 3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.
- E. Steel Reinforcement 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 in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with 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.
- H. Regional Materials: Manufacture products within 100 miles (160 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles (160 km) of Project site.

### 2.7 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 (25.4 mm) 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 A123/A123M or ASTM A153/A153M 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 30mil (0.762-mm) thickness per coat.

#### 2.8 FABRICATION

- A. Curtain Wall Fabricators.
  - 1. Approved Fabricators:
    - a. Advanced Glazing Contractors, Inc.
    - b. Pioneer Cladding & Glazing Systems, Inc.
  - 2. Other Fabricators will be considered. Fabricators shall have a minimum of seven (7) years' experience in the design, engineering, fabrication, and installation of curtain walls

of similar scale and complexity as this project and is subject to final approval by the Owner and the Architect.

- B. Form or extrude aluminum shapes before finishing.
- C. 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.
- D. 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. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
  - 6. Components curved to indicated radii.
- E. Fabricate components to resist water penetration as follows:
  - 1. Internal guttering system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
  - 2. Pressure-equalized system or double barrier design with primary air and vapor barrier at interior side of glazed aluminum curtain wall and secondary seal weeped and vented to exterior.
- F. Factory-Assembled Frame Units:
  - 1. Rigidly secure nonmovement joints.
  - 2. Prepare surfaces that are in contact with structural sealant in accordance with sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
  - 3. Seal joints watertight unless otherwise indicated.
  - 4. Install glazing to comply with requirements in Section 088000 "Glazing."
  - 5. Install structural glazing.
    - a. Set glazing into framing in accordance with sealant manufacturer and framing manufacturer's written instructions and standard practice. Use a spacer or backer as recommended by manufacturer.
    - b. Set glazing with proper orientation so that coatings face exterior or interior as specified.
    - c. Apply structural silicone sealant to completely fill cavity, in accordance with sealant manufacturers written instructions with the framing and glazing in a fully supported position.
    - d. Brace or stiffen framing and glazing in such a manner to prevent undue stresses on the glass edge seal and structural joints or movement of the glazing, until sealant is fully cured in accordance with manufacturer's recommendations.
    - e. After structural sealant has completely cured, insert backer rod between lites of glass as recommended by sealant manufacturer.
    - f. Install weatherseal sealant to completely fill cavity, in accordance with sealant manufacturer's written instructions, to produce weatherproof joints.
    - g. Clean and protect glass as indicated in Section 088000 "Glazing."

- h. Retain bracing or stiffening until erected to prevent racking of units during transportation and erection.
- G. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

#### 2.9 ALUMINUM FINISHES

- A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
  - 1. Color: Custom color. Match Architect's sample.
- B. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.
  - 1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 2. Color and Gloss: Custom color. Match Architect's sample.

#### 2.10 SOURCE QUALITY CONTROL

A. Structural Sealant: Perform quality-control procedures complying with ASTM C1401 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 INSTALLATION, GENERAL

- A. Comply with manufacturer's written instructions.
- B. Do not install damaged components.
- C. Fit joints to produce hairline joints free of burrs and distortion.
- D. Rigidly secure nonmovement joints.
- E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- F. Where welding is required, weld components in concealed locations to minimize distortion or discoloration of finish. Protect glazing surfaces from welding.

- G. Seal joints watertight unless otherwise indicated. Overlap splice plates with continuous lines of sealant.
- H. Metal Protection:
  - 1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with primer, applying sealant or tape, or installing nonconductive spacers as recommended by manufacturer for this purpose.
  - 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
  - 3. Curtain wall assemblies are to be protected during post-construction cleaning.
- I. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
- J. Install components plumb and true in alignment with established lines and grades.

#### 3.3 INSTALLATION OF OPERABLE UNITS

A. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

#### 3.4 INSTALLATION OF GLAZING

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

#### 3.5 INSTALLATION OF STRUCTURAL GLAZING

- A. Prepare surfaces that will contact structural sealant in accordance with sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
- B. Set glazing into framing in accordance with sealant manufacturer's and framing manufacturer's written instructions and standard practice. Use a spacer or backer as recommended by manufacturer.
- C. Set glazing with proper orientation, so that coatings face exterior or interior as specified.
- D. Hold glazing in place using temporary retainers of type and spacing recommended by manufacturer, until structural sealant joint has cured.
- E. Apply structural sealant to completely fill cavity, in accordance with sealant manufacturer's and framing manufacturer's written instructions and in compliance with local codes.
- F. Apply structural sealant at temperatures indicated by sealant manufacturer for type of sealant.
- G. Allow structural sealant to cure in accordance with manufacturer's recommendations.
- H. Clean and protect glass as indicated in Section 088000 "Glazing."

#### 3.6 INSTALLATION OF WEATHERSEAL SEALANT

- A. After structural sealant has completely cured, remove temporary retainers and insert backer rod between lites of glass, as recommended by sealant manufacturer.
- B. Install weatherseal sealant to completely fill cavity, in accordance with sealant manufacturer's written instructions, to produce weatherproof joints.

#### 3.7 ERECTION TOLERANCES

- A. Install glazed aluminum curtain walls to comply with the following maximum tolerances:
  - 1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
  - 2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
  - 3. Alignment:
    - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
    - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
    - c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
  - 4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

#### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. <u>Refer to Section 019117 "Building Enclosure Functional Performance Testing" for mockup tests</u> and field tests.
- C. Test Area: Perform tests on representative areas of glazed aluminum curtain walls.
- D. <u>Field Quality-Control Testing: Perform the following test on representative areas of glazed</u> <u>aluminum curtain walls.</u>
  - 1. <u>Water-Spray Test: Before installation of interior finishes has begun, areas designated by</u> <u>Architect shall be tested in accordance with AAMA 501.2 and shall not evidence water</u> <u>penetration.</u>
    - a. Perform a minimum of three tests in areas as directed by Architect.
    - b. <u>Perform tests in each test area as directed by Architect. Perform at least three</u> tests each, prior to 10, 35, and 70 percent completion. Any uncontrolled water infiltration into the interior of the system that is not drained to the exterior is considered a failure.
  - 2. <u>Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in</u> <u>"Performance Requirements" Article but not more than 0.09 cfm/sq. ft. (0.45 L/s per</u> sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

- a. Perform a minimum of three tests in areas as directed by Architect.
- b. <u>Perform tests in each test area as directed by Architect. Perform at least three</u> tests each, prior to 10, 35, and 70 percent completion.
- 3. <u>Water Penetration: ASTM E1105 at a minimum uniform and cyclic static-air-pressure</u> <u>differential of 0.67 times the static-air-pressure differential specified for laboratory testing</u> <u>in "Performance Requirements" Article, but not less than 10 lbf/sq. ft. (480 Pa), and shall</u> <u>not evidence water penetration. Any uncontrolled water infiltration into the interior of the</u> <u>system that is not drained to the exterior is considered a failure.</u>
- E. <u>Structural-Sealant Adhesion: Test structural sealant in accordance with recommendations in</u> ASTM C1401, Destructive Test Method A, "Hand Pull Tab (Destructive)," Appendix X2.
  - 1. <u>Test a minimum of six areas on each building facade.</u>
  - 2. <u>Repair installation areas damaged by testing.</u>
- F. <u>Glazed aluminum curtain walls will be considered defective if they do not pass tests and</u> inspections.
- G. <u>Aluminum-framed curtain walls will be considered defective if they do not pass tests and</u> <u>inspections. If they do not pass tests and inspections, Contractor shall make any necessary</u> corrections and ro-test until it passes.
- H. <u>Prepare test and inspection reports.</u>
- 3.9 CLEANING AND PROTECTION
  - A. Cleaning: Contractor shall clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance, and remove construction debris from project site. Legally dispose of debris.
  - B. Protection: Contractor shall protect the installed product's finish surfaces from damage during construction.

#### END OF SECTION 084413

#### SECTION 089119 - FIXED LOUVERS

#### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Fixed extruded-aluminum louvers.
  - 2. Blank-off panels for louvers

#### 1.2 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).
- C. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- B. Sustainable Design Submittals:
  - 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
  - 2. Environmental Product Declaration: For each product.
  - 3. Health Product Declaration: For each product.
  - 4. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.
- C. Shop Drawings: Project specific. For louvers and accessories. Include plans, elevations, sections, details, integration with surrounding construction and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
  - 1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
  - 2. Show mullion profiles and locations.
- D. Samples: For each type of metal finish required.
- E. Delegated Design Submittal: For louvers indicated to comply with structural 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. Product Test Reports: Based on evaluation of comprehensive tests performed in accordance with AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.
- B. Sample Warranties: For manufacturer's special warranties.

#### 1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
  - 1. AWS D1.2/D1.2M, "Structural Welding Code Aluminum."

#### 1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

#### 1.7 WARRANTY

- A. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.
  - 1. Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Warranty Period: 20 years from date of Substantial Completion.

#### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

#### 2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural performance requirements and design criteria indicated.

- B. Structural Performance: Louvers withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures are considered to act normal to the face of the building.
  - 1. Wind Loads:
    - a. Determine loads based on pressures as indicated on Drawings.
- C. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width in accordance with AMCA 500-L.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- E. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

#### 2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal Drainable-Blade Louver, Extruded Aluminum: (LVR-1A, LVR-1B, <u>LVR-1C</u>, <u>LVR-2</u>)
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Construction Specialties, Inc.; Model A6097 or a comparable product by one of the following:
    - a. Airolite Company, LLC (The); Model K6846.
    - b. Ruskin; Air Distribution Technologies, Inc.; Johnson Controls, Inc.; Model ELF6350DMP.
  - 2. Louver Depth: 6 inches (150 mm).
  - 3. Frame and Blade Nominal Thickness: Not less than 0.080 inch (2.03 mm).
  - 4. Mullion Type: Continuous blade with concealed vertical and horizontal supports for seamless appearance.
  - 5. Louver Performance Ratings:
    - a. Free Area: Not less than 8.34 sq. ft. (0.775 sq. m) for 48-inch- (1220-mm-) wide by 48-inch- (1220-mm-) high louver.
    - b. Point of Beginning Water Penetration: Not less than 1100 fpm (5.6 m/s).
    - c. Air Performance:
      - 1) Not more than 0.10-inch wg (25-Pa) static pressure drop at 800-fpm (4.1m/s) free-area intake velocity.
      - 2) Not more than 0.15-inch wg (37-Pa) static pressure drop at 1000-fpm (5.1m/s) free-area exhaust velocity.
  - 6. AMCA Seal: Mark units with AMCA Certified Ratings Seal.
- B. <u>Horizontal Drainable-Blade Louver, Extruded Aluminum (LVR-3 & LVR-2):</u>

- 1. <u>Basis-of-Design Product: Subject to compliance with requirements, provide Construction</u> <u>Specialties, Inc.; Model A4097 or a comparable product by one of the following:</u>
  - a. <u>Airolite Company, LLC (The).</u>
  - b. Ruskin; Air Distribution Technologies, Inc.; Johnson Controls, Inc.
- 2. Louver Depth: 4 inches (100 mm).
- 3. <u>Frame and Blade Nominal Thickness: Not less than 0.068 inch (1.73 mm) for blades and 0.080 inch (2.03 mm) for frames.</u>
- 4. <u>Mullion Type: Continuous blade with concealed vertical and horizontal supports for</u> <u>seamless appearance.</u>
- 5. <u>Louver Performance Ratings:</u>
  - a. <u>Free Area: Not less than 8.07 sq. ft. (0.750 sq. m) for 48-inch- (1220-mm-) wide by</u> <u>48-inch- (1220-mm-) high louver.</u>
  - b. Point of Beginning Water Penetration: Not less than 1040 fpm (5.3 m/s).
  - c. <u>Air Performance:</u>
    - 1) <u>Not more than 0.20-inch wg static pressure drop at 1040-fpm (5.3-m/s) free-area intake velocity.</u>
    - 2) <u>Not more than 0.18-inch wg static pressure drop at 1000-fpm (5.1-m/s) free-area exhaust velocity.</u>
- 6. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

#### 2.4 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
  - 1. Screen Location for Fixed Louvers: Interior face.
  - 2. Screening Type: Bird screening.
- B. Secure screen frames to louver frames with stainless steel machine screws, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.
- C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
  - 1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
  - 2. Finish: Same finish as louver frames to which louver screens are attached.
  - 3. Type: Non-rewirable, U-shaped frames.
- D. Louver Screening for Aluminum Louvers:
  - 1. Bird Screening, Flattened, Expanded Aluminum: 5/8 by 0.055 inch (15.87 by 1.4 mm) thick.

#### 2.5 BLANK-OFF PANELS

A. Insulated Blank-Off Panels: Laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver.

- 1. Thickness: 3 inches (76.2 mm).
- 2. Metal Facing Sheets, Aluminum: Not less than 0.032-inch (0.81-mm) nominal thickness.
- 3. Insulating Core: Rigid, glass-fiber-board insulation or extruded-polystyrene foam.
- 4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded-aluminum-channel frames, not less than 0.080-inch (2.03-mm) nominal thickness, with corners mitered and with same finish as panels.
- 5. Seal perimeter joints between panel faces and louver frames with gaskets.
- 6. Panel Finish: Interior side: mill finish. exterior side: Kynar 500 Black.
- 7. Attach blank-off panels with clips or sheet metal screws.
- 8. Provide full blank-off panels as indicated on Drawings.

#### 2.6 MATERIALS

- A. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063-T5, T-52, or T6.
- B. Aluminum Sheet: ASTM B209 (ASTM B209M), Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Fasteners: Use types and sizes to suit unit installation conditions.
  - 1. For fastening aluminum, use stainless steel fasteners.
  - 2. For color-finished louvers, use fasteners with heads that match color of louvers.
- D. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless steel components, with allowable load or strength design capacities calculated in accordance with ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing in accordance with ASTM E488/E488M conducted by a qualified testing agency.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
- F. Recycled Content of Aluminum Components: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- G. Regional Materials: Manufacture products within 100 miles (160 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles (160 km) of Project site.

#### 2.7 FABRICATION

- A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.
- C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
  - 1. Frame Type: Channel unless otherwise indicated.

- 2. Louvers to be supplied with 4-inch (101.6 mm) high by full depth sill flashing formed from minimum 0.050 inch (1.27 mm) thick aluminum.
- 3. Sill flashing to have welded side panels.
- 4. At LVR-2, provide glazing channel receiver(s) for integration into unitized curtain wall system.
- D. Include supports, anchorages, and accessories required for complete assembly.
- E. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches (1830 mm) o.c., whichever is less.
  - 1. Fully Recessed Mullions: Where indicated, provide mullions fully recessed behind louver blades for seamless appearance. Where length of louver exceeds fabrication and handling limitations, fabricate with close-fitting blade splices designed to permit expansion and contraction.
- F. Provide subsills made of same material as louvers or extended sills for recessed louvers.
- G. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

#### 2.8 ALUMINUM FINISHES

- A. Finish louvers after assembly.
- B. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer mica finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.
  - 1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions .
  - Color and Gloss: Custom colors. Match Architect's samples. <u>LVR-1B &</u> LVR-2 <u>& LVR-3</u> to match CW-1, LVR-1A to match FBR-2, <u>LVR-1C to match FBR-1A</u>, <u>LVR-1B & LVR-3 to</u> <u>match MP-2</u>.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates and openings, 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. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

#### 3.3 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 079200 "Joint Sealants" for sealants applied during louver installation.

#### 3.4 ADJUSTING AND CLEANING

- A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
  - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

