

# **INVITATION FOR BIDS**

CCK-2729-24
UKHC Parking Structure #8 Expansion BP#01
Project# 2565.0
ADDENDUM #5
07/13/2023

IMPORTANT: BID AND ADDENDUM MUST BE RECEIVED BY: 07/20/2023 @ 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: BIDDER NOTICES**

• Please incorporate into your bid the attached written questions and answers, and additional modifications to the original bid documents, provided by the project team.

OFFICIAL APPROVAL UNIVERSITY OF KENTUCKY	<u>SIGNATURE</u>
Ken Scott 07/13/2023	
Ken Scott / (859) 257-9102	Typed or Printed Name

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

### FOR THE PROJECT TITLED:

#### **PARKING STRUCTURE 8 EXPANSION**

University of Kentucky Lexington, Kentucky

To: Prospective Bidders

From: Walker Consultants

6602 E 75<sup>th</sup> Street, Ste 210 Indianapolis, Indiana 46250

Project Contacts: Tim Aldridge, P.E

The Addendum will form a part of the Contract Documents and modifies the original Bidding Documents dated April, 2023.

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

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

### **ITEM NO. 5.01**

Added sheet L307 Under Slab Drain Plan to sheet index on cover sheet G-001

#### **ITEM NO. 5.02**

Added sheet L307 Under Slab Drain Plan to list of drawings in specification 000115.

#### **ITEM NO. 5.03**

Added sheet L307 Under Slab Drain Plan further defining underslab drainage requirements.

#### **ITEM NO. 5.04**

Modified specification 322121- "Steel Louver Fences and Gates" as noted in regard to grounding.

#### **ITEM NO. 5.05**

Revised detail 1/SD103 to properly indicated location of new expansion joint header demolition.

## **ITEM NO. 5.06**

Clarified estimated bearing lengths and extents of drilled piers on S-100 as noted.

# **ITEM NO. 5.07**

Added sheet note 9 and plan designation defining tower crane blockout requirements for slab-on-grade on S-101

### **ITEM NO. 5.08**

Added concrete wash lines on plans to coordinate with section cuts on S-101 and S-102

### **ITEM NO. 5.09**

Revised top of CMU wall reference on 3/S-101.

### **ITEM NO. 5.10**

Modified section cuts along grid A as noted on S-101.

#### **ITEM NO. 5.11**

Removed reference to section cut 7/S-541 from NW corner of plan on S-103

#### **ITEM NO. 5.12**

Revised location of tower crane blockout on S-103 and S-104.

### **ITEM NO. 5.13**

Added bollard near NW stair on S-104.

#### **ITEM NO. 5.14**

Added bollard at top tier on S-410.

#### **ITEM NO. 5.15**

Updated drilled pier assumed lengths as noted on S-430

#### **ITEM NO. 5.16**

Added reference to column corner guards to 1/S-450.

#### **ITEM NO. 5.17**

Added galvanized support angle to top of wall on 4/S-511 and 8/S-511 as noted.

## **ITEM NO. 5.18**

Clarified epoxy requirement for dowels in 1/S-511

#### **ITEM NO. 5.19**

Removed reference to a concrete wash on 3/S-511

#### **ITEM NO. 5.20**

Revised drilled pier estimated bearing depth as noted on S-420.

#### **ITEM NO. 5.21**

Revised remark to MB03 defining depth of tapered section in mild beam schedule on S-530.

#### **ITEM NO. 5.22**

Clarified length of traffic topping on alternate detail on 1/S-541.

# **ITEM NO. 5.23**

Clarified rebar requirements on column 'C5' on S-550.

### **ITEM NO. 5.24**

Refer to revised specification 081113 "Hollow Metal Doors and Frames." The following manufacturer was added to Section 2.1.A:

6. De La Fontaine

#### **ITEM NO. 5.25**

Refer to revised drawing sheet A-621, specifically changes to details P and Q, which clarify the insulation requirements for the garage elevator wall.

Detail G was amended to remove the steel embed which does not appear on the structural drawings.

#### **ITEM NO. 5.26**

Refer to revised specification 057313 "Glazed Metal Railing." The following manufacturer was added as an equivalent to Hollaender in section 2.2.A:

- 1. C.R. Laurence
- 2. RIW Metals

The specification also clarifies the cladding finish for the railing shoe in section 2.8.A to be powder coated aluminum to match the curtain wall finish.

Section 2.11.B clarifies the glazing at the structural glass guard rail to be untinted/clear.

### **ITEM NO. 5.27**

Refer to revised drawings sheets A-556 and A-557. Details A and B on each sheet have removed the graphics showing the short wall at the end of the main stair landing that was not present on the floor plans or structural drawings.

#### **ITEM NO. 5.28**

Refer to revised drawing sheet A-561A. Detail P clarifies the location and construction of the third floor reception desk at the office building.

#### **ITEM NO. 5.29**

Refer to revised specification 064023 "Interior Architectural Woodwork." Section 2.2.A.1. was changed to clarify quarter sawn select bleached walnut as the lumber trim for base B-2, to match the wood species for the wood wall paneling.

### **ITEM NO. 5.30**

Refer to revised specification 142100 "MRL Electric Traction Elevators." Section 2.6.B.3 has been changed to require wood laminate wall panels of the elevator provider.

## **ITEM NO. 5.31**

Refer to newly issued drawing sheet A-911. This sheet details the requirements for a mock-up panel. Refer to the site plan for location. This requirement supersedes the requirement for the panel mockup shown on drawing sheet A-212.

#### **ITEM NO. 5.32**

Refer to revised specification 107113 "Exterior Sun Control Devices." The following manufacturer was approved as an acceptable alternate:

1. Waltek Co.

#### **ITEM NO. 5.33**

Modified striping as noted on AG101-T

### **ITEM NO. 5.34**

Refer to Section Number: 23 0900 - Instrumentation and Control for HVAC Added Specification section.

### **ITEM NO. 5.35**

Refer to Sheet E-201A, E-202A, E-203A, E-204A: Heat detector removed in front of elevator door on each floor.

#### **ITEM NO. 5.36**

Refer to Sheet E-201A: Added 3/4" conduit and Three #12 wires from generator to oil fill station for monitoring.

Added coded note 29. Added coded note 30. "Provide connection to generator load center". Added coded note 31. "Route circuit to existing panel LOPL1".

#### **ITEM NO. 5.37**

Refer to Sheet E-204A: Elevator circuit changed to existing panel LODH1.

#### **ITEM NO. 5.38**

Refer to Sheet E-205: Panel 1EQL1 added in electric room. Elevator circuits changed to panel 1EQL1.

#### **ITEM NO. 5.39**

Refer to Sheet E-206: Elevator circuit changed to panel LODH1.

#### **ITEM NO. 5.40**

Refer to Sheet E-302: Added duct type smoke detector to AHU-1 return. Added note 21.

### **ITEM NO. 5.41**

Refer to Sheet E-400: ATS-EQ changed to Life Safety ATS. Added existing panel LOPL1 with new feeder to panel 1EQL1 located in the office.

#### **ITEM NO. 5.42**

Refer to Sheet E-401: Panel 4EQL1 removed. Panel 1EQL1 added.

#### **ITEM NO. 5.43**

Refer to Sheet E-402: Panel 1EQL1 schedule added. Panel schedule adjustments.

### **ITEM NO. 5.44**

Refer to Sheet E-403: Panel schedule adjustments.

## **ITEM NO. 5.45**

Refer to Sheet E-404: Panel LODH1 schedule added.

# **ITEM NO. 5.46**

Refer to Sheet H-101: Added Remote Fill Station and associated coded note.

#### **ITEM NO. 5.47**

Refer to Sheet H-301: Removed "Emergency Generator and Day Tank Diagram" detail.

# **ATTACHMENTS:**

**Revised Drawings:** 

G-001

SD103

S-100

S-101

S-102

S-103

S-104

S-410

S-420

S-430

S-450

S-511

S-530

S-541

S-550

A-556

A-557

A-561A

A-621

A-911

AG101-T

E-201A

E-204A

E-205

E-206

E-302

E-400

E-401

E-402

E-403

E-404

H-101

H-301

# **Added Drawings**

L307

# **Revised Specifications:**

057313 "Glazed Metal Railings"

064023 "Interior Architectural Woodwork"

081113 "Hollow Metal Doors and Frames"

107113 "Exterior Sun Control Devices"

142100 "MRL Electric Traction Elevators"

323121 "Steel Louver Fences and Gates"

# Added Specifications

230900 "Instrumentation and Control for HVAC"

# Changes and Clarifications to Scope of Work

# 1. Changes and Clarifications to Trade Category TC-01 General Trades

- The tower crane, referenced in section A. General, Item 30, including letters a through j under the General Trades Scope Description is NOT to be provided by TC-01 General Trades.
- b. Removal of the tower crane from this scope of work does not elevate the need for rigging or certified riggers on any activities that utilize this crane. This contractor is still to provide temporary toilets with rigging to be placed and removed from the parking decks.
- c. Foundation Drains will not be provided by TC-01 General Trades.
- d. TC-01 General Trades is to purchase three (3) parking permits for use by the CM and two (2) parking permits for use of the craft personnel of this trade category for a total of five (5). These passes will be at the top level of PS8 and are \$63 per month. This contractor shall utilize these spaces in lieu of one space provided to this contractor indicated in the front ends.
- e. Include the removal and disposal of the mock up included as part of this addendum when directed to do so by the CM.

# 2. Changes and Clarification to TC02 Earthwork

- a. TC02 Earthwork is to provide four (4) 10'x5'x1" road plates to be left at the site for the duration of the project. These will be placed as directed by the CM.
- b. Provide a level pad for the mockup noted below and included as part of this addendum; location will be directed by the CM.

# 3. Changes and Clarifications to Trade Category TC-05 Concrete

- a. The tower crane, as referenced in Section A. General, item 30, including letters a through j under the General Trades Scope Description is to be provided by TC-05 Concrete.
- b. This Contractor at their discretion can utilize an SK315 in lieu of the SK415 as noted in the scope description. This crane will need to include safety features to account for the power lines surrounding the project limits as part of their safety plan. Final placement of the tower crane may be adjusted slightly in the north/south direction slightly from what is shown if necessary.
- c. This Contractor should assume coordination with Kentucky Utilities to protect the power lines with jacketing directly adjacent to the site.
- d. Foundation (Under slab) Drains including all drain tile, gravel, filter fabric, and connections as shown in this Addendum Item 5.03, is to be provided as part of TC-05 Concrete. This information will be provided on the model, include the coordination utilizing BIM Modeling resources to coordinate this with other underground utilities.

e. See the notes below regarding angles noted in the project documents. This trade contractor is to receive delivery and install these additional angles and are not to be included in the quantity of embeds provided in the Q&A response.

# 4. Changes and Clarifications to Trade Category TC-07 Steel

- a. Include additional galvanized angle shown cast in the wall on sheet 511 of this addendum Item 5.16. These are to be delivered to the site for installation by TC-05.
- b. The angles shown in the columns at the dumpster enclosure (2 columns) shown in detail on 9/S5.50 are to be provided by this subcontractor and installed by TC-05.

### 5. Changes and Clarification to Trade Contract TC-21 Electric

- a. TC 21 in addition to the requirements noted in the project documents in providing power to the tower crane, is to make (& disconnect) the electrical connection of the tower crane to the power source. The crane erection & dismantlement of the crane will be on a weekend.
- b. A remote fill station will be provided with the generator, see the cut sheet & wiring diagram contained within this addendum. This contractor is to include the additional power, low voltage wiring / termination, and coordination with Boyd/Cat & TC-22 to provide a complete and operational system.
- c. Duct detector noted in this addendum will be provided by Newtech, raceway and coordination is to be included as shown in the documents by this contractor.
- d. Reference Specification Section 271300, PART 3 EXECUTION, 3.01 CABLE SCHEDULE, ITEM A & B THESE SECTIONS ARE TO BE REMOVED and not included in this scope.

# 6. Changes and Clarifications to Trade Contract TC-22 Mechanical

- a. A remote fill station will be provided with the generator, see the cut sheet for this equipment contained within this addendum. This contractor is to install this devise along with the necessary fuel lines, piping, penetrations in concrete, and coordination with Boyd/Cat & TC-21 to provide a complete and operational system.
- b. Duct detector noted in this addendum will be provided by Newtech, installation in the duct work and coordination is to be included as shown in the documents by this contractor.

### General:

• UK has agreed to an additional 25 parking spaces on the upper deck of UKPS8 for purchase. Passes cost \$63 per month. These passes will be purchased directly through UK Parking, will be assigned

to a single license plate, and distributed at the CMs discretion. TC-05 Concrete will have the ability to purchase up to 20 of these passes when fully staffed on site.

- Add the omitted Section 002413 General Scopes of work Applicable to All Trades.
- With the addition of under slab foundation drains in this addendum, coordination of under slab utilities will be needed. Any trade having under slab utilities shall include time for the BIM Coordination of these, a model will be provided by the design team for this coordination, and it will be led by Messer.
- Mock Up Item No 5.30
  - All trades are to review and include any applicable work associated with their scope in this mockup. TC-02 is to create a level pad for this mockup & TC-05 is to provide the concrete. Given the lead times of materials and approvals for these items, time is of the essence and this work is to begin as soon as feasible. Additional mobilizations for coordination, installation, quality and reviews to complete this work should be included by all trades involved.

**END OF ADDENDUM NO. 5.00** 

	Question #		Responder	Response
		I reviewed this project and noticed that there was not a section for the DDC Control system in the specification book. There is a control system matrix and control drawings (IC) in the plan section. Will the specification be added by addendum and be part of the TC-20 Mechanical bid package or will this		
/29/2023	1.	be bid out separately at a later date?	KFI	The specifications section will be inlcuded in this addendum.
		In reviewing the plans for this project I see that the JACE and FX80 JACE are acceptable tier 1 controllers. Could we get the Johnson Controls SNE		
	2.	controller listed as an acceptable Tier 1 controller? This is in reference to drawing page IC-350.  Can RIW Ornamental Metal, Inc. be added to the list of approved manufactures for Section 057313 - Glazed Decorative Metal Railings? We are currently	KFI	We will list the Johnson Controls SNE controller as an acceptable tier 1 controller.
		producing the same product for the UK Coliseum Renovation and UK Jacob Science Renovation projects. Over the years, we have also done many similar		
	3.	projects across the UK campus. Please advise.	JRA	RIW is acceptable.
		Section 057000 - Decorative Metal list only the corner guards under the scope, but reference the materials and finish for Stainless Steel Roof Stacks.		
		Please confirm the SS Roof Stacks are not part of the Parking Structure 8 project. We are providing this item for the Jacobs Science Center project, but I don't think there are any featured on the Parking Structure so maybe the specs simply have some extra pages included from the other project. Please		
	4.	oon t trink there are any teatured on the Parking Structure so mayoe the specs simply have some extra pages included from the other project. Please advise	JRA	SS Roof Stacks are not part of the project scope.
	-	Is structural glass guardrail required per code next to the curtain wall at column line A of the Office North Stair S1? It is shown next to the adiacent	****	
		curtain wall on this stair at column line B3 on the ground tier level in Detail A/A-522A, but I am not finding it at the column line A curtain wall in any of		
		the drawings. Also, is the SS handrail continuous around the landings of this stair? Detail B/A-522A appears to show it at the lower intermediate and		Structural glass railing is not needed along column line A, it is needed at column line B.3 as shown Reference detail A/A-522A. The handrail is to be continuous at landings only where shown. Also, pla
	5.	2nd tier landings, but not at the upper intermediate and 3rd tier landings. Please advise.	JRA	note that the handrails at the office north monumental stair are coated aluminum, not SS. Ref. H/A-
		Atlas would like to bid on the Hollow Metal Doors and Frames (081113) for the project referenced above. Please see the attached Request for		
		Manufacturer Substitution for our preferred manufacturers, along with product data and a project resume. If you need any additional information,		
	6.	please let me know.  The Parking Garage Elevator has limited clear overhead of 12'-8" and our current manufacturers require 15'-6" to the underside of the beam. Is it	JRA	No issues with this substitution. See revised Specification  Overhead clearance was established per performance criteria of the basis of design. The overhead w
	7.	possible to increase the overhead of the shaft in order to qualify to bid this project?	JRA	change at this time.
		The Parking Garage Elevator is specified to have a contract speed of 150 FPM, whereas the existing elevators in the Parking Structure are currently rated		
	8.	for 200 FPM and there is no cost difference in equipment. We are needing clarification on which speed to bid at?	JRA	Keep at 150 per specifications.
		Both the Parking Garage Elevator and the Office Addition Elevator do not have an Elevator Control Room and our manufacturer requires a Room for each elevator at the top landing 6'-0" wide x 6'-0" deep with a 3'-0" wide x 7'-0" door opening for the elevator controller, electrical, HVAC, and Fire Alarm		Performance criteria per basis-of-design allows for control panels, which have been identified in t
	9.	devices and the devices required by code. Can this be added to the design?	JRA	drawings. An enclosed control room at the top landing have not been integrated into the drawing
		We respectively submit the following for clarification:		
		Section A – General		
		Items 1,2,5,6 are listed. What are items 3 and 4?	Messer	For TC-04 Drilled Piers Scope of Work description, the numbering under section 'A. General' is misnumbered, there is no items 3 nor 4.
			iviesser	misnumbered, there is no items 3 nor 4.  For TC-04 Drilled Piers - Yes, layout and as-builts for the drilled Piers is to be provided by this scope
		Item 8 - Please clarify that individual layout of the drilled piers and as-builts are by this trade contractor, control by others.	Messer	work. Control will be provided by TC-01 General Trades.
		Item 10 - For clarification, if Alternate 1 is approved, 1 drill rig for Alternate 1 and one drill rig for Base Bid.		TC-04 Drilled Piers - Yes, an additional drill rig is to be provided with the alternate. Base Bid will rec
		Item 12 – Existing utilities are removed and backfilled with Gravel. Can the engineer over-lay the existing utilities to be removed on the	Messer	adequate drill rigs to meet the project schedule.  An overlay of the drilled piers and detention basin is shown on the detention drawings. Existing util
		structural drawings:		are shown in the contract documents.
		Section B – Protection		
		Item 1 specifies pea gravel backfill. Will #57 stone be acceptable for backfilling due to availability of material?	Messer	For TC-04 Drilled Piers - Washed #9 stone is an acceptable alternate for pea gravel and is available th a local quarry.
		Item 2 – New Underground Detention Basin. Structure will be backfilled with compacted sand. Please provide an over-lay of the		
		excavation limits for the installation of the structure to the structural drawings so we can determine the impact. Also, can the new		Backfill shall remain compacted sand. Overlay of piers and underground storage system is shown on and L306. There is 12" separation from the edge of the drilled pier to the slab edge of the detention
		structure be backfilled with a compacted dense grade material in lieu of sand? Also, what is the designed support weights of the new		(1'-8" from the walls of the basin) at the closest points. The underground storage system is capabl
	10.	structure since the documents state they cannot support the weight of a drill rig and/or concrete trucks?	Element/Messer	achieving HS-20 loading with proper backfill and coverage.
		Section C – Description of Concrete Foundations Work		
		Item 3 – Excavation is Unclassified. We assume that the unclassified excavation is from subgrade to bottom of drilled pier as stated on the		Reference Item 5.06 clarifing estimated bearing lenghts and extents of drilled piers. Excavation is
		structural drawings. Please confirm. Also, Per Sheet S-100, detail 4, indicates a minimum rock socket of 10' is required. Does this include Weathered Rock?		unclassified from subgrade to bottom of drilled pier elevation shown. Any revisions to the drilled p
			Messer/Walker	length directed by the geotech of record will be addressed utilizing the unit prices provided on bid for
		Item 8 – Please provide the LFUCG requirements for dewatering for the site.  Other Items	Element	Refer to section 11.5.9 Construction Dewatering, of the LFUCG stormwater manual.
		Please provide a schedule for bidding purposes.	Messer	Schedule was provided in Addendum #3.
		Please provide the geotechnical report for the project.	Messer	Geotech Report was provided in Addendum #3.
		Can the bid form, Unit Prices be changed from Cy / Diameter to Lf / Diameter?	Messer	No, CY will be utilized for the unit price measure.
		With the removal of utilities, installation of utilities, and the backfill requirements, a unit price for permanent casing / diameter needs to be added to the list of unit prices in the event casing cannot be removed during concrete placement.	Messer	Agreed, a revised bid form including casings for each diameter is attached for TC-04 Drilled Piers
				The tower crane will be located on the pour strip, approximately 20' South of column line 'C'; refere
		Please overlay an approximate location of the tower crane on the structural drawings.	Messer	sheet S-103 (tower crane will be moved south of C on pour strip)
		Contract documents state a 12% diversity and a 10% diversity. Please clarify.  Sheet S-100. note 12 states "drilled pier bearing elevations are to be below base of detention vault system". What is the bottom of	Messer	12% diversity inclusion is the goal.
		detention vault and do the elevations on the plans reflect note 12?	Walker	The bottom of the detention basin is approximately 954', see civil drawings.
		Is guardrail required per code next to the curtain walls at both the NW & SW Tower stair intermediate landings? Guardrail is shown on the switchback		The guardrail is not required at the plan west side of the curtainwall where the landing closes the
		stairs and at each tier level landing next to the curtain wall per A-551 and A-552, but I am not finding it at the intermediate landings next to the same		between the stair and the curtainwall. The horizontal mullions provide the guard. The location of
	11.	curtain wall. Please advise.  Reference the Mild Concrete Beam and Girder Schedule on S-530. Note that the remarks for MB-03 references detail #6/S-541. Should this remark refer	JRA	guard rail is shown correctly on the drawings referenced.
			Walker	Yes, the reference will be changed.
	12.	to 5/S-541 instead?		
	12.	to 5/S-541 instead?  Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will		
	12. 13.		Walker	
		Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will		It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A
		Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.		It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2° insulation, but the key
	13.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the	Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A
	13.	Reference detail #4/5-420. Note the detail reference for 17/5-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the zarage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/5-510 and 8,11,16/18/5-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings 5-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/5-101 shows a concrete dimensioned 2"-10" minimum and cmula bow. A-111 calls out	Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2* insulation, but the key
	13.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the	Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2* insulation, but the key
	13.	Reference detail #4/5-420. Note the detail reference for 17/5-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/5-510 and 8,11,16/18/5-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings 5-101 and A-111 regarding the walls at the IDF. Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these correcte valles Note that section 4/5-101 shows a concrete dimensioned 2"-10" minimum and crum above. A-111 calls out wall type M8/6 (concrete wall and no mention of crum above). Additionally, section 8/3/5-104 bows crum wall only. A-111 at the same location again calls	Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2° insulation, but the key misidentifies this as 3°. This will be corrected by addendum. Refer to revised sheet A-621
	13. 14. 15.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g.  P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A (concrete walls and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A (concrete walls and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A (concrete walls for the same should be added to th	Walker JRA Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/5-511. Wash will be removed on Detail 3/5-511 to:
	13.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the aarage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section #8/S-101 shows cmu wall only. A-111 at the same location again calls out vall type M8A.  Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level. What are the Wash requirements at the slab on grade level?	Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.
	13. 14. 15.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the parages slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings 5-101 and A-111 regarding the walls at the IDF. Electrical and Supply rooms. Can a clarification be provided to helps understand the eatent and helpit of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A. Concrete wall and no mention of cmu above). Additionally, section 8/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A.  Reference the Ground Tier Plan on 5-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level. What are the Wash requirements at the slab on grade level?  Reference plan 5-102 and section #11/S-531. Note that per 5-102, the slab left of column line #61 is shown at -1°-2" to -1°-3" at the Roof Drain along	Walker JRA Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2° insulation, but the key misidentifies this as 3°. This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to:
	13. 14. 15.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g.  P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A (concrete vall and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A. Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of these sections indicate Washes to occur at the slab on grade level?  Reference plan S-102 and section #11/S-531. Note that per S-102, the slab left of column line #G1 is shown at -1'-2" to -1'-3" at the Roof Drain along column line. Co text all 11/S-531 shows these two slab similar in	Walker JRA Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2° insulation, but the key misidentifies this as 3°. This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to:
	13. 14. 15.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the aarage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete walls on the section of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out vall type M8A.  Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level. What are the detail requirements at the slab on grade level?  Reference plan S-102 and section #11/S-531. Note that per S-102, the slab left of column line. #601 is shown at -1'-2" to -1'-3" at the Roof Drain along column line. Note that the top of slab will be below the bottom of the Garage Slab to Column line. Column line Column	Walker JRA Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/5-511. Wash will be removed on Detail 3/5-511 to:
	13. 14. 15. 16.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings 5-101 and A-111 regarding the walls at the IDF. Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section 8/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A. Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level. What are the blass has requirements at the slab on grade level?  Reference plan 5-102 and section 81/S-531. Note that per S-102, the slab left of column line 8G1 is shown at -11-2" to -11-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab at column line C. Detail 11/S-531 shows these two slab similar in elevation. What are the detail requirements for the slab left of column line 8O1 is shown along column line 8O2. Per 6/S-541	Walker JRA Walker Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 21 insulation, but the key misidentifies this as 31. This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to the plan.  The slab is continuous from the west face of the canopy to Grid G4.
	13. 14. 15. 16.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings S-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A.  Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level?  Reference plan S-102 and section #11/S-531. Note that per S-102, the slab left of column line. B(1 is shown at -1'-2" to -1'-3" at the Roof Drain along column line. Note that the top of also will be level to column line. C. Detail 11/S-531 shows these two slab similar in elevation. What are the detail requirements for the slab left of column line C to attach to the Garage Slab or Beam?  Reference detail #4/S-410 and further referenced detail #6/S-541. Per 4/S-410 the beam 803 (16" x 36") is shown along column line #62. Per 6/S-541 this same beam is shown as 2 diversed. Which is correct? Please clarity.	Walker JRA Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 21 insulation, but the key misidentifies this as 31. This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to 1  the plan.
	13. 14. 15. 16.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,Q/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings 5-101 and A-111 regarding the walls at the IDF. Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8A (concrete wall and no mention of cmu above). Additionally, section 8/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8A. Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level. What are the blass has requirements at the slab on grade level?  Reference plan 5-102 and section 81/S-531. Note that per S-102, the slab left of column line 8G1 is shown at -11-2" to -11-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab at column line C. Detail 11/S-531 shows these two slab similar in elevation. What are the detail requirements for the slab left of column line 8O1 is shown along column line 8O2. Per 6/S-541	Walker JRA Walker Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to r the plan.  The slab is continuous from the west face of the canopy to Grid G4.
	13. 14. 15. 16.	Reference detail #4/5-420. Note the detail reference for 17/5-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/5-510 and 8,11,16/18/5-570. Also, reference Architectural Details e.g. P,0/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings-5-101 and A-11 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and helpit of these concrete walls? Note that section 4/5-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type MBA.  Reference the Ground Tier Plan on 5-101 and related sections e.g. section 4/5-101, etc. Several of these sections indicate Washes to occur at the slab on grade level and refers back to the plans. We find Washes indicated on the upper floor plans but not on the slab on grade level?  Reference plan 5-102 and sections #115/5-531. Note that per 5-102, the slab left of column line #G1 is shown at 1"-2" to 1"-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab at column line C. Detail 11/5-531 shows these two slab similar in elevation. What are the detail engurements for the slab left of column line C. Shown also Ream?  Reference detail #4/5-410 and further referenced detail #6/5-541. Per 4/5-410 the beam Bo3 (16" x 36") is shown along column line #G2. Per 6/5-541 this same beam is shown as 24" wide. Which is correct? Please clarify.	Walker JRA Walker Walker Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to 1  the plan.  The slab is continuous from the west face of the canopy to Grid G4.  The beam thickens at the stair to include a ledge to support the stair slabs.  Location of blockout and Sheet Note will be added to S-101.
	13. 14. 15. 16.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g.  P.QIA-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings-5-101 and A-11 regarding the walls at the IDF. Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and helpit of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type MBA.  Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of these sections indicate Washes to occur at the slab on grade level and refers back to the plans. We find Washes indicated on the upper floor plans but not on the slab on grade level?  Reference plan 5-102 and sections #1X/S-531. Note that per S-102, the slab left of column line #G1 is shown at -1*-2" to -1*-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab at column line C. Detail 11/S-531 shows these two slab similar in elevation. What are the detail enguirements for the slab left of column line C to attach to the Garage Slab or Beam?  Reference plans 24" wide. Which is correct? Please clarify.  Reference detail #4/S-410 and further referenced detail #6/S-541. Per 4/S-410 the beam Bo3 (16" x 36") is shown along column line #G2. Per 6/S-541 this same beam is shown at 24" wide. Which is correct? Please clarify.  Reference detail #4/S-535. Are there similar requirements for the slab on grade box out for Tower Crane that need to be included? e.g.—Slab Box Out, Knee Walls, etc.	Walker JRA Walker Walker Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to r the plan.  The slab is continuous from the west face of the canopy to Grid G4.  The beam thickens at the stair to include a ledge to support the stair slabs.  Location of blockout and Sheet Note will be added to S-101.  These are the only (2) locations on S-103 requiring this detail. However, Sheet Note 11 on S-103 note information shown on this sheet (S-103) is typical for all supported levels- thus arrything shown on
	13. 14. 15. 16.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the parages alabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g. P,0/A-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings-5-101 and A-111 regarding the walls at the IDF, Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and height of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type M8d. Concrete wall and no mention of cmu above). Additionally, section #3/S-101 shows cmu wall only. A-111 at the same location again calls out wall type M8d. Network of the control of the section and the same location again calls out wall type M8d. Reference the Ground Tier Plan on 5-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level and refers back to the plans. We find Washes indicated on the upper floor plans but not on the slab on grade level. What are the Wash requirements at the slab on grade level?  Reference the Ground Tier Plan on 5-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level. What are the Wash requirements are the slab on grade level?  Reference plan 5-102 and section #11/S-531. Note that per 5-102, the slab left of column line #61 is shown at -1'-2" to -1'-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab or Bean?  Reference detail #4/S-410 and further referenced detail #6/S-541. Per 4/S-410 the beam 803 (16" x 36") is shown along column line #62.	Walker JRA Walker Walker Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A.  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to n the plan.  The slab is continuous from the west face of the canopy to Grid G4.  The beam thickens at the stair to include a ledge to support the stair slabs.  Location of blockout and Sheet Note will be added to S-101.  These are the only (2) locations on S-103 requiring this detail. However, Sheet Note 11 on S-103 note information shown on this sheet (S-103) is typical for all supported levels - thus anything shown on sheet shall apply to all supported levels - therefore the Detail JS-533 callous hyphing shown on sheet shall apply to all supported levels - therefore the Detail JS-533 callous the properties of the same than the plans of the same than the plans of
	13. 14. 15. 16.	Reference detail #4/S-420. Note the detail reference for 17/S-540 next to the column at G1/D.7. Is this correct? Note that the intermediate landings will not align with the garage slabs.  Reference structural details regarding the elevator insulated walls e.g. 13,15,16/S-510 and 8,11,16/18/S-570. Also, reference Architectural Details e.g.  P.QIA-621. Per the structural details insulation is 2" thick and per the architectural details insulation is 3" thick. Which is correct?  Reference drawings-5-101 and A-11 regarding the walls at the IDF. Electrical and Supply rooms. Can a clarification be provided to helps understand the extent and helpit of these concrete walls? Note that section 4/S-101 shows a concrete dimensioned 2"-10" minimum and cmu above. A-111 calls out wall type MBA.  Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of these sections indicate Washes to occur at the slab on grade level and refers back to the plans. We find Washes indicated on the upper floor plans but not on the slab on grade level?  Reference plan 5-102 and sections #1X/S-531. Note that per S-102, the slab left of column line #G1 is shown at -1*-2" to -1*-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab at column line C. Detail 11/S-531 shows these two slab similar in elevation. What are the detail enguirements for the slab left of column line C to attach to the Garage Slab or Beam?  Reference plans 24" wide. Which is correct? Please clarify.  Reference detail #4/S-410 and further referenced detail #6/S-541. Per 4/S-410 the beam Bo3 (16" x 36") is shown along column line #G2. Per 6/S-541 this same beam is shown at 24" wide. Which is correct? Please clarify.  Reference detail #4/S-535. Are there similar requirements for the slab on grade box out for Tower Crane that need to be included? e.g.—Slab Box Out, Knee Walls, etc.	Walker JRA Walker Walker Walker Walker	It is correct. The intermediate landing and dowel is dashed in and indicated to apply only at 17A  Details P, Q/A-621 are inconsistent with the drawings. The drawings show 2" insulation, but the key misidentifies this as 3". This will be corrected by addendum. Refer to revised sheet A-621  Wall height and material type shall be as shown on Structural Drawings.  Washes will be added on plans to match Detail 1/S-511. Wash will be removed on Detail 3/S-511 to r the plan.  The slab is continuous from the west face of the canopy to Grid G4.  The beam thickens at the stair to include a ledge to support the stair slabs.  Location of blockout and Sheet Note will be added to S-101.  These are the only (2) locations on S-103 requiring this detail. However, Sheet Note 11 on S-103 note information shown on this sheet (S-103) is typical for all supported levels- thus arrything shown on