#### END OF SECTION 089119

			Material Identification Codes
Revision	Spec 072726.04	Code	Description AIR & WATER BARRIERS
	072726.04	AB-1	Fluid-Applied Synthetic Air, Water, and Vapor Retarder Membrane
	<b>084229.23</b>	ASLD	AUTOMATIC SLIDING DOORS
	084229.23	ASLD-2	Automatic, aluminum-framed glass doors & sidelights
	<b>083323</b> 083323	CD CD-1	COILING DOORS Coiling Door, Exterior Insulated
	083323.10	CD-2	Coiling Door, Interior, Fire Rated
	<b>042000</b> 042000	CMU CMU-1	CONCRETE MASONRY UNITS Typical
	107300	CNPY	CANOPY (MANUFACTURED)
	107300	CNPY-1	Pre-engineered extruded aluminum canopy
	033000 033000	CONC FIN	CONCRETE FINISHES (Exposed to View) Formed Surfaces
	033000 033000	CONC FIN-1 CONC FIN-2	As-cast finish: Surface Finish 2.0 per ACI 301-10 As-cast finish: Surface Finish 3.0 per ACI 301-10
	033000	CONC FIN-3	As-cast finish: CSC4 per ACI 347.3R-13
	<b>084413</b>	CW-1	CURTAINWALL Curtainwall System: Unitized: Steel-reinforced
	084413	CW-2	Curtainwall System; Unitized
	<b>057100</b> 057100	DEC STAIR DEC STAIR-1	DECORATIVE STAIRS Monumental stair assembly
	079513.16 / 077129	EXP JT	EXPANSION JOINT COVER ASSEMBLIES
	077129	EXP JT-1	Exterior: Wall-to-Wall
	077129	EXP JT-3	Exterior; Roof-to-Wall
	042000	FBR	VENEERED FACEBRICK
	042000 042000	FBR-1A FBR-1B	Facebrick; Beige; Smooth Facebrick; Beige; Textured
	042000 042000	FBR-2 FBR-3	Facebrick; Terracotta; Smooth Facebrick; Dark Terracotta; Smooth
	042000	FBRA	FACE BRICK ANCHORS
	042000	FBRA-1 FBRA-2	Thermal 2-Seal Adjustable veneer anchor & tie (Steel Stud) Thermal 2-Seal Adjustable veneer anchor & tie (CIP and CMU)
	040524 040523	FBRA-3 FBRA-4	Adjustable Offset Shelf Angle Support System Concealed Brick Lintel Support System
	042000	FLXF	FLEXIBLE FLASHING
	078100/ 078123	FP	FIRE PROTECTION
	078100 078123	FP-1 FP-2	SFRM, normal-density Intumescent Coating
	078100	FP-3	SFRM, high-density
	<b>078443</b> 078443	FRJS FRJS-1	FIRESTOPPING (Joint)       See Fire Resistive Joint System Schedule in Specifications
	070543.11	FRP FURG	FIBERGLAS-REINFORCED PLASTIC FURRING
	070543.11	FRP FURG-1	Composite Z-turring supports for cladding
	078413	FSTOP-1	See Firestopping Schedule in Specifications
	088000	GL	GLASS, GLAZING
	088000	GL-21	Insulating Glazing Units Clear Insulating Glass with Low-E Coating
	088000 088000	GL-22 GL-23	Lightly Refletive Clear Insulating Glass with Low-E Coating Insulating Glass with Low-E Coating and Birdsafe UV Coating on #1 Surface
	000000		Spandrel Insulating Glazing Unit
	088000	GL-41 GL-42	Lightly Reflective Spandrel Insulating Glass with Low-E Coating
	<b>092900</b>	GYP BD GYP BD-1	GYPSUM BOARD 5/8" fire-rated type X
	092900	GYP BD-2	5/8" fire-rated type X, mold-resistant & water-resistant
	092900	GYP BD-25	5/8" fire-rated type X tile backer
	061600	GYP SHTG	GYPSUM SHEATHING (Exterior)
	061600	GYP SHTG-1	5/8", type X, fiberglass-faced
	<b>099600</b> 099600	HPC-1	HIGH-PERFORMANCE COATING Protective Coatings For Steel Zine rich watten based appart build east, polyurathang finish, color on colorted by prohitect to match MP 1/MP 2
	099600	HPC-2	Protective Coatings For Steel
	099600	HPC-3	Protective Coatings For Steel
	099600	HPC-4	Zinc-rich urethane base, water-based epoxy build coat, polyurethane finish, color as selected by architect to match FBR-2. Protective Coatings For Steel
	099113	HPC-5	Protective Elastomeric Coatings For Concrete; color as selected by architect to match MP-1/MP-2
	099113 099113	HPC-6 HPC-7	Protective Elastomeric Coatings For Concrete; color as selected by architect to match FBR-2 Protective Elastomeric Coatings For Concrete; color as selected by architect to match STN-2
	072100	INSUL	INSULATION
	072100 072100	INSUL-1 INSUL-15	25 psi, below-grade foundations XPS Foil-faced Polyisocyanurate
	072100 072100	INSUL-24 INSUL-25	Mineral-fiber batts, unfaced Mineral-fiber semi-rigid board
	072100 072100	INSUL-30 INSUL-31	Spray-applied, closed-cell expanding polyurethane foam Spray-applied, open-cell expanding polyurethane foam for use at openings
	072100 072100	INSUL-4 INSUL-40	40 psi, high-density, underslab Unfaced fiberglass batt
	111300	LD EQ	LOADING DOCK EQUIPMENT
	111300	LD EQ-2	Dock levels
	111300	LD EQ-3	Interior Use Dock Lights
	111310?		Combination Dock Leveler / Scissors lift table
	089119	LVR	LOUVERS
7	089119 089119	LVR-1A LVR-1B	Fixed louver (Color to match FBR-2) Fixed louver (Color to match MP-2)
6	000140		Fixed louver (Color to match FBR-1A)
5, 7	089119	LVR-1C LVR-2	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1)
	089119 089119 089119	LVR-1C LVR-2 LVR-3	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2)
	089119 089119 089119 042000 042000	LVR-1C LVR-2 LVR-3 MA MA-1	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Deptil (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket
	089119 089119 089119 042000 042000 042000 042000	LVR-1C LVR-2 LVR-3 MA-1 MA-2 MA-3	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Deptil (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips
	089119 089119 089119 042000 042000 042000 042000 055000	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS
	089119 089119 089119 042000 042000 042000 042000 055000	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Straight ladder
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055000 055119	LVR-1C LVR-2 LVR-3 MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-4	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055000 055119 055819	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-4 MET FAB-5	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depter (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips  METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure
	089119 089119 089119 042000 042000 042000 042000 055000 055000 0555000 0555119 055819 092216 092216	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-5 MET FURG MET FURG-1	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Deptil (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips  METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure  METAL FURRING (Non-Structural) Hat channels
	089119 089119 089119 042000 042000 042000 042000 055000 055000 0555000 0555119 055819 092216 092216 092216	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG MET FURG-1 MET FURG-3	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring Channel bridging
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055119 055819 092216 092216 092216 092216 092216	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-4 MET FAB-4 MET FAB-5 MET FURG MET FURG-1 MET FURG-3 MET FURG-4 MET FURG-5	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furning Channel bridging Resilient channel Interlocking Celling Panel Clips
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055000 055119 055819 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-4 MET FURG-5 MET RAIL MET RAIL	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring Channel bridging Resilient channel Interlocking Ceiling Panel Clips METAL RAILINGS Handrail Interior
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055000 055119 055819 092216 055213 055213 055213	LVR-1C LVR-2 LVR-3 MA MA-1 MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-4 MET FURG-5 MET RAIL MET RAIL-1 MET RAIL-2 MET RAIL-2 MET RAIL-2	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Dept (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring C-hannel bridging Resilient channel Interlocking Celling Panel Clips METAL RAILINGS Handrail, Interlor Guardrail, Interlor Guardrail, Interlor Guardrail, Interlor Guardrail, Interlor
	089119 089119 089119 042000 042000 042000 042000 055000 055000 0555000 0555119 092216 0955213 0555213 0555213 0555213 0555213 0555213 0555213	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-4 MET RAIL-1 MET RAIL-1 MET RAIL-1 MET RAIL-6 MET STAIR	Fixed louver with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed louver, 4" Depth (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips  METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring Channels Z-furring Channel bridging Resilient channel Interlocking Celling Panel Clips METAL RAILINGS Handrail, Interior Guardrail, Interior Guardrail, Interior Guardrail, Interior
	089119 089119 089119 042000 042000 042000 055000 055000 055000 055119 092216 0955213 0555213 055513 055513 0555113 0555113 0555113	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-4 MET FURG-5 MET RAIL-1 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-2 MET RAIL-6 MET STAIR-1	Fixed lower with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower, 4" Dept (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips  METAL FABRICATIONS Laddors Straight ladder Bollard, surface-mounted steel pipe Prefabricated steel pipe Prefabricated steel pipe METAL FURRING (Non-Structural) Hat channels Z-furring Channel bridging Resilien channel Interlocking Ceiling Panel Clips METAL RALINGS Handrali, Interior Guardrali, Exterior, Stainless Steel with Cable Infill and Integral Light Fixtures
	089119 089119 042000 042000 042000 042000 042000 055000 055000 055119 092216 092216 092216 092216 092216 092216 092216 055213 0555113	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-4 MET FURG-5 MET RAIL-1 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-6 MET STAIR-1 MET STUD MET STUD-1	Fixed lower with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower, 4" Dept (Color to match MP-2)  MASONRY ACCESSORIES  Preformed gasket Compressible filler Bond-breaker strips  METAL FABRICATIONS Ladders Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring Channel bridging Resilient channel Interior Geiling Panel Clips METAL RAILINGS Handrali, Interior Guardrali, Interior Guardrali, Interior Guardrali, Interior Guardrali, Exterior, Stainless Steel with Cable Infill and Integral Light Fixtures METAL STUDE FRAMING (Non-Structural) Steel stair Study Constructural)
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055000 055119 092216 092216 092216 092216 092216 092216 092216 055213 055213 055213 055213 055513 055513 055513 055513 055513 055113 055113 092216 0555113 0	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-4 MET FURG-5 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-6 MET STAIR-1 MET STUD-1 MET STUD-2 MET STUD-2	Fixed lower with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower, 4* Depth (Color to match MP-2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladder Stright ladder Bollard, surface-mounted steel pipe Prefaticated stair and walkway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring Channel bridging RETAL RAILINGS Handral, Interior Guardrali, Interior Guardrali, Interior Guardrali, Interior Guardrali, Interior Steel stair Steel with Cable Infill and Integral Light Fixtures METAL STURES Steel pan stair METAL STURE FAMING (Non-Structural) Steel stud; C-shaped, galvanized
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055119 055819 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 055213 055213 055513 055513 055513 055513 055215 055215 055215	LVR-1C LVR-2 LVR-3 MA MA-1 MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET RAIL-1 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-2 MET RAIL-2 MET RAIL-2 MET STURG-3 MET S	Fixed lower with glazing channel regerger for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower with glazing channel regerger for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower with glazing channel regerger for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower with glazing channel regerger for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower with glazing channel regerger for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower with glazing channel regerger for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom Color to match CW-1) Fixed lower with glazing channel system (Custom
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055119 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 055213 055513 055513 055513 055513 055213 057300 	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-1 MET RAIL-2 MET RAIL-2 MET RAIL-6 MET STAIR MET STAIR MET STAIR MET STAIR MET STUD-1 MET STUD-2 MP-1 MP-1 MP-2 MP-2 MP-2	Fixed lower with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower, 4" Dept (Color to match MP.2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Laddors Straight ladder Bollard, surface-mounted steel pipe Prefabricated stair and wakway Shop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channels Z-furring Channels Interior Guardrali, Interior Guardrali, Interior Guardrali, Exterior, Stainless Steel with Cable Infill and Integral Light Fixtures METAL STURS Steel pan stair METAL STUR FRAING (Non-Structural) Steel stair Asia Muta Istud, C-T shaped, galvanized METAL Aluminum Composite Metal Panel (Upt Gray) Palined Finish Aluminu
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055100 055119 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 0555113 055513 055513 055213 055213 055213 074213.23 07421	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-5 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-2 MET RAIL-2 MET RAIL-2 MET RAIL-2 MET RAIL-2 MET STAIR MET STAIR MET STAIR MET STAIR-1 MET STUD-1 MET STUD-1 MET STUD-2 MP MP-1 MP-1 MP-3 MP-4 PF.JS	Fixed lower with glazing channel receiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower, 4* Dept (Corr to match MP2)  MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips  METAL FABRICATIONS Ladders Straight ladder Bolard, surface-mounted steel pipe Prefabricated stair and walkway Stop-Formed and Fabricated Aluminum Fin Tube Enclosure METAL FURRING (Non-Structural) Hat channel Literions  At channel KetTAL STARS  Steel ing Panel Clips  METAL STARS Steel not index Steel with Cable Infill and Integral Light Fixtures  METAL STUD FRAMING (Non-Structural) Steel stud; C-shaped, galvanized Steel shaft wall stud; C-T shaped, galvanized METAL PANELS  Zinc-Alory Composite Metal Panel (Light Gray) Painted Finish Aluminum Composite Metal Panel (Light Gray) Painted Finish Aluminum Composite Metal Panel (Light Gray) Painted Finish Aluminum Composite Metal Panel (Light Gray) Paterson States Paterson Pate
	089119 089119 089119 042000 042000 042000 042000 055000 055000 055000 055119 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 092216 074213.23 074213.	LVR-1C LVR-2 LVR-3 MA MA-1 MA-2 MA-3 MET FAB MET FAB-1 MET FAB-1 MET FAB-2 MET FAB-2 MET FAB-4 MET FAB-3 MET FURG-1 MET FURG-1 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET FURG-3 MET RAIL-1 MET RAIL-1 MET RAIL-2 MET RAIL-1 MET RAIL-2 MET RAIL-2 MET RAIL-1 MET STAIR MET STAIR MET STAIR MET STAIR-1 MET STUD-1 MET STUD-1 MET STUD-2 MP MP-1 MP-2 MP-3 MP-4 PFJS PFJS-1	Fixed lower with giazing deamed regeiver for integration into fully-unitized curtainwall system (Custom Color to match CW-1) Fixed lower, 4" Dept Color to match MP-2) MASONRY ACCESSORIES Preformed gasket Compressible filler Bond-breaker strips METAL FABRICATIONS Ladders Stright ladder Bollard, surface-mounted steel pipe Preformed gasket Compressible filler Bollard, surface-mounted steel pipe Preformed gasket Preformed gasket Preformed gasket Pr

## Material Identification Codes

Devision	0	0	Description
Revision	Spec	Code	Description
	075419	PVC-1	Thermoplastic PVC roofing system
	075419	PVC-2	Thermoplastic PVC roofing system
	010-13		
	077200	RF ACC	ROOF ACCESSORIES
	077200	RF ACC-1	Prefabricated Aluminum Walkway
E	077200		Insulated roof surb: Quetern size and profile: Internally atrustured
5	077200	RF ACC-2	Insulated foor curb, Custom size and prome, internally-structured
	077200	RH	ROOF HATCH
	077200	RH-1	Stair Access Hatch
	011200		
	077200	RH-2	Hoist Access Equipment Hatch
	084413	SCD	SUN CONTROL LOUVER DEVICE
	084413	SCD-1	Exterior Sun Control Device
	004413	300-1	
	077253	SG	SNOW GUARDS
	077253	SG-1	Pad Type, Zinc
	077253	80.0	
	077253	36-2	Pao Type, Aluminum
	-		
	079200	SLNT	SEALANT
	079200	SI NT-1	See Specification for Sealant Schedule
	070200		
		0.115	
	076200	SMF	SHEET METAL & FLASHING
	077100	SMF-1	Cantilevered Coping; Aluminum, prefinished
	077100	SME-2	Fascia Trim: Aluminum, prefinished, Lidht Grav
	077100		Taosia Trini, Zudinimum, prominiou, Light Oray
	077100	SMF-3	Formed Sheet Metal Coping; Aluminum Sheet (MP-2)
	077100	SMF-4	Fascia Trim: Zinc
	077400	0.45 5	
	0/7100	SMF-5	Formed Sneet Metal Coping; Zinc (MP-1)
	077100	SMF-6	Fascia Trim; Aluminum, prefinished, Dark Gray
			· · · · · · · · · · · · · · · · · · ·
	092492	SMKC	SMOVE CURTAINS
	063463	SINING	SMORE CURTAINS
	083343	SMKC-1	Overhead Coiling Smoke Curtain
	083343	SMKC-2	Elevator Hoistway Smoke Curtain
	003343	011110-2	
	72119	SPF	SPRAY POLYURETHANE FOAM INSULATION
	72119	SPF-1	Closed-cell spray foam air barrier, yapor barrier, lonition Barrier
	-		
	074242	SDD	
	074243	3FF	WOOD VENEER SOLID PRENOLIC PANEL
	074243	SPP-1	Phenolic Panel Rainscreen System
	054000	STL FURG	STEEL FURRING (Structural)
	054000		
	054000	SIL FURG-I	Hat channel, 16 ga. min, gaivanized
	054000	STL FURG-2	Z-furring, 16 ga. min, galvanized
	054000	STL STUD	STEEL STUD FRAMING (Structural)
	054000		
	054000	SIL SIUD-1	C-snaped, 16 ga. min, gaivanized G90
	044200	STN	STONE
	044200	STN-1	Anchored Veneer Panels: Russel Stone, Bloom Run Sandstone, finish: Honed
	044200		
	044200	51N-2	Anchored Granite Veneer Panels
	044200	STNA	STONE ANCHORS
	044200	STNA-1	Panel anchor
	074200	51177-1	
		-	
		IBM	IHERMAL BREAK MATERIALS
	072160	TBM-1	Structural fiberglass-reinforced thermoset resin plates
	042000	TWF	THROUGH-WALL FLASHING
	072000		
	042000	IVV⊢-1	I ermination bar, stainless steel
	042000	TWF-2	Drip plate, stainless steel
	021500		
	031500	UVD	UNDER-SLAD VAFUR DARRIER
	031520		
	031500	UVB-1	15 mil polvethvlene sheet
	031520		······································
	061053	WD BLKG	WOOD BLOCKING
	061053		Wood Blocking, Fire-retardant Treated
	001000		
	071326/071413	WP	WATERPROOFING
	071326	WP-1	Self-adhering Modified Bituminous Sheet Membrane
	074440		Hat Eluid applied Dubbarized Applet
	0/1413	VVP-2	
	042000	WPS	WEEP SYSTEM COMPONENTS
	042000	WPS-1	Cellular plastic vent
	0.10000		Construction mark developing
	042000	VVP3-2	Cavity drainage mesh, dovetall strips





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Author

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KEYNOTES - FLOOR PLANS				
#	DESCRIPTION			
F1	DEPRESSED FLOOR SLAB AT THIS LOCATION - REFER TO STRUCTURAL DRAWINGS AND ENLARGED FLOOR PLAN (WHERE APPLICABLE) FOR ADDITIONAL INFORMATION AND EXTENTS.			
F2	TRANSITION IN FLOOR CONSTRUCTION - REFER TO STRUCTURAL FRAMING PLANS AND DETAILS FOR MORE INFORMATION			
F4	PAVERS ON PEDESTALS. REFER TO L-DRAWINGS			
F5	ROOF DRAINAGE SECONDARY OVERFLOW DISCHARGE, REFER PLUMBING FOR DETAILS.			
F7	INTERIOR EXPOSED COLUMNS TO RECEIVE AESS LEVEL 4 FINISH PER AISC WITH (HPC-9)			
F8	WALL-MOUNTED DOOR PUSHPLATE ACTUATOR. REFER TO DOOR HARDWARE SCHEDULE			
F9	CARD READER			
F10	MULLION-MOUNTED DOOR PUSHPLATE ACTUATOR. REFER TO DOOR HARDWARE SCHEDULE			
F11	POST-MOUNTED DOOR PUSHPLATE ACTUATOR. REFER TO DOOR HARDWARE SCHEDULE			





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# GENERAL NOTES - FLOOR PLANS

- A. ALL INTERIOR PARTITIONS SHALL BE "A3a" UNLESS NOTED OTHERWISE.
  B. PARTITIONS, FURNITURE, EQUIPMENT, AND FIXTURES SHOWN SCREENED ARE TO BE ISSUED UNDER FUTURE INTERIOR FIT-OUT DOCUMENTATION PACKAGE(S) AND ARE SHOWN HERE FOR REFERENCE AND COORDINATION PURPOSES ONLY.
- C. PLAN DIMENSIONS ARE FROM FACE OF PARTITION TYPE AND DO NOT INCLUDE APPLIED FINISHES, UNLESS NOTED OTHERWISE. PLAN DIMENSIONS INDICATED AS "HOLD" OR "CLEAR" DIMENSIONS ARE FROM FACE OF APPLIED FINISH.
- D. INSTALL WORK STRAIGHT, PLUMB, LEVEL, SQUARE, AND TRUE, IN PROPER ALIGNMENT.E. FLATNESS: LEVEL FLOORS TO TRUE PLANE WITHIN 1/4 INCH (6 MM) IN 10'-0"
- (3 M) WHEN TESTED BY TEN FOOT (3 M) STRAIGHTEDGE PLACED ANYWHERE ON FLOOR IN ANY DIRECTION. 5. COORDINATE FURNITURE-RELATED FLECTRICAL LAYOUT WITH EURNITURE
- F. COORDINATE FURNITURE-RELATED ELECTRICAL LAYOUT WITH FURNITURE VENDOR.
  G. WHERE HANDRAILS, GRAB BARS, CABINETS, WALL-MOUNTED DOOR STOPS, OR OTHER WALL-HUNG ITEMS ARE ATTACHED TO PARTITIONS, INSTALL
- BACKER PLATES [OR WOOD BLOCKING ] ACCURATELY POSITIONED AND FIRMLY SECURED TO METAL STUDS, WHETHER OR NOT SUCH BACKER PLATES OR BLOCKING ARE INDICATED ON DRAWINGS. H. WHERE NEW WORK ABUTS, ALIGNS OR ADJOINS EXISTING MATERIALS,
- MAKE SMOOTH AND EVEN TRANSITION AND ELIMINATE EVIDENCE OF PATCHING AND REFINISHING. FINISH NEW WORK TO MATCH ADJACENT UNDISTURBED SURFACES, UNLESS NOTED OTHERWISE.
   CLOSE AND PATCH HOLES AND OPENINGS IN EXISTING FLOOR, WALL AND
- CEILING WHICH EXIST OR RESULT FROM DEMOLITION OR ALTERATION WORK TO MATCH ADJACENT UNDISTURBED SURFACES.
- J. PRIOR TO CONCEALMENT OF FIRE RESISTIVE MATERIALS BY OTHER WORK, PATCH AND REPAIR AREAS OF REMOVED OR DAMAGED APPLIED FIREPROOFING. COMPLETE PATCHING AND REPAIR TO MAINTAIN EXISTING FIRE-RESISTANCE DESIGN IN ACCORDANCE WITH FIREPROOFING MANUFACTURER'S WRITTEN INSTRUCTIONS FOR CONDITIONS OF
- EXPOSURE AND INTENDED USE. COORDINATE TESTING AND INSPECTION OF ASSEMBLIES AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
  K. PROVIDE FIRESTOPPING OF PENETRATIONS AND VOIDS THROUGH FIRE-RATED WALL, FLOOR AND PARTITION ASSEMBLIES [AND ROOF] INCLUDING
- EMPTY OPENINGS AND OPENINGS CONTAINING CABLES, PIPES, DUCTS, CONDUIT AND OTHER ELEMENTS. L. AT SOUND-RATED PARTITION WALLS, PROVIDE CONTINUOUS BEAD OF

L. AT SOUND-RATED PARTITION WALLS, PROVIDE CONTINUOUS BEAD OF ACOUSTICAL SEALANT AT JUNCTURE OF BOTH FACES OF RUNNERS OR PLATES WITH FLOOR AND CEILING CONSTRUCTION, AND WHEREVER GYPSUM BOARD ABUTS DISSIMILAR MATERIALS.

- AT OPENINGS AND CUTOUTS, FILL OPEN SPACES BETWEEN GYPSUM BOARD AND FIXTURES, CABINETS, DUCTS AND OTHER FLUSH OR PENETRATING ITEMS, WITH CONTINUOUS BEAD OF SEALANT.
- SEAL SIDES AND BACKS OF ELECTRICAL BOXES TO COMPLETELY CLOSE OFF OPENINGS AND JOINTS.

	CONSTRUC		<u> 10</u>	N PLAN LEGEND
SEE A010 FOR GENERAL NOTE				BBREVIATIONS, AND SYMBOLS
	(E) CONSTRUCTION TO REMAIN			
	NEW CONSTRUCTIO	ON	=	
	TEMPORARY CONSTRUCTION		_	======
	A	SSEN	IBLY	RATING
0	ZERO HOUR			
_1	ONE HOUR RATED			
2	TWO HOUR RATED	)		
	TY	PE O	FAS	SEMBLY
W	FIRE WALL		S	SMOKE BARRIER
В	FIRE BARRIER		SP	SMOKE PARTITIONS
Е	EXISTING			
	XXX XXX	DOO SEE FOR INTE SEE ADD WINI SEE FOR	R TA DOC ADD RIOF PAR ITION DOW DOC ADD	AG OR SCHEDULE AND LEGEND DITIONAL INFORMATION R PARTITION TAG TITION SHEET FOR NAL INFORMATION

KEYNOTES DESCRIPTION

#







8/28/2024 3:57:05 PM Autodesk Docs://514-6926 - UKHC Cancer Treatment & Advance Ambulatory Center/A23-UKC SHELLCORE 5146926.rv

Author



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KEYNOTES - FLOOR PLANS			
#	DESCRIPTION		
F1	DEPRESSED FLOOR SLAB AT THIS LOCATION - REFER TO STRUCTURAL DRAWINGS AND ENLARGED FLOOR PLAN (WHERE APPLICABLE) FOR ADDITIONAL INFORMATION AND EXTENTS.		
F2	TRANSITION IN FLOOR CONSTRUCTION - REFER TO STRUCTURAL FRAMING PLANS AND DETAILS FOR MORE INFORMATION		
F4	PAVERS ON PEDESTALS. REFER TO L-DRAWINGS		
F5	ROOF DRAINAGE SECONDARY OVERFLOW DISCHARGE, REFER PLUMBING FOR DETAILS.		
F7	INTERIOR EXPOSED COLUMNS TO RECEIVE AESS LEVEL 4 FINISH PER AISC WITH (HPC-9)		
F8	WALL-MOUNTED DOOR PUSHPLATE ACTUATOR. REFER TO DOOR HARDWARE SCHEDULE		
F9	CARD READER		
F10	MULLION-MOUNTED DOOR PUSHPLATE ACTUATOR. REFER TO DOOR HARDWARE SCHEDULE		
F11	POST-MOUNTED DOOR PUSHPLATE ACTUATOR. REFER TO DOOR HARDWARE SCHEDULE		

VG	DESCRIPTION
RF1	PRIMARY AND SECONDARY ROOF DRAINS
RF2	ROOF DRAIN, REFER TO DETAIL
RF3	TAPERED INSULATION CRICKETS (HATCHED AREAS) 1/2"/FOOT
RF4	PREFABRICATED ALUMNIMUM WALKWAY SYSTEM
RF5	PROVIDE WARNING LINE AT 15 FEET FROM OUTSIDE FACE OF ROOF EDGE
RF6	MOBILE HOIST ACCESS EQUIPMENT HATCH
RF7	STAIR ACCESS HATCH
RF8	FLEXIBLE WALKWAY SYSTEM
RF9	TAPERED INSULATION ROOF SUMP AT DRAIN

	1/8" = 1'-0"
R A010 FOR GE A011 FOR M	OOF PLAN LEGEND ENERAL NOTES, ABBREVIATIONS, AND SYME ATERIAL IDENTIFICATION TAG CODES AND N
	WARNING LINE @ 15' FROM OUTSIDE FACE OF ROOF EDGE
	FALL PROTECTION LIFELINE, FINAL LAYOU
igodol	FALL PROTECTION ANCHOR, FINAL LAYOU
0	INDIVIDUAL ROOF DRAIN (SMALL SF AREAS
	PRIMARY & SECONDARY ROOF DRAINS
	ROOF HATCH - REFER SHEET A011 FOR ROOF HATCH TYPE INFO.
	TAPERED INSULATION CRICKETS, SLOPE 1/2" / FOOT TYP. UNO.
	4'-0" WIDE NON-PENTRATING RAISED ALUN WALKWAY SYSTEM - 18" x 18" MIN WEIGHT SUPPORT BASE. FINAL LAYOUT PER SYSTI
	HEAVY-DUTY SLIP-RESISTANT WALKWAY PADS - COLOR TO BE GRAY. FINAL LAYOUT SYSTEM MFG.
PVC-1 RF-1	UPPER TAG - ROOF MATERIAL - SEE SHEE LOWER TAG - ROOF ASSEMBLY - SEE SHEE
+XX.X"	ROOF INSULATION THICKNESS, MIN. 5" THICKNESS = +0" HT.

SEE	A010 FOR GENERAL NOTE	s, Ae	BREVIATIONS, AND SYMBOL	
	(E) CONSTRUCTION TO REMAIN			
	NEW CONSTRUCTION	=		
TEMPORARY CONSTRUCTION				
	ASSEN	BLY	RATING	
0	ZERO HOUR			
1	ONE HOUR RATED			
2	TWO HOUR RATED			
	TYPE C	F AS	SEMBLY	
W	FIRE WALL	S	SMOKE BARRIER	
В	FIRE BARRIER	SP	SMOKE PARTITIONS	
Е	EXISTING			





 $\mathbf{T}$






1 SOUTH ENLARGED B 1/8" = 1'-0" 1/A200

#### EXTERIOR FINISH LEGEND



#### <u>GENERAL NOTES - EXTERIOR</u> <u>ELEVATIONS</u>

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND
- MATERIALS.
  B. SEA LEVEL ELEVATIONS OF EXISTING FLOORS ARE BASED ON SURVEY INFORMATION AND\OR AS-BUILT DRAWINGS PROVIDED BY THE OWNER. THE SURVEY DATA MAY NOT BE COMPLETE AND THE ACTUAL EXISTING ELEVATIONS MAY VARY IN DIFFERENT PORTIONS OF THE EXISTING BUILDING. ALL INFORMATION MUST BE FIELD VERIFIED AND COORDINATED BETWEEN NEW AND EXISTING CONSTRUCTION TO PROVIDE MATCHING FLOOR ELEVATIONS WHERE REQUIRED.
- C. GRADE LINE SHOWN ON ELEVATIONS WHERE REQUIRED.
   C. GRADE LINE SHOWN ON ELEVATIONS DOES NOT REFLECT SITE GRADING CONDITIONS; REFER TO CIVIL DRAWINGS FOR GRADING INFORMATION.
- D. REFER TO SHEETS A490 A496 FOR EXTERIOR WINDOW, CURTAIN WALL, LOUVER, AND SUNSHADE ELEVATIONS

#### KEYNOTES

#	DESCRIPTION
4.406	BRICK EXPANSION JOINT WITH BACKER ROD AND SEALANT AND COMPRESSIBLE JOINT FILLER
7.401	MP-1, ZINC-ALLOY COMPOSITE METAL PANELS



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Author

### EXTERIOR FINISH LEGEND

![](_page_75_Figure_4.jpeg)

#### <u>GENERAL NOTES - EXTERIOR</u> <u>ELEVATIONS</u>

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND
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- D. REFER TO SHEETS A490 A496 FOR EXTERIOR WINDOW, CURTAIN WALL, LOUVER, AND SUNSHADE ELEVATIONS

KEYNOTES			
#	DESCRIPTION		
4.406	BRICK EXPANSION JOINT WITH BACKER ROD AND SEALANT AND COMPRESSIBLE JOINT FILLER		

![](_page_75_Figure_11.jpeg)

![](_page_76_Figure_0.jpeg)

8/27/2024 10:35:12 AM Autodesk Docs://514-6926 - UKHC Cancer Treatment & Advance Ambulatory Center/A23-UKC\_SHELLCORE\_51469

Author

![](_page_76_Figure_3.jpeg)

![](_page_76_Figure_4.jpeg)

#### <u>GENERAL NOTES - EXTERIOR</u> <u>ELEVATIONS</u>

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND
- MATERIALS.
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KEYNOTES				
#	DESCRIPTION			
4.406	BRICK EXPANSION JOINT WITH BACKER ROD AND SEALANT AND COMPRESSIBLE JOINT FILLER			

![](_page_76_Figure_11.jpeg)

![](_page_77_Figure_0.jpeg)

![](_page_77_Figure_1.jpeg)

	4 A450			A4	3 A450 41	N	FALL PROTECTION & ROOF DAVITS. SEE ROOF PLAN FOR LOCATION —		2 A450	
						5 A478.C				
* * * * * * * * *		* * * * * * * * * * * * * * * * * * *								
		* * * * * * * * * * * * * * * * * * *								
				, , , , , , , , , , , , , , , , , , ,		₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩				
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								
I				A4	241					

![](_page_77_Figure_4.jpeg)

### EXTERIOR FINISH LEGEND

![](_page_77_Figure_6.jpeg)

#### <u>GENERAL NOTES - EXTERIOR</u> <u>ELEVATIONS</u>

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND
- MATERIALS.
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- MATCHING FLOOR ELEVATIONS WHERE REQUIRED.
  C. GRADE LINE SHOWN ON ELEVATIONS DOES NOT REFLECT SITE GRADING CONDITIONS; REFER TO CIVIL DRAWINGS FOR GRADING INFORMATION.
- D. REFER TO SHEETS A490 A496 FOR EXTERIOR WINDOW, CURTAIN WALL, LOUVER, AND SUNSHADE ELEVATIONS

#### KEYNOTES

#	DESCRIPTION
4.406	BRICK EXPANSION JOINT WITH BACKER ROD AND SEALANT AND COMPRESSIBLE JOINT FILLER
20.01	ROOF LEADER OVERFLOW NOZZLE. REFER TO P-DRAWINGS

![](_page_77_Figure_14.jpeg)

![](_page_78_Figure_0.jpeg)

#### EXTERIOR FINISH LEGEND

FBR-1A FACEBRICK, BEIGE	FBR-1B FACEBRICK, BEIGE, TEXTURED	FBR-2 FACEBRICK, RED
FBR-3 FACEBRICK, DARK RED, INSET	GL-21 VISION GLASS GL-41 SPANDREL GLASS METAL PANEL, PAINTED FINISH	GL-22 REFLECTIVE GLASS GL-42 REFLECTIVE SPANDREL GLASS
MP-4 CORRUGATED METAL PANEL, PAINTED FINISH	SPP-1 WOOD VENEER COMPOSITE PÁNEL PÁNEL GRANITE STONE VENEER	LVR-1A LVR-1B LVR-3 PREFINISHED ALUMINUM LOUVERS

#### <u>GENERAL NOTES - EXTERIOR</u> **ELEVATIONS**

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND
- MATERIALS. B. SEA LEVEL ELEVATIONS OF EXISTING FLOORS ARE BASED ON SURVEY INFORMATION AND\OR AS-BUILT DRAWINGS PROVIDED BY THE OWNER. THE SURVEY DATA MAY NOT BE COMPLETE AND THE ACTUAL EXISTING ELEVATIONS MAY VARY IN DIFFERENT PORTIONS OF THE EXISTING BUILDING. ALL INFORMATION MUST BE FIELD VERIFIED AND COORDINATED BETWEEN NEW AND EXISTING CONSTRUCTION TO PROVIDE
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#### KEYNOTES

#	DESCRIPTION
4.406	BRICK EXPANSION JOINT WITH BACKER ROD AND SEALANT AND COMPRESSIBLE JOINT FILLER
20.01	ROOF LEADER OVERFLOW NOZZLE. REFER TO P-DRAWINGS

## \_\_\_\_ROOF\_T/STL 1,127' - 4" +

## LEVEL <u>08 - PH</u> 1,102' - 4"

\_LEVEL 07 \_1,087' - 0" +

# 

## LEVEL 03 1,025' - 8"

\_LEVEL 02 1,009' - 8" +

## \_LEVEL 01 993' - 8" +

## \_LEVEL 00 973' - 8" -

![](_page_78_Picture_26.jpeg)

![](_page_79_Figure_0.jpeg)

### EXTERIOR FINISH LEGEND

FBR-1A FACEBRICK, BEIGE	FBR-1B FACEBRICK, BEIGE, TEXTURED	FBR-2 FACEBRICK, RED
FBR-3 FACEBRICK, DARK RED, INSET	GL-21 VISION GLASS	GL-22 REFLECTIVE GLASS
GL-23 BIRD SAFE GLASS	GL-41 SPANDREL GLASS	GL-42 REFLECTIVE SPANDREL GLASS
MP-1 METAL PANEL, ZINC FLAT PANEL	MP-2 METAL PANEL, PAINTED FINISH	MP-3 METAL PANEL, PAINTED FINISH (DARK GRAY)
CORRUGATED METAL PANEL, PAINTED FINISH	SPP-1 WOOD VENEER COMPOSITE PANEL	LVR-1A LVR-1B LVR-3 PREFINISHED ALUMINUM LOUVERS
STN-1 LIMESTONE VENEER	STN-2 GRANITE STONE VENEER	

#### <u>GENERAL NOTES - EXTERIOR</u> **ELEVATIONS**

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND
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- D. REFER TO SHEETS A490 A496 FOR EXTERIOR WINDOW, CURTAIN WALL, LOUVER, AND SUNSHADE ELEVATIONS

#### KEYNOTES

#	DESCRIPTION
4.406	BRICK EXPANSION JOINT WITH BACKER ROD AND SEALANT AND COMPRESSIBLE JOINT FILLER
7.601	SMF-1, CANTILEVERED METAL COPING
7.635	ALUMINUM DOWNSPOUT
11.21	ROOFTOP FALL PROTECTION PERMANENT HORIZONTAL LIFELINE
20.01	ROOF LEADER OVERFLOW NOZZLE. REFER TO P-DRAWINGS

![](_page_79_Figure_12.jpeg)

![](_page_80_Figure_0.jpeg)

 $\searrow$ 

![](_page_80_Figure_4.jpeg)

5 EAST FCD SOUTH BUMPOUT 1/8" = 1'-0" 1/A202

SUNKEN GARDEN SOUTH 6 1/8" = 1'-0"  $\searrow$ 1/A200

![](_page_80_Figure_7.jpeg)

![](_page_80_Figure_8.jpeg)

![](_page_80_Figure_9.jpeg)

EXTERIO	EXTERIOR FINISH LEGEND				
FBR-1A FACEBRICK, BEIGE	FBR-1B FACEBRICK, BEIGE, TEXTURED	FBR-2 FACEBRICK, RED			
FBR-3 FACEBRICK, DARK RED, INSET	GL-21 VISION GLASS	GL-22 REFLECTIVE GLASS			
GL-23 BIRD SAFE GLASS	GL-41 SPANDREL GLASS	GL-42 REFLECTIVE SPANDREL GLASS			
MP-1 METAL PANEL, ZINC FLAT PANEL	MP-2 METAL PANEL, PAINTED PINISH	MP-3 METAL PANEL, PAINTED FINISH (DARK GRAY)			
CORRUGATED METAL PANEL, PAINTED FINISH	SPP-1 WOOD VENEER COMPOSITE PANEL	LVR-1A LVR-1B LVR-3 PREFINISHED ALUMINUM LOUVERS			
STN-1 LIMESTONE VENEER	STN-2 GRANITE STONE VENEER				

#### <u>GENERAL NOTES - EXTERIOR</u> **ELEVATIONS**

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- D. REFER TO SHEETS A490 A496 FOR EXTERIOR WINDOW, CURTAIN WALL, LOUVER, AND SUNSHADE ELEVATIONS

KEY	NO	TES

#	DESCRIPTION
8.902	LVR-1B: EXTRUDED ALUMINUM DRAINABLE BLADE
	LOUVER, CONTINUOUS BLADES WITH CONCEALED
	VERTICAL AND HORIZINTAL SUPPORT. FOR
	SEAMLESS APPEARANCE. MATCH CW-1 FINISH

![](_page_80_Figure_18.jpeg)

![](_page_81_Figure_0.jpeg)

![](_page_81_Picture_4.jpeg)

![](_page_82_Figure_0.jpeg)

![](_page_82_Figure_2.jpeg)

![](_page_82_Picture_4.jpeg)

![](_page_83_Figure_0.jpeg)

![](_page_83_Picture_4.jpeg)

![](_page_84_Figure_0.jpeg)

![](_page_84_Figure_1.jpeg)

![](_page_84_Figure_2.jpeg)

![](_page_84_Figure_3.jpeg)

![](_page_84_Figure_4.jpeg)

### **GENERAL NOTES - WALL SECTIONS**

- A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND MATERIALS. B. SEA LEVEL ELEVATIONS OF EXISTING FLOORS ARE BASED ON SURVEY INFORMATION AND/OR AS-BUILT DRAWINGS PROVIDED BY THE OWNER. THE SURVEY DATA MAY NOT BE COMPLETE AND THE ACTUAL EXISTING ELEVATIONS MAY VARY IN DIFFERENT PORTIONS OF THE EXISTING BUILDING. ALL INFORMATION MUST BE FIELD VERIFIED AND COORDINATED BETWEEN NEW AND EXISTING CONSTRUCTION TO PROVIDE MATCHING FLOOR ELEVATIONS WHERE REQUIRED.
- C. GRADE LINE SHOWN ON ELEVATIONS DOES NOT REFLECT SITE GRADING CONDITIONS; REFER TO CIVIL DRAWINGS FOR GRADING INFORMATION.
- D. REFER TO SHEET A460 THRU A463 FOR EXTERIOR WALL SOFFIT AND ROOF TYPES.
- E. REFER TO EXTERIOR ELEVATIONS FOR CURTAIN WALL TYPES.

![](_page_84_Picture_11.jpeg)

AREA D

AREA B

AREA A

AREA C

1'-3" I		
4 A476		
2'-2" F		
1 A474		
2'-2"		
A474		
י_2"		
2'-2"		
2 A474		
2'-2"		
(1) (A474)		
2'-2"		
2 A474		
2'-2"		
5 7		
Ę		
2'-2" F		
4 A467		
.		
3 <u>1/8" = 1'-0"</u> 1/A200 B		

![](_page_85_Figure_2.jpeg)

### **GENERAL NOTES - WALL SECTIONS**

A. REFER TO OVERALL FLOOR PLANS FOR ADDITIONAL INFORMATION REGARDING EXTERIOR WALL TYPES AND MATERIALS. B. SEA LEVEL ELEVATIONS OF EXISTING FLOORS ARE BASED ON SURVEY INFORMATION AND/OR AS-BUILT DRAWINGS PROVIDED BY THE OWNER. THE SURVEY DATA MAY NOT BE COMPLETE AND THE ACTUAL EXISTING ELEVATIONS MAY VARY IN DIFFERENT PORTIONS OF THE EXISTING BUILDING. ALL INFORMATION MUST BE FIELD VERIFIED AND COORDINATED BETWEEN NEW AND EXISTING CONSTRUCTION TO PROVIDE MATCHING FLOOR ELEVATIONS WHERE REQUIRED.

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- GRADING INFORMATION. D. REFER TO SHEET A460 THRU A463 FOR EXTERIOR WALL SOFFIT AND ROOF TYPES.
- E. REFER TO EXTERIOR ELEVATIONS FOR CURTAIN WALL TYPES.

![](_page_85_Figure_9.jpeg)

![](_page_85_Picture_10.jpeg)

![](_page_86_Figure_0.jpeg)

C. GRADE LINE SHOWN ON ELEVATIONS DOES NOT REFLECT SITE GRADING CONDITIONS; REFER TO CIVIL DRAWINGS FOR GRADING INFORMATION.

AREA A

- D. REFER TO SHEET A460 THRU A463 FOR EXTERIOR WALL SOFFIT AND ROOF TYPES.
- E. REFER TO EXTERIOR ELEVATIONS FOR CURTAIN WALL TYPES.

![](_page_86_Picture_6.jpeg)

REQUIRED.

![](_page_87_Figure_0.jpeg)

7

![](_page_87_Figure_3.jpeg)

![](_page_87_Figure_4.jpeg)

![](_page_87_Figure_5.jpeg)

![](_page_87_Figure_6.jpeg)

![](_page_87_Figure_7.jpeg)

![](_page_87_Figure_8.jpeg)

![](_page_87_Figure_10.jpeg)

1 SECTION - CHILLER YARD 1/8" = 1'-0"

![](_page_87_Picture_12.jpeg)

![](_page_88_Figure_0.jpeg)

9 DETAIL 3" = 1'-0"

![](_page_88_Figure_4.jpeg)

![](_page_88_Figure_5.jpeg)

![](_page_88_Figure_6.jpeg)

![](_page_88_Figure_7.jpeg)

MP-5 BRAKE METAL FLASHING

OVER BACK OF STUDS

CFMF CLIPS BACK TO — STRUCTURE @ 48" O.C.

DIFFERETIAL METALS

6" CFMF STUDS

PROVIDE SHIMS TO ISOLATE

121' - 6" - ROOF FASCIA TRIM ON EXTRUDED ALUMINUM CARRIER. TRIM FINISH TO MATCH ACM - FLASHING SUPPORT CLIPS AT STUDS VERTICAL PLASTIC SHIMS TO PROVIDE AIR SPACE BEHIND METAL PANELS

ROOF MEMBRANE FLASHING HOT-AIR WELDED TO DRIP FLASHING

TURN ROOF MEMBRANE DOWN

PRE-FINISHED METAL GUTTER

2X PT WOOD NAILER FASTENED

TO BENT PLATE W/ 1/2" BOLTS @

WRAP AVB FLASHING AROUND

WRAP AVB FLASHING AROUND

PLATE AND NAILER

PLATE AND NAILER

- FASCIA TRIM TO MATCH

MP-4 FLASHING SUPPORT

- BENT PLATE

NAILER AND OVERLAP AVB

FLASHING

24" O.C.