21.	Reference drawing 5-103. Note the detail references at the NW Stair 7/5-541, 4/5-410 and further referenced 6/5-541. Note how details 68:7/5-541 are both referenced for the stair slab to garage slab detail along column line G2. Which detail is correct for this location?	Walker	Section 7/S-541 is incorrectly cut on S-103 and will be removed from the Drawing.
	Which trade contractor is responsible for installing rebar templates and required column dowels in the tops of caissons?		TC-04 Drilled Piers is responsible for supplying & installing column does that are cast into drilled piers.
22. 23.	Reference detail #7/SD104. Which Trade Contractor is responsible for the slab replacements per this detail?	Messer Messer	Any other resteel required or shown are to be drilled and epoxied by TC-05 concrete. TC-01 General Trades is responsible for the slab pour backs & islands in the existing garage.
24.	Reference detail #2/SD101. Are there any replacement requirements to be included for the two island areas that are being removed in this detail?	Walker	An infill slab will be required per Note 1 provided within the Detail. See 3/SD104. TC-01 is replacing this slab.
	Reference detail #1/SD101 and associated slab replacement plan 7/SD104. Note that the slab replacement plan does not match the slabs being removed. e.g. per SD101 approach slabs are shown to be removed where section #7/SD103 is referred to along column line #X1. We do not find an		1/SD101 includes blow-up plan 3/SD101. Slab replacement Detail 7/SD-104 shows replacement of demolished concrete on 3/SD101. Approach slabs along Grid XI will be replaced by the new garage slab
25.	associated slab replacement plan for these locations. What are the replacement requirements and extents if any?	Walker	on grade shown on S-101. Replacement details are cut on this plan (Ref: 5/S-511).
26.	Can an Alternate Specification be provided that clarifies the division between Base Bid and Alternates?	Messer	See section 012300 ALTERNATES, section 3.1
	Reference TC01 scope of work item #A. General - 30H, first sentence. Please confirm this sentence should read "The tower crane will be utilized as the		This note is correct - Scope of work is to be revised to read 'the tower crane will be utilized as the primary
27.	primary means of hoisting for TCOS". In lieu of "will not".	Messer	means of hoisting for TC05. 'Scope of work for tower crane is changed in this addendum from TC01 to TC05.
	Reference TCO5 scope of work item #A. Summary of Trade Category Work #8. Can sizes and counts of embeds required by other contractors be		TC05 shall assume the layout and installation of 100 embeds (50 base bid, 50 alternate 1), provided by
18.	provided? If not, can an allowance and Unit prices be established?	Messer	others, at a unit price that will reviewed with the successful contractor at the post bid review. This does not include any work such as the coil rod supports, specifically required by this scope of work.
	Reference TCO5 scope of work item #A. Summary of Trade Category Work #10. Please clarify TCO5 requirements for BIM Coordination. Is the building		The model will be provided to the construction team for coordination. The specific coordination for TCOS
29.	frame model provided by others?	Messer	is the necessary coordination of reinforcement & PT adjustments needed with other trades.
	Reference TCOS scope of work item #A. Summary of Trade Category Work #27. Note that the structural details at the existing garage for Levels 2,3 &7 do not show the Haunch per I/S-541. These floor reference detail #2/S-541 instead. Which is the correct detail to follow where the structural slab meets the existing garage at levels 2,3 &87?		Drawings are correct, the scope of TCOS should not include the haunch at levels 2,3,7. TCO1 should include scoring and removing concrete as shown on existing garage to receive the expansion joint in lieu of the redirecting called for on the haunch detail. The remaining floors are to receive the haunch as shown and described ion the scope of work. TCO1 is to provide the scoring and removal of concrete at the column
30.		Messer	locations of the existing garage at the floors with a haunch.
	Reference drawing S-100. We do not find footing and grade beam step locations. e.g. What are the stepping requirements for the Grade Beams and		
1.	Footings meeting the foundations along column line 84, etc.?  Reference TCOS sow item #A-10, regarding the 20 – 12" x 12" openings. Can additional information and details be provided to better understand what is	Walker	Footings do not step along Grid B4. The top of foundation elevation at Grid G1-D will be revised to 961-0" There will be no opening or box outs required at these locations, this note implies that 12"x12" areas will be free of PT cables and resteel so that the owner has options for coring the slab for future fit out of this
2.	required for these openings?	Messer	space.  Typical column section is (8) bars total with (2) bars per corner. The lower section of column requires (12)
3.	Reference Columns #C4, C4A and C5's in the schedule per drawing #5-550. Note that the top diagram depicts 12 vertical bars but the call out to the right calls out a total of 8 verticals. Can a clarification be provided?	Walker	bars total with (3) bars per corner. The 3rd bar at each corner will drop off above the 2nd Tier. Additional vertical bars will be shown on elevation sketch of column C5.
	Additionally, Column #C8 depicts 12 verticals but eh call out to the right calls out a total of 8.	Walker	Plan view will be modified to show (8) bars. Additionally, the elevation view of column C9 will be updated
34.	Reference detail #9/S-550 and the drawings regarding the Corner Guard shown. We are not finding any callout notes on the plans indicating where	Walker	accordingly.
5.	here else used in any 2000 in the culturing strept runs, the culture duals allows. We are in unliming any culture links of the plants inducting where these Corner Guards are required. Can a clarification be provided to understand where these are required if any?  I've got a few questions from Jerico on the glass rail at the monumental stair. The big thing is if they can use an approved alternate manufacturer.	Walker	Note will be added to 1/S-450 to identify applicable locations.
6.	Otherwise it's just confirming the finish & glass panels.		See response in Item 37.
7.	Manufacturer (par2.2) - The specs note for it to be manufactured by Hollaender or an approved equivalent. Jerico uses CRL, which is C.R. Lawrence. I'm not sure what could really differ other than the shoe maybe? Which leads to the next question.	JRA	CRL is an appropriate equivalent
· .	not sure what count reany unine runer than the stole mayor winter heads to the least question.  Base shoe [par2.7]: I've attached a cut sheet for what Jerico provides through CRL. I was having a hard time finding that Hollaender product listed, but I	JAA	CKE is an appropriate equivalent
8.	can't imagine it being much different from this. Can we confirm that this will be an acceptable alternative?  Stainless Finish (par 2.8): Can you please confirm which finish they would like? Paragraph 2.8 notes several different finishes. Jerico had the #4 brushed	JRA	Cut sheet is not attached
9.	satin finish included, and we assume that's what they wanted since it is the standard, but wanted to confirm. #8 polished (mirror finish) that they have listed in there would be a much more expensive finish.  Glass infill panel (par 2.11): We had included the 9/16' tempered laminated glass (clear). Can you confirm if it should be clear or tinted? Please provide	JRA	The specification lists many options, but the drawings call for a powder coat finish to match the surrounding curtain wall. The aluminum finish should match the curtain wall.
10.	tint if it is to be tinted.	JRA	The glass will be clear, this will be changed via addendum and reissue to specification
	Section 057313, subsection 2.11, paragraph B calls out the glass infill panels for the railing on the North Office Stair as 9/16"thick tempered laminated glass with a gray tint. Double checking, please confirm the glass is tinted gray not the PVB interlayer. I do not see this detail in the drawing Finish Legend for this stair. Do you want the Smoke Baffle plass on the same stair tinted gray to match? Please advise.		
1.	Reference detail #G/A-621. Note the steel angle shown in this detail. We do not find this angle shown on structural. What are the detail requirements	JRA	See response above
12.	and extents of this angle?	JRA	This steel embed has been removed from the scope. Refer to reissued drawing sheets
3.	Reference detail #A/A-556, B/A557 and the structural drawings. Note the short concrete walls to the left of column line #G2 (per A-556). These walls are not found detailed on the structural drawings. What are the requirements and extents for these walls?	JRA	The drawings have been corrected to delete extraneous details. The walls in question are not part of the scope. Refer to reissued drawing sheets.
14.	Reference drawing #A-111, detail #D/A-531 referenced along column line #A and the structural drawings. Note the embed angle detailed in D/A-531.  We do not find this angled detailed on the structural drawings. What are the detail requirements and extents of this angle?	Walker	Embed angle added to detail with "4A" designation. Wall section cut has been updated to 4A on S-101 to indicate location of applicability.
4.		waiker	Top of CMU wall condition is show as Detail 8/S-540. Multiple details refer back to this detail. Note:
5.	Reference the structural drawings. What are the structural requirements for tops of cmu walls where they meet structural concrete slabs?	Walker	reference will be corrected on Detail 3/S-101. Foundation drains will be further defined in Addendum. See added Sheet L307 for underslab
	Reference detail #5/S-510. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the Foundation Drain. We do not find the Foundation Drains indicated on the Plumbing Drawings. Can a clarification be provided that clearly defines where		drain requirements.
6.	drainage stone, filter fabric and foundation drains are required, included the size requirements for the foundation drains?	Walker/Element	
	Reference wall detail #1 on S-511. At the bottom of the wall is a note that reads "(2) #5 CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels		Intent is for these bars to be anchored into the foundations. At the contractor's option, this can be done using the continuous bar, a secondary dowel cast into the foundation, or a post-installed dowel using
٠.	be drilled into the drilled pier or that #5 dowels be extended from the drilled piers?	Walker	using the continuous bar, a secondary dowel cast into the foundation, or a post-installed dowel using epoxy (Hilti HY-200 or approved equivalent).
3.	If these dowels are to be drilled, then how deep, etc.?	Walker	Bar shall extend into foundation a minimum of 1'-7".
).	Reference wall detail #1 on S-S11. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?	Messer	TC-04 Drilled Piers will install column dowels in the drilled piers, the #5 dowels referenced in this detail are to be drilled and epoxied by TC-05 Concrete.
	Reference TCO2 scope of work item #8-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5' above the required subgrade. Requiring additional excavation by TCOS.		TCO2 Earthwork is to provide a finished grade 1' below finished floor, which includes gravel as described in SOW, for the areas contained with the Office Alternate 1. The remaining gravel and final grading for the SOG is to be by TC-05 Concrete.
0.		Messer/Element	
	Reference drawing S-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.	,	All non-hatched caissons and foundations are to be constructed as part of the base bid. The column dowels shall also be provided for all columns shown on S-100. Columns for the office building are not part of the
1.		Walker	base bid.
i2.	Reception Desk at Lobby 300, detail P/A-561A looks to show the Desk away from the east & south walls, section 1/A-561A, just shows a %" panel at backside making me think it hits the wall since it doesn't call out to receive quartz or show a knee wall, please darify?	JRA	The plan East side of the reception desk should run to the wall as in detail J/A-561A. The model is incorrect on view P/A-561A. Refer to reissued sheet A-561A for more information. Yes, the casework shown on Elevation P/A-422A will need finished back panels and end panels. Reference
- 2	Elevation P/A-422A, since these cabinets are stand alone, do we need to provide finished back panels, section N doesn't show this?	10.4	G-101, "General Notes - Casework" note A, which requires finished ends at all exposed surfaces in addition
i3.	Specs call for QS bleached walnut panels, but base is called to be rift sawn white maple, is this correct?	JRA JRA	to the keynotes shown. Bleached guarter
J*4.		AM	Per the finish schedule and specification, the panels WDV-1 and wood base B-2 will be stained to match
55. 56.	Do panels & base receive a clear finish or are we matching a stain sample?  Are trash grommets a drop in stainless steel?	JRA JRA	plastic laminate L-1, Wilsonart Uptown Walnut.  Yes.
٠		AM	tes.
57.	Casework base bid is only the new pay station shown at E & F/A-601? All other casework top, sill, panels are alternate, please clarify?	JRA	Correct. Only casework shown on drawings denoted with an "A" suffix (i.e. A-561"A") are alternate only.

	All casework & paneling in wall blocking is by general trades whether it shows the blocking on sections, this is needed for installation of cabinets to		
58.	walls?	JRA	Please reference the general notes on G-101
	4		* TC01 General Trades is to provide a laul and hoisting for materials of other trade contractors for the
59.	Will we be able to use the elevators to stage casework on the 3 <sup>rd</sup> floor?	Messer	Office Alternate 1.
60.	Do we know the height of the elevator cab to make sure we can get 9' panels in the cab?	JRA	Please coordinate with the elevator spec.
61.	Spec section 064116 2.2 H calls for locks on all door & drawer fronts, the casework elevations don't call for any locks, please clarify?	JRA	No locks on drawer or door fronts unless noted in the drawings.
	Most of casework sections call for melamine cabinet interiors behind door fronts, E/A-562A calls out laminate, please clarify melamine is for all cabinet		
62.	interiors behind door fronts?	JRA	Melamine is the intent for all cabinet interiors behind door or drawer fronts
	Our hardwood supplier said the rift sawn white maple is going to be hard to get, can we just provide hard or soft white maple? If you decide to go to		
63.	walnut, their will be sap & not all heart?	JRA	Bleached walnut is acceptable in lieu of white maple. Refer to revised specification 064023
	Please reference drawing sheet S-100. This depicts an office building alternate. Do only the drilled piers under the hatched footings get omitted for base		
64.	bid? Please provide clarity on which piers are to be included in base bid and which are part of the alternate.	Walker	All piers are to be constructed as part of base bid.
	Please reference drawing sheet S-100 detail 4. This references an estimated bearing depth. Please confirm if this depth is below the site grade at time of		
65.	drilling or from top of shaft (concrete elevation).	Messer	See revised drilled pier information on S-100 released in this addendum.
	Waltek Company, a custom curtain wall and ornamental metal manufacturer, is respectfully requesting to be added as an acceptable manufacturer for		
	Exterior Sun Control Device for the UK Parking Structure 8 – Expansion by addendum. Waltek has engineered, fabricated and installed many custom sun		
66.	control devises and ornamental louvers over its 45 plus year history.	JRA	The substitution is acceptable.
			TC21 is responsible for the demolition and turning the generator over to UK. TC-21 is to remove all fuel
	E-400 - note states that existing generator & feeder to be demolished. U-100 notes 3,4,5 - Generator to be relocated with existing circuits moved to new		from the generator once it is no longer needed, deliver to 1247 Versailles Rt, Lexington KY (Vaughan
	location shown. Is the existing generator to be demolished? Who is responsible for the demo and removal of existing generator?		Warehouse), unload and place in this warehouse as directed by UK (include the necessary equipment to
67.		Messer	off load, place and transport).
			Per the record drawings received, the existing feeder sizes are as follows:
	If existing generator is to be moved what are the circuits and size that needs to be moved?		* Gen-> Dist Panel is 2 sets of 3 #500MCM's & 1 #1/0 ground in 3" conduit
68.		KFI	* Gen auxilliaries are 20A, 120V circuits
69.	E-400 - Existing substation 016 & "LSDH1" - New breakers are required, Who is the manufacturer and panel type for existing gear?	KFI	GE GE
70.	Please provide manufacturer and panel type for existing panel "LNPL1" for new breakers to be added.	KFI	GE
	Noticed there are two shaft with a "TBD" depth. There is one DP2 and one DP2.5 shaft at columns A/B3.5 and A/G1. Can you ask what depth should we		
71.	assume these shafts for bidding purposes?	Walker	Will be updated in the addendum, see S-100 and S-430
	According to the finish schedule elevator E2 is being clad with wood paneling (WDV-1). Who is to provide this? Typically the elevator manufacturer is		
	responsible for the interior finishes, but I was unable to find anything confirming this in the spec or in the bid package description. Please advise.		The wood paneling shown in the elevator will be provided by the elevator contractor. The elevator
72.		JRA	specification is revised to reflect this.
	323113 Steel Louver Fences & Gates specifies a lightning protection system – is this to be incorporated by TC21 Electrical as part of 264113 as there		Gate grounding is not included in TC21. See revised Specification Section 323113 in this
73.	doesn't appear to be any mention of gates in this section.	Element	Addendum.
	Regarding the window film, the gradient film you chose comes in a 71" material. We will only be using 60" as a band, please confirm the gradient area		
	be at the top and we cut off the most opaque area at the bottom? Or would you prefer we cut off top and leave the most opaque area at the bottom?		
74.		JRA	Cut from the top and leave the most opaque area at the bottom.
	On A201A & A212A there is (2) hanging entry/exit signs per details & (1) sign by the storefront on 8/A211A, are these to be in the next bid package with		
75.	the remainder of the garage directional signage.		Yes, disregard these signs they will be included in the Bid Package 2.

### FOR THE PROJECT TITLED:

#### **PARKING STRUCTURE 8 EXPANSION**

University of Kentucky Lexington, Kentucky

To: Prospective Bidders

From: Walker Consultants

6602 E 75<sup>th</sup> Street, Ste 210 Indianapolis, Indiana 46250

Project Contacts: Tim Aldridge, P.E

The Addendum will form a part of the Contract Documents and modifies the original Bidding Documents dated April, 2023.

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

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

### **ITEM NO. 5.01**

Added sheet L307 Under Slab Drain Plan to sheet index on cover sheet G-001

#### **ITEM NO. 5.02**

Added sheet L307 Under Slab Drain Plan to list of drawings in specification 000115.

#### **ITEM NO. 5.03**

Added sheet L307 Under Slab Drain Plan further defining underslab drainage requirements.

#### **ITEM NO. 5.04**

Modified specification 322121- "Steel Louver Fences and Gates" as noted in regard to grounding.

#### **ITEM NO. 5.05**

Revised detail 1/SD103 to properly indicated location of new expansion joint header demolition.

## **ITEM NO. 5.06**

Clarified estimated bearing lengths and extents of drilled piers on S-100 as noted.

### **ITEM NO. 5.07**

Added sheet note 9 and plan designation defining tower crane blockout requirements for slab-on-grade on S-101

### **ITEM NO. 5.08**

Added concrete wash lines on plans to coordinate with section cuts on S-101 and S-102

### **ITEM NO. 5.09**

Revised top of CMU wall reference on 3/S-101.

### **ITEM NO. 5.10**

Modified section cuts along grid A as noted on S-101.

#### **ITEM NO. 5.11**

Removed reference to section cut 7/S-541 from NW corner of plan on S-103

#### **ITEM NO. 5.12**

Revised location of tower crane blockout on S-103 and S-104.

### **ITEM NO. 5.13**

Added bollard near NW stair on S-104.

#### **ITEM NO. 5.14**

Added bollard at top tier on S-410.

#### **ITEM NO. 5.15**

Updated drilled pier assumed lengths as noted on S-430

#### **ITEM NO. 5.16**

Added reference to column corner guards to 1/S-450.

#### **ITEM NO. 5.17**

Added galvanized support angle to top of wall on 4/S-511 and 8/S-511 as noted.

## **ITEM NO. 5.18**

Clarified epoxy requirement for dowels in 1/S-511

#### **ITEM NO. 5.19**

Removed reference to a concrete wash on 3/S-511

### **ITEM NO. 5.20**

Revised drilled pier estimated bearing depth as noted on S-420.

#### **ITEM NO. 5.21**

Revised remark to MB03 defining depth of tapered section in mild beam schedule on S-530.

#### **ITEM NO. 5.22**

Clarified length of traffic topping on alternate detail on 1/S-541.

# **ITEM NO. 5.23**

Clarified rebar requirements on column 'C5' on S-550.

# **ITEM NO. 5.24**

Refer to revised specification 081113 "Hollow Metal Doors and Frames." The following manufacturer was added to Section 2.1.A:

6. De La Fontaine

#### **ITEM NO. 5.25**

Refer to revised drawing sheet A-621, specifically changes to details P and Q, which clarify the insulation requirements for the garage elevator wall.

Detail G was amended to remove the steel embed which does not appear on the structural drawings.

#### **ITEM NO. 5.26**

Refer to revised specification 057313 "Glazed Metal Railing." The following manufacturer was added as an equivalent to Hollaender in section 2.2.A:

- 1. C.R. Laurence
- 2. RIW Metals

The specification also clarifies the cladding finish for the railing shoe in section 2.8.A to be powder coated aluminum to match the curtain wall finish.

Section 2.11.B clarifies the glazing at the structural glass guard rail to be untinted/clear.

### **ITEM NO. 5.27**

Refer to revised drawings sheets A-556 and A-557. Details A and B on each sheet have removed the graphics showing the short wall at the end of the main stair landing that was not present on the floor plans or structural drawings.

#### **ITEM NO. 5.28**

Refer to revised drawing sheet A-561A. Detail P clarifies the location and construction of the third floor reception desk at the office building.

#### **ITEM NO. 5.29**

Refer to revised specification 064023 "Interior Architectural Woodwork." Section 2.2.A.1. was changed to clarify quarter sawn select bleached walnut as the lumber trim for base B-2, to match the wood species for the wood wall paneling.

### **ITEM NO. 5.30**

Refer to revised specification 142100 "MRL Electric Traction Elevators." Section 2.6.B.3 has been changed to require wood laminate wall panels of the elevator provider.

## **ITEM NO. 5.31**

Refer to newly issued drawing sheet A-911. This sheet details the requirements for a mock-up panel. Refer to the site plan for location. This requirement supersedes the requirement for the panel mockup shown on drawing sheet A-212.

#### **ITEM NO. 5.32**

Refer to revised specification 107113 "Exterior Sun Control Devices." The following manufacturer was approved as an acceptable alternate:

1. Waltek Co.

#### **ITEM NO. 5.33**

Modified striping as noted on AG101-T

### **ITEM NO. 5.34**

Refer to Section Number: 23 0900 - Instrumentation and Control for HVAC Added Specification section.

### **ITEM NO. 5.35**

Refer to Sheet E-201A, E-202A, E-203A, E-204A: Heat detector removed in front of elevator door on each floor.

#### **ITEM NO. 5.36**

Refer to Sheet E-201A: Added 3/4" conduit and Three #12 wires from generator to oil fill station for monitoring.

Added coded note 29. Added coded note 30. "Provide connection to generator load center". Added coded note 31. "Route circuit to existing panel LOPL1".

#### **ITEM NO. 5.37**

Refer to Sheet E-204A: Elevator circuit changed to existing panel LODH1.

#### **ITEM NO. 5.38**

Refer to Sheet E-205: Panel 1EQL1 added in electric room. Elevator circuits changed to panel 1EQL1.

#### **ITEM NO. 5.39**

Refer to Sheet E-206: Elevator circuit changed to panel LODH1.

#### **ITEM NO. 5.40**

Refer to Sheet E-302: Added duct type smoke detector to AHU-1 return. Added note 21.

### **ITEM NO. 5.41**

Refer to Sheet E-400: ATS-EQ changed to Life Safety ATS. Added existing panel LOPL1 with new feeder to panel 1EQL1 located in the office.

#### **ITEM NO. 5.42**

Refer to Sheet E-401: Panel 4EQL1 removed. Panel 1EQL1 added.

#### **ITEM NO. 5.43**

Refer to Sheet E-402: Panel 1EQL1 schedule added. Panel schedule adjustments.

#### **ITEM NO. 5.44**

Refer to Sheet E-403: Panel schedule adjustments.

## **ITEM NO. 5.45**

Refer to Sheet E-404: Panel LODH1 schedule added.

# **ITEM NO. 5.46**

Refer to Sheet H-101: Added Remote Fill Station and associated coded note.

#### **ITEM NO. 5.47**

Refer to Sheet H-301: Removed "Emergency Generator and Day Tank Diagram" detail.

# **ATTACHMENTS:**

**Revised Drawings:** 

G-001

SD103

S-100

S-101

S-102

S-103

S-104

S-410

S-420

S-430

S-450

S-511

S-530

S-541

S-550

A-556

A-557

A-561A

A-621

A-911

AG101-T

E-201A

E-204A

E-205

E-206

E-302

E-400

E-401

E-402

E-403 E-404

L-+U+

H-101

H-301

# **Added Drawings**

L307

# **Revised Specifications:**

057313 "Glazed Metal Railings"

064023 "Interior Architectural Woodwork"

081113 "Hollow Metal Doors and Frames"

107113 "Exterior Sun Control Devices"

142100 "MRL Electric Traction Elevators"

323121 "Steel Louver Fences and Gates"

# **Added Specifications**

230900 "Instrumentation and Control for HVAC"

# Changes and Clarifications to Scope of Work

# 1. Changes and Clarifications to Trade Category TC-01 General Trades

- a. The tower crane, referenced in section A. General, Item 30, including letters a through j under the General Trades Scope Description is NOT to be provided by TC-01 General Trades.
- b. Removal of the tower crane from this scope of work does not elevate the need for rigging or certified riggers on any activities that utilize this crane. This contractor is still to provide temporary toilets with rigging to be placed and removed from the parking decks.
- c. Foundation Drains will not be provided by TC-01 General Trades.
- d. TC-01 General Trades is to purchase three (3) parking permits for use by the CM and two (2) parking permits for use of the craft personnel of this trade category for a total of five (5). These passes will be at the top level of PS8 and are \$63 per month. This contractor shall utilize these spaces in lieu of one space provided to this contractor indicated in the front ends.
- e. Include the removal and disposal of the mock up included as part of this addendum when directed to do so by the CM.

# 2. Changes and Clarification to TC02 Earthwork

- a. TC02 Earthwork is to provide four (4) 10'x5'x1" road plates to be left at the site for the duration of the project. These will be placed as directed by the CM.
- b. Provide a level pad for the mockup noted below and included as part of this addendum; location will be directed by the CM.

# 3. Changes and Clarifications to Trade Category TC-05 Concrete

- a. The tower crane, as referenced in Section A. General, item 30, including letters a through j under the General Trades Scope Description is to be provided by TC-05 Concrete.
- b. This Contractor at their discretion can utilize an SK315 in lieu of the SK415 as noted in the scope description. This crane will need to include safety features to account for the power lines surrounding the project limits as part of their safety plan. Final placement of the tower crane may be adjusted slightly in the north/south direction slightly from what is shown if necessary.
- c. This Contractor should assume coordination with Kentucky Utilities to protect the power lines with jacketing directly adjacent to the site.
- d. Foundation (Under slab) Drains including all drain tile, gravel, filter fabric, and connections as shown in this Addendum Item 5.03, is to be provided as part of TC-05 Concrete. This information will be provided on the model, include the coordination utilizing BIM Modeling resources to coordinate this with other underground utilities.

e. See the notes below regarding angles noted in the project documents. This trade contractor is to receive delivery and install these additional angles and are not to be included in the quantity of embeds provided in the Q&A response.

# 4. Changes and Clarifications to Trade Category TC-07 Steel

- a. Include additional galvanized angle shown cast in the wall on sheet 511 of this addendum Item 5.16. These are to be delivered to the site for installation by TC-05.
- b. The angles shown in the columns at the dumpster enclosure (2 columns) shown in detail on 9/S5.50 are to be provided by this subcontractor and installed by TC-05.

# 5. Changes and Clarification to Trade Contract TC-21 Electric

- a. TC 21 in addition to the requirements noted in the project documents in providing power to the tower crane, is to make (& disconnect) the electrical connection of the tower crane to the power source. The crane erection & dismantlement of the crane will be on a weekend.
- b. A remote fill station will be provided with the generator, see the cut sheet & wiring diagram contained within this addendum. This contractor is to include the additional power, low voltage wiring / termination, and coordination with Boyd/Cat & TC-22 to provide a complete and operational system.
- c. Duct detector noted in this addendum will be provided by Newtech, raceway and coordination is to be included as shown in the documents by this contractor.
- d. Reference Specification Section 271300, PART 3 EXECUTION, 3.01 CABLE SCHEDULE, ITEM A & B THESE SECTIONS ARE TO BE REMOVED and not included in this scope.

# 6. Changes and Clarifications to Trade Contract TC-22 Mechanical

- a. A remote fill station will be provided with the generator, see the cut sheet for this equipment contained within this addendum. This contractor is to install this devise along with the necessary fuel lines, piping, penetrations in concrete, and coordination with Boyd/Cat & TC-21 to provide a complete and operational system.
- b. Duct detector noted in this addendum will be provided by Newtech, installation in the duct work and coordination is to be included as shown in the documents by this contractor.

# General:

• UK has agreed to an additional 25 parking spaces on the upper deck of UKPS8 for purchase. Passes cost \$63 per month. These passes will be purchased directly through UK Parking, will be assigned

to a single license plate, and distributed at the CMs discretion. TC-05 Concrete will have the ability to purchase up to 20 of these passes when fully staffed on site.

- Add the omitted Section 002413 General Scopes of work Applicable to All Trades.
- With the addition of under slab foundation drains in this addendum, coordination of under slab utilities will be needed. Any trade having under slab utilities shall include time for the BIM Coordination of these, a model will be provided by the design team for this coordination, and it will be led by Messer.
- Mock Up Item No 5.30
  - All trades are to review and include any applicable work associated with their scope in this
    mockup. TC-02 is to create a level pad for this mockup & TC-05 is to provide the concrete.
    Given the lead times of materials and approvals for these items, time is of the essence and
    this work is to begin as soon as feasible. Additional mobilizations for coordination,
    installation, quality and reviews to complete this work should be included by all trades
    involved.

**END OF ADDENDUM NO. 5.00** 

Question #				
1	Question I reviewed this project and noticed that there was not a section for the DDC Control system in the specification book. There is a control system	Responder	Response	Commer
	matrix and control drawings (IC) in the plan section. Will the specification be added by addendum and be part of the TC-20 Mechanical bid package			
1.	or will this be bid out separately at a later date?	KFI	The specifications section will be inlouded in this addendum.	
2.	In reviewing the plans for this project I see that the JACE and FX80 JACE are acceptable tier 1 controllers. Could we get the Johnson Controls SNE controller listed as an acceptable Tier 1 controller? This is in reference to drawing page IC-350.	KFI	We will list the Johnson Controls SNE controller as an acceptable tier 1 controller.	
	Can RIW Ornamental Metal, Inc. be added to the list of approved manufactures for Section 057313 - Glazed Decorative Metal Railings? We are			
3.	currently producing the same product for the UK Coliseum Renovation and UK Jacob Science Renovation projects. Over the years, we have also done many similar projects across the UK campus. Please advise.	JRA	RIW is acceptable.	
J.	Section 057000 - Decorative Metal list only the corner guards under the scope, but reference the materials and finish for Stainless Steel Roof	JIVA	NW 15 deceptable.	
	Stacks. Please confirm the SS Roof Stacks are not part of the Parking Structure 8 project. We are providing this item for the Jacobs Science Center			
4.	project, but I don't think there are any featured on the Parking Structure so maybe the specs simply have some extra pages included from the other project. Please advise.	JRA	SS Roof Stacks are not part of the project scope.	
	Is structural glass guardrail required per code next to the curtain wall at column line A of the Office North Stair S1? It is shown next to the adjacent		Structural glass railing is not needed along column line A, it is	
	curtain wall on this stair at column line B3 on the ground tier level in Detail A/A-522A, but I am not finding it at the column line A curtain wall in any of the drawings. Also, is the SS handrail continuous around the landings of this stair? Detail B/A-522A appears to show it at the lower		needed at column line B.3 as shown. Reference detail A/A-522A.	
	intermediate and 2nd tier landings, but not at the upper intermediate and 3rd tier landings. Please advise.		The handrail is to be continuous at landings only where shown. Also, please note that the handrails at the office north monumental stair	
5.		JRA	are coated aluminum, not SS. Ref. H/A-522A.	
	Atlas would like to bid on the Hollow Metal Doors and Frames (081113) for the project referenced above. Please see the attached Request for			
6.	Manufacturer Substitution for our preferred manufacturers, along with product data and a project resume. If you need any additional information, please let me know.	JRA	No issues with this substitution. See revised Specification	
	The Parking Garage Elevator has limited clear overhead of 12'-8" and our current manufacturers require 15'-6" to the underside of the beam. Is it			
7.	possible to increase the overhead of the shaft in order to qualify to bid this project?	JRA	Overhead clearance was established per performance criteria of the basis of design. The overhead will not change at this time.	
	The Parking Garage Elevator is specified to have a contract speed of 150 FPM, whereas the existing elevators in the Parking Structure are currently			
8.	rated for 200 FPM and there is no cost difference in equipment. We are needing clarification on which speed to bid at?	JRA	Keep at 150 per specifications.	
	Both the Parking Garage Elevator and the Office Addition Elevator do not have an Elevator Control Room and our manufacturer requires a Room for each elevator at the top landing 6'-0" wide x 6'-0" deep with a 3'-0" wide x 7'-0" door opening for the elevator controller, electrical, HVAC, and		Performance criteria per basis-of-design allows for control panels,	
9.	Fire Alarm devices and other devices required by code. Can this be added to the design?	IDA	which have been identified in the drawings. An enclosed control room at the top landing have not been integrated into the drawings.	
9.	We respectively submit the following for clarification:	JRA	noom at the top landing have not been integrated into the drawings.	
	Section A – General			
	Items 1,2, 5, 6 are listed. What are items 3 and 4?		For TC-04 Drilled Piers Scope of Work description, the numbering	
		Messer	under section 'A. General' is misnumbered, there is no items 3 nor 4.	
			For TC-04 Drilled Piers - Yes, layout and as-builts for the drilled Piers	
	Item 8 - Please clarify that individual layout of the drilled piers and as-builts are by this trade contractor, control by others.		is to be provided by this scope of work. Control will be provided by	
		Messer	TC-01 General Trades.	
	how 40. For shortfination if Albaconto 4 is appropried 4 dell die fay Albaconto 4 and 10 and		TC-04 Drilled Piers - Yes, an additional drill rig is to be provided with	
	Item 10 - For clarification, if Alternate 1 is approved, 1 drill rig for Alternate 1 and one drill rig for Base Bid.		the alternate. Base Bid will require adequate drill rigs to meet the	
		Messer	project schedule.  An overlay of the drilled piers and detention basin is shown on the	
	Item 12 – Existing utilities are removed and backfilled with Gravel. Can the engineer over-lay the existing utilities to be removed on the structural drawings?		detention drawings. Existing utilities are shown in the contract	
	Section B – Protection	-	documents.	
	Item 1 specifies pea gravel backfill. Will #57 stone be acceptable for backfilling due to availability of material?		For TC-04 Drilled Piers - Washed #9 stone is an acceptable alternate	
		Messer	for pea gravel and is available through a local quarry.	
	Item 2 – New Underground Detention Basin. Structure will be backfilled with compacted sand. Please provide an over-lay of the excavation			
	limits for the installation of the structure to the structural drawings so we can determine the impact. Also, can the new structure be		Backfill shall remain compacted sand. Overlay of piers and	
10.	backfilled with a compacted dense grade material in lieu of sand? Also, what is the designed support weights of the new structure since the documents state they cannot support the weight of a drill rig and/or concrete trucks?		underground storage system is shown on L301 and L306. There is 12" separation from the edge of the drilled pier to the slab edge of	
10.	documents state they cannot support the weight of a drilling and/or concrete a docs:		the detention basin (1'-8" from the walls of the basin) at the closest	
		51	points. The underground storage system is capable of achieving HS-	
	Section C – Description of Concrete Foundations Work	Element/Messer	20 loading with proper backfill and coverage.	
			•	
1	Item 3 – Excavation is Unclassified. We assume that the unclassified excavation is from subgrade to bottom of drilled pier as stated on the		Reference Item 5.06 clarifing estimated bearing lenghts and extents	
	Item 3 – Excavation is Unclassified. We assume that the unclassified excavation is from subgrade to bottom of drilled pier as stated on the structural drawings. Please confirm. Also, Per Sheet S-100, detail 4, indicates a minimum rock socket of 10' is required. Does this include		Reference Item 5.06 clarifing estimated bearing lenghts and extents of drilled piers. Excavation is unclassified from subgrade to bottom	
			of drilled piers. Excavation is unclassified from subgrade to bottom of drilled pier elevation shown. Any revisions to the drilled pier	
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16.	Reference the Ground Tier Plan on S-101 and related sections e.g. section 4/S-101, etc. Several of theses sections indicate Washes to occur at the slab on grade level and refers back to the plans. We find Washes indicated on the upper floor plans but not on the slab on grade level. What are the Wash requirements at the slab on grade level?	Walker	Washes will be added on plans to match Detail 1/5-511. Wash will be removed on Detail 3/5-511 to match the plan.	
17.	Reference plan S-102 and section #11/S-531. Note that per S-102, the slab left of column line #G1 is shown at -1'-2" to -1'-3" at the Roof Drain along column line C. Note that the top of slab will be below the bottom of the Garage Slab at column line C. Detail 11/S-531 shows these two slab similar in elevation. What are the detail requirements for the slab left of column line C to attach to the Garage Slab or Beam?	Walker	The slab is continuous from the west face of the concess to Crist Cd.	
17.	Reference detail #4/S-410 and further referenced detail #6/S-541. Per 4/S-410 the beam B03 (16" x 36") is shown along column line #G2. Per 6/S-	Walker	The slab is continuous from the west face of the canopy to Grid G4.  The beam thickens at the stair to include a ledge to support the stair	
18.	541 this same beam is shown as 24" wide. Which is correct? Please clarify.	Walker	slabs.	
19.	Reference detail #13/5-535. Are there similar requirements for the slab on grade box out for Tower Crane that need to be included? e.g. – Slab Box Out, Knee Walls, etc.	Walker	Location of blockout and Sheet Note will be added to S-101.	
13.	Reference the Typical Tier Structural Plan on S-103. Detail #1/S-535 is referenced at two locations per this plan only. Is this correct? What about	Wilker	These are the only (2) locations on S-103 requiring this detail. However, Sheet Note 11 on S-103 notes that information shown on	
20.	Levels 2 & 7? Are there other corners where this detail applies? Please clarify.	Walker	this sheet (S-103) is typical for all supported levels - thus anything shown on this sheet shall apply to all supported levels unless noted, therefore the Detail 1/S-535 callouts apply to all supported levels as they are not noted otherwise. This would be the same for any other information, cuts, callouts, etc shown on 5-103.	
21.	Reference drawing S-103. Note the detail references at the NW Stair 7/S-541, 4/S-410 and further referenced 6/S-541. Note how details 6&7/S-541 are both referenced for the stair slab to garage slab detail along column line G2. Which detail is correct for this location?	Walker	Section 7/S-541 is incorrectly cut on S-103 and will be removed from the Drawing.	
22.	Which trade contractor is responsible for installing rebar templates and required column dowels in the tops of caissons?	Messer	TC-04 Drilled Piers is responsible for supplying & installing column does that are cast into drilled piers. Any other resteel required or shown are to be drilled and epoxied by TC-05 concrete.	
22	Reference detail #7/SD104. Which Trade Contractor is responsible for the slab replacements per this detail?	Mossor	TC-01 General Trades is responsible for the slab pour backs & islands in the opicting garage.	
23.		Messer	in the existing garage.	
24.	Reference detail #2/SD101. Are there any replacement requirements to be included for the two island areas that are being removed in this detail?	Walker	An infill slab will be required per Note 1 provided within the Detail.  See 3/SD104. TC-01 is replacing this slab.	
25.	Reference detail #1/SD101 and associated slab replacement plan 7/SD104. Note that the slab replacement plan does not match the slabs being removed. e.g. per SD101 approach slabs are shown to be removed where section #7/SD103 is referred to along column line #X1. We do not find an associated slab replacement plan for these locations. What are the replacement requirements and extents if any?	Walker	1/SD101 includes blow-up plan 3/SD101. Slab replacement Detail 7/SD-104 shows replacement of demolished concrete on 3/SD101. Approach slabs along Grid X1 will be replaced by the new garage slab on grade shown on S-101. Replacement details are cut on this plan (Ref: 5/S-511).	
26.	Can an Alternate Specification be provided that clarifies the division between Base Bid and Alternates?	Messer	See section 012300 ALTERNATES, section 3.1	
27.	Reference TC01 scope of work item #A. General - 30H, first sentence. Please confirm this sentence should read "The tower crane will be utilized as the primary means of hoisting for TC05". In lieu of "will not".	Messer	This note is correct - Scope of work is to be revised to read 'the tower crane will be utilized as the primary means of hoisting for TCOS. 'Scope of work for tower crane is changed in this addendum from TCO1 to TCO5.	
28.	Reference TC05 scope of work item #A. Summary of Trade Category Work #8. Can sizes and counts of embeds required by other contractors be provided? If not, can an allowance and Unit prices be established?	Messer	TCO5 shall assume the layout and installation of 100 embeds (50 base bid, 50 alternate 1), provided by others, at a unit price that will reviewed with the successful contractor at the post bid review. This does not include any work such as the coil rod supports, specifically required by this scope of work.	
29.	Reference TC05 scope of work item #A. Summary of Trade Category Work #10. Please clarify TC05 requirements for BIM Coordination. Is the building frame model provided by others?	Messer	The model will be provided to the construction team for coordination. The specific coordination for TC05 is the necessary coordination of reinforcement & PT adjustments needed with other trades.	
30.	Reference TC05 scope of work item #A. Summary of Trade Category Work #27. Note that the structural details at the existing garage for Levels 2,3 &7 do not show the Haunch per 1/5-541. These floor reference detail #2/5-541 instead. Which is the correct detail to follow where the structural slab meets the existing garage at Levels 2,3&7?	Messer	Drawings are correct, the scope of TCO5 should not include the haunch at levels 2,3,7. TCO1 should include scoring and removing concrete as shown on existing garage to receive the expansion joint in lieu of the reinforcing called for on the haunch detail. The remaining floors are to receive the haunch as shown and described ion the scope of work. TCO1 is to provide the scoring and removal of concrete at the column locations of the existing garage at the floors with a haunch.	
	Reference drawing S-100. We do not find footing and grade beam step locations. e.g. What are the stepping requirements for the Grade Beams		Footings do not step along Grid B4. The top of foundation elevation	
31.	and Footings meeting the foundations along column line B4, etc.?	Walker	at Grid G1-D will be revised to 961'-0"	
32.	Reference TC05 sow item #A-10, regarding the 20 – 12" x 12" openings. Can additional information and details be provided to better understand what is required for these openings?	Messer	There will be no opening or box outs required at these locations, this note implies that 12"x12" areas will be free of PT cables and resteel so that the owner has options for coring the slab for future fit out of this space.	
33.	Reference Columns #C4, C4A and C5's in the schedule per drawing #5-550. Note that the top diagram depicts 12 vertical bars but the call out to the right calls out a total of 8 verticals. Can a clarification be provided?	Walker	Typical column section is (8) bars total with (2) bars per corner. The lower section of column requires (12) bars total with (3) bars per corner. The 3rd bar at each corner will drop off above the 2nd Tier. Additional vertical bars will be shown on elevation sketch of column C5.	
	Additionally, Column #C8 depicts 12 verticals but eh call out to the right calls out a total of 8.		Plan view will be modified to show (8) bars. Additionally, the	
34.	Reference detail #9/S-550 and the drawings regarding the Corner Guard shown. We are not finding any callout notes on the plans indicating where	Walker	elevation view of column C9 will be updated accordingly.	
35.	these Corner Guards are required. Can a clarification be provided to understand where these are required if any?  I've got a few questions from Jerico on the glass rail at the monumental stair. The big thing is if they can use an approved alternate manufacturer.  Otherwise if the transferring the fields it against another.	Walker	Note will be added to 1/S-450 to identify applicable locations.	
36. 37.	Otherwise it's just confirming the finish & glass panels.  Manufacturer (par2.2) - The specs note for it to be manufactured by Hollaender or an approved equivalent. Jerico uses CRL, which is C.R. Lawrence.  I'm not sure what could really differ other than the shoe maybe? Which leads to the next question.	JRA	See response in Item 37.  CRL is an appropriate equivalent	
38.	Base shoe (par2.7): I've attached a cut sheet for what Jerico provides through CRL. I was having a hard time finding that Hollaender product listed, but I can't imagine it being much different from this. Can we confirm that this will be an acceptable alternative?	JRA	Cut sheet is not attached	
	Stainless Finish (par2.8): Can you please confirm which finish they would like? Paragraph 2.8 notes several different finishes. Jerico had the #4 brushed satin finish included, and we assume that's what they wanted since it is the standard, but wanted to confirm. #8 polished (mirror finish) that they have listed in there would be a much more expensive finish.		The specification lists many options, but the drawings call for a powder coat finish to match the surrounding curtain wall. The	
39. 40.	Glass infill panel (par 2.11): We had included the 9/16" tempered laminated glass (clear). Can you confirm if it should be clear or tinted? Please provide tint if it is to be tinted.	JRA JRA	aluminum finish should match the curtain wall.  The glass will be clear, this will be changed via addendum and reissue to specification	
	Section 057313, subsection 2.11, paragraph B calls out the glass infill panels for the railing on the North Office Stair as 9/16" thick tempered laminated glass with a gray tint. Double checking, please confirm the glass is tinted gray not the PVB interlayer. I do not see this detail in the drawing Finish Legend for this stair. Do you want the Smoke Baffle glass on the same stair tinted gray to match? Please advise.			
41.		JRA	See response above	<u> </u>