AND ROOF MEMBRANE PVC-COATED METAL DRIP FLASHING BY ROOFER

AB-1, LIQUID-APPLIED VAPOR-RETARDING AIR BARRIER

![](_page_88_Figure_11.jpeg)

- FLASHING SUPPORT CLIPS HEAD FLASHING BY METAL PANEL MFR - 1/4" BACKER ROD & SEALANT LOUVER HEAD

MP-5 FLASHING

STUDS

FLASHING SUPPORT CLIP AT

- PROVIDE SHIMS TO ISOLATE

DIFFERENTIAL METALS

MP-4 METAL PANELS

- GYP SHTG-1, 5/8" GLASS-MAT GYPSUM SHEATHING

![](_page_88_Figure_14.jpeg)

INSECT SCREEN

T/ NAILER \_\_\_\_\_ 121' - 6" - ROOF FASCIA TRIM ON EXTRUDED ALUMINUM CARRIER. TRIM FINISH TO MATCH ACM

- FLASHING SUPPORT CLIPS AT STUDS VERTICAL PLASTIC SHIMS TO PROVIDE AIR SPACE BEHIND

**AIR BARRIER** 

METAL PANELS - AB-1, LIQUID-APPLIED VAPOR-RETARDING

GYP SHTG-1, 5/8" GLASS-MAT GYPSUM SHEATHING

2 DETAIL - LOUVER HEAD AT MP-5 3" = 1'-0"

![](_page_88_Picture_20.jpeg)

DETAIL - LOUVER SILL AT PENTHOUSE CURB 3" = 1'-0"

![](_page_88_Picture_22.jpeg)

![](_page_89_Figure_0.jpeg)

STN-1: ANCHORED		
AIR BARRIER TRANSITION TAPE-		
CONTINUOUS THROUGH WALL FLASHING: FLEXIBLE SELF-ADHERED MEMBRANE OVER S.S. DRIP EDGE SET IN		WPS-2: CAVITY DRAIN/ MATERIAI
BED OF SEALANT		
WPS-1: WEEP VENTS @ 24" O.C.—		TERMINATION BAR AN
STN-2: ANCHORED GRANITE		SEALANT
VENEER PANELS		<ul> <li>SLAB ON GRADE. REF S-DRAWINGS</li> </ul>
		LEVEL 00
GROUT CAVITY SOLID		973' - 8" 🌱
ANCHORS		COMPACTED GRAVEL REFER TO S-DRAWING
TBM-1		UNDER SLAB VAPOR B SEAL WITH TAPE AT PI AND PENETRATIONS
WP-1, SELF-ADHERING MODIFIED BITUMINOUS SHEET MEMBRANE, DRAINAGE / COVER BOARD AND INSULATION,		CONCRETE FOUNDATI REFER TO S-DRAWING
VERTICAL APPLICATION		CONCRETE GRADE BE
PERFORATED PERIMETER — DRAIN WRAPPED IN FILTER FABRIC SOCK WITH PERFORATIONS FACING DOWN		DRAWINGS
	- [] [ ] 908080808080[ ] ^^ 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	

1 1/2" = 1'-0"

![](_page_89_Figure_4.jpeg)

WPS-2: CAVITY DRAINAGE MATERIAL

TERMINATION BAR AND	
SFALANT	

DETAIL - BRICK BASE AND BRI	CK WALL (NORTH FACADE)
3     1 1/2" = 1'-0"       1/A459	
	6 1/2" 8"
2 1/2 X ALUMINUM CURTAIN	

SEAL WITH TAPE AT PERIMETER

DETAIL - CURTAIN WALL SILL AND STONE BASE (NORTH FACADE) **4** / 1 1/2" = 1'-0" 7/A459.A

DETAIL - STONE BASE AND METAL PANEL (NORTH FACADE) 1 1/2" = 1'-0" 2/A423

![](_page_89_Picture_13.jpeg)

![](_page_90_Figure_0.jpeg)

![](_page_90_Figure_1.jpeg)

![](_page_90_Figure_2.jpeg)

![](_page_90_Figure_3.jpeg)

MODIFIED BITUMINOUS SHEET MEMBRANE WATERPROOFING,

HORIZONTAL APPLICATION

![](_page_90_Figure_4.jpeg)

![](_page_90_Picture_5.jpeg)

### DETAIL - DOOR THRESHOLD

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![](_page_90_Figure_10.jpeg)

![](_page_91_Figure_1.jpeg)

3 PLAN DETAIL - LINK NORTH WALL METAL PANEL 1 1/2" = 1'-0"

![](_page_91_Figure_4.jpeg)

![](_page_91_Figure_5.jpeg)

![](_page_91_Figure_6.jpeg)

![](_page_91_Picture_7.jpeg)

![](_page_92_Figure_0.jpeg)

#### 6 DETAIL - TYPICAL LOBBY CURTAIN WALL 3" = 1'-0"

6	SMF-5 18 GA FORMED ZINC COPING PLATE
	FURRING/ STIFFENERS AS REQUIRED TO SUPPORT COPING
	(SG-1)
	SELF-ADHERED HIGH-TEMP FLEXIBLE FLASHING
N	CONT. GALV. RETAINER
4 1/2"	SHEET METAL CLOSURE TRIM FASTENED TO PLYWOOD AND STEEL PLATE WITH COUNTERSUNK SCREWS
	3/4" DEFLECTION JOINT       W/ BACKER ROD
	CFMF SLIDE CLIP

![](_page_92_Figure_6.jpeg)

![](_page_92_Figure_7.jpeg)

2 DETAIL - LEVEL 5 PARAPET - MT1 COPING 1 1/2" = 1'-0" 2/A453

2/A453

![](_page_92_Figure_9.jpeg)

![](_page_92_Figure_10.jpeg)

![](_page_93_Figure_0.jpeg)

MULLION REINFORCING

UNITIZED CURTAIN WALL

PROVIDE THERMAL SHIMS

BRACKETS AND MULLION

GLAZING AS INDICATED -ON CW ELEVATIONS

SCRIBE SNAP COVER

AROUND SUN SHADE

SUPPORT BRACKETS

ALUMINUM SUNSHADE

SUPPORT BRACKETS

BETWEEN SUNSHADE SUPPORT

VERTICAL MULLION

AS REQUIRED TO

SUPPORT LOADS.

![](_page_93_Figure_1.jpeg)

2) d

![](_page_93_Figure_2.jpeg)

## DETAIL - SUNSHADE BOTTOM AT LOBBY CURTAIN WALL

/ 1 1/2" = 1'-0"

1/A453.A

![](_page_93_Picture_5.jpeg)

![](_page_93_Figure_6.jpeg)

![](_page_93_Figure_8.jpeg)

![](_page_93_Figure_10.jpeg)

![](_page_93_Figure_12.jpeg)

![](_page_94_Figure_0.jpeg)

![](_page_94_Figure_1.jpeg)

![](_page_94_Figure_2.jpeg)

![](_page_94_Figure_3.jpeg)

![](_page_94_Picture_4.jpeg)

DETAIL - DOCK LOW ROOF GLAZING AT BRICK 4 <u>1 1/2" = 1'-0"</u> 1/A457

![](_page_94_Figure_9.jpeg)

#### SECTION DETAIL - CONNECTOR PARAPET - LEVEL 03 BRICK 3 / 1 1/2" = 1'-0"

![](_page_94_Figure_11.jpeg)

LEVEL 02 1,009' - 8"

SECTION DETAIL - CONNECTOR PARAPET - LEVEL 02 BRICK 2 1 1/2" = 1'-0"

![](_page_94_Figure_14.jpeg)

![](_page_94_Picture_15.jpeg)

![](_page_94_Figure_17.jpeg)

![](_page_95_Figure_0.jpeg)

![](_page_95_Figure_1.jpeg)

3 DETAIL - LOUVER DOOR SILL 3" = 1'-0"

![](_page_95_Figure_3.jpeg)

2

# 1 DETAIL - LOUVER DOOR JAMB 3" = 1'-0"

![](_page_95_Figure_9.jpeg)

![](_page_95_Picture_10.jpeg)

![](_page_96_Figure_0.jpeg)

![](_page_96_Figure_1.jpeg)

![](_page_96_Figure_2.jpeg)

![](_page_96_Figure_3.jpeg)

![](_page_96_Figure_4.jpeg)

![](_page_96_Figure_5.jpeg)

![](_page_96_Figure_6.jpeg)

![](_page_96_Picture_9.jpeg)

![](_page_97_Figure_0.jpeg)

![](_page_97_Picture_13.jpeg)

- OUTSIDE FACE OF SILL MULLION

T/O SILL MULLION

SEE ELEC.

MULLION

B/O

LIGHT FIXTURE

INTERMEDIATE

8.327

8.321

<<u>8.322</u>

![](_page_98_Figure_0.jpeg)

1	
	CURTAIN WALL KEYNOTES
KEY VALUE	KEYNOTE TEXT
8.321	TYPICAL CURTAIN WALL MULLION WITH PROFILE 'A' CAP. REFER TO SHEET A49 1" MULLION CAP
8.322	VERTICAL CURTAIN WALL MULLION WIT PROFILE 'B' CAP. REFER TO SHEET A49 6" TAPERED MULLION EXTENSION CAP
8.323	CURTAIN WALL SILL MULLION WITH PROFILE 'C' CAP. REFER TO SHEET A49 10" DEEP TAPERED MULLION EXTENSIO CAP
8.324	CURTAIN WALL HEAD MULLION WITH PROFILE 'C' CAP. REFER TO SHEET A49 10" DEEP TAPERED MULLION EXTENSIO CAP
8.325	CURTAIN WALL JAMB MULLION WITH PROFILE 'C' CAP. REFER TO SHEET A49 10" DEEP TAPERED MULLION EXTENSIO CAP
8.326	HORIZONTAL SSG CURTAIN WALL MULLION PROFILE 'D'. REFER TO SHEE A496
8.327	VERTICAL SSG CURTAIN WALL MULLION PROFILE 'D'. REFER TO SHEET A496
8.328	BUTT-GLAZED HORIZONTAL MULLION

#### GENERAL NOTES - EXTERIOR WINDOWS & CURTAINWALL

- REFER TO DOOR SCHEDULE FOR DOOR INFORMATION DIMENSIONS SHOWN OF OPENINGS IN MASONRY ARE THE ROUGH OPENING DIMENSIONS WHICH INCLUDE A 3/4" SEALANT JOINT AT EACH JAMB & SILL. REFER TO CURTAINWALL HEAD DETAILS FOR HEAD JOINT SIZE IN
- 3. SEE ELEVATIONS FOR SURROUNDING / ADJACENT
- 4. REFER TO SHEET A011 AND SPECIFICATIONS FOR (CW-)
- 5. INACTIVE PORTIONS OF LOUVERS ARE BLANK OF

![](_page_98_Picture_10.jpeg)

## 26 W78 CW-1

REFER TO 4/A495 FOR SCD-1 DESIGN FOR THIS ELEVATION

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![](_page_99_Figure_3.jpeg)

#### INFLECTION POINT SEE FLOOR PLANS

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![](_page_99_Picture_7.jpeg)

REFER TO 2/A495 FOR SCD-1 DESIGN FOR THIS ELEVATION 27 W79 CW-1

![](_page_99_Figure_10.jpeg)

![](_page_99_Picture_12.jpeg)

![](_page_100_Figure_0.jpeg)

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![](_page_100_Figure_4.jpeg)

5 W83 (CW-1) 1/8" = 1'-0"

25'-4"

	CURTAIN WALL KEYNOTES
KEY VALUE	KEYNOTE TEXT
8.321	TYPICAL CURTAIN WALL MULLION WITH PROFILE 'A' CAP. REFER TO SHEET A495 1" MULLION CAP
8.326	HORIZONTAL SSG CURTAIN WALL MULLION PROFILE 'D'. REFER TO SHEET A496
8.327	VERTICAL SSG CURTAIN WALL MULLION PROFILE 'D'. REFER TO SHEET A496
8.328	BUTT-GLAZED HORIZONTAL MULLION PROFILE 'D'. REFER TO SHEET A496
<varies></varies>	

#### **GENERAL NOTES - EXTERIOR** WINDOWS & CURTAINWALL

- 1. REFER TO DOOR SCHEDULE FOR DOOR INFORMATION. 2. DIMENSIONS SHOWN OF OPENINGS IN MASONRY ARE THE ROUGH OPENING DIMENSIONS WHICH INCLUDE A 3/4" SEALANT JOINT AT EACH JAMB & SILL. REFER TO CURTAINWALL HEAD DETAILS FOR HEAD JOINT SIZE IN SIZING GLAZING.
- 3. SEE ELEVATIONS FOR SURROUNDING / ADJACENT MATERIALS.
- 4. REFER TO SHEET A011 AND SPECIFICATIONS FOR (CW-) MULLION AND FRAMES SIZES. 5. INACTIVE PORTIONS OF LOUVERS ARE BLANK OF
- PANELS, TYP.

![](_page_100_Figure_12.jpeg)

![](_page_101_Figure_0.jpeg)

![](_page_101_Figure_1.jpeg)

7 1/8" = 1'-0" 1/A532

SHAFT SH10 - SECTION 1

6

1/8" = 1'-0" 1/A532

![](_page_101_Figure_4.jpeg)

![](_page_101_Figure_5.jpeg)

1/4" = 1'-0" 1/A207.A

![](_page_101_Picture_7.jpeg)

![](_page_101_Figure_8.jpeg)

![](_page_101_Picture_9.jpeg)

![](_page_102_Picture_0.jpeg)

UKHC CTC and ASC Tower Crane Usage Matrix

7/10/2024

	Description		Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-24
	NORTH TOWER CRANE																													
	Shallow Foundations & Walls (CC) 12/12/24		CC	CC	CC	CC	CC	CC	CC																			1		
	Structure Concrete Decks (CC)							CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC									1		
	Steel Frame (SS) PENTHOUSE NORTH											SS							SS	SS								1		
	Curtain Wall/Glazing (CW)																		CW	CW	CW							1		
	L8 Mechanical Equipment Loading (MC)																		MC	MC	MC									
	L8 Electrical Equipment Loading (EC)																		EC	EC	EC									
	Earliest Possible Tower Crane Removal																					Х								
	SOUTH TOWER CRANE																											1		
	Shallow Foundations & Walls (CC) 1/6/25			CC	CC	CC	CC	CC	CC																					
	Structure Concrete Decks (CC)									CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC		
	Steel Frame (SS) L1-5																							SS	SS	SS	SS	SS		
	Steel Frame (SS) PENTHOUSE SOUTH																							SS	SS					
	Curtain Wall/Glazing (CW)																								CW	CW		1		
	L8 Mechanical Equipment Loading (MC)																							MC	MC			1		
	L8 Electrical Equipment Loading (EC)																							EC	EC			1		
	Earliest Possible Tower Crane Removal																											х		
																												1		
			Dec-24	lan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27		
ë c	Taura Cara a Daiarita #1	Early Shift	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	MC/EC	MC/EC	MC/EC	NA	NA	NA	NA	NA	NA		
Crane Ition	Tower Crane Priority #1	Early Shift 1st Shift	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	CC CC	MC/EC	MC/EC	MC/EC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA		
/er Crane ocation	Tower Crane Priority #1 (First Pick of Cranes)	Early Shift 1st Shift 2nd Shift	20 20 20	20 20 20	CC CC CC	CC CC CC	CC CC CC	CC CC CC	CC CC CC	CC CC CC	CC CC CC	CC CC CC	22 22 22	CC CC CC	CC CC CC	CC CC CC	CC CC CC	CC CC CC	CC CC SS	MC/EC CC SS	MC/EC CW CW	MC/EC CW CW	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA		
ower Crane Allocation	Tower Crane Priority #1 (First Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift	20 20 20 20	20 20 20 20	22 22 22	CC CC CC	20 20 20	сс сс сс	20 20 20	CC CC CC	CC CC CC	22 22 22	22 22 22	CC CC CC	20 20 20 20	20 20 20 20	CC CC CC	CC CC CC	CC CC SS	MC/EC CC SS	MC/EC CW CW	MC/EC CW CW	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA		
th Tower Crane age Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift	20 20 20 20 20	CC CC CC CC	CC CC CC CC	20 20 20 20 20	CC CC CC CC	CC CC CC CC	20 20 20 20 20	CC CC CC CC	20 20 20 20 20	CC CC CC CC	20 20 20 20 20	20 20 20 20 20	20 20 20 20 20	20 20 20 20 20 20	20 CC CC CC	CC CC CC CC	CC CC SS CC	MC/EC CC SS CW	MC/EC CW CW CW	MC/EC CW CW NA	NA NA NA	NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA	NA NA NA		
Vorth Tower Crane Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift	20 20 20 20 20 20	20 20 20 20 20 20 20	CC CC CC CC CC CC	CC CC CC CC CC	CC CC CC CC CC	20 20 20 20 20 20	CC CC CC CC CC CC	CC CC CC CC CC	CC CC CC CC CC	CC CC CC CC CC	20 20 20 20 20 20	20 20 20 20 20 20	CC CC CC CC CC CC	20 20 20 20 20 20	20 20 20 20 20 20	CC CC CC CC CC CC	CC CC SS CC SS	MC/EC CC SS CW SS	MC/EC CW CW CW SS	MC/EC CW CW NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA		
North Tower Crane Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	20 20 20 20 20 20 20 20	CC CC CC CC CC CC CC	20 20 20 20 20 20 20	CC CC CC CC CC CC CC	20 20 20 20 20 20 20	CC CC CC CC CC CC	CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC	CC CC SS CC SS CC	MC/EC CC SS CW SS MC/EC	MC/EC CW CW CW SS MC/EC	MC/EC CW CW NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA RC	NA NA NA NA RC	NA NA NA NA RC	NA NA NA NA NA		
North Tower Crane Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift	CC CC CC CC CC CC CC	20 20 20 20 20 20 20 20	CC CC CC CC CC CC	20 20 20 20 20 20 20	20 20 20 20 20 20 20 20	20 CC CC CC CC CC CC	CC CC CC CC CC CC	CC CC CC CC CC CC	CC CC CC CC CC CC	CC CC CC CC CC CC	20 20 20 20 20 20 20	20 20 20 20 20 20 20	20 20 20 20 20 20 20	CC CC CC CC CC CC CC	20 20 20 20 20 20 20 20	CC CC CC CC CC CC CC	CC CC SS CC SS CC	MC/EC CC SS CW SS MC/EC	MC/EC CW CW CW SS MC/EC	MC/EC CW CW NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA RC	NA NA NA NA RC	NA NA NA NA RC	NA NA NA NA NA		
Ine North Tower Crane In Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift Early Shift	CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	20 00 00 00 00 00 00 00 00 00 00 00 00 0	20 20 20 20 20 20 20 20 20 20 20 20 20 2	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	200 200 200 200 200 200 200 200 200 200	20 20 20 20 20 20 20 20 20 20 20	20 20 20 20 20 20 20 20 20 20 20 20	CC CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC CC CC CC CC CC	CC CC CC CC CC CC CC	CC SS CC SS CC CC	MC/EC CC SS CW SS MC/EC CC	MC/EC CW CW CW SS MC/EC	MC/EC CW CW NA NA NA CC	NA NA NA NA NA CC	NA NA NA NA NA CC	NA NA NA NA RC CW	NA NA NA NA RC MC/EC	NA NA NA NA RC MC/EC	NA NA NA NA NA MC/EC		
Crane North Tower Crane ation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift Early Shift 1st Shift	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	20 20 20 20 20 20 20 20 20 20 20 20 20 2	20 20 20 20 20 20 20 20 20 20 20 20 20 2	20 20 20 20 20 20 20 20 20 20 20 20 20 2	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC	CC SS CC SS CC CC CC CC	MC/EC CC SS CW SS MC/EC CC CC	MC/EC CW CW CW SS MC/EC CC CC	MC/EC CW CW NA NA NA CC CC CC	NA NA NA NA NA CC CC	NA NA NA NA NA CC CC	NA NA NA NA RC CW CC	NA NA NA NA RC MC/EC CC	NA NA NA NA RC MC/EC CC	NA NA NA NA NA MC/EC CC		
ver Crane North Tower Crane location Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift Early Shift 1st Shift 2nd Shift	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC SS	CC CC CC CC CC CC CC CC CC SS	CC CC CC CC CC CC CC CC CC SS	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC SS CC SS CC CC CC CC NA	MC/EC CC SS CW SS MC/EC CC CC NA	MC/EC CW CW SS MC/EC CC CC CC NA	MC/EC CW CW NA NA NA CC CC CC CC NA	NA NA NA NA NA CC CC CC	NA NA NA NA NA CC CC CC SS	NA NA NA RC CW CC SS	NA NA NA RC MC/EC CC SS	NA NA NA RC MC/EC CC SS	NA NA NA NA NA MC/EC CC SS		
Tower Crane North Tower Crane Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift 1st Shift 2nd Shift Early Shift	CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC SS CC	CC CC CC CC CC CC CC CC CC SS CC	CC CC CC CC CC CC CC CC CC SS CC	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC	CC SS CC SS CC CC CC CC NA	MC/EC CC SS CW SS MC/EC CC CC NA CC	MC/EC CW CW SS MC/EC CC CC CC NA CC	MC/EC CW CW NA NA NA CC CC CC CC NA CC	NA NA NA NA CC CC CC CC CC	NA NA NA NA CC CC CC SS CC	NA NA NA RC CW CC SS CW	NA NA NA NA RC CC SS MC/EC	NA NA NA NA RC MC/EC CC SS MC/EC	NA NA NA NA NA MC/EC CC SS MC/EC		
th Tower Crane North Tower Crane age Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift 1st Shift 2nd Shift Early Shift 1st Shift Early Shift	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC NA CC	CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC NA CC	CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA	CC SS CC SS CC CC CC CC NA CC	MC/EC CC SS CW SS MC/EC CC CC CC NA CC	MC/EC CW CW SS MC/EC CC CC NA CC	MC/EC CW CW NA NA NA CC CC CC CC NA	NA NA NA NA CC CC CC NA	NA NA NA NA CC CC CC SS CC	NA NA NA NA RC CW CC SS CW	NA NA NA NA RC MC/EC CC SS MC/EC	NA NA NA NA RC MC/EC CC SS MC/EC	NA NA NA NA NA MC/EC CC SS MC/EC		
South Tower Crane North Tower Crane Usage Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes)	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift 1st Shift 2nd Shift Early Shift Early Shift 1st Shift 2nd Shift	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC NA CC CC	CC CC CC CC CC CC CC CC CC NA CC CC	CC SS CC SS CC CC CC CC NA CC CC CC	MC/EC CC SS CW SS MC/EC CC CC NA CC CC CC	MC/EC CW CW SS MC/EC CC CC CC NA CC CC	MC/EC CW CW NA NA NA CC CC CC CC CC	NA NA NA NA CC CC CC CC CC	NA NA NA NA NA CC CC CC SS CC CC	NA NA NA NA RC CW CC SS CW CW	NA NA NA NA RC MC/EC CC SS MC/EC CW	NA NA NA NA RC CC SS MC/EC CW	NA NA NA NA NA MC/EC CC SS MC/EC NA		
South Tower Crane North Tower Crane Usage Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes)	Early Shift 1st Shift 2nd Shift 2nd Shift 2nd Shift Early Shift 1st Shift 2nd Shift Early Shift 1st Shift 1st Shift 2nd Shift	CC CC CC CC CC CC CC CC NA CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC NA CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC NA CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC NA CC CC CC NA	CC CC CC CC CC CC CC CC NA CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC SS CC CC CC CC NA	CC CC CC CC CC CC CC SS CC CC CC CC NA	CC CC CC CC CC CC CC CC SS CC CC CC NA	CC CC CC CC CC CC CC CC CC NA CC CC CC NA	CC CC CC CC CC CC CC CC NA	CC SS CC SS CC CC CC CC CC CC CC CC	MC/EC CC SS CW SS MC/EC CC CC NA CC CC CC CC	MC/EC CW CW SS MC/EC CC CC CC NA CC CC CC CC	MC/EC CW CW NA NA NA CC CC CC CC CC CC CC	NA NA NA NA CC CC CC CC CC CC CC	NA NA NA NA CC CC CC SS CC CC CC	NA NA NA RC CW CC SS CW CW CW CW MC/EC	NA NA NA NA RC CC SS MC/EC CW MC/EC	NA NA NA RC MC/EC CC SS MC/EC CW MC/EC	NA NA NA NA NA MC/EC CC SS MC/EC NA MC/EC		
South Tower Crane North Tower Crane Usage Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) STRAIGHT-TIME CRANE OPERATION HOURS	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift Early Shift 1st Shift 2nd Shift 1st Shift 1st Shift 2nd Shift	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC NA 320	CC CC CC CC CC CC CC CC CC CC CC NA S52	CC CC CC CC CC CC CC CC CC NA CC CC CC NA	CC CC CC CC CC CC CC NA CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC NA 352	CC CC CC CC CC CC CC CC CC CC CC CC NA 384	CC CC CC CC CC CC CC CC CC CC CC CC NA 352	CC CC CC CC CC CC CC CC CC CC CC CC NA 368	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC CC NA	CC CC CC CC CC CC CC CC CC CC CC NA 352	CC CC CC CC CC CC CC CC CC CC CC CC NA 320	CC CC CC CC CC CC CC CC CC CC CC CC NA 368	CC SS CC SS CC CC CC CC CC CC CC CC CC C	MC/EC CC SS MC/EC CC CC CC CC CC CC CC CC CC SS 352	MC/EC CW CW SS MC/EC CC CC CC CC CC CC CC CC CC CC CC CC C	MC/EC CW CW NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA RC CW CC SS CW CW CW MC/EC	NA NA NA NA RC CC SS MC/EC CW MC/EC	NA NA NA NA RC CC SS MC/EC CW MC/EC	NA NA NA NA MC/EC CC SS MC/EC NA MC/EC	8064	
South Tower Crane North Tower Crane Usage Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) STRAIGHT-TIME CRANE OPERATION HOURS OVERTIME CRANE OPERATION HOURS	Early Shift 1st Shift 2nd Shift 1st Shift 2nd Shift Early Shift 5 Shift 2nd Shift 1st Shift 1st Shift 2nd Shift	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC NA 320	CC CC CC CC CC CC CC CC CC NA 352 176	CC CC CC CC CC CC CC CC CC NA CC CC CC NA 368	CC CC CC CC CC CC CC CC CC CC NA 352	CC CC CC CC CC CC CC CC CC CC CC NA 352 1776	CC CC CC CC CC CC CC CC CC CC CC NA 384	CC CC CC CC CC CC CC CC CC CC CC NA 352 3176	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC CC CC CC SS CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC NA 320	CC CC CC CC CC CC CC CC CC CC CC NA 368	CC SS CC SS CC CC CC CC CC CC CC CC CC C	MC/EC CC SS CW SS MC/EC CC CC CC CC CC CC CC CC SS2 352	MC/EC CW CW SS MC/EC CC CC CC CC CC CC CW 368	MC/EC CW CW NA NA NA CC CC CC CC CC CC CW 368	NA NA NA NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA RC CW CC SS CW CW CW MC/EC 176 88	NA NA NA NA RC CC SS MC/EC CW MC/EC CW 176	NA NA NA NA RC CC SS MC/EC CW MC/EC 192 96	NA NA NA NA NA MC/EC CC SS MC/EC NA MC/EC 176 8.8	8064 3952.8	
South Tower Crane North Tower Crane Usage Allocation Usage Allocation	Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) Tower Crane Priority #1 (First Pick of Cranes) Tower Crane Priority #2 (Second Pick of Cranes) STRAIGHT-TIME CRANE OPERATION HOURS OVERTIME CRANE OPERATION HOURS DOUBLE-TIME CRANE OPERATION HOURS	Early Shift 1st Shift 2nd Shift 2nd Shift Early Shift 1st Shift 2nd Shift Early Shift 1st Shift 1st Shift 2nd Shift	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC NA 368 184	CC CC CC CC CC CC CC CC CC CC NA CC CC CC NA 320 160	CC CC CC CC CC CC CC CC CC NA 352 1776	CC CC CC CC CC CC CC CC CC CC CC NA 368 368 184	CC CC CC CC CC CC CC CC CC NA 352 1776	CC CC CC CC CC CC CC CC CC CC NA 352 352 1776	CC CC CC CC CC CC CC CC CC CC CC NA 384 192	CC CC CC CC CC CC CC CC CC NA CC CC CC NA 3522 176	CC CC CC CC CC CC CC NA CC CC NA 368 184 18.4	CC CC CC CC CC CC CC CC CC CC NA CC CC CC A A 368 368 368	CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC CC CC CC CC	CC CC CC CC CC CC CC CC CC NA 320 160 20	CC CC CC CC CC CC CC CC CC CC NA 3688 184 36.8	CC CC SS CC SS CC CC CC CC CC	мс/ес СС SS СW SS мс/ес СС СС СС СС СС СС СС СС СС С	мс/ес СW CW SS MC/еС СС СС СС СС СС СС СС СС СС СС СС Заб8	MC/EC CW NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA NA NA CC CC CC CC CC CC CC CC CC CC CC CC CC	NA NA NA NA RC CW CC CW CC CW CC CW CC CW CC CW AC/CC 176 888 17.6	NA NA NA NA RC CC CC SS MC/EC CW MC/EC CW A 176	NA NA NA NA RC CC CC SS MC/EC CW MC/EC CW 192 192	NA NA NA NA NA NA CC CC SS MC/EC SS NA MC/EC 176 8.8 4.4	8064 3952.8 520.8	