Reference detail #6/A-621. Note the steel angle shown in this detail. We do not find this angle shown on structural. What are the detail requirements and extents of this angle?  Reference detail #A/SS, & [ASS75] and the structural drawings. Note the short concrete walls to the left of column line #G2 (per A-556). These walls are not found detailed on the structural drawings. What are the requirements and extents for these walls?  Reference detail #A/SS, & [ASS75] and the structural drawings. What are the requirements and extents for these walls?  Reference detail #A/SS, & [ASS75] and the structural drawings. What are the requirements and extents of this angle?  Reference this structural drawings. What are the detail requirements and extents of this angle?  Reference the structural drawings. What are the detail requirements and extents of this angle?  Reference detail #S/S-510. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the Foundation Drains in dictated on the Plumbing Drawings for the Foundation Drains in dictated on the Plumbing Drawings. Can a clarification be provided that clearly defines where drainage stone, filter fabric and foundation drains are required, included the size requirements for the foundation drains?  Reference wall detail #1 on 5-511. At the bottom of the wall is a note that reads "(2) #5 CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels be drilled into the drilled pier or that #5 dowels be extended from the drilled piers?  Reference wall detail #1 on 5-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers?  Reference wall detail #1 on 5-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  Reference wall detail #1 on 5-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  Reference wall detail #1 on 5-511. Which trade contractor is responsible for the #5 dowels ex	e e el el ene y y soor, d d sg
Reference detail #A/A-556, B/A557 and the structural drawings. Note the short concrete walls to the left of column line #G2 (per A-556). These walls are not found detailed on the structural drawings. What are the requirements and extents for these walls?  Reference drawing #A-111, detail #D/A-531 referenced along column line #A and the structural drawings. Note the embed angle detailed in D/A-531. We do not find this angled detailed on the structural drawings. What are the detail requirements and extents of this angle?  Reference the structural drawings. What are the structural requirements for tops of cmu walls where they meet structural concrete slabs?  Reference detail #5/S-510. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the Foundation Drains. We do not find the Soundation Drains indicated on the Plumbing Drawings. Can a clarification be provided that clearly delines where drainage stone, filter fabric and foundation drains are required, included the size requirements for the foundation drains?  Reference wall detail #1 on S-511. At the bottom of the wall is a note that reads "(2) #5 CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels be drilled into the drilled pier or that #5 dowels be extended from the drilled piers?  Reference CTO2 scope of work item #8-3-e-i regarding subgrade elevation. Can a clarification be provided the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TOS.  Reference Crook of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TOS.  Reference drawing 5-100. Are all Calssons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid. The column dowels in the column shows on 5-100. Columns from on 5-100. Columns for the	e e el el ene y y soor, d d sg
Reference drawing #A-111, detail #D/A-531 referenced along column line #A and the structural drawings. Note the embed angle detailed in D/A-531. We do not find this angle added to detail with "AA" designation. Wall section has been updated to 4A on S-101 to indicate location of application of a policy of the foundation by a policy of the foundation frains. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the foundation Drains. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the foundation drains will be further defined in Addendum. S added Sheet 1.307 for underslab drain requirements.  Reference wall detail #1 on S-511. At the bottom of the wall is a note that reads "(2) #S CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels be drilled into the drilled pier or that #IS dowels be extended from the drilled piers?  Reference wall detail #1 on S-511. Which trade contractor is responsible for the #IS dowels extending from the drilled piers if required?  Reference wall detail #1 on S-511. Which trade contractor is responsible for the #IS dowels extending from the drilled piers if required?  Reference TCO2 scope of work item #B-3-e1 regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TCOS.  Reference drawing S-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.  Reference drawing S-100. Are all Caissons, Columns and foundations are to be constructed part of the base bid. The column dowels shall also be provided cloulmns shown on this of the base bid? If not, please clarify what is to be included	ity. ails ails ails e e el he y o o o o o o o o o o o o o o o o o o
Reference the structural drawings. What are the structural requirements for tops of cmu walls where they meet structural concrete slabs?  Reference detail #5/5-510. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the Foundation Drain. We do not find the Foundation Drains indicated on the Plumbing Drawings. Can a clarification be provided that clearly defines where drainage stone, filter fabric and foundation drains are required, included the size requirements for the foundation drains?  Reference wall detail #1 on S-511. At the bottom of the wall is a note that reads "(2) #5 CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels be drilled into the drilled pier or that #5 dowels be extended from the drilled piers?  Walker	e e el y y y y y y y y y y y y y y y y y
Reference detail #5/S-510. We do not find this detail called out on the plans. Additionally, this detail references the Plumbing Drawings for the Foundation Drain. We do not find the Foundation Drains indicated on the Plumbing Drawings. Can a clarification be provided that clearly defines where drainage stone, filter fabric and foundation drains are required, included the size requirements for the foundation drains?  Reference wall detail #1 on S-511. At the bottom of the wall is a note that reads "(2) #5 CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels be drilled into the drilled pier or that #5 dowels be extended from the drilled piers?  Walker  Walker  Walker  Walker  Walker  Walker  Walker  Walker  Bar shall extend into foundation a minimum of 1-7".  Reference wall detail #1 on S-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  Reference TCQ2 scope of work item #8-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TCOS.  Reference drawing S-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.	e e el he y y y y y y y y y y y y y y y y y y
Reference wall detail #1 on 5-511. At the bottom of the wall is a note that reads "(2) #5 CONT. DOWEL INTO DRILLED PIER". Is it the intent that dowels be drilled into the drilled pier or that #5 dowels be extended from the drilled piers?  47.  48. If these dowels are to be drilled, then how deep, etc.?  Reference wall detail #1 on 5-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  49.  Reference wall detail #1 on 5-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  Reference TCO2 scope of work item #B-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TCO5.  Reference drawing 5-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.	el e
dowels be drilled into the drilled pier of that #3 dowels be extended from the drilled piers?  47. Walker Using epoxy (Hill HY-200 or approved equivalent).  48. If these dowels are to be drilled, then how deep, etc.?  49. Walker Bar shall extend into foundation a minimum of 1-7".  TC-04 Drilled Piers will install column dowels in the drilled piers, #5 dowels referenced in this detail are to be drilled and epoxied from the drilled piers if required?  Messer TC-05 Concrete.  Reference TCO2 scope of work item #B-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TCO5.  Messer/Element  Reference drawing S-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.	ne y y oor, d g
Reference wall detail #1 on S-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  Messer  TC-04 Drilled Piers will install column dowels in the drilled piers, #5 dowels referenced in this detail are to be drilled and epoxied Tc-05 Concrete.  Reference TCO2 scope of work item #B-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TCO5.  Messer/Element  Reference drawing S-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.	y poor, d ng
Reference wall detail #1 on S-511. Which trade contractor is responsible for the #5 dowels extending from the drilled piers if required?  Messer  TC-05 Concrete.  TC-05 Concrete.  TC02 Earthwork is to provide a finished grade 1' below finished which includes gravel as described in SOW, for the areas contain with office Alternate 1. The remaining gravel and final grad for the SOG is to be by TC-05 Concrete.  Messer/Element  Reference TC02 scope of work item #8-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TC05.  Reference drawing 5-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.	y poor, d ng
Reference TCO2 scope of work item #B-3-e-i regarding subgrade elevation. Can a clarification be provided regarding the alternate areas? Note that at the larger North area of the alternate, the provided grade will be around 2'-5" above the required subgrade. Requiring additional excavation by TCOS.  Reference drawing 5-100. Are all Caissons, Columns and Foundations shown on this drawing (except the backward diagonal hatched grade beams and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.  Reference drawing 5-100. Are all Caissons, Columns and Foundations are to be constructed part of the base bid. If not, please clarify what is to be included for the base bid.	d ng s
and elevator footing) to be provided as part of the base bid? If not, please clarify what is to be included for the base bid.  The columns and roundations shown on this grawing (except the backward diagonal natched grade beams and elevator footing) to be provided as part of the base bid. The column dowels shall also be provided for columns shown on S-100. Columns for the office building are not shown on S-100. Columns for the office building are not shown on S-100.	
waiker part of the base bid.	
Reception Desk at Lobby 300, detail P/A-561A looks to show the Desk away from the east & south walls, section J/A-561A, just shows a %" panel at backside making me think it hits the wall since it doesn't call out to receive quartz or show a knee wall, please clarify?  52.    JRA   Teissued sheet A-561A for more information.	
Yes, the casework shown on Elevation P/A-422A will need finish back panels, section N doesn't show this?  Elevation P/A-422A, since these cabinets are stand alone, do we need to provide finished back panels, section N doesn't show this?  Casework' note A, which requires finished ends at all exposed standard or the company of the compa	
54. Specs call for QS bleached walnut panels, but base is called to be rift sawn white maple, is this correct? JRA Bleached quarter	
Do panels & base receive a clear finish or are we matching a stain sample?  Do panels & base receive a clear finish or are we matching a stain sample?  Do panels & base receive a clear finish or are we matching a stain sample?  JRA Wilsonart Uptown Walnut.	
56. Are trash grommets a drop in stainless steel? JRA Yes.  Convent base hid is only the aguing with the parameter of the par	
57. Casework usee bird is only the new pay station shown at a 4 r/A-out r an other casework top, sin, panets are alternate, please clarify?  JRA suffix (i.e. A-561"A") are alternate only.	
All casework & paneling in wall blocking is by general trades whether it shows the blocking on sections, this is needed for installation of cabinets to  S8. walls?  Please reference the general notes on G-101	
Will we be able to use the elevators to stage casework on the 3 <sup>rd</sup> floor?  *TC01 General Trades is to provide a laul and hoisting for mate  Messer of other trade contractors for the Office Alternate 1.	Is
60. Do we know the height of the elevator cab to make sure we can get 9' panels in the cab?  JRA Please coordinate with the elevator spec.	-
61. Spec section 064116 2.2 H calls for locks on all door & drawer fronts, the casework elevations don't call for any locks, please clarify?  Most of casework sections call for melamine cabinet interiors behind door fronts, E/A-562A calls out laminate, please clarify melamine is for all  Melamine is the intent for all cabinet interiors behind door or	
62. cabinet interiors behind door fronts?  Our hardwood supplier said the rift sawn white maple is going to be hard to get, can we just provide hard or soft white maple? If you decide to go  Bleached walnut is acceptable in lieu of white maple. Refer to	
63. to walnut, their will be sap & not all heart?  Please reference drawing sheet S-100. This depicts an office building alternate. Do only the drilled piers under the hatched footings get omitted for 64. base bid? Please provide clarity on which piers are to be included in base bid and which are part of the alternate.  Walker  All piers are to be constructed as part of base bid.	
Please reference drawing sheet S-100 detail 4. This references an estimated bearing depth. Please confirm if this depth is below the site grade at time of drilling or from top of shaft (concrete elevation).  See revised drilled pier information on S-100 released in this addendum.	
Waltek Company, a custom curtain wall and ornamental metal manufacturer, is respectfully requesting to be added as an acceptable manufacturer for Exterior Sun Control Device for the UK Parking Structure 8 – Expansion by addendum. Waltek has engineered, fabricated and installed many  66. custom sun control devises and ornamental louvers over its 45 plus year history.  JRA  The substitution is acceptable.	
E-400 - note states that existing generator & feeder to be demolished. U-100 notes 3,4,5 - Generator to be relocated with existing circuits moved to new location shown. Is the existing generator to be demolished? Who is responsible for the demo and removal of existing generator?  67.  TC21 is responsible for the demolition and turning the generator once no longer needed, deliver to 1247 Versailles Rt, Lexington KY (Vaughan Warehouse), unload and place in this warehouse as directed by UK (include the necessary equipment to off load, place).  Messer and transport).  Per the record drawings received, the existing feeder sizes are as	
follows:  If existing generator is to be moved what are the circuits and size that needs to be moved?  * Gen-Dist Panel is 2 sets of 3 #500MCM's & 1 #1/0 ground in conduit  KFI  * Gen auxilliaries are 20A, 120V circuits	
69. E-400 - Existing substation 016 & "LSDH1" - New breakers are required, Who is the manufacturer and panel type for existing gear? KFI GE	
70. Please provide manufacturer and panel type for existing panel "LNPL1" for new breakers to be added.  Noticed there are two shaft with a "TBD" depth. There is one DP2 and one DP2.5 shaft at columns A/B3.5 and A/G1. Can you ask what depth  71. should we assume these shafts for bidding purposes?  Walker  Will be updated in the addendum, see S-100 and S-430	
According to the finish schedule elevator £2 is being clad with wood paneling (WDV-1). Who is to provide this? Typically the elevator manufacturer is responsible for the interior finishes, but I was unable to find anything confirming this in the spec or in the bid package description.  72. Please advise.  IRA  The wood paneling shown in the elevator will be provided by the elevator contractor. The elevator specification is revised to reflect this.	t
Gate grounding is not included in TC21. See revised 323113 Steel Louver Fences & Gates specifies a lightning protection system – is this to be incorporated by TC21 Electrical as part of 264113 as there 73. doesn't appear to be any mention of gates in this section.	
Regarding the window film, the gradient film you chose comes in a 71" material. We will only be using 60" as a band, please confirm the gradient area be at the top and we cut off the most opaque area at the bottom? Or would you prefer we cut off top and leave the most opaque area at the bottom?  74. bottom?  IRA  Cut from the top and leave the most opaque area at the bottom	
On A201A & A212A there is (2) hanging entry/exit signs per details & (1) sign by the storefront on 8/A211A, are these to be in the next bid package  75. with the remainder of the garage directional signage.  Yes, disregard these signs they will be included in the Bid Package.	1



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26 52 13

26 56 19

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#### SECTION 00 24 13 – SCOPES OF WORK

# GENERAL REQUIREMENTS APPLICABLE TO ALL TRADE CATEGORIES

## **GENERAL**

#### 1.1 RELATED DOCUMENTS

A. Drawings and all provisions of the contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

### 1.2 DEFINITIONS

- A. Where items are specified by the use of Reference Standard Specifications, the date of the Reference Standard shall be the latest edition at the time of signing of the Contract, unless a specific edition is referenced in the Specifications or in an applicable code, in which case the specific reference shall govern. This summary should in no way be construed as being all-inclusive. It is issued as a guide to aid in the assignment of work. If conflicts regarding assignment of work exist between the drawings, the specifications, notes or these descriptions, the Bid Category Descriptions shall take precedence.
- B. The Specifications may contain incomplete sentences. Words, which do not contribute to clear and concise directions, may have been omitted. ("the Subcontractor shall", "shall be"; "as noted on the drawings", etc.). Omitted words and phrases may be supplied by inference, the word "shall be" and "shall" are indicated by a colon (:) i.e. "Color: Brown". The inferred subject of clauses or sentences starting with a verb shall be the Subcontractor, Sub-subcontractor, or Supplier responsible for the work of the Section in which it occurs.

# 1.3 GENERAL REQUIREMENTS

## A. SCOPE

- 1. These general Requirements form a part of each Trade Category work description and apply to each bidder's scope of work. Refer to a specific description of the scope of work to be applied to individual Trade Categories elsewhere in this Volume 1 Project Manual.
- 2. The following is a Description of Trade Categories for the UK Parking Structure 8 Expansion Project <u>Bid Package 01, Building Construction</u>. All work relative to the project is identified on plans and specifications as prepared by Walker Consultants, and their design consultants. This section describes the work to be completed by each Bid Category as designated by the Construction Manager. Each subcontractor shall cooperate and coordinate with all other Bid Category Contracts for expedient completion of the work of this project. Each Trade Category Description identifies the scope of work to be performed by the bidder in specific Bid categories. This summary should in no way be construed as being all-inclusive. It is issued as a guide to aid in the assignment of work. If conflicts regarding assignment of work exist between the drawing notes and these descriptions, this section will take precedence.



- 3. The organization of the Trade Category Description into numbered or lettered paragraphs and subparagraphs is for ease of reference only. No limitation in, or on a requirement is intended, implied or should be assumed due solely to its location within the Trade Category Description.
- 4. Each subcontractor is responsible for performing the Work described in the Trade Category Description, and as required by the Contract Documents for the Trade Category for which it is submitting a bid. Each subcontractor shall have taken all of the provisions herein into consideration when preparing its bid, and all costs associated with performing all work required by the Contract Documents shall be included in the subcontractors' s Contract Sum. Each subcontractor is responsible for knowing what Work has been assigned to any preceding or succeeding separate Subcontracts, as well as to other subcontracts within this Bid Package. No succeeding separate Subcontractor, as well as to other subcontracts within this Bid Package. No additional reimbursement or extensions of time will be allowed a subcontractor due to its lack of knowledge or understanding of the Work assigned to its subcontract or to any separate subcontract which may affect its Work.
- 5. Separate bids for this project shall be submitted for the following contracts. Bids will only be accepted for individual Trade Categories.

# TRADE CATEGORY DESCRIPTORS

TC01 – GENERAL TRADES

TC02 – CIVIL / EARTHWORK

TC03 – SELECTIVE DEMOLITION

TC04 – DRILLED PIERS

TC05 – CONCRETE

TC06 - MASONRY

TC07 – STRUCTURAL & MISC STEEL

TC08 – FINISH CARPENTRY

TC09 - WATERPROOFING/CAULK

TC10 – ROOFING

TC11 – DOORS, FRAMES, HW, SPECIALTIES

TC12 – GLASS & GLAZING

TC13 – DRYWALL, CEILINGS, EFIS, EXTERIOR WALL PANELS

TC14 - FLOORING

TC15 – TILE & TERRAZO

TC16 – PAINTING

TC17 – WINDOW TREATMENTS

TC18 – ELEVATORS

TC19 - FIRE PROTECTION

TC20 - MECHANICAL / PLUMBING

TC21 – ELECTRICAL & COMMUNICATIONS

BC22 – LANDSCAPING

**BC23 PARKING SIGNAGE (LATER PACKAGE)** 

BC24 PARKING CONTROL EQUIPMENT (LATER PACKAGE)

6. This summary should in no way be construed as being all inclusive. It is a guide to aid in the assignment of work. Refer to the drawings and specifications for a detailed accounting of any work not explicitly specified or noted. Each Trade Category lists specification sections included, in whole or in part, in that Trade Category. All work activates not



explicitly specified or noted, but required to complete the work included in a Trade Category, are a part of the work scope. If conflicts regarding assignment of work exist between the drawing notes and these descriptions, this Trade Category Description shall take precedence.

- 7. The Bidder, having become thoroughly familiar with the requirements, conditions and intent of the Contract Documents, and with all conditions affecting the performance and cost of the Work at the place where the Work is to be completed, and having fully inspected the site in all particulars, hereby proposes and agrees to fully perform and work within the time stated and in strict accordance with the Contract Documents, without claims for additional time or compensation.
- 8. Except as may be specifically noted to the contrary in the Contract Documents, each subcontractor shall provide or cause to be provided, an shall pay for all labor, materials, equipment, tools, construction equipment and machinery, hoisting, scaffolding, temporary utilities, transportation, testing and all other facilities and services necessary for proper execution and completion of the Work of its Subcontract, whether temporary or permanent.
- 9. The Bidder's Lump Sum bid INCLUDES all applicable sales and/or use taxes and INCLUDES all insurance premiums required to meet the Insurance Limits specified elsewhere in this manual.
- 10. The Bidder agrees that upon written notice of the acceptance of its bid, the Bidder will arrange to meet with the CM within five (5) business days to review its bid and to execute the Subcontract. Failure to execute the Subcontract within ten (10 working days after receipt of the Subcontract may be considered a default under the obligation of the Bid Bond.
- 11. The Contract Documents shall be construed so as to require the Subcontractor to perform all Work reasonably inferable there from as being necessary in order to produce the indicated functional, operational, or finished result. It is understood that all bid submittal documents, Bidding Requirements, Contract Forms and Contract Conditions, General and Special Conditions and all detailed work not specifically mentioned but generally accepted as associated with and/or required for the completion of described scopes of work is/are considered a part of this Subcontract.
- 12. It is understood that the use of the terms Bidder, Contractor, Prime Contractor, Trade Contractor and Subcontractor within the documents shall refer to the same entity, and it is the entity that enters into a contract with the Construction Manager (CM) as a successful Trade Category Bidder.
- 13. There will be specific restrictions on the use of tools/equipment and personnel access to project areas with respect to interior construction activities. Upon completion of the Above Ceiling Inspection/Punchlist, there will be no ladders, scaffolds, gang boxes, etc. allowed in the areas without approval from the CM.
- 14. All necessary pumping and dewatering to facilitate or as a result of the contractor's work shall be by each contractor.
- 15. As a condition to entering into this Subcontract, Contractor and Subcontractor agree not to hire any employee of the other party for 6 months following the completion of any project



where the 2 parties are working together, without the express written approval of the other party. Any violation of this clause would constitute a breach of this Subcontract Agreement.

# B. EXISTING CONDITIONS & MEASUREMENTS

- 1. Each subcontractor is responsible to review the site and to be familiar with all existing conditions within and around the Project including local conditions and requirements.
- 2. Subcontractors shall examine the conditions under which the work is to be installed and shall notify the Construction Manager in writing immediately of any discrepancies or conditions detrimental to the proper performance of the work. This Subcontractor in not to proceed until the required corrections are accomplished.

## C. LAWS, PERMITS AND REGULATION

- 1. All work shall be completed in compliance with all rules, codes and regulations of all Local, State, Federal or other governing bodies having jurisdiction. Only skilled tradesmen having experience in performing the type of work being assigned shall perform the work.
- 2. All costs for permits, fees, bonds, tap-in fees, assessments and inspections (exclusive of special inspection and the Construction Authorization/plan review) applicable to the Work as levied or required by public authorities having jurisdiction shall be included. All required traffic control (signage, barricades, flag men, etc) and street permits required to perform the work and/or to transport equipment/materials (deliveries) to and from the work site shall be included.

# D. SCHEDULING

- 1. All subcontractors shall, in conjunction with the CM, develop an accurate schedule for the completion of the work. This schedule is to be monitored daily and any changes in labor and/or material deliveries required to meet this schedule will be made by this subcontractor. Refer to Section 'Project Schedule', and the attached schedule for additional requirements and for milestone completion dates.
- 2. Each subcontractor shall participate at the weekly Contractor's meeting. Any subcontractor, pertinent to the schedule of upcoming work, is required to be present at each Contractor's meeting. Information required includes manpower projections and work activities for the coming week as well as information relevant to a six (6) week planning horizon. The format of these meetings will utilize the 'LEAN' Construction process method. Failure to participate or submit required information each week will result in rejection of this Subcontractor's pay request.
- 3. The subcontractor shall include all necessary means, methods, all equipment, tools and services required to accomplish the Work in accordance with the Project Schedule, including but not limited to all labor materials, engineering, hoisting, staging, handling, fasteners, adhesives, scaffolds, surface preparation, surface testing, incidental and miscellaneous or accessory items required, temporary utilities, temporary lighting, portable power for welding localized dewatering, weather protection and dust control.
- 4. Work shall be completed within the accepted progress schedule milestone dates established by the CM. In the event that the completion of work by this subcontractor falls behind the accepted schedule, and insufficient response is received within three (3) working days after issuing expediting directives, the CM reserves the right to have this work completed by



- others. All costs of such work completed by the CM will be the responsibility of this subcontractor.
- 5. Time is of the essence on this Project. Each subcontractor shall phase construction and complete the work in a manner that all trades can stay within the dates indicated on the Project Schedule.
- 6. In the event that activities from the construction schedule are completed early allowing follow activities to start early, than all contractors will be required to start earlier than the dates dictated in the Project Schedule.

## E. SUPERVISION

- 1. Each subcontractor shall provide a full-time Superintendent, on site, throughout the duration of their scope of work. This Superintendent shall be authorized to make all decisions relative to the work on site, shall attend weekly Contractor's meetings and shall be the primary contact for all correspondence. Part time or token representatives who are not so authorized will not be permitted. Failure to comply with this requirement will result in rejection of this subcontractor's pay request. Any change of superintendent shall be preapproved by the CM.
- 2. The full time on-site Superintendent must be a project manager level individual who is experienced in coordinating multiple subcontractors. This person will represent this subcontractor in all project meetings, and be able to commit resources and make decisions on behalf of their company.
- 3. Each Contractor must provide a 24-hour Emergency phone number to the CM prior to the start of work or the delivery of material to the jobsite.
- 4. Each subcontractor's project superintendent is required to have a cell phone in order to communicate with the CM.

# F. ADMINISTRATION

- 1. Each subcontractor is required to submit an electronic copy (PDF Format) of all submittals and / or shop drawings (2 hard copies only upon request of the CM) and (4) physical samples at time of review. Electronic copies of submittals shall not be scanned images, they shall be of 'original' PDF file quality. All submittals shall have the specification section referenced on each copy. One (1) electronic set of submittals and/or shop drawings with comments, and one (1) physical sample will be returned to subcontractor.
- 2. All shop drawings, submittals, and samples must be submitted to the CM within two weeks of contract award. Take note that some project shop drawings, submittals, and samples require earlier submission as dictated by the project schedule. In no way will submittals be allowed to delay the project or a specific work activity. All submittals must be submitted in advance and along with sufficient review time and procurement time shall not hold up construction. Each subcontractor is responsible for informing the CM of all necessary submittal return dates.
- 3. Any and all materials to be incorporated into the project shall be required to have a submittal, regardless of a submittal is specifically required in an individual specification section.
- 4. Each subcontractor shall have the capability of using 'eComm'. This is an internet based project collaboration and management software. All project documentation such as submittal tracking, RFI, Meeting Minutes, Quality Issues Log, and other relevant project



- correspondence will be posted on a secure project web site. Subcontractors are required to access 'eComm' to obtain relevant project information. Claims or disputes based on missing information due to a failure to access the site will not be considered. Autodesk Build will also be utilized as noted elsewhere in the project documents.
- 5. Each subcontractor shall obtain and eComm 'User' account. To obtain a 'User' account, the subcontractor will be required to attend a training offered by Messer Construction. The training generally consists of a 1 hour training in the Messer Site Office that is offered at no cost to user. Labor costs and miscellaneous expenses (parking, etc), associated with the training shall be the responsibility of the subcontractor.
- 6. All Contractor Requests for Information (RFI) shall be submitted through eComm. RFIs that are not submitted through eComm will not be considered, and the subcontractor shall have no entitlement to a claim for additional cost or time due to its failure to submit through eComm. Submittals shall be submitted to the CM via email and all submittals shall have the specification section referenced on each copy. PDF combining software will be required by each subcontractor to use eComm effectively.
- 7. Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated. In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each project and system specifically assigned to the contractor to be designed or certified by a design professional.
- 8. All Operation and Maintenance (O&M) / Closeout documents specified to be provided shall be submitted to the CM as outlined in the Project Schedule. If this requirement is not completed, the subsequent pay application will be placed on hold until this requirement is met. Each contractor shall submit to the CM five (5) hard copies and one (1) electronic copy of all O&M/Closeout documents for their work.
- 9. Regarding warranties for O&M/Closeout manuals, all contractors are to submit 'sample' warranties for each material/product specified to receive a warranty. Such 'sample' warranties are to be submitted to the CM as part of their submittals. Upon issuance of the project Substantial Completion each contractor is to submit final warranties to the CM within 30 calendar days post substantial completion. Each subcontractor shall submit to the CM five (5) hard copies and one (1) electronic copy of all warranties (sample and final) for O&M/Closeout documents for their work.
- All O&M/Closeout documents must be submitted to the CM in approved D-Ring binders as outlined in the General and Special Conditions. The D-ring binders can only be 80% filled.
- 11. All subcontractors are required to perform a subcontractor punchlist inspection of their own work and completion of same prior to the CM/Architect Punch and Above Ceiling Inspections/Punchlist. The durations for the subcontractor punchlists are included in the overall activity durations of the specific activity. Provide to the CM a copy of each subcontractor punchlist for each activity in each area.
- 12. Record drawings shall be updated on a weekly basis at the CM jobsite office in red ink. Record drawings shall show the actual installation where installation varies from that shown originally. This shall be delivered in PDF format.
- 13. Each subcontractor shall have an active e-mail account for the receipt of CM correspondence to the subcontractor.



- 14. Except as otherwise permitted in the Contract Documents or when direct communications have been specially authorized, communications by and with the Design Professionals or the Owner shall be through the CM. Communications by and with subcontractor and material suppliers shall be through the subcontractor.
- 15. Each subcontractor shall submit Daily Reports on a form provided by the CM. At a minimum, the Daily Reports shall include work activities performed, manpower, equipment used and weather conditions. Daily Reports shall be submitted daily at the end of the work day in Autodesk Build.
- 16. All contractors will be required to participate in the CM's Quality Control Plan. Each contractor will be required to have an iPad tablet onsite for the Autodesk Build Program to operate from. Autodesk Build licenses will be provided by the CM. See Specification Section 'Quality Requirements' for more detail.

## G. SAFETY

- 1. Each Trade Contract is required to provide and maintain an effective safety program and conform to all Federal and Local Safety Codes. Each Contractor shall conform to the Messer Construction Company Safety, Health, and Environmental Requirements. A copy of this program is included in this Project Manual.
- 2. All employees of all contractors, subcontractors or other entities who require access to the site are required to attend a pre-construction safety orientation meeting prior to starting work on site.
- 3. Each Subcontractor shall conduct a weekly Safety Meeting with all it's on site employees, documented by attendance sheets, and typed safety topics, a copy of the agenda and the minutes to be submitted to the CM on a weekly basis. Daily huddles with crews' review of JSAs are required and are to be submitted daily in Autodesk Build.
- 4. The project site requires 100% fall protection at heights of 6' or greater. Platform ladders shall be utilized on this and all Messer Construction projects, no A-frame ladders will be allowed on site.
- 5. Comply with all requirements of the Williams-Steiger Occupational Safety and Health Act of 1970, as well as all subsequent amendments and revisions. Hard hats, work boots, long pants, shirts with a minimum of 4" sleeve, and safety glasses shall be worn by all employees, at all times while on site.
- 6. All personnel working on this project are required to wear reflective vests, shirts or other reflective apparel that covers the upper portion of the body.
- 7. All workers must display their first and last names on the front of their hardhats (no nicknames).
- 8. All equipment operators and truck drivers on the site are required to wear hard hats, work boots, safety glasses, shirts with 4" sleeves and long pants at all times, including in the open cab while running equipment.
- 9. Any barricade or safety device removed by a subcontractor's employees in order to perform the work shall be immediately re-erected as soon as that work activity is complete. Temporary barricades and/or a controlled access zone must be established while the barricade is down. If the subcontractor fails to comply with this requirement, the CM or designee will cause the necessary work to be completed, and all associated costs will be deducted from costs due to the subcontractor.



- 10. All subcontractors performing any 'hot work' (grinding, welding, burning, etc) on this project are required to provide a fire watch, as well as obtain a hot work permit from the CM. This specifically includes hot work performed in or adjacent to existing buildings. Fire blankets are required where necessary; this is specifically required for work performed adjacent to any wooden materials, such as existing wood framing or temporary wooden construction. Applications for hot work permits shall be submitted and closed on a daily basis.
- 11. All accidents and safety incidents (ie property damage, near misses, etc) shall be reported to the CM immediately, a written report will be required to be completed prior to the end of that working day.

## H. COORDINATION

- 1. Provide to the CM and to all other subcontractors, as designated by the CM, all information (drawings, technical data, diagrams, templates, embedment's or other related work) necessary for the coordination of the work in a timely fashion.
- 2. Each subcontractor shall field verify dimensions, materials and conditions and coordinate with the work of other trades.
- 3. Each subcontractor is to coordinate all work of other trades through the CM for proper function and sequence to avoid construction delays and to omit conflicts. Coordinate and cooperate with all other subcontractors and their lower-tier subcontractors. If a conflict is observed, bring it to the attention of the CM immediately in order to avoid delays and finalize a resolution.
- 4. Each segment of work shall be coordinated with the CM prior to proceeding. ALL DELIVERIES MUST BE SCHEDULED THROUGH, AND APPROVED 24 HOURS IN ADVANCE OF DELIVERY BY THE CM. Any deliveries not scheduled in advance may be refused by the CM.
- 5. All subcontractors shall cooperate fully with any testing / inspection agency with inspections and with the gathering of samples by coordinating the time of the inspections and by providing safe access to the locations of the tests / inspections.
- 6. Where new work connects with existing, do all necessary cutting and fitting required to make a satisfactory connection with the work to be performed under the Contract Documents so as to leave the entire work in a finished and workmanlike condition. This requirement shall include all required work where new items connect, fit or otherwise interface with existing surfaces. Provide all labor and materials to this end, whether or not shown or specified. Verify and match existing conditions.

# I. CLEANING

- 1. No vehicles of any kind shall be permitted to exit the work areas with mud on their tires. Subcontractors shall make provisions for the cleaning of equipment (tires) prior to exiting the work areas. Subcontractors who allow mud and dirt to be tracked off-site shall be responsible for the immediate clean-up of soiled surfaces. Any subcontractor not complying with this requirement will be back charged at a labor rate of \$95 per hour plus the cost of any necessary tools or equipment at the CM's discretion. This will be strictly enforced.
- 2. The washing out of concrete delivery trucks will not be permitted on site other than predesignated wash out areas.



- 3. Roads and sidewalks used in the progress of the work, outside the limits of the Site and the adjacent areas leading to it, shall be maintained open to travel and kept in a clean condition by all subcontractors. Failure to maintain roads and sidewalks will result in the CM assigning the cleaning of the same in the most expedient manner with the costs deducted from the responsible subcontractor's contract amount.
- 4. Daily cleanup of each subcontractor's debris by the subcontractor's own craft force is mandatory for this project and is included in the subcontract. Each subcontractor will be responsible for the proper transportation of general debris to dumpster locations (on-site) and compaction of debris into said containers in a manner that allows containers to be fully utilized. Each crew is expected to have a cart or skid pan so that no materials hit the floor. Subcontractors failing to load dumpsters properly and/or failing to break down cartons will be charged for removal of partially filled dumpsters. Materials not removed by the subcontractor will be discarded, as directed by the CM, at the delinquent subcontractors' expense. General Trades will provide material hoisting and have a hopper for trash collection for work on the finished spaces of the Office Alternate 1.
- 5. Each subcontractor is required at the end of each and every work day to clean-up and organize equipment, materials and debris from that day's work activities and empty trash to the dumpsters. The daily time allotted for this effort should be as required to maintain a clean, orderly, and professional jobsite. Each subcontractor is advised to include the costs of this work in its bid. Daily cleanup is to include general sweeping by each subcontractor. Any subcontractor who fails to adhere to the job site will have these services performed at the cost of the delinquent subcontractor.
- 6. Failure to clean up the site daily and/or failure to participate in daily cleaning responsibilities will result in a charge of \$95.00 per hour and costs shall be back charged to the appropriate subcontractor. Cleanliness during construction is of the utmost importance.

## J. SITE UTILIZATION

- 1. Each subcontractor shall confine its operations to the defined site limits and/or approved site lay down and storage areas. Any work activates that require work outside of the site limits shall be coordinated in advance with the CM.
- 2. Each subcontractor is responsible for receiving all deliveries, unloading, hoisting, storage and subsequent moving of materials as required to complete its work. Each contractor is responsible to provide traffic control, including flagmen, traffic cones, and barricades, as required to protect the public at all times as the work and material deliveries requires. Upon delivery, all materials and equipment must be immediately located to approve storage locations. On-site storage locations of all materials, equipment, and operations must be coordinated with, and approved by the CM in advance. Staging areas will be designated by the CM to each subcontractor. Any materials, equipment, or operations found to be outside approved staging areas are subject to relocation by the Subcontractor at their expense as directed by the CM. Deliveries shall not interfere with normal traffic and pedestrian flow or block entrances / access to adjacent buildings. The 'staging' of delivery trucks on adjacent, public streets is prohibited.
- 3. There will be no long term on-site storage of materials allowed. The Subcontractor shall store no more material or equipment on-sit than is necessary to complete one (1) week worth of work. The project Schedule indicates material fabrications and/or productions starting after submittal reviews. All material deliveries are to be timely coordinated with the start of the construction activities. Any costs associated with storing procured materials



off site should be included in the subcontractor's bid. Unneeded materials or equipment not in use must be removed from the site immediately. Any materials of such that are not removed from the site in a timely manner will be removed by the CM at the Subcontractor's expense.

- 4. All costs with material delivery in small quantities, relocation of materials that impede work progress, and off site material storage and handling shall be included in the bid.
- 5. Each subcontractor shall be responsible for the protection of its own materials, tools, equipment and finished work. Damage to stored, finished or existing work and/or theft of any materials, tools or equipment shall be repaired or replaced at the Subcontractor's expense. Each subcontractor shall take precautions to prevent damage to any adjacent properties or finished products. If any damage occurs, the subcontractor causing the damage will be responsible for the cost of replacement.
- 6. Fuel storage on-site is prohibited. No gasoline or diesel powered equipment is to be operated inside enclosed building areas.
- 7. Each subcontractor shall at all times maintain a clean and safe passageway for the Owner and personnel throughout the entire site. Each subcontractor shall be responsible for the proper protection of adjacent structures, public right of ways and emergency egresses while performing its scope of work.
- 8. Each subcontractor is responsible for maintaining drainage and grades of the site, affected by their work, during and after their work.
- 9. All work requiring a shutdown of existing streets and sidewalks and/or impeding public access in any way shall be coordinated with the CM in advance. All permits and costs associated with the shutdown or closure, including temporary structures, barricades, signage, and traffic control required by the owner and/or authority granting the shutdown or closure, shall be the responsibility of the Subcontractor requiring the shutdown or closure.
- 10. Any areas disturbed by subcontractors that are not specified/shown to receive new improvements shall be restored to the original conditions by the subcontractor responsible for creating such disturbance. It shall be each subcontractor's responsibility to identify any such areas that will be disturbed from their original condition and are not specified / shown to receive new improvements and communicate to the CM in advance such that the pre-existing conditions can be examined and confirmed prior to any disturbance.

## K. GENERAL WORK RULES AND MISCELLANEOUS PROVISIONS

- 1. All subcontractors and all of their employees, including those of lower tier subcontractors and suppliers, shall abide by all rules the Owner or the CM may have in effect or hereafter put into effect, at the site of the work, including those pertaining to worker and Owner personnel safety, use of cameras, and security procedures or requirements. Subcontractors shall remove from the Project site any employee violating these rules at the request of the Owner or CM.
- 2. Normal working hours will be from 7:00 AM to 5:00 PM, Monday through Friday unless the Construction Manger approves alternate arrangements. Off-hours work must be scheduled in advance with the CM. This does not alleviate the Subcontractor's responsibility to work overtime as required to maintain the schedule. Delays due to normal weather conditions are to be taken into consideration and anticipated when bidding this project. Saturdays are considered workdays as required to make up any weekdays lost due to weather, and are considered workdays required to maintain schedule.



- 3. Theft, abuse or destruction of property, tools, equipment or materials will not be tolerated and may be considered grounds for immediate removal from the project site.
- 4. Horseplay and/or fighting are prohibited and may be considered grounds for immediate removal from the project site. Workers shall be courteous to the public in and around the site at all times. Workers observed 'cat calling' or making obscene gestures towards the public will be removed from the site. Curing and swearing will not be permitted on site.
- 5. The University of Kentucky is a smoke free campus, therefore smoking, tobacco use, vaping is NOT permitted on this project site.
- 6. Two-way radios used for communication purposes only will be allowed on the project. All other radios, televisions or electronic sound devices are prohibited. Any radios, televisions, etc. found on site will be immediately discarded by the CM at the Subcontractor's expense.
- 7. Use of the CM's Office shall be limited to subcontractor's superintendents and foremen.
- 8. Items to be salvaged are to be delivered to the Owner to a location to be determined. Subcontractors are to assume the designated warehouse for salvage materials is within a ten (10) mile radius of the project site.
- 9. Harassment of any individual, at or around the jobsite, in any manner will be cause for immediate dismissal.
- 10. General Construction Parking will not be permitted on site. Each subcontractor will be allowed one working vehicle in the parking/staging area for its Superintendent. Any other vehicles will not be allowed and will be subject to towing at vehicle owner's expense.
- 11. There will be strict limitations regarding eating and drinking on the project site. The CM will designate limited controlled areas for the purpose of breaks and lunch. No eating or drinking (other than trade contractor water cans) will be allowed anywhere in the building other than the designated controlled areas. Any contractor utilizing a water cooler must provide an adjacent trash can for the purpose of receiving water cups and be responsible for emptying this trash daily.
- 12. Signs of any type are prohibited, except as specifically assigned by the Construction Documents or approved by the CM.
- 13. Any layout required for this subcontractor's work shall be included.
- 14. Beginning work shall be deemed acceptance of the existing or preceding conditions.
- 15. All electrical cords are to be rolled up and stored daily by each contractor. Any electric cords not rolled up and stored in Subcontractor's gang box / staging area will be rolled up and / or retained by the CM at the Subcontractor's expense.
- 16. Electrical cords in use must be free of walkways and pathways. Subcontractors are expected to suspend electrical cords as necessary so that cords are elevated so as not to create a tripping hazard and so that areas can be broom swept daily.
- 17. No subcontractors are allowed in the occupied portion of the existing garage, hospital (non-medical reasons) or any adjacent University of Kentucky Property unless authorized by the CM. This includes during breaks and lunches.
- 18. All subcontractors are required to meet the University of Kentucky's Design Standards for all work items. These standards are available for review on the UK website.
- 19. Any subcontractor in violation of the listed General Requirements (namely paragraph G thru K) will be required to through another site orientation before their employees may



continue their work assignments. Any subcontractor not reporting for re-orientation and performing work within twenty-four hours of receiving a written notice of the reported violation will be responsible for any cost delays experienced by the CM or other subcontractors.

- 20. All work requiring a utility outage(s) shall be completed on second shift or weekends unless noted otherwise. All costs associated with completing said activates on off-shift work shall be included. UK requires multiple weeks for approval of utility outages and this should be reviewed and factored in to not impact the project schedule.
- 21. All work deemed by the Owner or CM to be an excessive noise or vibration creating activity shall be completed on second shift, weekends or during the hours the owner authorizes. This includes but is not limited to the following: use of powder actuated tools, hammer-drilling, core drilling, use of chipping hammer, etc. All costs associated with completing said activities on second shift shall be included.
- 22. Second shift is defined to be 5:00PM 7:00AM. Off-hours must be scheduled and approved in advance with the CM.

# 1.2 SUPPLEMENTAL REQUIREMENTS AND INSTRUCTIONS TO BIDDERS

## A. SUMMARY OF BID PACKAGE 01 WORK

The Work of UK Parking Structure 8 Expansion Project can broadly be described by identifying four areas of construction: (1) Existing PS 8 & Utilities, (2) PS 8 Expansion, (3) Office (alternate 1), and (4) the Site Work.

The Work of this Bid Package will provide the entirety of the expansion less the finial directional signage and parking equipment which may follow in a separate bid package. The Office portion of this project is to be bid as add Alternate 1 as outlined in the documents. The base bid should include all work necessary to construct the garage; any resulting credits should the Alternate be accepted are to be applied to the total value of the Alternate.

# B. GENERAL REQUIREMENTS FOR BID PACKAGE

- 1. All trade category subcontractors are to utilize the areas that have been set aside and furnished with 8 each 30"x72" folding tables with blow-molded plastic tops and 40 folding metal chairs including portable storage carts for both tables and chairs by the General Trades subcontractor for all work breaks and lunching. Subcontractors' personnel will not be permitted to gather at project gates or in areas outside of the perimeter site fence at any time for work breaks, lunching or smoking, prior to starting of work or at the completion of work shift. Smoking is not permitted on The University of Kentucky's campus and there will be no smoking areas permitted on the project site or on UK Property.
- 2. Each trade category subcontractor shall obtain and pay for the cost of all permits and documents required and necessary for the execution of the work of each trade category subcontractor, including any storm water piping and structures required for dewatering. Provide a copy of all permits and other required documents to the CM.
- 3. Storm water management and erosion control measures are to be established by TC-02 Earthwork subcontractor and will be transferred to TC-01 General Trades contractor at the completion of getting the building pad to grade and the start of caissons. Trade category subcontractors shall comply with storm water management and erosion control per MSD,



local governing codes and all requirements (permits, daily inspection reports, etc.), applicable specifications and as shown or indicated on the Civil Drawings. Additionally, comply with erosion control for the offsite storage areas and additional limits of site work identified on Messer's site logistics plan included in these documents. Endeavor to protect the installed facilities and pay for the restoration of any damage caused by this trade category subcontractor.

- 4. All proposed dewatering activities shall first be approved by the CM. Dewatering effluent shall not be discharged directly into any storm water system, or pumped into any erosion controlled area without first being filtered and approved by CM. Minimally, subcontractors preforming work that requires dewatering are to provide, replace and dispose of sediment filter bags discharged to an erosion controlled area on site. An Erosion control Area shall be provided, regularly maintained and repaired throughout construction; and removed when this function is no longer required for the project by the General Trades subcontractor.
- 5. Obtain and pay the cost of all required permits for work on University of Kentucky streets and city streets, sidewalks, curbs and new driveway cuts required for the Work of the trade category subcontractor performing the work. Include costs for land closure permits, and for all mandated requirements of the permit, as needed to complete portions of the work. Provided and maintain required signage for lane and sidewalk closure.
- 6. Safety and security of the site is paramount. The quasi-permanent perimeter chain link fence and gates and the temporary movable chain link fence and barriers within the existing garage contribute to site security. Therefore the fencing and gates must be protected from damage that would allow unauthorized entry into the site. Any damage caused to the fence and gates must be immediately repaired and paid for by the Trade Category subcontractor responsible for the damage to allow proper closure of the perimeter in order to maintain site security.
- 7. Any and all hoisting, rigging, scaffolding, trash chutes, ladders, planking, guying, shoring, and bracing required to perform the Work of each Trade Category subcontractor shall be included. All cost associated with the foregoing shall be included in the Bid Amount of this Trade Category bidder.
- 8. <u>TC-01 General Trades</u> subcontractor is to establish all surveying, surveying controls (line and grade), and benchmarks. All survey work shall be performed by or under the supervision of a Licensed Professional surveyor with current professional liability insurance. The General Trades subcontractor shall be responsible for repairing or replacing benchmarks and controls damaged by its operations. All trade category subcontractors shall be responsible for elevations, grades, layout and line dimensions for their own work, but each of these trade category subcontractors will utilize the surveying controls and benchmarks established and maintained by the General Trades subcontractor.
- 9. CAUTION: Exercise extreme care at all times when traveling near or performing work around the existing storm water box culvert and new underground detention basin. Both are substantial structures located through the construction project site. Construction access into the site will be established by TC-02 for equipment crossings, any other areas or loading for traffic. The storm detention system and corresponding structures are not to be driven over, staged on without written permission from the CM. Any and all damage caused to the storm water box culvert or underground detention system and its components shall be repaired or replaced by the subcontractor responsible for the damage.



- 10. Provide utility locating services at all areas of underground work of this trade category subcontractor. This trade category subcontractor shall assume full responsibility for the protection of all existing 'live' utilities located within the work areas associated with the Work of this trade category subcontractor.
- 11. Do not disconnect, cut-through, remove or otherwise disable any existing utility that is to be abandoned until after the new provisions are in place.
- 12. Each trade category subcontractor shall be responsible for all construction traffic exiting the site to utilize the wheel was stations to minimize dirt, mud and debris from leaving the site and being deposited on roads adjacent to the site. Failure to comply with this responsibility will result in back charges for cleaning mud and debris from the streets.
- 13. Any work that is a nuisance or potentially harmful to others, such as fumes from the application of special coatings, excessive dust from grinding, sanding or similar activities, shall be performed in a manner that does not interfere with concurrent work activities. Special enclosures, temporary ventilation systems and/or performing work during an off-hour shift or on weekends shall be provided and included as necessary.
- 14. Provide all safety measures, protection and other procedures necessary to protect workers and the surrounding work from cutting and welding operations, overhead operations where cut-offs or debris is subject to failing, and other similar work. All specified fire watch practices shall be implemented and observed when cutting or welding and during the use of open flame tools such as cutting torches, plumber's torches, etc. Based on the project schedule, follow-on work may begin on the lower levels of the project prior to completion of the structure above. Each trade category subcontractor shall be responsible for safely coordinating its work with that of other trade category subcontractors.
- 15. According to the Project Schedule, portions of the Work are scheduled to be constructed during the winter months. Trade Category subcontractors shall make allowances for and accept all costs associated with tenting, heating, or other means and methods to continue constructing the scope of work included during the cold and inclement weather periods as necessary to maintain the Project Schedule. Full costs shall be included in the Bid Amounts of subcontractors. Requests for Time extensions and/or claims for cost or delay will not be considered due to cold or inclement weather.
- 16. Trade subcontractors will provide limited temporary services to the site for use by all trade category subcontractors. These services include, among other items, temporary water and electric utilities, temporary toilet facilities, dumpster services, perimeter site fence repair and maintenance, temporary lighting and heating. For reference, the complete scope of items provided is contained in the scope description documents.
  - a. Temporary water: TC-20 Mechanical / Plumbing is to provide two temporary 3/4" frost proof hydrants with separate services from source, meters to comply with UK PPD, on the south side of the site. Consumption costs for water will be paid by the owner.
  - b. Temporary electric power, required for the performance of work of the project will be provided by the Electrical subcontractor. The electrical power service connection to the site is 480V, 3 phase, but will be distributed to the building at 120/240V, single phase. Any special wiring for equipment and/or a requirement for an electrical service other than 120/240V, single phase service provided shall be the responsibility of the trade category subcontractor requiring the service.
  - c. A tower crane will be required and provided by TC05 Concrete. TC20 Electrical is to provide the necessary electric service, power and removal of service so that 480



- volt, 250 amp, 3 phase dedicated permanent power. The tower crane will be placed near the center of the expansion.
- d. Temporary electric lighting will be provided by TC 21 Electrical as necessary to establish OSHA compliant lighting levels with the work area(s) as the progress of the construction dictates. Any additional task lighting required to complete the work of a trade category subcontractor shall be the responsibility of and the provisions of the trade category subcontractor requiring the task lighting.
- e. Dumpsters for general construction trash are to be provided for use by all trade category subcontractors. Concrete washout, excavation materials and selective demo scopes are not to utilize these dumpsters; the costs for disposal should be included by the respective trade contractor. Refer to the Trade Category descriptions for details.
- 17. Where details are referenced as an example within this Scope of Work, the noted or exampled work shall be provided at all similar, typical conditions or locations. References to work on specific drawings shall not be interpreted to limit the included work to the referenced drawing only. All specified work included in the work of this trade category subcontractor shall be provided at all instances and at all locations shown or indicated in the documents.

# C. ACCESS, WALKS AND ROADS, PARKING AND LAYDOWN AREA

- Construction access will be established around the project site by TC-02 and maintained by TC-01 General Trades subcontractor. Primary access to the site will be from the Elizabeth Street Entrance. Additional access points into the construction site are available but entry from other access point locations must be approved by and coordinated with the CM.
- 2. The lot identified on the site logistics map located on the North Side of Transcript Avenue will be utilized for the majority of the project duration. This area will be serve as limited contractor parking and storage containers as approved by the CM.
- 3. Elizabeth Street will be closed and part of the construction site along with the lot shown west of the construction site will have more limited short term staging thru the later part of 2024. There will be other UK projects with work in this area during the construction duration of this project.
- 4. Reference the Messer Construction site logistics plan included in the documents for site entry access and site transportability. Each trade category subcontractor shall provide their own arrangements for access to any part of the site to execute their work that extends beyond access shown on the site logistics plan documents.
- 5. Construction access roads are in place for access to the work. Any additional roads, grading, and/or staging areas required beyond what is available shall be the responsibility of the subcontractor requiring it, and all costs associated shall be included in the Bid Amount. Any rework of existing access roads or crane pads required by this trade category subcontractor to complete its work shall be provided by this subcontractor. Excessive damage to construction access roads caused by this subcontractor shall be the responsibility of this subcontractor to repair.
- 6. All roads and sidewalks that are to remain in operation at the completion of the project that require removal to execute the Work of this trade category subcontractor shall be replaced and returned to their original condition immediately after the Work is installed and accepted. Provide crosswalk striping at all new entrances as indicated, if required.

## D. TESTING AND SPECIAL INSPECTIONS

1. Schedule, coordinate and cooperate fully with testing agents and provide timely and safe access to the work area requiring testing and inspections. Testing agencies will be



employed by the Owner to provide special inspections associated with the Work of applicable trade category subcontractor. All other specified testing, including material testing and retesting, and the coordination of same, shall also be provided by the Owner. Provide a weekly schedule to the CM outlining all required testing and inspections, and the schedule for same. Testing and inspections specifically required for applicable trade category subcontractor shall include geotechnical inspection, concrete testing and all other testing specified in the project documents. All costs associated with failed tests, including re-work and re-inspection, and the retesting shall be the responsibility of the applicable trade category subcontractor.

# E. PROJECT MOCK-UP(S)

Provide all work, labor, materials, tools, equipment, hoisting, scaffolding and all other necessary and required items in the associated cost in the Bid Amount of each Trade Category subcontractors that are required for the Project Mock-Up. The construction of the mock-up shall be coordinated with the Project Schedule so as not to create any material delays. It is anticipated that partial orders of materials, as well as an early mobilization, will be required to complete the mock-up as early as possible. Any costs associated with partial or expedited orders and an early mobilization shall be included in the Bid Amount of each Trade Category proposal. Provide all other mock-ups as specified in the individual specification sections and include the cost in each Trade Category Bid Amount requiring the mock-up. Individual mock-ups not incorporated into the completed Work shall be dismantled and removed from the site by each Trade Category Subcontractor.

- <u>Tax Status</u> This Project is taxable, refer to instructions to bidders all applicable taxes are to be included in bid.
- <u>Insurance</u>: This Project is utilizing a CCIP (Contractor Controlled Insurance Program. Refer to the section in the manual for instruction). Contractors shall not include any cost for general liability or workers compensation in their bids.
- <u>Builders Risk</u>: Policy is provided by Messer Construction, reference the General Requirements for additional information on the responsibility of deductible.
- **Application of Payment**: This will be done thru GC Pay.
- <u>CCiP Requirements:</u> OSHA Training and Drug Screening will be required of all employees. Review Project manual for requirements.
- <u>Dewatering, Storm Compliance:</u> NOI, BMP and other regulatory measures are required as part of this project. All subcontractors working on site are to be familiar with, provide any additional accommodate necessary for their work and remedy any conditions as a result.
- <u>Waste Management</u> Project is not a LEED Project so no trash sorting will be implemented; boxes, crates, cartons to be broke down prior to putting in dumpsters.
- a. MBE Participation Refer to the Participation Goals section pertaining to UKs goals for this project.

# **END OF SECTION 00 24 13**



# SECTION 00 41 00 - BID FORM - TC-04 DRILLED PIERS

# UNIVERSITY OF KENTUCKY CAPITAL CONSTRUCTION PROCUREMENT SECTION FORM OF PROPOSAL: TC-01 GENERAL TRADES

Project No. 2565.0 Project Title:	UK Parking Structure 8 Expansion
Purchasing Officer:	
	be followed exactly in submitting a proposal for this work. If this copy is written request to the authority issuing Contract Documents.
This Proposal is submitted by:	OLAME AND A DODECC OF DIDDER)
Date:	(NAME AND ADDRESS OF BIDDER)
Telephone:	
Vendor Number:	
TO: BID CLERK	INVITATION TO BID: <u>CCK-</u>
UNIVERSITY OF KENTUCKY CAPITAL CONSTRUCTION	BID OPENING DATE: July 19, 2023
PROCUREMENT RM. 322 SERVICE BUILDING LEXINGTON, KY. 40506-0005	TIME 3:00 P.M. E.D.T.
site of the Work, the Drawings and complete C well as the Specifications affecting the work a supplies and services required to construct the forth therein, and at the price stated below with	n for Bids for the above referenced Project, having carefully examined the Contract Documents as defined in Article I of the General Conditions, as a prepared by the Consultant, hereby proposes to furnish all labor, materials, Project in accordance with the Contract Documents, within the time set hout qualification. The bidder, if successful, will enter into Messer reement as shown in this bid package without modifications.
The Bidder hereby acknowledges receipt of th	e following Addenda:
ADDENDUM NO	DATED
ADDENDUM NO	DATED
ADDENDUM NO (Here insert the number and date of any Adde NONE should be inserted.)	DATED inda issued and received. If none has been issued and received, the word

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004100B01 Form of Proposal Dated: 01/2022 Applies to: UKPS 8 Expansion University of Kentucky

#### FORM OF PROPOSAL

## AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST

I hereby certify:

- 1. That I am the Bidder (if the Bidder is an individual), a partner in the Bidder (if the Bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the Bidder is a corporation);
- 2. That the submitted Bid or Bids covering Capital Construction Procurement Section Invitation No. CCK- have been arrived at by the Bidder independently and have been submitted without collusion with, and without any agreement, understanding or planned common course of action with, any other contractor, vendor of materials, supplies, equipment or services described in the Invitation to Bid, designed to limit independent bidding or competition; as prohibited by provision KRS 45A.325;
- 3. That the contents of the Bid or Bids have not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished with the Bid or Bids and will not be communicated to any such person prior to the official opening of the Bid or Bids;
- 4. That the Bidder is legally entitled to enter into the contracts with the University of Kentucky and is not in violation of any prohibited conflict of interest, including those prohibited by the provisions of KRS 164.390, and 45A.330 to 45A.340 and 45A.455;
- 5. This offer is good for 60 calendar days from the date this Bid is opened. In submitting the above, it is expressly agreed that upon proper acceptance by the Capital Construction Procurement Section of any or all items Bid above, a contract shall thereby be created with respect to the items accepted;
- 6. That I have fully informed myself regarding and affirm the accuracy of all statements made in this Form of Proposal including Bid Amount.
- 7. Unless otherwise exempted by KRS 45.590, the Bidder intends to comply in full with all requirements of the Kentucky Civil Rights Act and to submit data required by the Kentucky Equal Employment Act upon being designated the successful contractor.
- 8. That the bidding contractor and all subcontractors to be employed do not and will not maintain any facilities they provide for employees in a segregated manner and they are in full compliance with provisions of 41 CFR 60-1.8 that prohibits the maintaining of segregated facilities.
- 9. In accordance with KRS45A.110(2), the undersigned hereby swears under penalty of perjury that he/she has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky and that the award of a contract to the bidder will not violate any provision of the campaign finance laws of the Commonwealth of Kentucky.