Week Day Hours per Crane (Applies to both cranes that are operational at a given time)	60	60	) (	50	60	60	60	60	60	60	60	60	) 60	0 62	.5 62.	.5 62.	57	0 7	0	70	70	70	70	70	70	55	
-Number of cranes time applies	1	1	2	2	2	2	2	2	2	2	2	2	2 2	2	2	2	2	2	2	2	2	2	1	1	1	1	
-ST	40	40	) 4	10	40	40	40	40	40	40	40	40	) 40	0 4	40 4	40 4	0 4	0 4	0	10	40	40	40	40	40	40	
-OT	10	10	) 1	LO	10	10	10	10	10	10	10	10	) 10	0 1	.0 1	.0 1	0 1	0 1	0	10	10	10	10	10	10	10	
-DT	10	10	) 1	LO	10	10	10	10	10	10	10	10	) 10	0 12	.5 12.	.5 12.	5 2	0 2	0	20	20	20	20	20	20	5	
Saturday Hours per Crane	10	10	) 1	LO	10	10	10	10	10	10	10	10	) 10	0 1	.0 1	.0 1	0 1	0 1	0	10	10	10	10	10	10	10	
-Number of cranes Saturday time applies	1	1	L	1	1	1	1	1	1	1	1	. 1	L 1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sunday Hours	0	(	)	0	0	0	0	0	0	0	0	0	) (	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sustained Second/Third Shift (Applies to all cranes that are operational at a given time)	0	(	)	0	0	0	0	0	0	0	0	0	) (	0	0	0	0	0	0	0	0	0	0	0	0	0	
-Number of cranes time applies	1	14	2	2	2	2	2	2	2	2	2	2	2 2	2	2	2	2	2	2	2	2	2	1	1	1	1	

Notes: -This document is for bidding and planning purposes; WALSH CONSTRUCTION maintains sole control and decision making regarding tower crane usage, reallocations, emergencies, etc..

-1st Shift = 7am - 3:30pm

-2nd Shift = 3:30 pm - 9p (Partial Shifts can be scheduled)

-Early Shift = 4am - 7am (Partial Shifts can be scheduled)

"NA" indicates that a tower crane shift is not planned; however, usage time can be scheduled in advance via the Walsh tower crane scheduling process

-CC = Concrete Contractor

-CW = Curtain Wall Contractor

-EC = Electrical Contractor -MC = Mechanical Contractor

-MS= Masonry Contractor

-SS = Structural Steel Contractor

- Tower Crane 'priority' means that the subcontractor

listed will have priority over the selection and

- Priority does not indicate all shifts will be used; however, they indicate the priority for choice. Overall weekday hours are not to be exceed by the subcontractor without approval from Walsh

55	40	
1	1	
40	40	
10	10	
5	5	
10	0	
1	0	
0	0	
0	0	
1	1	

![](_page_103_Figure_0.jpeg)

Approximate dimension differences based on final equipment requirements

Equipment depicted for graphic purposes only and not denoting a model requirement.

![](_page_104_Figure_0.jpeg)

 $\searrow$ 

#### **KEYNOTES - FLOOR PLAN** DESCRIPTION

5	PROVIDE <gyp bd-26=""> (ACOUSTIC BOARD) AT INTERIOR GYP BD FACES THIS ROOM.</gyp>
12	PROVIDE RF SHIELDING IN ROOM WALLS AND CEILING. REFER TO SHEET A801 FOR TYPICAL MRI PARTITION TYPES FERROUS MATERIALS ARE TO BE USED WITHIN RF SHIELDED ROOMS.
19	REFER TO ROOM A106H ON SHEET A612 FOR TYPICAL CONSULT ROOM.
20	REFER TO ROOM A106F ON SHEET A612 FOR TYPICAL FAMILY CONSULT ROOM.
21	REFER TO ROOM A103V ON SHEET A613.1 FOR TYPICAL URGENT CARE TREATMENT ROOM.
22	REFER TO ROOM A103R ON SHEET A613.1 FOR URGENT CARE TREATMENT ROOM WITH COLUMN.
23	REFER TO ROOM A101W ON SHEET A614.1 FOR PHLEBOTOMY DRAW BAY.
61	REFER TO DETAILS ON SHEET A692 FOR TYPICAL TYPE 'B' TLT - PUBLIC
63	REFER TO DETAILS 1-6 ON SHEET A694 FOR TYPICAL TYPE 'A' TLT - STAFF
64	REFER TO DETAILS 3,7,13,14,15,16 ON SHEET A694 FOR TYPICAL TYPE 'B' TLT - STAFF
67	REFER TO DETAILS 1,6,11,12,13,14 ON SHEET A693 FOR TYPICAL TYPE 'A' TLT - PATIENT
68	REFER TO DETAILS 2,7,15,16,17,18 ON SHEET A693 FOR TYPICAL TYPE 'B' TLT - PATIENT
75	SEMI-RECESSED FIRE EXTINGUISHER CABINET <fec-1> U.N.O IN LOBBY, VESTIBULE OR HIGH-FINISH AREA USE <fi< td=""></fi<></fec-1>
	OR <fec-3>. REFER TO LIFE SAFETY &amp; INTERIOR ELEVATION DRAWINGS.</fec-3>
82	

![](_page_104_Figure_5.jpeg)

![](_page_104_Figure_6.jpeg)

![](_page_105_Figure_0.jpeg)

![](_page_105_Figure_1.jpeg)

AREA A

![](_page_105_Picture_4.jpeg)

![](_page_106_Figure_0.jpeg)

8/13/2024 9:40:14 PM Autodesk Docs://514-6926 - UKHC Cancer Treatment & Advance Ambulatory Center/A23-UKC INTERIOR 5146926.rvt

![](_page_106_Picture_2.jpeg)

/13/2024 9:40:14 PM

![](_page_107_Figure_0.jpeg)

![](_page_107_Picture_6.jpeg)










3 PLAN DETAIL AT VESTIBULE GLASS JAMB 1 1/2" = 1'-0"



2 PLAN DETAIL AT VESTIBULE PORTAL (LOBBY SIDE) 1 1/2" = 1'-0"









9 PLAN DETAIL AT VESTIBULE PORTAL (LOBBY SIDE) 2 1 1/2" = 1'-0"























7 SECTION DETAIL THROUGH PORTAL HEAD 1 1/2" = 1'-0"







11 SECTION DETAIL THROUGH PORTAL BEAM 1 1/2" = 1'-0"





2

1 1/2" = 1'-0"



- FIELD FINISHED SEAM PER

# MFR INSTRUCTIONS

- REFER TO CORE AND SHELL DRAWINGS FOR INFORMATION





5 SECTION DETAIL THROUGH VESTIBULE FASCIA 1 1/2" = 1'-0"



SECTION DETAIL THROUGH FCU ENCLOSURE











	Bid Package 07 - Core and Shell Group 2				
		Question	n and Response Log		
		Respones As O	t: 09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
	For Bid Package Plumbing (TC 22A.7), Allowance 10 says to provide Saturdays-Full Crew-10 Days. Please clearly define this allowance. How many men for these 10 days		Bid Breakdown form will be updated to reflect a labor hour value rather than a quantity of	Released during Bid Package 7 Group 1	
1	should this Allowance be for?	Walsh	Saturdays.	Bidding	
	For Bid Package HVAC/Mechanical (TC 23A.7), Allowance 11 says to provide Saturdays-				
2	Full Crew Airside-10 Days. Please clearly define this allowance. How many men for these 10 days should this Allowance be for?	Walsh	Bid Breakdown form will be updated to reflect a labor hour value rather than a quantity of Saturdays.	Released during Bid Package 7 Group 1 Bidding	
3	For Bid Package HVAC/Mechanical (TC 23A.7), Allowance 11 says to provide Saturdays- Full Crew Wetside-10 Days. Please clearly define this allowance. How many men for these 10 days should this Allowance be for?	Walsh	Bid Breakdown form will be updated to reflect a labor hour value rather than a quantity of Saturdays.	Released during Bid Package 7 Group 1 Bidding	
4	Under Trade Category Scope Clarifications for HVAC/Mechanical (TC 23A.7) Item #77 Provide Steam Trap Monitoring System per documents. We do not see this in the documents, is this required?	Walsh. CMTA	Intent was not to create an additional requirement. Comply with the documents.	Released during Bid Package 7 Group 1 Bidding	
•	Item #80 The subcontractor is responsible for all project consumption costs related to				
	temporary steam for the duration of the projectThis is not possible to do, please			Released during Bid Package 7 Group 1	
5	provide an allowance for this.	Walsh	Consumption costs will be funded by listed Utility Allowance on the bid breakdown form.	Bidding	
			A Tower Crane Utilization Matrix to be provided with anticipated Addendum #4.	Released during Bid Package 7 Group 1	
6	Will the Tower Crane be utilized for setting HVAC equipment?	Walsh	Subcontractors owe their own hoisting. Priority of crane usage time listed in B.1.	Bidding	
			TC22A7 Plumbing will carry the fuel oil system. The Plumbing and HVAC Bid Breakdown	Released during Bid Package 7 Group 1	
7	What bid package is the Fuel Oil Tank, Pumps and Piping fall under?	Walsh	forms have been updated to correct the confusion.	Bidding	
	Is the Building Automation/Temperature Controls to be include in Bid Package TC			Released during Bid Package 7 Group 1	
8	23A.7 ?	Walsh	Walsh: Controls are to be bid as a separate RFP in July timeframe.	Bidding	
			Stated BIM Coordination Allowance will be utilized for 3rd party BIM Coordination costs.		
	The various bid forms show allowances to include for BIM Coordination. Will this		Subcontractor shall carry cost for their own BIM coordination activities inluding meetings,		
	include everything, meetings, Pipe/duct drawings, sleeve drawings, clash detection,		modeling, sleeve drawings, coordination updates, clash detection, and similar BIM	Released during Bid Package 7 Group 1	
9	coordination updates?	Walsh	coordination scope of work.	Bidding	
	It has come to our attention that the 2500UT basis of design system is not a good fit		Walsh/Champlin/HGA: This is not being bid as part of Group 1. Design team will review and		
	for the project and Kawneer has suggested the 1600UT system which has been the		respond as part of the Group 2 bidding process which will begin in approximately the next	Released during Bid Package 7 Group 1	
10	basis of design for other buildings at UK. Please Advise if 1600 UT will be acceptable	Champlin / HGA	Week.	Bidding	
	1. Detailing within the arch's indicate a desired overall system depth of 10°. The		waish/Champlin/HGA: This is not being bid as part of Group 1. Design team will review and	Delegged during Did Deckers 7 Crown 1	
11	captured 250001 system has a standard depth of $7/2$ . Some custom dies do exist for	Champlin / HCA	respond as part of the Group 2 bloding process which will begin in approximately the next	Released during Bid Package / Group 1	
11	2. The 2500 IT system was designed primarily to address projects with high thermal				
	requirements or that needed the aesthetic of a 4 side SSG look. Provisions for deen				
	covers or the support of supshades are not provided within the standard system		Walsh/Champlin/HGA: This is not being hid as part of Group 1. Design team will review and		
	Customization to the chassis to accept those features typically result in an increased		respond as part of the Group 2 bidding process which will begin in approximately the next	Released during Bid Package 7 Group 1	
12	sightline of 3" and a reduction of the advertised high thermal values.	Champlin / HGA	week.	Bidding	
	3. The arch's show spans of 20' at the South and East elevations of the project. The calculated wind load based on project requirements was 41 PSF and the vertical module spacing at those 20' spans was 48". The standard 7 ½" deep 2500UT chassis, reinforced with steel, will not make those spans based on the loading requirements and the vertical mullion spacing. The maximum span for the standard system at loading would be between 15' to 16' as shown in the chart below. There are no existing dies for the system that will meet these requirements. (Wind load charts can be found in the Architectural Detail Manual for the product which is available for	Champlin (1104	Walsh/Champlin/HGA: This is not being bid as part of Group 1. Design team will review and respond as part of the Group 2 bidding process which will begin in approximately the next	Released during Bid Package 7 Group 1	
13			Page 1 of 17	Didding	

	Bid Package 07 - Core and Shell Group 2				
		Question	and Response Log		
		Respones As O	t: 09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
	1. Advertisement for bid AB-2 (5) Project Schedule lists the time for substantial completion as 365 consecutive calendar days. During the pre-bid call it was mentioned that substantial completion for this bid package was sometime Q4 of 2026 but there was a slide showing September of 2026. In the project schedule I only see a date listed of 10/27/26 for substantial completion of the overall project. I see a BIM core & shell but I'm struggling to find specific dates as it pertains to this bid package and specifically TC26A.7 For instance TC26A.7 requires temporary electric and lighting		<ul> <li>10/26/2027 is the current projected substantial completion date.</li> <li>9/20/2027 is the current targeted substantial completion date.</li> <li>Schedule will drive the substantial completion dates rather than the advertisement to bid.</li> <li>Temporary site lighting is to be provided by others.</li> <li>Temporary interior lighting of the floors shall follow the concrete activities in the schedule.</li> <li>Temp lighting of floors to be provided immediately after stripping of formwork and start of reshoring.</li> <li>'Full' temporary electrical power for construction operations to be available no later than reshores being pulled for each floor.</li> <li>Temporary power for mechanical systems per the contract schedule.</li> </ul>	Released during Bid Package 7 Group 1	
14	to be designed by a PE but I don't see dates specific to this. 2. To bid this package, we need detailed bills of materials including sizes and weights of all material that we are responsible for installing that will be furnished by others. TC26A.7 items 51-53 are weight / dimension specific. This complete BOM is also required to address item 70. Permitting required we know the values as it is based off	Walsh	Estimated dimensions are on the drawings, with exception to the "shipping split" information, which will not be available until submittals are provided. Approximate weights	Bidding Released during Bid Package 7 Group 1	
15	a % of these furnished items as well.	Walsh / AEI	are provided on the included sketch "Conceptual Electrical Equipment Weights"	Bidding	
16	3. If gear is to be furnished by others should item 74 be removed from scope since we have no remedy with the manufacturer if breakers are incorrect?	Walsh / AEI	Intent is that the panels will be shipped with final coordinated breaker sizes factory installed. Where this is not feasible or otherwise not complete, the C&S subcontractor shall correct the panels. Unit costs have been added to the Bid Breakdown form to account for possible changes. Assume that breakers to be provided by others.	Released during Bid Package 7 Group 1 Bidding	
17	Will temporary smoke detectors need to be provided during construction?	Walsh	No. This is not a project requirement.	Released during Bid Package 7 Group 1 Bidding	
18	Note 6.J of the electrical scope relates to temp. power for the mechanical contractor and temp. conditioning of the project. Can more information be provided for this? A building of this size could require significant temp. power to achieve the proper conditioning.	Walsh	Subcontractor shall plan to power equipment for 18 months. See other RFIs for consumption concerns.	Released during Bid Package 7 Group 1 Bidding	
19	Please provide clarification to note 24 in the electrical scope. I do not see any reference to communication backbone, branches or pathways on the bid drawings nor a line item on the bid form. Also, page 10 states Low Voltage rough in is excluded from this package.	Walsh	Sleeves only by the core and shell subcontractor	Released during Bid Package 7 Group 1 Bidding	
20	There are multiple references to site electrical, site lighting and building lighting in scope. The bid form states that this isn't part of this bid pack. Please clarify.	Walsh	Bid breakdown form will be corrected. Scope is intended to be part of the Core and Shell Package.	Released during Bid Package 7 Group 1 Bidding	
21	5. Note 77 in the electrical scope states the EC is responsible for project power consumption costs. Is allowance 13 in place to cover these fees? What if this allowance is exceeded?	Walsh	Consumption will be covered by an Utility Allowance. If consumption exceeds this value, adjଞ୍ଚିକ୍ଷକୁଙ୍କାହି f Mill be made accordingly.	Released during Bid Package 7 Group 1 Bidding	

	Bid Package 07 - Core and Shell Group 2				
		Questior	and Response Log		
		Respones As O	t: 09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
	The doors schedule has just under 200 openings listed and the hardware specs have hardware set assignments for all openings on the door schedule, but plan page A-700 has a note between the door schedule sections of exterior doors and interior doors that states "Interior doors, frames, and assemblies are to be considered interior fit- out project scope and are included here for reference purposes only." -Based on this, should we only be pricing the roughly 20-25 openings listed on the "exterior" door schedule at the top left corner, and exclude all openings on the				
	"interior" door schedules on the rest of the page?		Doors, Frames, and Hardware will be bid as a single package with Interior Fit Out drawings in	Released during Bid Package 7 Group 1	
22		Walsh	the September / October time frame.	Bidding	
23	What trade category will this scope fall under? Division 8 Openings is listed under a few Trade Categories, but I do not see anything about doors, frames, and hardware listed under any specific trade category.	Walsh	Doors, Frames, and Hardware will be bid as a single package with Interior Fit Out drawings in the September / October time frame.	Released during Bid Package 7 Group 1 Bidding	
24	Are any division 10 items needed in this phase of bidding and if so, what trade category will this scope fall under? Division 10 Specialties is listed under a few Trade Categories, but I do not see anything specialties listed under any specific trade category.	Walsh	Div 10 will be bid as a single package with Interior Fit Out drawings in the September / October time frame.	Released during Bid Package 7 Group 1 Bidding	
	Please explain the union requirements for this project. The concrete scope of work				
25	mentions union carpenters are required for this scope of work. Is there a PLA for the project?	Walsh	Pursuant to Trade Category Par. 5.1, union carpenters are required for the concrete scope of the project. A PLA is not anticipated at this time.	Released during Bid Package 7 Group 1 Bidding	
26	Chilled Water Piping: Can Victaulic HDPE Piping System be used as an alternative to heat fusion joints for above ground hydronic chilled water and process chilled water 2" and above? System includes Victaulic Style 905 Couplings designed for installation on plain-end HDPE piping, Style 907 Transition Coupling for use in conjunction with	СМТА	Yes; allowance of grooved couplings will be included as a contractor's option.	Released during Bid Package 7 Group 1 Bidding	
27	PIPE, PIPE FITTINGS AND PIPE SUPPORT – 201300: Hydronic Chilled Water/Process Chilled Water Piping: Can schedule 40 carbon steel/std weight piping be used as an alternative to HDPE piping for above ground hydronic chilled water and process chilled water 2" and above?	СМТА	Not at this time. Refer to any updates issued in the addendum phase.	Released during Bid Package 7 Group 1 Bidding	
28	(Heating Water, Baseboard Heating Water) Per currently published UK Design Standards for HVAC Piping Systems, there are no restrictions on using Victaulic grooved piping in enclosed spaces. Can confirmation and context be provided whether Victaulic grooved mechanical pipe joints can be used in shafts and above	СМТА	Refer to the specifications for restrictions on locations of grooved mechanical piping joints.	Released during Bid Package 7 Group 1 Bidding	
29	Please confirm that we can install PVC Schedule 40 under level 00 slab to all distribution equipment including the ATS Cabinets	AEI	PVC is acceptable in locations indicated by specifications and installed in compliance with specifications including, but not limited to, 260543/260533 (IE:rigid elbows, concrete encasement under structural members) (AEI)	Released during Bid Package 7 Group 1 Bidding	
30	Is the bus duct part of OFCI equipment or is the contractor to provide?	Walsh	No. The bus duct will not be considered an OFCI item. See attached sketch for what is to be considered OFCI.	Released during Bid Package 7 Group 1 Bidding	
31	The building is category A seismic. Does this facility require seismic bracing?	СМТА	No.	Released during Bid Package / Group 1 Bidding Released during Bid Package 7 Group 1	
32	It states that flex drops and brackets can be used. Is that correct?	СМТА	That is correct.	Bidding	
33	I cannot find the site drawings with the fire service. Will this be installed in the previous contracts?	Bell	Walsh: No This is not installed via previous contracts. CMTA: Refer sheets U210.3 and U210.4.	Released during Bid Package 7 Group 1 Bidding	
34	drawings provided.	Walsh	Walsh: Controls are to be bid as a separate RFP in July timeframe.	Bidding	
35	<ol> <li>Will the building automation contractor bid to the HVAC Trade Contractor TC</li> <li>23A.7?</li> </ol>	Walsh	Waာနှာမှုင်အာရုံးစား are to be bid as a separate RFP in July timeframe.	Released during Bid Package 7 Group 1 Bidding	

	Bid Package 07 - Core and Shell Group 2				
		Question	n and Response Log		
		Respones As O	n: 09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
	3. In TC 23A.7 there is a specific exclusion for "Conduit for Building Automation				
	System". Is the Electrical contractor going to be expected to provide the conduit for			Released during Bid Package 7 Group 1	
36	the building automation system?	Walsh	Walsh: Controls are to be bid as a separate RFP in July timeframe.	Bidding	
	4. If building automation controls are being bid as a part of BP-07 please provide a			Released during Bid Package 7 Group 1	
37	controls specification specific to this project.	Walsh	Walsh: Controls are to be bid as a separate RFP in July timeframe.	Bidding	
			Yes Controls Subcontractor will participate in BIM. Requirements will be spelled out in the		
	5. TC 23A.7 has a \$215k allowance for BIM coordination. Does the Building		future Controls package. An allowance has not been established for any subcontractor's		
	Automation contractor need to participate in BIM coordination? If so, can there be an		performance in BIM coordination and will not be established for the controls subcontractor.	Released during Bid Package 7 Group 1	
38	allowance given for this contractor?	Walsh	See other RFI responses for purpose of the BIM Coordination allowance.	Bidding	
				Released during Bid Package 7 Group 1	
39	6. What is the duration of BIM coordination and how often will the meetings be held?	Walsh		Bidding	
			Walsh/Champlin/HGA: This is not being bid as part of Group 1. Design team will review and		
	We are submitting AIR-SHIELD <sup>™</sup> LSR Liquid Membrane Air/Vapor and Liquid Moisture		respond as part of the Group 2 bidding process which will begin in approximately the next	Released during Bid Package 7 Group 1	
40	Barrier for your consideration. Please confirm if this is an acceptable product.	Champlin / HGA	week. This is under review.	Bidding	
			A new form of proposal will be provided to allow for combination bidding of HVAC and		
	Can a combination bid be submitted for Plumbing(IC 22A.7) and HVAC/Mechanical		Plumbing and Earthwork and Utilities. These new Form of Proposals will be included with	Released during Bid Package / Group 1	
41	(TC 23A.7)?	Walsh / UK	Addendum #4 but will be a direct combination of the combined forms.	Bidding	
	1. Fixture type L9A says fixture to be surface mounted on roof without penetrating				
	the membrane and directs to architectural drawings for mounting detail. I'm probably		A Et. A simple upickted, new construction require quiteble for light upickt equipment shall be	Delegend during Did Deelegen 7 Crears 1	
42	overlooking it, but i cannot find this detail. Can the specific sheet number be called		AEI: A simple weighted, non-penetrating mount suitable for lightweight equipment shall be	Released during Bid Package / Group 1	
42			A Set Anticipated locations for those drivers are as follows. Precise mounting locations with	Bidding	
	these areas shall be coordinated with Architect in the field		these areas shall be coordinated with Architect in the field. Generally, driver distance from		
			fixture shall not exceed 30 ft. Door STOOR1.1 – Driver located above ceiling in EXIT		
			PASSAGEWAY STOOP1. Door A100E/E – Driver located above ceiling just inside the door in		
	E201 A note 1 says to coordinate remote driver location with architect. Can either the		Corridor A100E Door A100W – Driver located in tunnel TL0003 near LINAC EO CSA00H		
	location of remote drivers be identified, or a maximum distance be established. The		High on wall or overhead mounted to deck. Door A107 – Driver located in MECH/PLUMBING	Released during Bid Package 7 Group 1	
43	location of remote drivers can greatly impact conduit and wire routing.	AFI	CSA00F. High on wall or overhead mounted to deck.	Bidding	
10	3. Sheet E202.A note 1 calls for a weighted roof mount base for fixture L5. Is there a				
	spec or basis of design for this base? (Same note called out on 208.A for fixture L9A so		AEI: Refer to response for item #42 - this fixture type shall utilize a similar mounting to Type	Released during Bid Package 7 Group 1	
44	ties back to question 1)	AEI	L9A.	Bidding	
	Note on site lighting calls for handholes at "300' (maximum) as required" but doesn't			-	
	elaborate on the purpose of these handholes. Can we get additional direction on this			Released during Bid Package 7 Group 1	
45	requirement?	AEI	Handholes installed to be utilized as a pull box. Provide as directed by documents. (AEI)	Bidding	
	5. Sheet ESP202 note 1 refers to architectural drawings for quantity and location of				
	handrail lighting. On the related detail on sheet A020 I see met rail 6 and length but		AEI: Type L11 light fixtures shall be mounted within vertical support posts of handrail		
	I'm struggling to find any further detail. A011 shows met rail 6 as having "integral light		system, approximately 4'-0" on center. Handrail system detail drawings will be provided in a	Released during Bid Package 7 Group 1	
46	fixtures"	AEI	subsequent issuance. Also refer to written specifications for additional information.	Bidding	
			Revisions were made to add circuiting and revise disconnect size in Addendum #4. Refer to		
	6. E500 shows a couple of battery charges and battery disconnects. Ampacity is		sheets E500 and E505 for battery charger requirements for Lower Level and Penthouse,	Released during Bid Package 7 Group 1	
47	shown but feeding panel and voltage appears to be missing.	AEI	respectively. (AEI)	Bidding	

	Bid Package 07 - Core and Shell Group 2				
		Question	n and Response Log		
		Respones As O	t: 09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
	7. ESP100 shows a lot of signage locations and a talk-a-phone. Scope item 40				
	addresses the talk a phone but doesn't indicate what panel the should be fed from.				
	Scope item 42 addresses signage but based on the plans it appears that many of the				
	signs are not internally lit as no power is shown to the sign. Can we confirmed that all				
	sign locations that need power have power shown? For instance, area 1 shows a		Circuit for Talk-a-Phone was added in Addendum #2 - refer to ESP100 (AEI). Conceptual		
	dozen or more signage locations on the overall plan but not a single one of them has		Signage Package is provided for reference with ADD#4. This provides more information	Released during Bid Package 7 Group 1	
48	power shown on ESP101	Walsh / AEI	related to lit vs non lit signage on the site.	Bidding	
			Signage design is not complete. For purposes of bidding assume 120v / 20A for the site		
	8. ESP102 note 1 says to provide power to site signage but doesn't indicate the		signage power connection. The signs will be powered from the same panelboard that	Released during Bid Package 7 Group 1	
49	ampacity, voltage or serving panel.	AEI/Walsh	powers the lighting in the area of the signage. (AEI)	Bidding	
			Panel schedules will not be provided for Core/Shell. Panelboards are being furnished by UK.		
			Final schedules will be issued with Fit-Out package. (AEI). Design Development Drawings of	Released during Bid Package 7 Group 1	
50	Panel schedules are missing.	AEI	the Interior Fit out will be provided in Addednum #3 for reference.	Bidding	
			Service expectation is to allow support of minor IOT devices in the building and support use		
			of tablets and phones for drawing review. Assume that hot spots will be provided on each		
			floor in the following areas: at each stair well, at skin hoist location, at each elevator bank		
	What is service expectation for the temporary wifi called out in scope item 78? It		and at 1 additional huddle space. The 4th floor will have a large break area that will require		
	seems like controlling access is probably going to be difficult so I could easily see this		additional coverage to support the use of the space. Assume additional 10 WAP locations	Released during Bid Package 7 Group 1	
51	system become overwhelmed.	Walsh	for this use.	Bidding	
				Released during Bid Package 7 Group 1	
52	There's several references to exhibit J but I've failed to find the exhibit.	Walsh	Walsh to provide Ex J.	Bidding	
	Scope for temporary allows remanufactured transformers. Is remanufactured gear			Released during Bid Package 7 Group 1	
53	acceptable for temporary as well?	Walsh	This is acceptable. Subcontractor will be required to maintain the equipment.	Bidding	
	Scope specifically excludes rough-in for low voltage systems. Does any work in the		Core and Shell subcontractor shall provide sleeves for low voltage and technology systems.	Released during Bid Package 7 Group 1	
54	technology drawings need to be included?	Walsh	No other rough in or trim is part of the core and shell scope.	Bidding	
	Scope specifically excludes fire alarm. In addendum 1 a lot of fire smoke dampers			Released during Bid Package 7 Group 1	
55	were added. Do we only need to supply power to these?	Walsh / AEI	Power to these units will be carried with fit out contractor.	Bidding	
	With the number of drawings issued as part of addendum 1 would it be possible to			Released during Bid Package 7 Group 1	
56	extend the last day for questions?	Walsh / UK	Bid day will extend refer to addendum information.	Bidding	
	The drawings for Trade Category 23A.7 indicate VFD's are shown for reference only				
	and will be provided by the Controls Contractor as part of a future bid package. Item				
	52. in our Trade Package description sates, provide variable frequency drives for all				
	HVAC equipment as specified. Please confirm whose responsibility it is to provide the			Released during Bid Package 7 Group 1	
57	VFD's.	Walsh/CMTA	VFD's will be provided by the temperature controls contractor in an upcoming bid package.	Bidding	
			An underdrain is not specified for the entire building. Refer to foundation drains for related	Released during Bid Package 7 Group 1	
58	Is an underdrain system required for the building?	Geotech	scope of work.	Bidding	
				Released during Bid Package 7 Group 1	
59	Where do foundation drains tie into the storm systems?	Bell	See Sketch for foundation drain tie in points.	Bidding	

	Bid Package 07 - Core and Shell Group 2						
	Question and Response Log						
		Respones As O	t: 09/12/2024 @ 8:00 AM				
#	Question	Responder	Response	Release			
	Bidding contractors have brought to our attention that the Core & Shell package						
	drawings do not designate what ceiling types are to be used where (ie. Lay-in or						
	Drywall) and therefore they cannot confidently determine where Victaulic can or						
	cannot be used outside of mechanical rooms. As result, we are being told this will						
	affect bid costs dramatically if weld is to be factored in for all piping outside the mech						
	rooms. Other factors that would be affected are labor/manpower.						
	coordination/fabrication, and material allocation. Will ceiling type with area						
	designations be available for bidders prior to bid? If not, can any clarification be						
	provided as to how bidders can best determine what ceiling locations are to be		Fit out Interiors DD drawings will be issued for reference. Bid Packages 1 through 5 will also				
	considered 'accessible' when evaluating the hydronic hot water piping?		be provided for reference. This large reference package will be a Separate Addendum	Released during Bid Package 7 Group 1			
60		walsh	(Addendum 3) to limit confusion from 'base' scope of work.	Bidding			
			Fit out Interiors DD drawings will be issued for reference. Bid Packages 1 through 5 will also				
	The plans reference prior bid packages 1 & 2. Is there somewhere we can access		be provided for reference. This large reference package will be a separate addendum.	Released during Bid Package 7 Group 1			
61	these prior drawing packages?	walsh	Subcontractors shall be responsible for coordination with the entire project.	Bidding			
	The specs mention a gate, but A400 and A405 scale a 3.5' wide gate and the opening						
	between retaining walls is 8'wide. So, I'm asking if they want a double gate in this						
	area and is one leaf supposed to be stationary to work with a panic bar latch or does		This scope is not being bid with Group 1 bids but will be bid in the future with a specific site				
	the cable railing extend beyond the walls to allow for only a single 3.5' wide gate with		fencing Trade Category in Group 3. Design team will review and respond as part of the	Released during Bid Package 7 Group 1			
62	self-closing hinges, card reader and a panic bar latch at this location?	Walsh	Group 3 bid.	Bidding			
	Is there a walk gate on the east side of the South Terrace? Building Elevations 2/A400		This scope is not being bid with Group 1 bids but will be bid in the future with a specific site				
	and A405 appear to show a gate in this area between the retaining walls and cable		fencing Trade Category in Group 3. Design team will review and respond as part of the	Released during Bid Package 7 Group 1			
63	railing. If so, what type of gate hardware is required? Please advise.	Walsh	Group 3 bid.	Bidding			
	The plans note 100% wet pipe sprinkler coverage but then contradict this in the same						
	Tagged note : (PG 3187 of PDF). Do I interpret this note we will only be running the						
	infrastructure and		Note F1 is incorrect. Intent is for a single Fire Protection Bid Package without a split of Core				
	1) Mechanical room piping sprinklers		and Shell and Fit out. There will only be 1 Fire Protection contract issued. 100% Design				
	2)Specific areas noted on each plan		Development Fit Out drawings, with Ceiling Plans, will be issued via addendum 3. All areas				
	3)The pre action for the generator room.		except as noted to be exceptions to the fully sprinklered building will have coverage	Released during Bid Package 7 Group 1			
64	If we are installing piping and heads throughout can we receive the RCP plans.	Walsh	provided.	Bidding			
				Released during Bid Package 7 Group 1			
65	1. Given the complexity of this project, can the bid date be extended?	Walsh	Bid date is being extended. See addendum for details.	Bidding			
66	2. Civen the complexity of this preject, can the last data for superious he extended 2.	Malah	Questions will be answered to questions received as time allows. UK has continued to	Released during Bid Package / Group 1			
66	2. Given the complexity of this project, can the last date for questions be extended?	waish	forward questions	Blading			
67	2. Is the Construction Manager "Walsh" hidding the cast in place concrete scene?	Walch	No. Walch will not be providing a Rid on any scones of work	Released during Bid Package 7 Group 1			
07	5. Is the construction Manager Waish bluding the cast in place concrete scope:	VVdISII	Footings are called out on plan drawing \$2008. Drawing notes and footing schedule are on	Beleased during Bid Package 7 Group 1			
68	What thickness are these areas required to be?	тнр	the overall plan drawing \$200	Ridding			
00	5 Reference drawing #\$604 Ream #'s B402 – B411 and beam #B431 have a zero for			bidding			
	either the width or the denth. What are the width and denth requirements for these			Released during Bid Package 7 Group 1			
69	beams?	THP	Please refer to updated schedules on the drawings issued in addendum(s).	Bidding			
00	6. Reference drawing #S200C. What are the structural detail requirements where the		Foundation below CMU firewall will be shared with the garage structure and issued in a	Released during Bid Package 7 Group 1			
70	CMU Firewall occurs adjacent to column lines L.3 and 17?	ТНР	future package. Contractor to coordinate with the garage contractor.	Bidding			
	7. Reference keynote #2/S200A, etc. What are the detail requirements for thickened		Thicken slab on grade where noted below stairs the same as at masonry walls, shown on	Released during Bid Package 7 Group 1			
71	slabs at the stairs? We are not finding a detail for this condition.	ТНР	S103.	Bidding			

	Bid Package 07 - Core and Shell Group 2			
		Questic	n and Response Log	
		Respones As (	Dt: 09/12/2024 @ 8:00 AM	
#	Question	Responder	Response	Release
	8. Reference drawing #S200C. Section #34/S303 is referenced along column line #M			
	left of line #13. It appears this reference is in error as it is showing a concrete			
	shearwall in the section but the location it is taken is through a CMU wall. What is the		Section 34/S303 is correct and applies at line 13. The detail shows the grade beam step and	Released during Bid Package 7 Group 1
72	correct detail reference at this location?	ТНР	tie bars required at line 13.	Bidding
	Can the shaft area at Stairway "C" or the EIDF room "C" be used for electrical conduits		See E310U for planned location for electrical risers to L8. Also, See E300 from Addendum 4	
	going up to the Penthouse from level 00?		for additional information on these shafts. The EIDF rooms are only to be utilized for Fire	Released during Bid Package 7 Group 1
73	See Drawing E300 thru E308.	HGA / Champlin	Alarm Risers. No power conduits, other than F/A are allowed in EIDF.	Bidding
	I do not see the utility drawings that has the fire main. Do we just stub out 5 foot		Site Utility contractor to bring Fire main into building and stub up. Refer sheets U210.3 and	Released during Bid Package 7 Group 1
74	from building?	Walsh	U210.4.	Bidding
			Project will utilize an SDI program and a payment and performance bond should NOT be	
			included in base bids. Some Specific trade categories will have a requested unit cost for	
			bond costs. If a firm is deemed inelligble for the SDI program, an opportunity will be	Released during Bid Package 7 Group 1
75	Will a payment and performance bond will be required?	Walsh	provided to provide a bond ilo entry into the SDI program.	Bidding
	Is the CCK-2653.30-4-24 UK Cancer Treatment Center project really tax exempt per			Released during Bid Package 7 Group 1
76	article 14 - Taxes, IB-12?	Walsh	The project is not Tax Exempt. Article 14 states this correctly.	Bidding
	Reference has been made to a distinction on the scope of responsibility of the		See Sketch attached. The Concrete subcontractor shall include the '2nd lift'of concrete	Released during Bid Package 7 Group 1
77	Concrete subcontractor vs the Drilled Piers subcontractor. Please clarify.	Walsh	above the construction joint.	Bidding
			No. Complete Medical Gas system to be provided by Fit Out subcontractor. Core and Shell	Released during Bid Package 7 Group 1
78	Is Plumbing contractor to furnish and install the medical gas equipment?	Walsh	Contractor to provide sleeves only.	Bidding
			Subcontractors shall assume all work in the Limestone Right of Way to be completed off	
			hours with Work Hours being 7 pm to 6am inclusive of daily set up and breakdown of road	
			closures and safety protections. All subcontractors working in the right of way should	
			anticipate individual street permits and shut downs along with roadway protections for	Released during Bid Package 7 Group 1
79	Can Limestone be shut down to allow for setting of bridge steel.	Walsh	work in the right of way.	Bidding
				Released during Bid Package 7 Group 1
80	Please confirm that Metal Fab 4 is part of the Steel and misc Metals scope of work.	Walsh	Confirmed. This is part of the Steel Trade Category as part of the 055119 Specification.	Bidding