# READ CAREFULLY - SIGN IN SPACE BELOW - FAILURE TO SIGN INVALIDATES BID

SIGNED BY		TITLE	
PRINT NAME		FIRM	
ADDRESS		AREA CODE & PHONE	
		FAX	
CITY	STATE	ZIP CODE	
BIDDER'S EMAI	IL	DATE	

# **BIDDER'S QUALIFICATIONS**

The Commonwealth of Kentucky Model Procurement Code (KRS 45A.080) requires contracts to be awarded, "to the responsive and responsible bidder whose bid offers the best value" to the University of Kentucky. In order to determine if the Bidder has the experience, qualifications, resources and necessary attributes to provide the quality workmanship, materials and management required by the plans and specifications, the Bidder may be required to complete and submit the information requested on the University of Kentucky Contractor Bidder Determination of Responsibility questionnaire. Failure to provide the information requested on the questionnaire or failure to provide any additional submittals or information that may be requested to make this determination may be grounds for a declaration of non-responsibility with respect to the Bidder. A copy of the Contractor Determination of Responsibility questionnaire is available upon request to all Bidders.

#### TIME LIMIT FOR EXECUTION OF CONTRACT DOCUMENTS

It is further agreed, that in the event this Proposal is accepted by the Owner and the undersigned shall fail to execute the Contract and furnish satisfactory Payment and Performance Bond within ten (10) consecutive calendar days from the date of notification of the award of the Contract, the Owner may at his option, determine that the undersigned has abandoned the Contract and thereupon, the Proposal shall become null and void and the Bid guarantee, check or Bid bond which accompanied it shall be forfeited and become the property of the Owner as liquidated damages for each failure and no protest pursuant to such action will be made. If the Undersigned shall execute the Contract, it is understood that the Bid Guarantee or Bid Bond will be returned to the undersigned by the Owner.

## **SUPERINTENDENT**

In accordance with Article 17 of the General Conditions a full-time superin	tendent will be required on this project.
Below, please list the superintendent your firm will employ on this project.	The successful Bidder will be required to
furnish a resume of the superintendent's qualifications and or past projects.	

List the Superintendent's Name

LUMP SUM PROPOSAL

FP-3

004100B01 Form of Proposal Dated: 01/2022 Applies to: UKPS 8 Expansion University of Kentucky The Bidder agrees to furnish all labor, materials, supplies and services required to complete the Work, for the above referenced Project, for the Capital Construction Procurement Section, University of Kentucky, as described in the Specifications and Contract Documents and shown on the Drawings enumerated below and as modified by the Addenda listed above.

FOR THE LUMP SUM OF			
	(USE WORDS)		
DO	DLLARS AND		_CENTS.
(USE WORDS)	(USE WORDS)		
(\$) (USE FIGURES)			
Bid Alternates:			
1. ALTERNATE No. 1 (Office):		(\$	
	(USE WORDS)		(USE FIGURES)
2. ALTERNATE No. 2 (Lighting Rep	lacement):	(\$	)
2. 1121214 1112 110. 2 (Eighting 100)	(USE WORDS)	(Ψ	(USE FIGURES)

# THE FOLLOWING ITEMS ARE HEREWITH ENCLOSED WITH BID PROPOSAL:

- 1. <u>Bid Bond</u> (or Certified Check) in an amount not less than five percent (5%) of total Bid.
- 3. <u>Authentication of Bid Form</u> and Statement of Non-Collusion and Non-Conflict of Interest.
- 4. **DBE Subcontractors & Suppliers**

A Payment and Performance Bond shall not be included with the bid. If the bidder is not approved for participation in the SDI program, then the bidder will be required to furnish a proposal to add a 100% P&P Bond. All bonding and insurance requirements are contained in the Instruction to Bidders and/or General Conditions. Performance and Payment bonds shall be obliged in favor of The University of Kentucky and Messer Construction Company. A 5% bid bond is required with the submission of this proposal.

## **BUSINESS CLASSIFICATION**

Please complete this form which is necessary for the University of Kentucky vendor database. Mark only one classification. Refer to "Definitions" for assistance in determining correct classification.

(01)	_Small Business	(06)	_Woman-Owned Large Business
(02)	Large Business	(07)	Disadvantaged Woman-Owned Small Business
(03)	_Disadvantaged Small		
`	Business	(08)	_Disadvantaged Woman-Owned Large Business
(04)	Disadvantaged Large		
` /	Business	(09)	_Other
(05)	_Woman-Owned Small Business		

# **DEFINITIONS**

- (01) SMALL BUSINESS: A business concern that is organized for profit, is independently owned and operated, is not dominant in the field of operations in which it is bidding, and meets the size standards as prescribed in the Code of Federal Regulations, Title 13, Part 121. Consult your local or district Small Business Administration (SBA) office if further clarification is needed.
- (02) LARGE BUSINESS: A business concern that exceeds the small business size code standards established by SBA.
- (03) DISADVANTAGED SMALL BUSINESS: A business concern (a) that is at least 51 percent owned by one or more socially and economically disadvantaged individuals (as defined below), or a publicly owned business, having at least 51 percent of its stock owned by one or more socially and economically disadvantaged individuals; and (b) has its management and daily business operations controlled by one or more such individuals. Socially and economically disadvantaged individuals include: Asian, Black/African American, Hispanic or Latino, Native American, Native Hawaiian/Pacific Islander, Women, Disabled, Veteran and Disabled Veteran and other minorities or individuals found to be disadvantaged by the SBA.
- (04) DISADVANTAGED LARGE BUSINESS: A concern that meets the definition of socially and economically disadvantaged individuals as defined above, but which is not a small business by the SBA's size standards.
- (05) WOMAN-OWNED SMALL BUSINESS: A small business that is at least 51 percent owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" means actively involved in the day to day management.
- (06) WOMAN-OWNED LARGE BUSINESS: A concern that meets the definition of woman owned and operated, but which is not a small business by the SBA's standards.
- (07) DISADVANTAGED, WOMAN-OWNED SMALL BUSINESS: A concern that meets the definition of both (03) and (05) above.
- (08) DISADVANTAGED, WOMAN OWNED LARGE BUSINESS: A concern that meets the definition of both (04) and (06) above.
- (09) OTHER: A concern that does not meet any of the above definitions.

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004100B01 Form of Proposal Dated: 01/2022 Applies to: UKPS 8 Expansion University of Kentucky

# IDENTIFICATION OF DIVERSE BUSINESS ENTERPRISE SUBCONTRACTORS AND MATERIAL SUPPLIERS

Diverse Business Enterprises (DBE) consist of minority, women, disabled, veteran and disabled veteran owned business firms that are at least fifty-one percent owned and operated by an individual(s) of the aforementioned categories. Also included in this category are disabled business enterprises and non-profit work centers for the blind and severely disabled.

The University of Kentucky encourages and supports the participation Diverse Business Enterprises. Please list Subcontractors and Material Suppliers according to following Ethnic Vendor List or if they are a Woman Owned Business. 12% Goal MBE/WBE:

1.	Certified MBE /WBE Subcontractors		
2.	Certified MBE/WBE Material Suppliers		
Certi	ified Percentage of MBE Participation included in this Proposal	<u>%</u>	
Certi	ified Percentage of WBE Participation included in this Proposal	<u>%</u>	

**UNIT PRICES** 

FP-6

004100B01 Form of Proposal Dated: 01/2022 Applies to: UKPS 8 Expansion University of Kentucky NOTE: Unit Prices shall include the furnishing of all labor, materials, supplies and services and shall include all items of cost, overhead and profit for the Contractor and any subcontractor involved, and shall be used uniformly without modifications for either additions or deductions. The Unit Prices as established shall be used to determine the equitable adjustment of the Contract Price in connection with changes, deletions or extra work performed under the Contract and the "Rules of Measurement" set forth in the General Conditions shall govern.

The apparent low bidder will be required to complete and submit the following information by noon of the first working day following the bid opening to assist the University in determining contractor responsibility to complete the project being bid. Failure to comply could result in rejection of bid proposal.

The apparent low bidder is requested to attend a post bid meeting which will be scheduled at a later date.

# **DESCRIPTION OF WORK**

#### **UNIT PRICE**

DESCRIPTION OF WORK	UNITTRICE
#1: Removal of unsatisfactory soil and replacement w/ satisfactory	actory soil material (CY): \$
#2: Rock excavation and replacement with satisfactory soil n	naterial (CY):
#3: Change in drilled pier length in rock for <b>DP2</b> (CY):	\$_
Change in drilled pier length in rock for <b>DP2.5</b> (CY):	\$
Change in drilled pier length in rock for <b>DP3</b> (CY):	\$
Change in drilled pier length in rock for <b>DP3.5</b> (CY):	\$
Change in drilled pier length in rock for <b>DP4.5</b> (CY):	\$
Change in drilled pier length in rock for <b>DP6</b> (CY):	\$
Change in drilled pier length in rock for <b>DP6.5</b> (CY):	\$
#3: Permanent casing / diameter left in place for <b>DP2</b> (LNF	T): <u>\$</u>
Permanent casing / diameter left in place for <b>DP2.5</b> (LNF	TT): \$
Permanent casing / diameter left in place for <b>DP3</b> (LNF	TT): \$
Permanent casing / diameter left in place for <b>DP3.5</b> (LNF	TT): \$
Permanent casing / diameter left in place for <b>DP4.5</b> (LN)	FT): \$
Permanent casing / diameter left in place for <b>DP6</b> (LN	FT): \$
Permanent casing / diameter left in place for <b>DP6.5</b> (LN	FT): \$

# PRIMARY LIST OF PROPOSED SUBCONTRACTORS

All subcontractors are subject to the approval of the Capital Construction Procurement Section and Capital Project Management Division, University of Kentucky, Lexington, KY.

If certain branches of the Work are to be done by the Prime Contractor, so state.

The apparent low bidder will be required to complete and submit the following information by noon of the first working day following the bid opening to assist the University in determining contractor responsibility to complete the project being bid. Failure to comply could result in rejection of bid proposal.

The apparent low bidder is requested to attend a post bid meeting which will be scheduled at a later date.

DIVISION OF WORK	NAME AND ADDRESS OF SUBCONTRACTOR

# LIST OF MATERIALS AND EQUIPMENT

Each item listed under the different phases of construction must be clearly identified so that the Owner will definitely know what the Bidder proposes to furnish.

The use of a manufacturer's or dealer's name only, or stating "as per Plans and Specifications," will not be considered as sufficient identification.

Where more than one "Make" or "Brand" is listed for any one item, the Owner has the right to select the one to be used.

The apparent low bidder will be required to complete and submit the following information by noon of the first working day following the bid opening to assist the University in determining contractor responsibility to complete the project being bid. Failure to comply could result in rejection of bid proposal.

The apparent low bidder is requested to attend a post bid meeting which will be scheduled at a later date.

MATERIALS AND EQUIPMENT	BRAND OR MANUFACTURER

## SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

#### 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. Interior trim and components for ornamental wood walls
- 2. Transparent staining for wood trim.
- 3. Veneer-Faced Plywood.

# B. Related Requirements:

- 1. Section 061000 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork that are concealed within other construction before woodwork installation.
- 2. Section 064023.15 "Plastic Laminate Faced Architectural Woodwork" for plastic laminate woodwork as indicated on the Drawings.
- 3. Section 123661.19 "Quartz Agglomerate Countertops" for quartz countertops install in conjunction with wood woodwork and for toilet room vanities.

## 1.3 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded woodwork.

# 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Shop Drawings: For architectural woodwork.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Show large-scale details.
  - 3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
  - 4. Show locations and sizes of cutouts and holes for items installed in architectural woodwork.

Construction Documents
April, 2023

UK Parking Structure 8 Expansion UK Project Number: 2565.0

- 5. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
- C. Samples: For each exposed product and for each color and finish specified, in manufacturer's or fabricator's standard size.
- D. Samples for Initial Selection: For each type of exposed finish.
- E. Samples for Verification: For the following:
  - 1. Woodwork for Transparent Finish: Not less than 12 inches long, finished on one side and one edge.
  - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
  - 3. Show locations and sizes of cutouts and holes for plumbing fixtures and other items installed in architectural woodwork.

# 1.5 INFORMATIONAL SUBMITTALS

- Qualification Data: For fabricator.
- B. Product Certificates: For each type of product, signed by product manufacturer.

#### 1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful inservice performance.
- B. Installer Qualifications: Fabricator of products.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.
- B. Deliver interior architectural woodwork materials only when environmental conditions meet requirements specified for installation areas. If interior architectural woodwork materials must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.
- C. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas.

# 1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior architectural woodwork materials until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and

HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

- 1. Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period
- B. Do not install architectural woodwork materials that are wet, moisture damaged, or mold damaged.
  - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.
- C. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

# 1.9 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated

## PART 2 - PRODUCTS

# 2.1 MATERIALS, GENERAL

- A. General: Provide materials that comply with requirements of for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Lumber: DOC PS 20 and the following grading rules:
  - 1. NHLA: National Hardwood Lumber Association, "Rules for the Measurement and Inspection of Hardwood & Cypress."
- C. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
  - 1. For exposed lumber, mark grade stamp on end or back of each piece, or omit grade stamp and provide certificates of grade compliance issued by inspection agency.
- D. Softwood Plywood: DOC PS 1.
- E. Hardboard: AHA A135.4.

F. MDF: ANSI A208.2, Grade 130, made with binder containing no urea-formaldehyde resin.

#### 2.2 INTERIOR ARCHITECTURAL WOODWORK

- A. Hardwood Lumber Trim for Transparent Finish (Stain or Clear Finish):
  - 1. Species and Grade: Select bleached Walnut, quarter sawn; primarily heartwood.
  - 2. Maximum Moisture Content: 10 percent.
  - 3. Finger Jointing: Not allowed.
  - 4. Gluing for Width: Not allowed.
  - 5. Veneered Material: Allowed, Only for lumber trim noted "Type 1" on The Drawings.
  - 6. Face Surface: Surfaced (smooth).
  - 7. Matching: Selected for compatible grain and color.

# 2.3 VENEER-FACED PLYWOOD

- A. Hardwood Veneer Plywood Paneling: Manufacturer's stock hardwood plywood panels complying with HPVA HP-1.
  - 1. Face Veneer Species and Cut: Select Bleached Walnut, Quarter Sawn.
  - 2. Veneer Matching: Selected for similar color and grain.
  - 3. Construction: Veneer core.
  - 4. Glue Bond: Type II (interior).

#### 2.4 MISCELLANEOUS MATERIALS

- A. Fasteners for Interior Architectural Woodwork: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.
- B. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- D. Adhesives, General: Adhesives shall not contain urea formaldehyde.
- E. VOC Limits for Installation Adhesives: Installation adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - 1. Multipurpose Construction Adhesives: 70 g/L.
  - 2. Contact Adhesive: 250 g/L
- F. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.

1. Wood glue shall have a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

# 2.5 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
  - 1. Corners of Woodwork and Edges of Solid-Wood (Lumber) Members 3/4-Inch-Thick or Less: 1/16 inch.
  - 2. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.
  - 3. Corners of Woodwork and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.
- D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
  - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
  - Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.
     Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

# 2.6 WOOD WOODWORK FOR TRANSPARENT FINISH

- A. Grade: Premium.
- B. Construction Type: As indicated on Drawings.
- C. Wood for Exposed Surfaces:
  - 1. Species: Select Walnut.
  - 2. Cut: Quarter sawn.
  - 3. Grain Direction: Horizontal for board trim, fronts, and fixed panels.
  - 4. Matching of Veneer Leaves: Slip match.

- 5. Vertical Matching of Veneer Leaves: End match.
- 6. Veneer Matching within Panel Face: Balance match.

#### 2.7 SHOP FINISHING

- A. Grade: Provide finishes of same grades as items to be finished.
- B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
- C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
  - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.

# D. Transparent Finish:

- 1. Grade: Premium.
- 2. Finish: System 12, water-based polyurethane, or other as required to match exiting cabinets.
- 3. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to cabinets made from closed-grain wood before staining and finishing.
- 4. Staining: As selected by Architect, and as follows:
  - a. Staining to match Wilsonart "Uptown Walnut" laminate.
- 5. Filled Finish for Open-Grain Woods: After staining, apply wash-coat sealer and allow to dry. Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
- 6. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine architectural woodwork materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Before installing interior architectural woodwork, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

## 3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, too small to fabricate with proper jointing arrangements, or with defective surfaces, sizes, or patterns.
- B. Install interior architectural woodwork level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
  - 1. Scribe and cut interior architectural woodwork to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
  - 2. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
  - 3. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining interior architectural woodwork with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
  - 4. Coordinate interior architectural woodwork with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate interior architectural woodwork.
- C. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

## 3.4 WOODWORK INSTALLATION

- A. Woodwork: Install without distortion so components fit properly and are accurately aligned.
  - 1. Install woodwork with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
  - 2. Maintain veneer sequence matching of woodwork with transparent finish.
- B. Fasten wall woodwork through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.

# 3.5 ADJUSTING

- A. Replace interior architectural woodwork that is damaged or does not comply with requirements. Interior architectural woodwork may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.
- B. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

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## 3.6 CLEANING

A. Clean interior architectural woodwork on exposed and semiexposed surfaces. Restore damaged or soiled areas and touch up factory-applied finishes, if any.

#### 3.7 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace architectural woodwork materials that are wet, moisture damaged, and mold damaged.
  - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

# **END OF SECTION 064023.11**

#### **SECTION 081113 - HOLLOW METAL DOORS AND FRAMES**

## 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:
  - Interior and exterior steel doors and frames.
  - Concealed metal door frames.
- B. Related Requirements:
  - 1. Section 081416 "Flush Wood Doors" for doors to be installed in hollow metal frames.
  - 2. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

## 1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

# 1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.
- B. Sustainable Design Submittals:
  - Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
- C. Shop Drawings: Include the following:
  - 1. Elevations of each door type.
  - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.

- 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
- 4. Locations of reinforcement and preparations for hardware.
- 5. Details of each different wall opening condition.
- 6. Details of anchorages, joints, field splices, and connections.
- 7. Details of accessories.
- 8. Details of moldings, removable stops, and glazing.
- 9. Details of conduit and preparations for power, signal, and control systems.
- D. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

## 1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

# 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
  - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Amweld International, LLC.
  - 2. Ceco Door; ASSA ABLOY.
  - Curries Company; ASSA ABLOY.
  - 4. MPI Group, LLC (The).
  - 5. Steelcraft; an Allegion brand.
  - 6. De La Fontaine
- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

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# 2.2 REGULATORY REQUIREMENTS

- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
  - Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
- B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

## 2.3 INTERIOR DOORS AND FRAMES

- A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2...
  - 1. Physical Performance: Level B according to SDI A250.4.
  - 2. Doors:
    - a. Type: As indicated in the Door and Frame Schedule.
    - b. Thickness: 1-3/4 inches.
    - c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.042 inch.
    - d. Edge Construction: Model 2, Seamless.
    - e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.
  - 3. Frames:
    - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch.
    - b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
    - c. Construction: Full profile welded.
  - 4. Exposed Finish: Prime.
- C. Concealed Metal Frame
  - 1. Manufacturers: Provide EZYJAMB SRC by EZCONCEPT or approved equal.
  - 2. Thickness: 18 ga.
  - 3. Refer to 08 7100 "Door Hardware" for appropriate strike, hinge, and power options.

## 2.4 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

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- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2...
  - 1. Physical Performance: Level B according to SDI A250.4.
  - 2. Doors:
    - a. Type: As indicated in the Door and Frame Schedule.
    - b. Thickness: 1-3/4 inches
    - c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
    - d. Edge Construction: Model 2, Seamless.
    - e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.
      - 1) Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

## 3. Frames:

- a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
- b. Construction: Full profile welded.
- c. Thermally Broken Frames: Provide thermally broken hollow metal frames for exterior applications.
  - 1) Door stops are 5/8" high and have an integral, 3/8" thick, vinyl, positive thermal break with a compression type gasket (weatherstrip).
- 4. Exposed Finish: Prime.

## 2.5 FRAME ANCHORS

## A. Jamb Anchors:

- 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
- 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
- 3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
  - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

## 2.6 MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- E. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
  - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- F. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- G. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- H. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
- I. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- J. Glazing: Comply with requirements in Section 088000 "Glazing."
- K. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

## 2.7 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

## B. Hollow-Metal Doors:

- 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
- 2. Fire Door Cores: As required to provide fire-protection ratings indicated.

- 3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
- 4. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
- 5. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.
- 6. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
- 7. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
  - 1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
  - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  - 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
  - 4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
  - 5. Jamb Anchors: Provide number and spacing of anchors as follows:
    - a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
      - 1) Two anchors per jamb up to 60 inches high.
      - 2) Three anchors per jamb from 60 to 90 inches high.
      - 3) Four anchors per jamb from 90 to 120 inches high.
      - 4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
    - b. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
  - 6. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
    - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
  - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

- 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- F. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.
  - Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollowmetal work.
  - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
  - 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames
  - 4. Provide loose stops and moldings on inside of hollow-metal work.
  - 5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

# 2.8 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

## 2.9 ACCESSORIES

A. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

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## 3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

- B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
  - Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    - a. At fire-rated openings, install frames according to NFPA 80.
    - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    - c. Install frames with removable stops located on secure side of opening.
    - d. Install door silencers in frames before grouting.
    - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
    - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
  - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
  - 4. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
  - 5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  - 6. In-Place Metal Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
  - 7. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Steel Doors:

- a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
- b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
- c. At Bottom of Door: 3/4 inch plus or minus 1/32 inch.
- d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
- 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- 3. Smoke-Control Doors: Install doors and gaskets according to NFPA 105.
- D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.
  - 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

## 3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

## **END OF SECTION 081113**

## **SECTION 10 7113 - EXTERIOR SUN CONTROL DEVICES**

## PART 1- GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - Fixed vertical exterior sunshades.
- B. Related Sections:
  - 1. Section 012300 "Alternates" for specifications exclusive to bid Alternates.
  - 2. Section 08 4413 "Glazed Aluminum Curtain Walls" for additional curtain-wall integrated solar shade devices not included in this section.

## 1.2 REFERENCES

Α

Aluminum Association (AA) DAF 45 - Designation System for Aluminum Finishes.

- B. American Architectural Manufacturers Association (AAMA):
  - 2603 Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Architectural Extrusions and Panels.
  - 2. 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.
- C. American Society of Civil Engineers (ASCE) 7 Minimum Design Loads for Buildings and Other Structures.
- D. ASTM International (ASTM):
  - 1. B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 2. E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

## 1.3 SYSTEM DESCRIPTION:

- A. Design Requirements: Design sunshade system to withstand:
  - 1. Design wind pressure in accordance with ASCE 7, tested in accordance with ASTM E330.
  - 2. Design sunshades to accommodate local requirements for snow and wind loading. Provide engineering calculations to support design. Calculations to be by a registered engineer licensed in the state the project is located. Analysis to include all components of sunshade including but not limited to deflection of blades, outriggers, and fascia. Deflection to be limited to L/120,  $\frac{3}{4}$ ", or as required by code.

## 1.4 SUBMITTALS

- A. Submittals for Review:
  - 1. Shop Drawings: Indicate system components, dimensions, attachments, and accessories.
  - 2. Samples
    - a. Submit one sample minimum 12" long of each material to be utilized at each sunshade with appropriate finish.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum Ten years documented experience in work of this Section.
- B. Professional Engineer Requirements: Drawings and structural calcuclations to be signed and sealed by a professional engineer licensed to practice in the project area.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Contract Documents are based on products by Construction Specialties, Inc.
- B. Substitutions: Acceptable manufacturers include, but are not limited to, the following:
- Waltek Co.

## 2.2 MATERIALS

## A. Aluminum Extrusions:

ASTM B221, 6063-T5 alloy and temper.

## 2.3 COMPONENTS

#### A. Louvers:

- 1. Type: Hollow extruded aluminum, rectangular and airfoil shaped.
- 2. Spacing: As indicated on The Drawings.
- B. Louver Supports: Extruded aluminum, shaped to louver profile, continuously welded to louvers.
- C. Fasteners: Fasteners to be aluminum or stainless steel. Provide types, gauges and lenths engineered to suit installation conditions by manufacturer or supplier.
- D. Anchors and Inserts: Use non-ferrous metal or hot dip galvanized anchors and inserts for installation and elsewhere as required for corrosion resistance. Use stainless steel or lead expansion bolt devices or drill in place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

## 2.4 FABRICATION

- A. Fabricate sunshade system in accordance with approved Shop Drawings.
- B. Accurately fit and secure joints and intersections.
- C. Fabricate in largest practical units.

# 2.5 FINISHES

#### A. Aluminum:

- 1. Type: AAMA 2605, three-coat fluoropolymer coating containing minimum 70 percent PVDF resins.
- 2. Color: Custom color to match Valspar 9967 XL Pewter.

## 2.6 Exterior fin schedule (Refer to Drawings):

# A. Type 1 and Type 2

- 1. Basis of Design Product: 18 in. XL Single Piece Airfoil Blade w/Bracket by Construction Specialties
- 2. Mounting Attachment: Fin (blade) to be mounted via individual custom retainer bird mouth bracket. Bracket designed, engineered, and supplied by fin manufacturer as a complete system. Mounting bracket to mount directly to building structure with stainless steel fasteners.

# B. Type 3:

- 1. Basis of Design Product: 10" Vertical Airfoil Blade by Construction Specialties.
- Mounting Attachment: Fin (blade) to be mounted via individual custom retainer bird mouth bracket. Bracket designed, engineered, and supplied by fin manufacturer as a complete system. Mounting bracket to mount directly to building structure with stainless steel fasteners.

# C. Type 4:

- 1. Basis of Design Product: Vertical Sunshade System CS-300-4 by Construction Specialties.
- 2. Blades: 2"x8" rectangular tube design. Blades shall be factory assembled to outriggers using stainless steel, type F, thread cutting screws through internal screw slots in blades. Welding is not acceptable. Blades to be mechanically secured to allow for replacement in case of damage. Fasteners to be hex head.
- 3. Mounting Bracket: Aluminum mounting bracket, by sunshade manufacturer. All fasteners mounting to structure to be designed and supplied by sunshade manufacturer. Fasteners to be stainless steel 300 Series.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install components plumb and level, in proper plane, free from warp and twist.
- C. Anchor system to building components; provide adequate clearance for movement caused by thermal expansion and contraction and wind loads.

## 3.2 ADJUSTING

A. Touch up minor scratches and abrasions on finished surfaces to match original finish. END OF SECTION

## SECTION 142100 - MRL ELECTRIC TRACTION ELEVATORS

## 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. This Section includes machine-room-less electric traction passenger elevators.
- B. Related Sections include the following:
  - Division 03 Section "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
  - Division 04 Section "Unit Masonry" for setting sleeves, inserts, and anchoring devices in masonry and for grouting elevator entrance frames installed in masonry walls.
     Division 05 Section "Metal Fabrications" for the following:
    - a. Attachment plates and angle brackets for supporting guide-rail brackets.
    - b. Weld plates for anchoring elevator machine to machine room floor slab.
    - c. Hoist beams.
    - d. Structural-steel shapes for subsills.
    - e. Pit ladders.
  - 3. Division 26 Sections for electrical service for elevators to and including disconnect switches at machine room door and standby power source, transfer switch, and connection from auxiliary contacts in transfer switch to controller.
  - 4. Division 28 Section "Fire Detection and Alarm" for smoke detectors in elevator lobbies to initiate emergency recall operation and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation and for connection to elevator controllers.