	Bid Package 07 - Core and Shell Group 2				
		Question	n and Response Log		
		Respones As C	09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
			The foundation walls are laterally supported by the Level 01 slab and Level 00 slab on grade and grade beams.		
			Before slabs are in place, backfill may be placed to about 4 feet high to install the perimeter drainage, but should not be placed higher until the Level 01 slab is in place.		
			With Level 01 in place but no slab on grade, backfill may be placed to about 12 feet high and should be monitored to ensure there is no displacement of the base of the wall. Note that the service corridor "tunnel" slab on grade and top slab must be in place, since the outer west wall is not a retaining wall and relies on the main wall along Line 9 for lateral support at both top and bottom. At the garden, the battered wall is a retailing wall that supports the outer wall.		
			Backfill may be placed full height when Level 01 is in place and the slab on grade is in place for at least two bays in from the wall. The slab on grade should extend from the wall to Line C, Line 6.9 by the elevators, and Line M, and be cast to the Linacc walls and south or west face of the columns. The slab on grade within the Linaccs may be cast later, since the vault walls and top will brace the main wall along Line 9.		
			The retention system does not alleviate the backfill limits, since the backfill and compaction methods apply pressure to the wall.		
80	Please provide information related to requirements of backfill of the foundation walls	ТНР	Backfill placement, construction, monitoring, means and methods are ultimately contractor responsibilities.	Released during Bid Package 7 Group 1 Bidding	
81	Confirm if the Bridge Steel is part of this Steel Package or to be provided by others.	Walsh	Yes, the pedestrian bridge is in this package. Scope of work will be rewritten to more clearly deliniate scope of work on the Pedestrian Bridge.	Released during Bid Package 7 Group 1 Bidding	
82	Please clarify requirements for the Warehouse in HVAC scope of work. Is this just for HVAC materials? What type of trucks are required to get there. Are there climate control and fire protection requirements?	Walsh	This requirement will be removed from this trade categoy.	Released during Bid Package 7 Group 1 Bidding	
83	Is there any scope of work in BP7 that overlaps with BP1 Elizabeth Street or BP2 Site Utilities?	Walsh	Storm Line H including manhole and inlets south of the Waller Annex is not to be included with BP7 . 5 Light fixtures along Waller are not to be included with BP7. See Sketch for the specific	Released during Bid Package 7 Group 1 Bidding	
84	Please clarify if the Steel Trade Contractor has any scope for the following Details: On sheet S204B there are two sections cut (3/S401 and 10/S401) and on sheet S208A (73 & 74/S405). We would be responsible for 58 & 59/S405 that is cut on sheet S203B, is this a correct assumption?	Walsh	3/S401 - Connection and anchorage to slab by Curtain Wall Subcontractor. 10/S401 - Thermally Broken brick support system to be furnished and installed by the Mason. Lintel component of this system to be furnished by Steel Subcontractor and Installed by Mason. Refer to Scope of Work Ex B.2 Misc Metals Item 8. All shelf angles and loose lintels to be furnished by Steel Subcontractor. Additional information on A462 73/S405 - Connection and anchorage to slab by CFMF Subcontractor. 74/S405 - Connection and anchorage to slab by CFMF Subcontractor. 58/S405 - Misc Metal supports for head of curtain wall by Steel Subcontractor. 59/S405 - Misc Metal supports for head of curtain wall by Steel Subcontractor. Page 8 of 17	Released during Bid Package 7 Group 1 Bidding	

Bid Package 07 - Core and Shell Group 2				
		Questior	n and Response Log	
		Respones As O	t: 09/12/2024 @ 8:00 AM	
#	Question	Responder	Response	Release
			L2 to be changed to the UK standard fixture. LED Pole Mounted Luminaire with Type II Optic Mounted on 12ft tall round aluminum pole integral photocell and occupancy sensor. Kim Lighting 1a-ARA2-54L-560-3K7-2-CLR-4-XXX-BLS-SCH-R/POLE:PR4-4R16-226-XX-SBC-BLS-XX.	Released during Bid Package 7 Group 1
85	The Site light fixtures are not UK standard. Are these the right fixtures?	Walsh	3000K 70+CRI 9500 LUMENS. L2A to be equivelant based on L2 fixture change.	Bidding
85	Is Steel Sub responsible for Break-away fire-release connections?	Walsh	No. This connection will be provided by Garage contractors.	Released during Bid Package 7 Group 1 Bidding
96	Is Steel Sub responsible for pre-manufactured canonies?	Walch	No. Bro-manufactured canonies will be a separate Trade Category bid with pending Group 2	Released during Bid Package / Group 1
00	Will Steel Subcontractor need to provide the backer plate for the through holts at the	vvalsti	ino. Pre-manufactureu canopies win be a separate trade category bid with pending droup 2.	Released during Bid Package 7 Group 1
87	premanufactured canony cantilevered tube connector? $(5/\Delta 0.22)$	Walsh	No. This will be by the pre-manfuctured canopy subcontractor	Ridding
0,	Will Steel Subcontractor need to provide the galvanized plate at the loading dock door			Released during Bid Package 7 Group 1
88	iambs and heads 3/A022 & 5/A022?	Walsh	Yes, this will be provided by the steel subcontractor.	Bidding
			MEPFP subcontractors are to furnish and install their own embeds as required for their	
	On sheet S201A Note 1 at the mechanical shaft openings. It refers to embed		systems' connections in shafts in accordance with S103. Steel subcontractor is not to	
	requirements at perimeter of openings. How can steel subcontractor bid these		provide these. Steel subcontractor to provide all bent plate at shaft openings in the streel	Released during Bid Package 7 Group 1
89	without a quantity or coordination with mechanical subs.	Walsh	structural areas.	Bidding
	A462 does not provide the size for the brick ledge angles. The information above the		This response supersedes prior RFI response on this subject.	
	details are for lintels, not necessarily the brick ledge angles. These can be as big as		Brick ledge angles integrated into the FBRA-3 Adjustable Offset Shelf angle support system,	Released during Bid Package 7 Group 1
90	L8x8x1/2.	Walsh	as shown typically on 10/A462, will NOT be provided by the Steel Subcontractor.	Bidding
	us to provide temporary power to the AHU's in the basement and penthouse. Can you identify the exact units that will need temporary power, in reviewing the mechanical schedules and the construction schedule I could not locate exactly when the power would need to be ready and for which units? The overall temporary service		Plan on all units being activated for temp use, but supply fans only will be run. All basement units and the north half of the penthouse units will be run from 7/1/26. The south half of the penthouse will be run from 10/1/26. Maintain the temp service requirement as stated in	Released during Bid Package 7 Group 1
91	requirement would need to be increased if the plan is to temporary all the AHU units.	Walsh	the documents.	Bidding
92	1. Sheet E301.C shows a note 1 in vestibule but the sheet doesn't have a sheet specific notes.	AEI	Note shall be as indicated, "PROVIDE ROUGH-IN OF TWELVE (12) 3/4" EMT CONDUITS FROM LOWER LEVEL CEILING INTO VESTIBULE ABOVE CEILING."	Released during Bid Package 7 Group 1 Bidding
02	2. Can we confirm the battery stations are being furnished in the generator package	Malah	Confirmed. Battery stations to be provided as owner furnished contractor installed	Released during Bid Package / Group 1
93	3. Original drawings show Inst Air fed from panel LLLRSH1 but I could not find this equipment. Sheet E507 showed a future instrument air which was revised in addendum 4 to IAC-1 but a circuit wasn't shown. Is this the same load?	AEI	IAC-1 will be part of the fit-out package. The Instrument Air Compressor shown fed from LLLRSH1 may be removed.	Released during Bid Package 7 Group 1 Bidding
	4. Regarding the WIFI, Q&A line 51, are we putting in a wireless network or are we			Released during Bid Package 7 Group 1
95	installing a bunch of stand-alone cellular hot spots?	Walsh	Wireless network of Access Points rather than cellular hot spots.	Bidding
96	5. Regarding the breakroom TVs, what do these need to be wired back to, i.e. where is the content coming from?	Walsh	Local control / content for the monitors. Monitors inL4 break room should be brought to single point of control for single computer access and presentation from within the room.	Released during Bid Package 7 Group 1 Bidding
97	6. Trade Contract 26A.7 letter H. states to provide 4,000 amp 480/277V 3ph 4w switchgear, is the intent to feed this switchgear from the (2) 2,000 KVA remanufactured 12,470-480/277v transformers? Additionally, then will the (2) 2,000 amp panels one provided by this subcontractor and the other provided by another subcontractor on the project be fed from the 4,000 amp switchgear? If so what will be the location of the 2,000 amp panel provided by another subcontractor is this panel for the parking garage?	Walsh	Provide the equipment as defined in the scope of work. Post award coordination will occur between BP1 subcontractor and BP7 contractor to provide a total temp power system. If its determined an additional piece of temporary gear is required this will be added to future Fit Out package. Subcontractors should not assume any scope for the parking garage. Anticipate equipment and feeds to be sourced from the temporary electrical yard just north of the Waller Annex building.	Released during Bid Package 7 Group 1 Bidding
	7. TC 26A907 bid form line 3, can these be modified to acknowledge that this		Permitting costs for the owner furnished equipment will be provided as a change order to	
98	contractor will not have any permitting cost related to the prepurchase equipment or can a dollar value be provided to base the permit cost for this.	Walsh	subcontractors. Subcontractors to Include all permitting costs related to their scope of work and proposal.	Released during Bid Package 7 Group 1 Bidding

		Bid Package 07	7 - Core and Shell Group 2
		Question	n and Response Log
		Respones As C	01: 09/12/2024 @ 8:00 AM
#	Question	Rospondor	Posponso
"		Responder	Addendum 3 included Fit out drawings showing reference to the imaging
			LINAC spaces
			Each LINAC to have sleeves through wall to allow for the following conduit
			8x 4"
			1x 3"
			4x 2"
			1v 1"
			10x 5"
			104.5
			Addendum 4 modified clab conditions in imaging removing requirements
00	8 TC 264007 hid form lines 10 8 11 what drawing datails this work?	Walch	for those imaging spaces
99		vvdisti	Line 15 was intended to be clear that interior lights for the fit out were no
	0. TC 264007 hid form line 15, are we not to hid the scene of work shown in the 200		undeted hid breakdown form. Line 15 has been undeted to allow for seen
100	9. TC 26A907 bid form line 15, are we not to bid the scope of work shown in the 200	Walch	updated bid breakdown form. Line 15 has been updated to allow for scop
100	series of the electrical drawings?	vvaisn	
101	10 TC 264907 bid form line 16 is this not contrary to TC 26 A 7 items $24$	Walsh	This was identified and corrected in Addendum 2
101	10. TC 20A907 bid form line 10, is this not contractor to provide housekeeping pads. TC	vvalsti	
102	26 a 7 item 53 says nads by others. Can we confirm which is correct	Walsh	Pads to be provided by others
102		VValsh	Fach tower Crane is planned as :
			Hammerhead cranes
			245' Boom length Approximate location per logistics plan
			12000# conscitu at 245'
			12000# capacity at 245.
	12 Lean't find the stated canacity of the tower grapes. The project manual states		Additionally a large construction heist is going to be provided, the minimu
	"When the tower grane does not have the capability or capacity for a pick		canabilities of this boist are as follows:
	Subcontractor will be responsible for beisting." There are some large loads going into		Enclosed Distform 22' Long V 12' Wide V 11' High
	the Deptheuse so we are trying to determine whether the tower grane will. A have		Consistive 20,000 lb rated
	the conscisu and D, still be available at the time the owner furnished goar shows up on		Capacity – 20,000 ib fated
102	cito	Walch	Speed – minimum 225 ipm.
103	SILE.	vvaisn	Travel – Level ou to Level 8.
104	13. TC 26A.7 6, F calls for a temp power allowance for modifications to the temp	Walch	Pid Proskdown form is undeted to now include a \$100,000 Allowance
104	power but there's not an allowance included on the bid form that I can see.	waish	Bid Breakdown form is updated to now include a \$100,000 Allowance.
105	14.08 And $100$	Walsh	This will be attached with Addendum 6. Pardon the omission
105		VVdiSii	
106	15. Can the hid date be extended	Walsh	Bid date is extended but will not extend again. See addendum
100	Response log #14: What is the timeline from subcontract issuance until the		The engineering of this is to occur as needed to support subcontractor's e
	lengineered temporary drawings would be required. We don't have an in-house PE so		procurement and install of the temporary service. As temporary work it w
107	this is something we will need to have quoted to us and time will obviously impact	Walsh	nermit / AHI review
107	Response log #18: Regarding temporary, can the specific AHUs desired be called out	VVUISIT	
	There are multiple AHUs in the basement and penthouse. It wouldn't appear that the		Previously answered Project will adjust temp nower planning based on p
108	temp service will be sufficient to power them all	Walsh	of permanent electrical gear and services
100	Response log #30: Is there a spec for the hus duct? I didn't see one with the original		er permanent electrical Sear and Services.
	specifications and I'm not seeing that it was included with the addendum 2		Specification 26 2500 Enclosed Bus Assemblies is provided with the docur
	specifications. I would assume the breakers on the bus will need to be part of the		after consideration of the likely impact to short circuit study and spec red
	larger selective coordination and short circuit studies, do we need to carry anything		of hus duct and gear manacturer the hus duct will be included as owner fu
100	for these studies, or will it be picked up with the main gear package?	AFI/ Walsh	supersedes prior direction via RFI
109	instances statics, of white be pleased up with the main gear package:		

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	Bid Package 07 - Core and Shell Group 2				
		Questior	n and Response Log		
		Respones As O	r: 09/12/2024 @ 8:00 AM		
#	Question	Responder	Response	Release	
	Response log #51: This question was more geared towards the level of service from				
	the provider, i.e. gig speed fiber connection versus 5G broadband connection.				
	Depending on availability the providers cost could vary greatly for their aid to				
	construction, and I don't want to include an option that ends up not being sufficient			Released during Bid Package 7 Group 1	
110	for the project. Who administers the wireless throughout the project.	Walsh	Walsh will admnister the wifi. See other responses for other information.	Bidding	
	Response log #55: Do we exclude power to the fire smoke dampers added in				
	addendum 1 or to all fire smoke dampers (there were some on the original issue set).				
	Along this same line, in TC 26A.7, specific exclusion #2 excludes all branch circuiting				
	downstream of panelboards. There are a lot of branch circuits included in the plans. I		Electrical subcontractor shall owe all conduit, wiring, circuitry per plans including the MEP		
	don't think the intent here is to exclude 100% of the branch circuitry included in the		equipment, site lighting, and fire dampers. Exclusion #2 was intended to refer to branch	Released during Bid Package 7 Group 1	
111	drawings but need clarification.	Walsh	circuitry associated with Fit Out scope of work.	Bidding	
			Panel LLNPH2A will is required and will be added to riser. Will require a 225A feed from	Released during Bid Package 7 Group 1	
112	Drawing E503 shows panel LLNPH2A but I can't find this panel designation on the riser	AEI	LLNDH2A	Bidding	
	Drawing EM-700 shows panel LLEPHD1, but I didn't locate it. Should it be on drawing			Released during Bid Package 7 Group 1	
113	E300 detail 6 of room C004 (the transformer and subpanels it feeds are there)	AEI	Confirmed. Shall be located in C004.	Bidding	
			Jobsite wifi – avg 300 client connections. Network can block traffic to some sites (such as		
			social media). Assume a 1 GB service for wifi. A number of ISPs are active adjacent to this		
			property as it was formerly homes. As an example - metronet shows service capbaility to		
	How many devices will be accessing the WIFI system at any given time? This will		addresses of recently demolished homes on University Ave. Bidders should not assume UK	Released during Bid Package 7 Group 1	
114	determine bandwidth requirements.	Walsh	will provide internect connection to the site.	Bidding	
	Will the WIFI system access be limited to certain users and devices or open for			Released during Bid Package 7 Group 1	
115	general use?	Walsh	A guest network will be established.	Bidding	
	Please describe the intent for WIFI coverage areas per floor. RFI reply # 51 referenced				
	each stair well, at skip hoist location, at each elevator bank, 1 additional huddle				
	space, and 10 AP devices for 4 <sup>th</sup> floor break area. Will WAP devices be added at		All Levels for scope of each stair well, at skip, at each elevator bank, and a huddle space.	Released during Bid Package 7 Group 1	
116	these locations for all building levels?	Walsh	Additional 10 devices on Level 4.	Bidding	
	Because WAP systems differ in technology types and signal strength; Is the intent for				
	1 WAP per location to cover a small radius, requiring users to be within the noted		Limited Range wifi. The objective is to have zones of coverage, not blanket coverage	Released during Bid Package 7 Group 1	
117	area for access? Or should each floor have blanket coverage for a broader access	Walsh	everywhere throughout every phase of construction.	Bidding	
	The RFI response #51 referenced "Service expectation is to allow support of minor				
	IOT devices in the building and support use of tablets and phones for drawing				
	review." Because the site will also have security cameras and TV's, will these devices		Most jobsite cameras run on cellular data, but in concept, TVs and other IOT devices will be	Released during Bid Package 7 Group 1	
118	also be accessing this system?	Walsh	on the same network/service (part of the 300 client connections).	Bidding	
	Prior to the Temporary WIFI system scheduled active date, will the service provider		ISPs are currently active directly adjacent to site and previously active on the project site	Released during Bid Package 7 Group 1	
119	conduits from the entrance facility to the telephone poles be installed and usable?	Walsh	with active service bein provided along Elizabeth Street corridor.	Bidding	
				Released during Bid Package 7 Group 1	
120	Who is paying for Wi-Fi monthly service?	Walsh	Subcontractor.	Bidding	
	Item 24, page 6 calls for main branches/pathways for IDF closets requirements				
	including sleeves and risers for stacked IDF rooms. Are only SLEEVES required for IDF		Provide for rough in, sleeves, and pathways, as shown on the drawings. Where drawings are	Released during Bid Package 7 Group 1	
121	pathways?	Walsh	silent provide sleeves connecting stacked IDF rooms.	Bidding	
	Item 25, page 6. Will an exterior ground loop and/or ground rods be required for				
	lightning protection? The drawings only call for ground loop under building slab.			Released during Bid Package 7 Group 1	
122	Please provide detail if lightning protection is to terminate to under slab ground loop.	AEI	Confirmed Lighting protection to be connected to counterpoise as indicated on Sheet E710	Bidding	
			Commissioning in this instance is referring to startup and testing of equipment as	Released during Bid Package 7 Group 1	
123	Item 52, page 8. Please clarify scope of "commission" OFE.	Walsh	referenced in the project specifications.	Bidding	
	Item 52, page 8. Will OFE equipment be delivered and stored onsite if received prior			Released during Bid Package 7 Group 1	
124	to setting in place? If offsite storage is required, for how many months?	Walsh	Plan for 14strla Time Delivery for owner provided equipment.	Bidding	