## 1.3 DEFINITIONS

- A. Definitions in ASME A17.1 apply to work of this Section.
- B. Defective Elevator Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

- C. University Project Manager: "University Project Manager" means the individual from the Capital Project Management Division (CPMD), the Campus Physical Plant Division (CPPD), who is designated to be in charge of the Project.
- D. Consultant: "Consultant" means the individual, the Elevator Consultant, the Engineer, and/or the Architect who is responsible for the design of the elevator system. The consultant may be an employee of the University of Kentucky Facilities Management Division.
- E. Contractor: "Contractor" means the successful bidder/firm to whom the contract to construct the elevator system has been awarded.
- F. Owner: When used, "Owner" shall mean the University of Kentucky and/or one of the Facilities Management Divisions.
- G. Construction Manager: "Construction Manager" or "CM" shall mean Messer Construction Co, with whom the contract to construct will be issued. There will be no contract between Contractor and Owner.

## 1.4 SUBMITTALS

- A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for the following:
  - 1. Car enclosures and hoistway entrances.
  - 2. Operation, control, and signal systems.
- B. Shop Drawings: Show plans, elevations, sections, and large-scale details indicating service at each landing, machine room layout, coordination with building structure, relationships with other construction, and locations of equipment and signals. Include large-scale layout of car control station. Indicate variations from specified requirements, maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.
- C. Samples for Initial Selection: For finishes involving color selection.
- D. Samples for Verification: For exposed finishes of cars, hoistway doors and frames, and signal equipment; 3-inch- square Samples of sheet materials; and 4-inch lengths of running trim members.
- E. Manufacturer Certificates: Signed by elevator manufacturer certifying that hoistway, pit, and machine room layout and dimensions, as shown on Drawings, and electrical service, as shown and specified, are adequate for elevator system being provided.
- F. Qualification Data: For Installer.
- G. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.
  - 1. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.

- H. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.
- I. Warranty: Special warranty specified in this Section.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with ASME A17.1 and elevator design requirements for earthquake loads in ASCE 7.
  - 1. Seismic Criteria:
    - a. Mapped Spectral Response Acceleration  $(S_s) = 0.178$
    - b. Mapped Spectral Response Acceleration  $(S_1) = 0.077$
    - c. Design Spectral Acceleration for Short Period (S<sub>ds</sub>)=0.142
    - d. Design Spectral Acceleration for 1-Second Period (S<sub>d1</sub>)=0.087
    - e. Seismic Importance Factor = 1.25
    - f. Seismic Design Category = B
    - g. Site Class Type = C
  - 2. Basic Structural System and Seismic Resisting System (ASCE 7-10 Table 12.2-1):
    - a. Response Modification Factor (R) = 3
    - b. Seismic Response Coefficient (C<sub>s</sub>) = 0.059
    - c. Design base Shear = C₅W
    - d. Analysis Procedure = Equivalent Lateral Force Procedure
  - 3. Effective peak velocity acceleration (Av), or seismic risk zone, is needed to design elevator to comply with ASME A17.1. Maps with seismic risk zones are in the Uniform Building Code; maps with values of Av are in BOCA International codes and in ASCE 7-95. Av could be determined by elevator manufacturer, based on Project's address.
- B. Accessibility Requirements: Comply with Section 407 in ICC A117.1.
- 1.6 DELIVERY, STORAGE, AND HANDLING
  - A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging.
  - B. Store materials, components, and equipment off of ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.

# 1.7 COORDINATION

- A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
- B. Coordinate sequence of elevator installation with other work to avoid delaying the Work.

C. Coordinate locations and dimensions of other work relating to electric traction elevators including pit ladders, sumps, and floor drains in pits; entrance subsills; hoist beams; and electrical service, electrical outlets, lights, and switches in pits and hoistways.

## 1.8 WARRANTY

- A. Warranty: Form in which elevator provider agrees to repair, restore, or replace defective elevator work within specified warranty period.
  - 1. Warranty Period: One year from date of Substantial Completion.

## 1.9 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide one year's full maintenance service by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
  - Perform maintenance, including emergency callback service, during normal working hours.
  - 2. Include 24-hour-per-day, 7-day-per-week emergency callback service.Response Time: Two hours or less.
  - 3. All elevator design must be done with consideration of and for the existing University of Kentucky elevator maintenance agreements. Copies of the contracts are available from the departments and/or the Purchasing Division.
    - a. The maintenance agreements for different Facilities Divisions may not be identical having area-specific or use-specific deviations.
    - b. At the end of the contractual obligation (warranty period) of any new elevator installation, the new elevator will be maintained under the service agreements then in existence.
    - c. The end-of-warranty maintenance contract for a new elevator installation will be awarded through existing Purchasing Division procedures

## PART 2 - PRODUCTS

# 2.1 BASIS-OF-DESIGN

A. Basis-of-Design: Subject to compliance with requirements below, design is based on "TKE "Synergy" MRL Elevator

# 2.2 NON-PROPRIETARY SYSTEMS, COMPONENTS, AND PARTS

A. General: Provide manufacturer's non-proprietary elevator systems. Where components are

not otherwise indicated, provide non-proprietary components published by manufacturer as included in elevator systems and as required for complete system.

- 1. Refer to electrical requirements for back-up generator service to elevator; elevator to be used as means of egress per the requirements of the KBC 'Kentucky Building Code."
- 2. Non-proprietary equipment, parts, and controls items (including circuit boards, chips, diagnostic tools, etc.) are to be bid and installed. Approved and acceptable non-propriety equipment, parts, and controls are listed in the sections following.
  - a. Further, all non-propriety controls, tools, passwords, equipment, parts, and training necessary to service the elevator be provided to the University of Kentucky by the manufacturer and/or the Contractor.
    - 1) An elevator manufacturer and/or their suppliers may bid for and if successful furnish and install their as-designed elevator systems for installation in University of Kentucky buildings or construction projects. With their bid documents there must be submitted a statement that there are no proprietary parts or equipment in the elevator system(s) and that they are meeting the intent of this specification (i.e. that any and/or all parts, materials, maintenance drawings, maintenance tools, circuit boards, etc. will be available to the University and/or its elevator service provider(s) at the prevailing wholesale market prices at the time of need. The following statement will be part of elevator bid requests to satisfy the requirement of this item. This requirement is not to intended to eliminate neither the manufacturers nor the local elevator companies (who purchase on the open market).

"The undersigned bidder/company hereby agrees that no proprietary situations will be imposed as to the providing to the University's elevator service providers any maintenance drawings, equipment, part, or control items (including circuit boards, chips, diagnostic tools, etc.), etc. required for the maintenance and upkeep of the elevators provided on this project. Further, the items will be sold to the University's elevator service providers at current wholesale costs and without undue delay."

- B. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work where installation of devices is specified in another Section.
- C. Car Frame and Platform: Welded steel units.

## 2.3 OPERATION SYSTEMS

- A. General: Provide manufacturer's nonproprietary microprocessor operation system as required to provide type of operation system indicated.
  - 1. Provide non-propriety controls tools, passwords, equipment and training necessary to service the elevator be provided to the University of Kentucky by the Consultant and/or the Contractor.
- B. Controller: Provide microcomputer based control system to perform all of the functions.
  - 1. All high voltage (110V or above) contact points inside the controller cabinet shall be

- protected from accidental contact in a situation where the controller doors are open.
- Controller shall be separated into two distinct halves; Motor Drive side and Control side.
  High voltage motor power conductors shall be routed and physically segregated from the
  rest of the controller.
- 3. Provide a serial card rack and main CPU board containing a non-erasable EPROM and operating system firmware.
- 4. Variable field parameters and adjustments shall be contained in a non-volatile memory module.
  - The controller shall be capable of continuous operation in ambient temperatures between 65 degrees F and 90 degrees F.
- 5. Specialized diagnostic devices used to check the operation of the microprocessor and not permanently attached to the controller, shall be provided as part of the contract and shall become university property.
- 6. Diagnostic tools or devices requiring "reloading" or "recharging" by the manufacturer shall not be used on a University of Kentucky project.
- 7. Elevator supplier may provide their standard non-proprietary controller provided that the controller complies with the requirements of Article 2.1 of the Specification.
- C. Drive: Provide Variable Voltage Variable Frequency AC drive system to develop high starting torque with low starting current.
- D. MRL Controller Location: Locate controllers at the top floor landings within the elevator shaft as Indicated on the Drawings.
- E. Security Features: Provide the following security features, where indicated. Security features shall not affect emergency firefighters' service.
  - 1. Keyswitch Operation: Push buttons are activated and deactivated by security keyswitches at car control stations. Key is removable only in deactivated position.
    - a. Provide keyswitch control for both the basement and penthouse landings.

# 2.4 DOOR REOPENING DEVICES

- A. Protective Device: Provide car door protective device extending the full height. This device will be designed to sense an obstruction in its path while the doors are closing and automatically cause the car and hoistway door to return to the open position. The doors will remain open until the expiration of a time interval and then close automatically. Device shall be Janus Pana40 Plus 3D.
- B. Nudging Feature: After car doors are prevented from closing for predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.

# 2.5 FINISH MATERIALS

- A. General: Provide the following materials for exposed parts of elevator car enclosures, car doors, hoistway entrance doors and frames, and signal equipment as indicated.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.
- C. Stainless-Steel Bars: ASTM A 276, Type 304.

- D. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.
- E. Nickel Silver Extrusions: ASTM B 151/B 151M, Alloy UNS No. C74500 or No. C77600.

## 2.6 CAR ENCLOSURES

- A. General: Provide steel-framed car enclosures with nonremovable wall panels, with car roof, access doors, power door operators, and ventilation.
  - 1. Provide standard railings complying with ASME A17.1 on car tops where required by ASME A17.1.
  - 2. Provide finished car including materials and finishes specified below.
  - 3. Car platforms shall be standard manufacturer sizes unless the University specifically requests a non-standard platform size.
- B. Materials and Finishes: Provide manufacturer's standards, but not less than the following:
  - 1. Subfloor: Underlayment grade, exterior plywood, 5/8-inch nominal thickness.
  - 2. Floor Finish: Specified in a Division 09 Section Refer to Room Finish Schedule on the Drawings.
  - 3. Wood Laminate Wall Panels: manufacturer's suggested substrate with laminate finish to match WDV-1 per the Finish Schedule.
    - a. The Architect will require a sample for comparison and approval.
  - 4. Fabricate car with recesses and cutouts for signal equipment.
  - 5. Fabricate car door frame integrally with front wall of car.
  - 6. Stainless-Steel Doors: Flush, hollow-metal construction; fabricated from stainless-steel sheet or by laminating stainless-steel sheet to exposed faces and edges of enameled cold-rolled steel doors using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
  - 7. Sight Guards: Provide sight guards on car doors. Provide sight guards permanently fastened to the hoist way door and of the same color or finish as the hoist way door. There shall be no holes in the guards other than those used to fasten the guard to the door.
  - 8. Sills: Extruded metal, with grooved surface, 1/4 inch thick.
    - a. Sill Manufacturer: Plymouth Engineering Shapes of Hopkinsville, Kentucky www.plymouth.com/ or approved substitute. Grout sills in place with using a non-shrink, non-metallic grout.
  - 9. Metal Ceiling: Flush panels, with LED downlights in the center of each panel. Align ceiling panel joints with joints between wall panels. Each elevator car shall have an aesthetic ceiling structure that properly supports the installation of the number of lamp

holders using LED low watt bulbs to appropriately illuminate the interior of the car to system and code standards. Replacement of the lamps shall be easy access from the interior of the car.

- 10. Handrails and Bump Rails: Manufacturer's non-proprietary rails, of shape, metal, and finish indicated.
- 11. Indicators:
  - a. Locate the car digital position indicator over the transom or within the car-operating panel.
  - b. Place the Car Direction Indicators in the car doorframe where they will be visible from the vicinity of the hall pushbutton.
  - c. Every car direction indicator must be visible from the immediate vicinity of the hall pushbutton.
- 12. The Contractor/manufacturer shall provide to the Owner/Consultant, through the CM, for review, car interior designs, and finish selections.

## 2.7 HOISTWAY ENTRANCES

- A. General: Provide manufacturer's non-proprietary horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Provide frame size and profile to coordinate with hoistway wall construction.
- B. Materials and Fabrication: Provide manufacturer's non-proprietary materials, but not less than the following:
  - 1. Stainless-Steel Frames: Formed from stainless-steel sheet.
  - Stainless-Steel Doors: Flush, hollow-metal construction; fabricated from stainless-steel sheet or by laminating stainless-steel sheet to exposed faces and edges of enameled cold-rolled steel doors using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
  - 3. Sight Guards: Provide sight guards on doors matching door edges. Provide sight guards permanently fastened to the hoist way door and of the same color or finish as the hoist way door. There shall be no holes in the guards other than those used to fasten the guard to the door.
  - 4. Dust Covers: Provide dust covers at hoist way entrances that conceal the hoist way door tracks and interlocks. Provide covers no less than the width of the door opening plus 12". Mount covers securely to the header by use of metal screws with keyhole openings. The cover shall be capable of being removed without need of removing screws entirely.
  - 5. Sills: Extruded metal, with grooved surface, 1/4 inch thick.
    - a. Sill Manufacturer: Plymouth Engineering Shapes of Hopkinsville, Kentucky www.plymouth.com/ or approved substitute. Grout sills in place with using a non-shrink, non-metallic grout.
  - 6. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

#### 2.8 SIGNAL EQUIPMENT

- A. General: Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricate lighted elements with long-life incandescent lamps and acrylic or other permanent, nonyellowing translucent plastic diffusers or LEDs.
- B. Car Control Stations: Provide manufacturer's non-proprietary recessed car control stations. Mount in return panel adjacent to car door, unless otherwise indicated.
  - 1. Mark buttons and switches with standard identification for required use or function that complies with ASME A17.1. Use both tactile symbols and Braille.
  - 2. Provide "No Smoking" sign matching car control station, either integral with car control station or mounted adjacent to it, with text and graphics as required by authorities having jurisdiction.
- C. Emergency Communication System: Provide system that complies with ASME A17.1 and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)." On activation, system dials preprogrammed number of monitoring station and identifies elevator location to monitoring station. System provides two-way voice communication without using a handset and provides visible signals that indicate when system has been activated and when monitoring station has responded. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
  - 1. Two-Way Communication System:
    - a. The devices shall consist of a single pushbutton, automatic dialer with appropriate indicator lights, and all other essential features necessary to comply with ADA.
    - b. The emergency phones shall be mounted flush on the back of a hinged door at the bottom portion of the in-car control panels and locked with a barrel-type key. The key number shall be EX513.
    - c. The communication device shall be as manufactured by Ramtel Model RR833-OEM to match the existing elevator emergency communication system including remote location indicator and other existing features now in use.
    - d. A stand-alone flush box-type device is not to be used without approval of the Owner.
    - e. The face plate shall have, including but not necessarily limited to:

# EMERGENCY PHONE UNIVERSITY OF KENTUCKY (include UK logo)

- f. Other information and instructions on the faceplate are as provided by the Ramtec/Ramtel communication device.
- D. Key Box: Provide a lockable secure storage box on the Priority 1 floor for the firemen's service key(s). The Consultant shall request storage box keying information from the UK Fire Marshal.
  - 1. Engrave, etch, or emboss fire service instructions on the fixture cover in accordance with ASME A17.1a.
  - 2. Provide etched, embossed, or engraved Fire Service Signage located on each hall pushbutton cover.

# E. Keys and Switches:

- 1. Provide switches for lights, service or inspection. Keys should be removable for lights in all positions; keys should be removable only in the normal positions for temporary use functions. Use Best cylinders with 7-pin small format removable cores for CPPD.
- 2. Provide a two-speed fan switch; key should be removable in all positions; use Best Cylinder with removable core for CPPD.
- 3. Provide each car-operating panel with an emergency stop key switch, key should be removable in all positions; use Best Cylinder with removable core for CPPD.
  - a. Position the cylinder near the bottom of the pushbuttons with the key removable in either position and with one set of normally closed contacts.
  - b. Mark the switch with etched, engraved, or embossed "ON" and "OFF."
- 4. Where special key switches or card readers and/or other devices are used to lock out particular floor and/or functions:
  - a. Wire controls so as not to interfere with Fire Service operation.
  - b. Provide inactive push buttons for each floor even if a key switch, card reader, and/or other devices are required.
- 5. Where there is a Penthouse mechanical room, provide lock-out keyed switch on the Penthouse push button (the push button is to be activated by the keyed switch); key shall not be removable in the activation position. (Use Best Cylinder with removable core for CPPD).
- 6. For unrestricted elevator service to the penthouse, provide a keyed switch to over-ride the Penthouse mechanical room keyed button lock-out switch; key shall be removable in all positions (Use Best Cylinder with 7-pin small format removable core). Place this over-ride switch in the top area of the car panel.

## F. Fireman Service Controls:

- 1. In-car Fireman Service Controls shall be in a reachable, recessed, and in a locked panel in the control panel and at the top portion of the panel.
  - a. Engrave, etch, or emboss fire service instructions inside the fixture cover in accordance with ASME A17.1a.
  - b. Key number shall be FEOK1 (Barrel shaped Key) for campus (CPPD) buildings.
- G. Provide each car-operating panel with special language etched, engraved, or embossed pertaining to the posting of the Elevator Permit and the Capacity of the elevator
- H. Car Position Indicator: Provide illuminated, digital-type car position indicator, located above car door or above car control station. Also provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.
  - 1. Include travel direction arrows if not provided in car control station.

## PUSHBUTTON FIXTURES

Provide vandal resistant pushbutton fixtures with tamper proof screws as manufactured

by:

- a. Innovation Industries, Inc. www.innovationind.com
- b. GAL Manufacturing Corp. www.gal.com., or
- c. Elevator manufacturer tamper-proof push-button system. Elevator supplier may provide their standard non-proprietary pushbutton fixtures provided that the pushbutton fixtures comply with the requirements of Article 2.1 of the Specification.
- 2. Locate digital car position indicators on each floor in the elevator lobby over the door opening, adjacent to the hoist way door entrance, or contained within the hall pushbutton fixture.
- 3. Use vandal resistant car direction indicators located on the elevator car to indicate direction of travel and visual arrows for car direction.
- 4. Provide arrival gongs at each elevator lobby.
- 5. Provide the Fire Service key switch at the main fire-recall lobby pushbutton.
  - a. Provide a lighted jewel to indicate Fire Service Operation.
  - b. Engrave, etch, or emboss fire service instructions on the fixture cover in accordance with ASME A17.1a.
  - c. Provide etched, embossed, or engraved Fire Service Signage located on each hall pushbutton cover.
  - d. All Campus (CPPD) Fireman Service Keying requirements shall be for key number FEOK1 (Barrel shaped Key).
- 6. Push button designation numbering shall match the architectural room numbering designation i.e. if architectural drawing calls the lowest floor "Ground Floor" the elevator floor designation shall not be "Basement" etc.
- 7. Surface applied signage is prohibited
- J. Hall Push-Button Stations: Provide one hall push-button station at each landing, for each elevator.
  - 1. Provide units with flat faceplate for mounting with body of unit recessed in wall.
  - 2. Equip units with buttons for calling elevator and for indicating desired direction of travel.
  - 3. Provide telephone jack in each unit for firefighters' two-way telephone communication service specified in Division 28 Section "Fire Detection and Alarm."
- K. Hall Lanterns: Units with illuminated arrows; but provide single arrow at terminal landings. Provide the following:
  - 1. Units with flat faceplate for mounting with body of unit recessed in wall and with illuminated elements projecting from faceplate for ease of angular viewing.
- L. Hall Annunciator: With each hall lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.
  - 1. At manufacturer's option, audible signals may be placed on car.
- M. Corridor Call Station Pictograph Signs: Provide signs matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station, unless otherwise indicated.

## 2.9 ELEVATORS

## A. Elevator Description:

Type: Gearless traction.

Machine Location: Hoistway; no machine room is provided.

Rated Load: 3500 lb . Rated Speed: 150 fpm.

Security Features: Keyswitch operation .

Car Enclosures:

a. Inside Width: 80 inches from side wall to side wall.

Inside Depth: 51 inches from back wall to front wall (return panels).

Inside Height: 91 inches to underside of ceiling.

Front Walls (Return Panels): Satin stainless steel, No. 4 finish.

Car Fixtures: Satin stainless steel, No. 4 finish.

Side and Rear Wall Panels: Satin stainless steel, No. 4 finish. Door Faces (Interior): Satin stainless steel, No. 4 finish.

Door Sills: Nickel silver, polished.

- Sill Manufacturer: Plymouth Engineering Shapes of Hopkinsville, Kentucky www.plymouth.com/ or approved substitute. Grout sills in place with using a non-shrink, non-metallic grout.
- b. Ceiling: Satin stainless steel, No. 4 finish.

Handrails: 1-1/2 inches round, at sides and rear of car.

Floor prepared to receive resinous matrix terrazzo (specified in Division 09 Section "Resinous Matrix Terrazzo").

- 2. Hoistway Entrances: As follows:
  - a. Width: 42 inches.

Height: 84 inches.

Type: Single-speed side sliding. Fire-Protection Rating: 1-1/2 hours.

Frames: Polished stainless steel, No. 8 finish. Doors: Polished stainless steel, No. 8 finish.

Sills: Nickel silver, polished.

- 1) Sill Manufacturer: Plymouth Engineering Shapes of Hopkinsville, Kentucky www.plymouth.com/ or approved substitute. Grout sills in place with using a non-shrink, non-metallic grout.
- 3. Hall Fixtures: Satin stainless steel, No. 4 finish. Additional Requirements:
  - a. Operating Panel: Provide each car-operating panel with special language etched, engraved, or embossed pertaining to the posting of the Elevator Permit and the Capacity of the elevator

Provide blanket hooksand one complete set(s) of full-height protective blankets.

1) Provide a locked fireproof cabinet in the elevator equipment room for

hanging storage of the pads.

## 2.10 MANUFACTURERS, SUPPLIERS, AND INSTALLERS

- A. The following Elevator Manufacturing Companies are approved; including, but not limited to:
  - CemcoLift, Inc.
     2801 Township Line Road Hatfield, PA 19440-0500 Toll Free: (800) 962-3626 Phone: (215) 799-2900

Fax: (215) 799-290 Fax: (215) 703-0358 www.cemcolift.com

- ThyssenKrupp Elevator Company 7217 East 87th Street, 46256 Indianapolis, IN Ph. (317) 595-1125 www.thyssenkruppelevator.com
- 3. Kone, Inc. 5201 Park Emerson Dr., Suite E, Indianapolis, IN 46203 Ph. (317) 788-0061 www.kone.com
- 4. Schindler Elevator Corporation 1761 North Sherman Drive, Suite E, Indianapolis, IN 46218 Ph. (317)486-0906 www.us.schindler.com
- Global-Tardif Elevator Manufacturing Group Inc.
   120 De Naples Saint-Augustine-de-Desmaures
   Quebec, Canada G3A 2Y2
   Ph: (800) 661-6316

Fax: (418) 878-1595 www.globaltardif.com

- B. The following Elevator Installing Companies may supply and install elevator equipment purchased from third party manufacturers but must meet the requirements of this specification and be approved by the University Project manager; including, but not limited to:
  - DC Elevator
     124 Venture Court- Suite 1
     Lexington, KY 40511
     Ph. (859) 254-8224
     Fax (859) 231-8740
  - The Murphy Elevator Co., Inc. 128 East Main Street, Louisville, KY 40202

PH. (800)321-1527 www.murphyelevator.com

3. Oracle Elevator Company 4523 Knopp Avenue, Louisville, KY 40213 PH. (502)363-9300 www.oracleelevator.com

## PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Examine hoistways, hoistway openings, pits, and machine rooms as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.
  - 1. For the record, prepare a written report, endorsed by Installer, listing dimensional discrepancies and conditions detrimental to performance or indicating that dimensions and conditions were found to be satisfactory.

Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 INSTALLATION

- A. Comply with manufacturer's written instructions.
- B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to minimize transmission of vibrations to structure and thereby minimize structure-borne noise from elevator system.
- D. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.
- E. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- F. Leveling Tolerance: 1/8 inch, up or down, regardless of load and direction of travel.
- G. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.
- H. Door Frames: Grout or slush all entrnace frames solid.

- I. Locate hall signal equipment for elevators as follows, unless otherwise indicated:
  - 1. Place hall lanterns either above or beside each hoistway entrance.
  - 2. Mount hall lanterns at a minimum of 72 inches above finished floor.

## 3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of elevator installation and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by ASME A17.1 and by governing regulations and agencies.
- B. Operating Test: Load to rated capacity and operate continuously for 30 minutes over full travel distance, stopping at each level and proceeding immediately to the next. Record temperature rise of elevator machine during 30-minute test period. Record failure to perform as required.
  - 1. When emergency power is provided, the elevator(s) shall be tested under a FULL load on the generator. This would include all emergency lighting and other emergency loads connected to the generator.
  - 2. Fireman's Service shall be tested under emergency power conditions.
  - 3. When Firemen's Service is provided, the UK Fire Marshal's office shall be consulted as to which floors will become Priority 1 and Priority 2 for emergency return situations.
- C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.

## 3.4 PROTECTION

- A. Temporary Use: Comply with the following requirements forelevator used for construction purposes:
  - 1. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
  - 2. Provide strippable protective film on entrance and car doors and frames.
  - 3. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
  - 4. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
  - 5. Do not load elevators beyond their rated weight capacity.
  - 6. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

7. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

## 3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate, adjust, and maintain elevator(s). Refer to Division 01 Section "Demonstration and Training."
- B. Check operation of elevator with Owner's personnel present and before date of Substantial Completion. Determine that operation systems and devices are functioning properly.
- C. Check operation of elevator with Owner's personnel present not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

# **END OF SECTION 142100**

# SECTION 23 09 00 - INSTRUMENTATION AND CONTROL FOR HVAC

## PART 1 - GENERAL

## **RELATED DOCUMENTS:**

Drawings and general provisions of the Contract, including General and Supplementary Conditions, General Mechanical Provisions and General Requirements, Division 1 Specification Sections apply to the work specified in this section.

# **DESCRIPTION OF WORK:**

Furnish a BACnet system compatible with existing University systems. All building controllers, application controllers, and all input/output devices shall communicate using the protocols and network standards as defined by ANSI/ASHRAE Standard 135-2001, BACnet. This system shall communicate with the University of Kentucky Facility Management's existing BACnet head-end software using BACnet/IP at the tier 1 level and BACnet/MSTP at the tier 2 level. No gateways shall be used for communication to controllers installed under section. BACnet/MSTP or BACnet/IP shall be used for all other tiers of communication. No servers shall be used for communication to controllers installed under this section. If servers are required, all hardware and operating systems must be approved by the Facilities Management Controls Engineering Manager and/or the Facilities Management Information Technology Manager.

All Building Automation Devices should be located behind the University firewall, but outside of the Medical Center Firewall and on the environmental VLAN.

Provide all necessary hardware and software to meet the system's functional specifications. Provide Protocol Implementation Conformance Statement (PICS) for Windows-based control software and every controller in system, including unitary controllers. These must be in compliance with Front End systems PICS and BIBBS and attached Tridium PICS and BIBBS. Provide all hardware and software to backup, restore, troubleshoot and install system. Software, backups, unitary, and ASC files shall be delivered to UEM (Utilities & Energy Management) for archiving purposes.