Bid Package 07 - Core and Shell Group 2						
Question and Response Log						
Respones As Ot: 09/12/2024 @ 8:00 AM						
#	Question	Responder	Response	Release		
	Item 64 calls for enough fuel for a complete testing as required. Please confirm final			Released during Bid Package 7 Group 1		
125	fill up after testing is by others.	Walsh	Confirmed.	Bidding		
			Following receipt of bids, scope discussions will be scheduled immediately based on the			
			critical path of the project. Recommendations for award will flow from those to UK. Walsh	Released during Bid Package 7 Group 1		
126	What is the projected award date?	Walsh	would target late July for key packages based on timely meetings and approvals.	Bidding		
	We have not seen on any drawings, the lifting capacity of the Tower Crane. Can this			Released during Bid Package 7 Group 1		
127	be provided?	Walsh	See other RFI response on tower crane planned capacities.	Bidding		
	In the marked-up riser provided in addendum 2 showing owner furnished versus					
	contractor furnished, many of the surge units were left white indicating they are to be		Surge Devices will be provided with the owner equipment, this was an oversite on the riser	Released during Bid Package / Group 1		
128	contractor furnished. Can we get confirmation that this is the intent?	Walsh	diagram.	Bidding		
			All exterior facing louvers are to be provided by metal panel subcontractors. Mechanical	Deleged during Did Deckers 7 Crown 1		
420	And any low on to be provided by the mechanical sylpaneture ter	) M (a lab	Subcontractor is to provide all connections to louvers and all active components, where	Released during Bid Package 7 Group 1		
129	Are any louvers to be provided by the mechanical subcontractor	vvaisn		Blading		
	maintenance related to all mechanical equipment or just the mechanical equipment		Machanical subcontractor will maintain the owner furnished contractor installed machanical	Poloacod during Bid Backago 7 Group 1		
120	provided by the subcotpractor?	Walch	equipment that is used during the course of construction, such as the AHUs	Ridding		
150		vvalsti		bidding		
			A revised curtain wall specification will be provided in Group 2 – Addendum #1. Per revised			
			specifications, an option for (CW-1) to be constructed of a field-fabricated (stick-built)			
			system will be provided, pending confirmation that mullion sightlines are consistent			
	It has come to our attention that the 2500UT basis of design system is not a good fit		between adjacent unitized and field-fabricated systems and that performance between			
	for the project and Kawneer has suggested the 1600UT system which has been the		these systems is consistent per specified requirements. (CW-2) system shall remain fully-			
131	basis of design for other buildings at UK. Please Advise if 1600 UT will be acceptable	Champlin / HGA	unitized.	Released with Addendum 1		
			The depth of the system shown in the architectural details is based upon preliminary span			
	1. Detailing within the arch's indicate a desired overall system depth of 10". The		analysis, but final mullion depth is to be determined by the curtain wall fabricator's			
	captured 2500UT system has a standard depth of 7 1/2". Some custom dies do exist for		engineering. Note that any adjustments to mullion depth shall be applied consistently to all			
132	the system but none that would match that aesthetic.	Champlin / HGA	(CW-1) locations.	Released with Addendum 1		
			The curtain wall system shall provide the design aesthetic as indicated in the construction			
			documents. It is acceptable for the mullion width to be increased to 3" if required to meet			
			the loads and/to provide support for the sun shade. Note that any revisions to mullion			
	2. The 2500UT system was designed primarily to address projects with high thermal		sitelines/width shall be applied consistently to all (CW-1) locations. Per forthcoming			
	requirements or that needed the aesthetic of a 4 side SSG look. Provisions for deep		specification revisions in Group 2 – Addendum #1, curtainwall engineer shall provide			
	covers or the support of sunshades are not provided within the standard system.		detailed performance information and analysis for atypical curtainwall configurations such			
	Customization to the chassis to accept those features typically result in an increased		as the points of sunshade support. All such connections shall be thermally-broken per			
133	sightline of 3" and a reduction of the advertised high thermal values.	Champlin / HGA	specifications.	Released with Addendum 1		

Bid Package 07 - Core and Shell Group 2							
Question and Response Log							
	Respones As Of: 09/12/2024 @ 8:00 AM						
#	Question	Responder	Response	Release			
134	3. The arch's show spans of 20' at the South and East elevations of the project. The calculated wind load based on project requirements was 41 PSF and the vertical module spacing at those 20' spans was 48". The standard 7 ½" deep 2500UT chassis, reinforced with steel, will not make those spans based on the loading requirements and the vertical mullion spacing. The maximum span for the standard system at loading would be between 15' to 16' as shown in the chart below. There are no existing dies for the system that will meet these requirements. (Wind load charts can be found in the Architectural Detail Manual for the product which is available for download from our website)	Champlin / HGA	If necessary, the curtain wall at the lobby may need to be deeper than 7 ½". The architectural details indicate 10" based upon preliminary calculations. Confirmation of specific locations needed - curtainwall design for (CW-2) system has assumed heights limited to roughly 16'-0" (a single story) with stack joints and either lateral bracing at the slab edge - such as at the Southeast corner on levels 1 and 2 - or via a girt - such as at the primary lobby areas.	Released with Addendum 1			
135	We are submitting AIR-SHIELD™ LSR Liquid Membrane Air/Vapor and Liquid Moisture Barrier for your consideration. Please confirm if this is an acceptable product.	Champlin / HGA	This product has been approved and has been added as an acceptable manufacturer in Group 2 – Addendum #1.	Released with Addendum 1			
136	Requesting to be given " or equal" for bidding of the brick materials as follows DIVISION 42000, 2.6 BRICK (FBR-1AB, FBR-2, FBR-3) A.Qualifies as Indigenous Material B.Not possible for this type of brick C.Qualifies D.Qualifies- ASTM C216, grade SW, Type FBX D 2-6 Qualifies as follows BELDEN BRICK, CANTON OHIO, MANUFACTURED SUGAR CREEK OHIO 7a FBR-1A Beige, Smooth, Matte/Velour Finish, Color: Custom 2 part blend of Acadia (67%) and 8532 (33%) 7b.FBR-1B Beige, Texture, Scratch Finish; Color: Custom 2-part blend of Acadia (67%) and 8532 (33%) 7c. FBR-2; Terracotta: smooth, Matte/Velour Finish: Color: Custom 3-Part blend of 40% Indian Red F/G, 40% Royalty Red F/G, 20% 8621 F/G 7d. FBR-3; Dark Terracotta: Matte/Velour Finish: Color; 8621 F/G I'd like to submit for your review a substitution request for the specified Metalworks Torsion Spring panels found in section 095421 - Metal Pan Ceilings. I've attached a completed substitution request and the corresponding product documents from CertainTeed Architectural.	Champlin / HGA	Responses to your questions are outlined herein in Red: Requesting to be given " or equal" for bidding of the brick materials as follows DIVISION 42000, 2.6 BRICK (FBR-1AB, FBR-2, FBR-3) A.Qualifies as Indigenous Material B.Not possible for this type of brick Noted. This is acceptable C.Qualifies D.Qualifies ASTM C216, grade SW, Type FBX D 2-6 Qualifies as follows BELDEN BRICK, CANTON OHIO, MANUFACTURED SUGAR CREEK OHIO 7a FBR-1A Beige, Smooth, Matte/Velour Finish, Color: Custom 2 part blend of Acadia (67%) and 8532 (33%) Proposed colors are not approved. 7b.FBR-1B Beige, Texture, Scratch Finish; Color: Custom 2-part blend of Acadia (67%) and 8532 (33%) Proposed colors are not approved. 7c. FBR-2; Terracotta: smooth, Matte/Velour Finish: Color: Custom 3-Part blend of 40% Indian Red F/G, 40% Royalty Red F/G, 20% 8621 F/G The following Belden product will be noted as acceptable for (FBR-2) in forthcoming revisions to 042000 in Group 2 – Addendum #1: VELOUR FINISH; COLOR: REGAL BLEND 7d. FBR-3; Dark Terracotta: Matte/Velour Finish: Color; 8621 F/G The following Belden product will be noted as acceptable for (FBR-3) in forthcoming revisions to 042000 in Group 2 – Addendum #1: VELOUR FINISH; COLOR: REGAL BLEND 7d. FBR-3; Dark Terracotta: Matte/Velour Finish: Color; 8621 F/G The following Belden product will be noted as acceptable for (FBR-3) in forthcoming revisions to 042000 in Group 2 – Addendum #1: VELOUR FINISH; MIX OF 50% BISMARK DARK AND 50% REGAL BLEND (PRE-SORTED TO REMOVE THE LIGHTEST COLOR IN THIS RANGE). This RFI is not applicable to Group 2 Enclosure scope.	Released with Addendum 1			

		Bid Package 0	7 - Core and Shell Group 2			
		Question and Response Log				
		Respones As Of: 09/12/2024 @ 8:00 AM				
#	Question	Responder	Response			
138	Trade Category 09A.7 Framing 5.1 states that subcontractor shall use union carpenters. This is not listed in any of the other trade categories. Please confirm if the 09A.7 subcontractor must use union carpenters.	Walsh	Bidding requirements are per the applicable portions of the Kentucky Mod Code. Additional requirements are included in Contractor's previously distributed Subcontract Agreement.			
139	Spec 084413 includes acceptable manufacturer's and Glass Solutions is requesting that our system be reviewed and allowed as an acceptable manufacturer and fabricator as we self manufacture our system. This unitized curtain wall system is being used on the upcoming UK Health Education Building.	Champlin / HGA	Glass Solutions substitution request for and supporting product data has b is approved.			
140	Material Tag INSUL-30 does not appear on the drawings while there are details that call for spray insulation with no material tag. Please clariy if INSUL-30 is used on the project and clariy which spray foam material is to be used where there is no material tag	Champlin / HGA	Correct - (INSUL-30) is not currently noted for use on the architectural dra noted on drawings and at locations where spray foam insulation is intende the exterior air and vapor barrier, spray foam insulation shall refer to (SPF include the bottom structure of the pedestrian walkway and the top-of-cu condition at Area C. however, st contractor's option, (INSUL-30) could be the mineral wool batt insulation (INSUL-24) at selective opening or penetr air-tightness.			
	Is there an updated Schedule? Current schedule dated 6/27/24 shows façade		Utilize the current schedule. Start of core and shell structural dates are ho			
141	package NTP on 9/16 (Bid Date is 9/17).	Walsh	delay in group 2 bid timeline.			
142	Spec calls for a performance mockup, but is not included in the schedule. Based on current schedule, it does not appear there will be enough time to fabricate a performance mockup and hit the field for façade install end of 2025.	Walsh	Glazing for mockup to be expected in March/April of 2025. Subcontractor for any costs to meet this date.			
143	Ref Drwg A459.6/2 & A473.E/3; Spec 074213.13 describes MP-4 as a corrugated metal panel. Drwg A459.6/Dtl 3 it appears that MP-4 as corrugated however on A473.E/ Dtl 3 this same panel is labelled MP-4 Painted Composite Metal Panel. Please confirm what material is correct.	champlin / HGA	(MP-4) shall be corrugated metal panel, in custom color to match (MP-2). corrugated rainscreen or approved equal by Pac Clad or Holcim Elevate; P Aluminum; Finish: 3-coat PVDF in custom color to match (MP-2); Duragua approved equal. Detail 3/A473.E is incorrect and should note (MP-2) - rev be issued in forthcoming addendum.			
144	Ref Drwg A477.A/Dtl 5; the copings are identified as 18 ga zinc to match MP-1 Spec section 077100 para. 2.2 identifes copings to be aluminum with mica finish. Are the copings at the MP-1 Zinc Panels fabricated in Zinc sheetmetal to match the wall panels or are the coping to be aluminum with 2 coat mica finish ?	Champlin / HGA	Copings at (MP-1) locations are intended to be (SMF-4), fabricated of zinc Note: sloped coping plate in this detail is also intended to be fabricated of (SMF-5). Revised drawings will be issued in forthcoming addendum to cla			
145	Ref Drwgs A300/Dtl 5 & A424/Dtl 4; A305/dtl 5 refers to the soffit panel as MP-2 Aluminum Composite however drwg A424/ dtl 4 labels the soffit panel as SPP-1 Phenloic Panel. Please identify the correct material fo rthis soffit.	Champlin / HGA	Detail 4/A424 is incorrect - this material should be (MP-2). Refer to view 6 & 4/A425 to clarify the extents of MP-2 and SPP-1 on the underside of the revised drawing will be issued in forthcoming addendum.			
146	Ref Drwg A429/dtl 1, A421/dtl 3, A424/Dtl 1; There appears to be a conflict designating the MP type to be used for this pedway soffit. It is variably identifed as MP-2, MP-2/MP-1, and MP-3 depending on the drawing reviewed. Please idnetify the MP- type desired for this soffit.	Champlin / HGA	Refer to view 6/A300 and views 3 & 4/A425 to understand the extents of on the underside of the pedway. Revised Drawings will be issued in a forth addendum			
147	Specification 084413 calls for a split finish and that the exterior finish is to be a custom anodized finish. Can the architect provide additional information on the custom anodized finish as many finishers will not provide a custom anodized finish due to the inconsistency from batch to batch?	Champlin / HGA	Architect will provide control sample for exterior custom anodized finish t contractor(s). Bidders/Manufacturers/Fabricators can also furnish sample medium gray anodized color ranges for architect review and approval.			
148	Does the architect have a paint number/color for the interior finish, as specification 084413 calls for a custom color?	Champlin / HGA	Architect will provide a RAL number or Sherwin Williams colormatch num Note that it will not be a metallic paint color. Page 14 of 17			

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wings. Where ed to function as -1). Examples urtainwall utilized in lieu of ration locations for	
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should account	
Centria BR5-36 refinished rd Plus or vised drawings will	
to match (MP-1). Fzinc material - see rify.	
5/A300 and views 3 e pedway. A	
MP-2 and SPP-1 ncoming	
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		Bid Package 07	7 - Core and Shell Group 2
		Question	n and Response Log
		Respones As O	0f: 09/12/2024 @ 8:00 AM
#	Question	Responder	Response
	Can the architect confirm that the louvers on sheet A404, Level 00 tagged "L05" and		These two louvers are tagged incorrectly, and should instead be tagged L4
149	"L06" are the correct tags as it seems like these should be types "L03" and "L04"	Champlin / HGA	respectively - A revised drawing will be issued in forthcoming addendum.
	A louver is shown on sheet A407 between column lines N and P without a tag, nor is it		This is a louver-clad hinged door for roof access. Refer to 1/A478.C and 3,
	represeneted on A492 - can the architect advise what louver type this and if it is		additional information. Additional architectural detail will be provided in
150	active or not?	Champlin / HGA	addendum. Louver Clad hinged doors to be included with in TC07F7 Meta
	A louver is shown on 4/A410 but does not have a tag nor is it included on sheet A492 -		The design intent is for this to be a louver mounted to the face of an exter
151	is this a fixed louver and if so, what louver type is this and is it active?	Champlin / HGA	hollow metal door. Additional details will be issued in a forthcoming adde
			Noted. This louver type will be added to sheet A492 in forthcoming adder
	A louver is shown on 6/A410 with tag L16, but is not shown on sheet A492, can the		size is 13'-6"W x 3'-6". Note: this louver is intended to function as pressur
152	architect advise what louver type this is?	Champlin / HGA	MRI quench, and will need to be coordinated with concealed/recessed ple
			It appears these referenced louvers are correctly noted as (LVR-2). Louver
			into the curtain wall system shall be 4" depth. Drawings and specifications
	Can the architect confirm that the louvers shown on the W73 and W92 window type		a forthcoming addensum. Louvers glazed into the Curtain Wall shall be pic
	(23/A491 & 19?A491) is to be LVR-2 or should these be LVR-3 (4" deep) since they are		Glass and Glazing. Other Louvers not glazed into the curtainwall are picked
153	being glazed into the curtain wall system?	Champlin / HGA	TC07F7 Metal Panels.
			W9 and W10 are incorrectly tagged as W93 and W94 on A409. W43 is rec
	The following window types are listed on the window schedule (A490-A495): W9,		matches W40 - it will be removed from A490. W51 was removed in Group
	W10, W43, W51, W53, W88, and W87 - can the architect confirm that these are not		W53 is incorrectly tagged as WX1 on A408 and A410. W87 tag is missing f
154	on the building as we cannot find them?	Champlin / HGA	tag is missing from 3/A493. Revised drawings will be issued in forthcomin
	The following window types are on the building elevations but not on the window		WX1 is incorrectly tagged, and should be W53. WX0 will be revised to and
	schedule (A490-A495): WX1, WX0, W93 and W94 - can the architect confirm these		A490. W93 and W94 are incorrectly tagged, and should be W9 and W10,
155	types are correct?	Champlin / HGA	Revised drawings will be issued in forthcoming addendum.
			The cone shaped extrusion is intended to be a "False snap cover" to be pr
			curtain wall contractor. It is assumed that this cover will be field-applied a
	Is the Cone shaped extrusion to be part of the Curtain Wall system as shown on detail		supported by being attached to the snap covers of the mullions at the jam
	4/A474.A? How is this going to work with the curtain wall system stopping below the		It may also have a leg which extends down and is secured over the real sn
156	cone extrusion as there is nothing supporting/attaching to it?	Champlin / HGA	mullion.
			There is typicall a 4" offset from the back of curtain wall framing to edge o
			a side attachment of the curtain wall anchors rather than ton mounting the
			anchors. Side mounting is preferred over top mounting to avoid peeding
	What is the nurnose of the 4" of insulation shown on detail $4/4474.4$ (and multiple		recess ton mounted anchors. The gap must be closed off with a perimete
157	others), is this for building movement?	Champlin / HGA	system per code. Perimeter Fire safing is carried with TCO9A7 Framing
1.57	Specification 084413-2.1-I-5.a calls for condesnation resistance with a temperature		
	swing of 70 degrees to -25 degrees with 72 degree interior temp and 30% RH - I do		
	not believe there is a system designed that can achieve these parameters especially		
	with the sunshades, custom exterior profiles and glass types given. Can the architect		
158	cofirm these parameters are correct?	Champlin / HGA	Temperature ranges have been updated in the specification updated with
		, ,	

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	Bid Package 07 - Core and Shell Group 2				
Question and Response Log Respones As Of: 09/12/2024 @ 8:00 AM					
					#
			It is acceptable for sun shade components glazed in metal panels louvers		
			doors, to be supplied to the curtain wall fabricator by separate manufactu		
	Specification 084413-2.2A calls that all components to be sourced from the same		product data is all to be included under the same submittal, detailed on th		
	manufacturer including the curtain wall, spandrel panels (assuming glaze in metal		drawings, and installed by the same contractor. The overall system perform		
	panels or the backpans), venting windows, entrances, sun control devices and		take into account all of thes products together and not evaluated separate		
	accessories. No supplier/manufacturer provides all these parts and pieces, will the		they should all have the same finish and not submit separate finish sample		
159	architect allow different suppliers for the differents phases of the curtain wall?	Champlin / HGA	and shall all be warranted as a single system.		
	Hardware Set CS-9.0 in specification 087100 calls for (1) Concealed Vertical Rod exit				
	device but door B000N.2 is a pair of doors, can the architect advise what type of CVR				
160	exit device they want for the inactive door?	Champlin / HGA	Exclude this door from the Bid. This will be procured in a future package.		
	Please confirm absence of a project labor agreement or union requirement to bid this		At this time, there is not a project labor agreement for the project. Bidding		
161	project	Walch	are per the applicable portions of the Kentucky Model Procurement Code		
101		vvalsti	are per the applicable portions of the kentucky woder rocarement code.		
	I wanted to reach out and see if there is any possibility of extending the bid date on				
	the UK CTC and AAC project. I sent project information to my metal suppliers right				
	after receiving the invite, and subsequently sent the updated specs in Addendum 1,				
	and was told by Kawneer who is the basis of design for the curtain wall, they would				
	not be able to provide me a number until the end of September. I also spoke to our				
	rep for Wausau/EFCO and they had concerns as well. I m not sure we have time to				
	submit a substitution request in order open it up to other suppliers and still get it				
160	the most competitive and accurate number possible	Champlin / HCA	See the addendum documentation for notential hid nuch. The goal is to m		
102			See the addendum documentation for potential bid push. The goarts to m		
	Please find our substitution request enclosed as well as supporting documentation &				
	test reports in the link below. Since the Basis-of-Design for MP-1 is Alpolic and the				
	Basis-of-Design for MP-2 & MP-3 is Alucobond, I have included product data for both.		Based on the additional information provided, AMNA is an approved fabric		
163	Feel free to contact me if you have any questions. Thanks.	Champlin / HGA	composite metal panels		
			The door/ Opening schedule is on sheet A700. Interior permanent doors, s		
	when I look at the drawings, while there are a ton of references to the door schedule,		wells and electrical rooms, are not part of any BP7 Group 2 Package. The c		
164	I can't find a door schedule.		included in any of the Trade Categories are exterior doors.		
			Foamed in place insulation is part of the project. It will be carried in Trade		
165	Is foamed in place insulation actually called for on the project?	Walsh	Waterproofing and AVB.		
	you know if Waish is planning on installing the anchors with another steel erector		Fail Protection anchors are to be supplied by the fall protection subcontraction by the compared of the supplied by the fall protection subcontraction of the supplied by the supplied by the fall protection subcontraction of the supplied by the supplied by the fall protection subcontraction of the supplied by the superbox the s		
466	and we would just be supplying the materials, or did you want us to quote field labor		by the concrete subcontractor or the steel subcontractor. Lifelines and tes		
166	as wells	vvaisn	to be by the fall protection subcontractor.		
167	What is the ten of the facting for the tower grapes?	Walch	see Sketch attached to the addendum. Top of footing for the North Tower		
169	What are the required elevations of the tower cranes?	Walsh	assumed to be 500. Top of footing for the south tower traffe should be as		
160	Is there a utilization matrix for the tower cranes?	Walsh	See additional documents with this Addendum		
103	is there a duitzation matrix for the tower chanes:	vvalsti	See additional documents with this Addendum		

	Release
	ncicase
rs, and operable turer's, but the the same shop ormance shall also itely. Additionally, ples per component	
ng requirements e.	
maintain if possible.	
ricator for the	
, such as on stair e only doors	
le Category 07A7	
ractor and installed esting / certification	
er Crane should be assumed to be 970'	

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	You have 2 coiling fire rated doors & 1 fire counter shutter. There are no fire door						
	specs, so we are just going to bid fusible links only. You won't be able to interface						
170	those doors with the building fire alarm".	Walsh	This is not being bid with this package and will be included in a future bid package				