It is the contractor's responsibility to insure that the University of Kentucky Facilities Management's head-end system's licensed device/point count is increased to accommodate the number of devices and/or points that are added to fulfill the contractor's obligation to meet the requirements of the project.

Prepare individual hardware layouts, interconnection drawings and software configuration from project design data.

Design, provide, and install all equipment cabinets, panels, data communication network cables needed, and all associated hardware.

Provide and install all interconnecting cables between supplied cabinets, application controllers, and input/output devices.

Provide complete manufacturer's specifications for all items that are supplied. Include vendor name of every item supplied.

Provide supervisory specialists and technicians at the job site to assist in all phases of system installation, startup, and commissioning.

Provide a comprehensive operator, administrator and technician training program as described herein.

Provide as-built documentation, programming software for use site wide, electronic copies of all diagrams, and all other associated project operational documentation (such as technical manuals on approved media, the sum total of which accurately represents the final system.

Furnish, install, and fit-up in complete working order, with all accessories required, the automatic temperature control and monitoring systems shown on the Drawings and specified herein. The systems shall be properly connected, piped and wired in a manner conforming to the laws, ordinances and codes now in force in the Commonwealth of Kentucky.

The controls and all listed I/O points from this project shall communicate with the University of Kentucky Facilities Management's existing BACnet software head-end station using BACnet/IP. All BACnet points shall be exposed to the University of Kentucky Facilities Management's head-end station. Graphics will be installed by UEM on the head-end system. All point and device names shall comply with the University Facilities Management standards and shall be approved before and included in the shop drawings submittal. Cooperate with the Owner (UEM) to ensure that all specified points and alarms communicate and operate on the head-end system. All point and device names shall comply with the University Facilities Management standards (format listed below, consult Utilities and Energy Management (UEM) for the correct abbreviations) and shall be included in the shop drawings submittal for review and approval. Point naming conventions and formats are listed further in this specification in the Direct Digital Controls Equipment section. Refer to University Standard 230553S02 for the AHU Naming Convention.

Related to the alarms, the contractor is to set up the alarm parameters specified by the system sequences of operations without enabling the alarms. Contractor is to provide a list of points containing alarm extensions to Owner (UEM). UEM will be responsible for doing the alarm names, alarm texts and enabling the alarm points provided on the list.

All work must be coordinated and scheduled with the UEM Controls group prior to any work being done on site.

Thermostats: Each terminal unit requires a thermostat for operation, unless specifically indicated on the Drawings to be slaved to another unit. Slaved terminal units shall be controlled to match the CFM and discharge air temperature of the master unit. Thermostat locations have been identified on the Drawings to the extent possible, but all such locations may not be shown. Provide the required thermostats whether or not shown on the Drawings. For those thermostats not shown on the Drawings, work out an acceptable location with the Architect/Engineer. Thermostats are to be provided with no doors.

Provide DDC controls for the air terminal units. Provide electronic operators controlled and monitored by direct digital control systems which shall include, but not be limited to, air handling systems, pumps, terminal units, etc.

The control equipment shall be complete and shall include, but not be limited to, all necessary valves, damper operators, pipe, fittings, etc.

Electronic Control System installer must physically demonstrate to Owner and Owner's representatives (UEM) via software simulations that the proposed building automation system and control sequences will function as outlined in the contract documents prior to field implementation.

Provide VFD's as specified in other sections.

The control and monitoring system for this project shall be made up using standard materials, equipment and components regularly manufactured for systems of this type. The system shall be complete in every respect and shall be a functioning system.

Electrical power wiring and interlock wiring for all controls, signal devices, equipment, alarms, etc., shall be in accordance with diagrams and instructions from the supplier of the systems. All power and control wiring, conduit and wiring connections required for the complete installation, including wiring to smoke dampers and combination fire/smoke dampers and their motors, shall be provided by this Contractor in accordance with Electrical specification requirements. Controls shall be on emergency power.

Refer to other Mechanical Division sections for installation of instrument wells, valve bodies, and dampers in mechanical systems; not work of this section.

## QUALITY ASSURANCE:

Manufacturer: Subject to compliance with requirements, manufacturers offering controls that may be incorporated into the work at Tier 1 BACnet/IP include the following:

Vykon Johnson Controls Alerton

Subject to compliance with requirements, manufacturers offering controls that may be incorporated into the work at Tier 2 BACnet/MSTP include the following:

Honeywell Johnson Controls Alerton Distech

Acceptable controls manufacturers shall include any controls manufacturers which utilize a BACnet protocol in accordance with the specification. If the bidding manufacturer is not listed above, documentation for approval as an equal must be submitted 10 days prior to the bid opening date to allow for evaluation by the university.

Installing Contractor: Installing controls contractors must comply with the following requirements:

The installing systems integration contractor has been in the business of installing BACnet controls for the last 5 years minimum. In addition, the installing systems integration contractor needs to demonstrate with documentation that they have provided the controls in a minimum of (3) hospital or university renovation projects of similar size and scope where they utilized a BACnet system.

The systems integration contractor must have on staff the following number of key personnel as a minimum, each with a minimum of 5 years of related BACnet controls installation experience: Project Manager - 2, Controls Applications Engineer - 2, Programmer - 2, Installation Supervisor - 2, Controls Technician - 5.

Prefer contractor staff to include Niagara Tridium AX/N4 certified technicians.

Contractor to have experience with successful integrations of controls with Niagara Tridium systems.

Contractor to have a minimum of 3 years of installation history with the brand of controls being bid.

Contractor must have a help desk operation or staff available for phone contact 24/7 for providing technical support to university staff. Call forward and emergency service numbers are not acceptable during normal business hours.

Codes and Standards:

Electrical Standards: Provide electrical components of pneumatic control systems which have been UL-listed and labeled, and comply with NEMA standards.

NFPA Compliance: Comply with NFPA 90A "Standard for the installation of Air Conditioning and Ventilating Systems" where applicable for controls and control sequences.

Kentucky Building Code: Comply with requirements where applicable for controls.

Provide products of the temperature control system with the following agency approvals:

**UL-916**; Energy Management Systems

**UL-873**; Temperature Indication and Regulating Equipment

**UL-864**; Subcategories UUKL, OUXX, UDTZ; Fire Signaling and Smoke Control Systems

**CSA**: Canadian Standards Association

FCC, Part 15, Subpart J., Class A Computing Devices

All products shall be labeled with the appropriate approval markings. System installation shall comply with NFPA, NEMA, NEC, Local and National Codes.

# SUBMITTALS:

Product Data: Submit manufacturer's technical product data for each control device furnished, indicating dimensions, capacities, performance and electrical characteristics, and material finishes, also include installation and start-up instructions.

# A. Shop Drawings, Product Data, and Samples

- 1. Each submittal shall have a cover sheet with the following information provided: submittal ID number; date; project name, address, and title; BAS Contractor name, address and phone number; BAS Contractor project manager, quality control manager, and project engineer names and phone numbers.
- 2. Each submittal shall include the following information.
  - a. BAS riser diagram showing all DDC controllers, network repeaters, and network wiring.
  - b. One-line schematics and system flow diagrams showing the location of all control devices.
  - c. Points list for each DDC controller, including: Tag, Point Type, System Name, Object Name, Expanded ID, Display Units, Controller Type, Address, Cable Destination, Module Type, Terminal ID, Panel, Slot Number, Reference Drawing, and Cable Number. The initial shop drawing submittal for review needs to include all point names meeting the naming convention outlined in this specification for UEM approval at the shop drawing phase prior to the contractor beginning any programming.
  - d. Vendor's own written description for each sequence of operations, to include the following:
    - Sequences shall reference input/output and software parameters by name and description.
    - The sequences of operations provided in the submittal by the BAS Contractor shall represent the detailed analysis needed to create actual programming code from the design documents.
    - Points shall be referenced by name, including all software points such as programmable setpoints, range limits, time delays, and so forth.
    - The sequence of operations shall cover normal operation and operation under the various alarm conditions applicable to that system.
  - e. Detailed Bill of Material list for each panel, identifying: quantity, part number, description, and associated options.

- f. Control Damper Schedules. This spreadsheet type schedule shall include a separate line for each damper and a column for each of the damper attributes, including: Code Number, Fail Position, Damper Type, Damper Operator, Blade Type, Bearing Type, Seals, Duct Size, Damper Size, Mounting, and Actuator Type.
- g. Control Valve Schedules. This spreadsheet type schedule shall include a separate line for each valve and a column for each of the valve attributes, including: Code Number, Configuration, Fail Position, Pipe Size, Valve Size, Body Configuration, Close off Pressure, Capacity, Valve CV, Calc CV, Design Pressure, Actual Pressure, and Actuator Type.
- h. Cataloged cut sheets of all equipment used. This includes, but is not limited to, the following: DDC panels, peripherals, sensors, actuators, dampers, and so forth.
- Range and scale information for all transmitters and sensors. This sheet shall clearly indicate one device and any applicable options. Where more than one device to be used is on a single sheet, submit two sheets, individually marked.
- j. Hardware data sheets for all local access panels.
- k. Software manuals for all applications programs to be provided as a part of the programming devices, and so forth for evaluation for compliance with the performance requirements of this Specification.
- I. The controls contractor shall include their BACnet PICS and BIBB statements (as described in ASHRAE 135-2001) for each device.
- BAS Contractor shall not order material or begin fabrication or field installation until receiving authorization to proceed in the form of an approved submittal. BAS Contractor shall be solely responsible for the removal and replacement of any item not approved by submittal at no cost to the Owner.
- 4. Submittal shall have approved point names.

Maintenance Data: Submit maintenance instructions and spare parts lists for each type of control device. Include that type data, product and shop drawings in maintenance manual.

# Operation and Maintenance Instructions:

This contractor shall prepare an electronic Operations Manual entitled "Automatic Temperature Control and Monitoring Systems Operation and Maintenance Data." Manual shall be PDF files with separate PDFs for each of the items noted below.

Each manual shall contain the following information:

Name and address of Consulting Engineer, Contractor, and index of equipment, including vendor (name and address).

Complete brochures, descriptive data and parts list, etc., on each piece of equipment, including all approved shop drawings.

Complete maintenance and operating instructions, prepared by the manufacturer, on each major piece of equipment, including preventative maintenance instructions.

Complete shop drawing submittal on temperature and monitoring controls including control diagrams updated to reflect "as-built" conditions.

All wiring and component schematics necessary for Owner (UEM) to troubleshoot, repair and expand the system.

All manuals shall be submitted to the Engineer prior to final inspection of the building.

Provide a laminated copy mounted in a sleeve on the outside of the panels for the controls sequences pertinent to equipment supplied by that specific controls panel.

Controls Program Backup: At the end of the project, the contractor is to supply digital backup copies of all final complete operating controls programs. These shall be delivered to UEM for archiving purposes.

# **DELIVERY, STORAGE AND HANDLING:**

Provide factory shipping cartons for each piece of equipment and control device. Maintain cartons while shipping, storage and handling as required to prevent equipment damage and to eliminate dirt and moisture from equipment. Store equipment and materials inside and protect from weather.

# **PART 2 - PRODUCTS**

## DIRECT DIGITAL CONTROL SYSTEM

General: This specification defines the minimum hardware and performance requirements for a computer-based building automation system to be furnished and installed.

# SCOPE OF WORK:

## System Requirements:

Contractor shall provide all equipment, engineering and technical specialist time to check the installation required for a complete and functioning system. The contractor shall furnish and install all interconnecting system components. Components to include, but not be limited to: power line conditioners, field panels, sensors, motor starter interfaces, and any other hardware items not mentioned above but required to provide the Owner with a complete workable system.

Any feature or item necessary for complete operation, trouble-shooting, and maintenance of the system in accordance with the requirements of this specification shall be incorporated, even though that feature or item may not be specifically described herein. This shall include hardware and software.

All materials and equipment used shall be standard components, regularly manufactured for this and/or other systems and not custom designed especially for this project. All systems and components shall be thoroughly tested and proven in actual use.

# Input/Output Summary:

The system as specified shall monitor, control and calculate all of the points and functions as listed in the Input/Output Summary.

# System Start-Up and Acceptance:

Upon completion of the installation, the BAS Contractor shall start-up the system and perform all necessary testing and debugging operations. An acceptance test in the presence of the Owner's representative shall be performed. The vendor shall check all sensors that exhibit any problems or faulty reading. When the system performance is deemed satisfactory in whole by UEM, the system parts will be accepted for beneficial use and placed under warranty. The BAS Contractor is to be available for system commissioning at the end of the installation when requested by the Engineer and/or Owner. The contractor is to also be available for seasonal commissioning for the other seasons beyond the initial commissioning.

This Contractor shall work with the Owner (UEM), who is developing the graphics, to ensure that all points report, function and alarm as required on the BACnet head-end system. The Contractor will also work with the Project Manager or CNS/MCIS to obtain all necessary IP's and Ethernet drops needed for BACnet panel. The Owner (UEM) will assign all BACnet/IP instance numbers and all BACnet/MSTP network numbers for use by the Contractor. All BACnet/IP devices will report directly to the head-end system.

UEM will be performing their own complete point by point evaluation as part of this project, independently of the commissioning activity. This will occur during the warranty period of the project.

# Facilities Management's Instruction:

The BAS Contractor shall provide two copies of an electronic version of the operator's manual describing all operating and routine procedures to be used with the system. This user's manual should contain subjects such as: standard operation, error message explanations, software usage, commands, system troubleshooting, etc. The Contractor shall also provide wiring schematics for all system components.

The BAS Contractor shall instruct the Owner's designated representatives in these procedures during the start-up and test period. The duration of the instruction period shall be no less than four (4) hours during two 2 hour sessions. (Number of hours may be adjusted to a max of 40 dependent upon the size and scope of project. For larger projects, training vouchers for instructional training at the manufacturer's facilities may be requested in lieu of on-site training.) These instructions are to be conducted during normal working hours at the Owner's convenience and are to be prearranged with the Owner. The owner can request this training any time within the one year warranty period and may request any number of classes adding up to the total number of hours. The contractor shall provide an hourly unit price for additional on-site training.

The instructions shall consist of both hands-on at the job site and classroom training at a classroom location on the University of Kentucky campus coordinated with the Project Manager and UEM.

Upon completion, the attendees shall be able to operate the system and implement system changes including start-up, boot load, add point to the data base, enter messages, and down line load field units.

Prior to the scheduling of the sessions, an agenda outlining the training topics must be submitted for approval. Agenda items shall include, but not be limited to, the following topics:

- Explanation of control sequences. Include which sensors are used and how output device operates.
- 2) Explanation of control drawings and manuals, including symbols, abbreviations, and overall organization.
- 3) Walk-through of project to identify controller locations and general routing of network cabling.
- 4) Review of operation and maintenance of hardware devices including air compressor, air dryers, controllers, instruments, and sensors. Include schedule for routine maintenance.
- 5) Programming Application Specific Controllers
  - (a) Backing up and Restoring Application Specific Programming
  - (b) Adding/Deleting/Editing points on Application Specific controllers
  - (c) Troubleshooting Application Specific controllers (inputs/outputs/logic/master slave relationships/bus issues)
- 6) Programming Building Specific Controllers

- (a) Backing up and Restoring Building Specific Controllers Programming
- (b) Adding/Deleting/Editing points on Building Specific Controllers controllers
- (c) Troubleshooting Building Specific Controllers controllers (inputs/outputs/logic/network issues)
- 7) How to use tools and cables

# Warranty:

The system including all hardware and software components shall be warranted for a period of one year when the system performance is deemed satisfactory in whole by UEM. The system parts will be accepted for beneficial use and placed under warranty at that time. A Certificate of Occupancy does not initiate the control system warranty. Any defects in materials and workmanship arising during this warranty period shall be corrected without cost to the Owner.

All applicable software as detailed in this specification shall be updated by the BAS Contractor free of charge during the warranty period. This will ensure that all system software will be the most up-to-date software available from the BAS Contractor.

# **DIRECT DIGITAL CONTROL (DDC) EQUIPMENT**

# System Software

All software required for monitoring, modifying, configuring and backup for the system shall be embedded in the controller and accessible via VT terminal, hyper-terminal or the web. This software shall allow any computer with access (and security) to the University's network to perform the work described above using a web browser or provided software. No software upgrades should be required unless provided at no additional cost to the customer. The software version used for installation of any new devices must either be at the current software version used on the University Facilities Management campus at the current JAVA version or the new software at the most current JAVA version must be installed on all devices and the current system prior to the installation of the new devices. All software is to also operate on the latest version of Microsoft Windows operating system. All configuration and programming tools required for the upgraded version must be provided at the time of installation.

Provide a USB, standard RS-232 9 pin female, Bluetooth, RJ11, RJ12 or RJ45 connection for on-site access.

# **BACnet Conformance**

Building Controller shall as a minimum support MS/TP and Ethernet BACnet LAN types. It shall communicate directly via these BACnet LANs as a BACnet device and shall support simultaneous routing functions between all supported LAN types. Global controller shall be a BACnet conformance class 3 device and support all BACnet services necessary to provide the following BACnet functional groups:

1. Clock Functional Group

- 2. Files Functional Group
- 3. Reinitialize Functional Group
- 4. Device Communications Functional Group
- 5. Event Initiation Functional Group

Please refer to end of this section for a complete list of the services that must be directly supported to provide each of the functional groups listed above. All proprietary services, if used in the system, shall be thoroughly documented and provided as part of the submittal data.

Standard BACnet object types supported shall include as a minimum: Analog Value, Binary Value, Calendar, Device, File, Group, Notification Class, Program and Schedule object types. Alarms should also be setup on this system with limits. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data.

The Building Controller shall comply with Annex J of the BACnet specification for IP connections. This device shall use Ethernet to connect to the IP internetwork. It must support interoperability on the campus area network and function as a BACnet Broadcast Management Device (BBMD) and/or a BACnet router.

Building Controller (B-BC)

# General

Building Controller (B-BC) shall be minimum 16 bit microcomputer based, utilizing a multi-tasking, multi-user operating system.

The B-BC controllers shall permit the simultaneous operation of all control, communication facilities management and operator interface software, as programmed by the Contractor or User. Modification of the on-board B-BC controller database shall be performed on-line using the built-in software. Systems which require the B-BC to be removed from service while DDC control sequences are modified shall not be acceptable.

B-BC controllers shall utilize true floating point arithmetic capabilities.

All B-BC controllers shall have open licensing to connect to existing UK UEM Tridium BACnet BAS.

Databases and Memory Back-Up

All programming defining the functions to be performed by the B-BC, including but not limited to application programs and point database within each B-BC, shall be protected from loss due to power failure for a minimum of 72 hours. All database and backup shall be provided to the UK UEM Controls group.

# Service Ports

B-BC controllers shall be equipped with a minimum of one operator service port for the connection of a laptop computer. The service port shall be either a built-in standard RS-232 data terminal port, USB port, CAT5 cable or RJ11/12 connection.

Connection of a service device, to a service port, shall not cause the B-BC controller to lose communications with its peers or other networked device controllers.

Display and Readout Capability

The B-BC controller shall additionally provide diagnostic LED indication of device transmit and receive data communications for all communication port and peripheral ports, normal operation, abnormal operation and control relay operation indication.

Manual/Auto Control and Notification

The B-BC controller shall provide commanded override capability from the built-in operator interface. Such overrides shall be annunciated to the head-end station. Such overrides shall be valid as long as power is applied to the controller.

# Adjustments

Every control panel shall provide adjustments for the functions specified. In general, adjustments shall be provided for all setpoints used by controllers within each control panel. In addition, adjustments shall be provided for throttling ranges, mixed air damper minimum positions, or other items as specified. Adjustments shall be integral to each individual B-BC. The built-in operator interfaces shall allow the easy execution of the adjustment through named identifiers within the B-BC. From a single B-BC user interface, any other B-BC shall be accessible and full adjustment capabilities shall be provided.

**B-BC Naming Convention** 

B-BC devices shall be named using the following naming convention:

B-BC devices shall be named using the following format:
BuildingName\_BuildingNumber\_Floor\_RoomNumber\_B-BC Device Type OR
BuildingNumber\_BuildingName\_Floor\_RoomNumber\_B-BC Device Type

All B-AAC points shall be named using the following format:
Building\_Floor\_RoomNumber\_Device Type\_Equipment ShortName\_Function

# Examples:

A B-BC device located in the Pavilion HA mechanical room HA4001 would be named as follows:

PAVHA\_0293\_04\_HA4001\_JACE

An exhaust fan status point for a fan in Pavilion HA mechanical room HA3001 fed directly from the above panel would be named as follows:

PAVHA\_03\_HA3001\_HVA\_EF1\_STAT

For function short names and building short names and numbers, contact the University Controls Engineering Department.

# Advanced Application Controller (B-AAC)

# General

Controls shall be microprocessor based, Advanced Application Controllers (B-AAC's). B-AAC's shall be provided for Air Handling Units, packaged Rooftops, primary and secondary pumping loop systems and other applications as shown on the drawings. B-AAC's shall be based on a minimum 16 bit microprocessor working from software program memory which is physically located in the B-AAC. The application control program shall be resident within the same enclosure as the input/output circuitry which translates the sensor signals. All input/output signal conversion shall be performed through a minimum of a 10 bit A to D converter. All input points shall be universal in nature allowing their individual function definition to be assigned through the application software. All unused input points must be available as universally definable at the discretion of the owner. If the input points are not fully universal in nature, unused points must be equal in quantity between Analog Inputs and Digital Inputs.

All B-AAC controllers shall have open licensing to connect to existing UK UEM Tridium BACnet BAS.

Contractor shall provide a minimum of one B-AAC controller per air handling or mechanical system as shown on the drawings.

The BAS contractor shall provide and field install all B-AAC's specified under this section. Mechanical equipment manufacturers desiring to provide B-AAC' type controls as factory mounted equipment, shall provide a separate bid for their products less all controls, actuators, valve assemblies and sensors, which are specified to be provided by the BAS/Temperature control contractor.

All input/output signals shall be directly hardwired to the B-AAC. Troubleshooting of input/output signals shall be easily executed with a volt-ohm meter (VOM). As a result of this intent, it is specified that power line carrier systems, or other systems which command multiple outputs over a single pair of wires, shall not be utilized.

B-AAC's shall be in continuous direct communication with the network which forms the facility wide Building Automation System. The B-AAC's shall communicate with the B-BC at a minimum baud rate of 9,600 baud.

# Non-Volatile Memory

All control sequences programmed into the B-BC shall be stored in non-volatile memory, which is not dependent upon the presence of a battery, to be retained. Power failures shall not cause the GDC memory to be lost, nor shall there be any need for batteries to be recharged or replaced to maintain the integrity of the controller database. The B-BC shall allow for the creation of unique application control sequences. Systems that only allow selection of sequences from a library or table are not acceptable.

All control sequences shall be fully programmable at the B-AAC, allowing for the creation and editing of an application control sequence, while at the unit.

The B-AAC shall be provided with an interface port (standard RS232 data terminal port or USB port) for a laptop computer. The interface port shall allow the laptop to have full functionality as described above. From the interface port or *network terminal, the laptop shall be able to directly access any B-AAC or B-ASC in the* network.

The B-AAC shall provide an input/output point trending utility that is capable of accumulating 48 analog point samples and 10 digital point samples, per Input/Output point. Each sample shall be taken on a user defined interval, ranging from 1 second to 255 hours per sample. The digital readings shall be on a change of state occurrence for the digital points. All samples shall be recorded with the engineering units for the value, along with a time and date identifier for each sample taken. The samples shall be protected against loss due to power interruptions through a battery or capacitor backup method for a minimum of 30 days.

Systems unable to provide the above capability shall provide for the individual Input/Output point trending at the B-BC. Specifics as to how each B-AAC point will be trended, at the B-BC, shall be provided in the submittal documents. Included in the explanation shall be the sample intervals, the memory allocation in the B-BC and the number of B-AAC's per B-BC that can be expected.

The B-AAC shall provide LED indication of transmit/receive communications performance, as well as for the proper/improper operation of the controller itself.

The B-AAC shall be provided with a battery backed time clock that is capable of maintaining the time of day and calendar for up to thirty days, upon loss of power to the B-AAC, without loss of setting. The battery for the time clock shall be replaceable by the customer. The B-AAC shall be provided with integral time schedules; as a minimum, two seven day schedules with eight on/off periods per day shall be provided. Holiday override of weekly schedules shall be provided for pre-scheduling of holidays, for the year in advance.

# Controller Location

To simplify controls and mechanical service troubleshooting, the B-AAC shall be capable of being mounted directly in or on the controls compartment of the air handling system. The B-AAC shall be housed in a NEMA 1 enclosure to accommodate direct mounting on the equipment to be controlled. The B-AAC shall be constructed in a modular orientation such that service of the failed components can be done quickly and easily. The modular construction should limit the quantities of printed circuit boards to a maximum of two. All logic, control system, power supply and input/output circuitry shall be contained on a single plug-in circuit board. When required to replace a printed circuit board, it shall not be necessary to disconnect any field wiring. This shall allow all controls maintenance and troubleshooting to be made while at the air handling unit. The B-AAC shall be directly wired to sensory devices, staging relays or modulating valves for heating and cooling.

Every controller and control panel shall be labeled with a lamacoid plate permanently secured to the device. Sticky tape or glued labels are not acceptable. The labeling shall describe the device and include related information such as MAC address, IP address, BACnet Instance numbers, etc.

All power feeds shall be clearly identified and shall include panel number, breaker and

electrical panel location if not in the same room.

For compatibility to the environment of the air handling unit, B-AAC's shall have wide ambient ratings. B-AAC's shall be rated for service from -40 DegF (Degrees Fahrenheit) to 140 DegF.

Contractor shall submit description of location of B-AAC's on all mechanical and air handling equipment.

**B-AAC Naming Convention** 

B-AAC devices shall be named using the following naming convention:

B-AAC devices shall be named using the following format: Building\_Floor\_RoomNumber\_B-AAC Device Type\_Equipment Short Name

All B-AAC points shall be named using the following format: Function

# **Examples:**

An Air Handler controller in the Pavilion HA mechanical room HA4001 for AHU7 would be named as follows:

PAVHA\_04\_HA4001\_HVA\_AHU7

The mixed air temperature point for the above system would be named as follows:

MAT

Therefore, when this point is learned, the entire point name will be:

PAVHA\_04\_HA4001\_HVA\_AHU7\_MAT

For function short names and building short names and numbers, contact the University Controls Engineering Department.

Application Specific Controller (B-ASC)

# General

Controls shall be microprocessor based Application Specific Controller (B-ASC). B-ASC's shall be provided for Unit Ventilators, Fan Coils, Heat Pumps and other applications as shown on the drawings. B-ASC's shall be based on a minimum 16 bit microprocessor working from software program memory which is physically located in the B-ASC. The application control program shall be resident within the same enclosure as the input/output circuitry which translates the sensor signals. All input/output signal conversion shall be performed through a minimum of a 10 bit A to D converter.

Contractor shall provide a minimum of one B-ASC controller per unitary system as shown on the drawings.

The BAS contractor shall provide and install all B-ASC's specified under this section.

All input/output signals shall be directly hardwired to the B-ASC. Troubleshooting of input/output signals shall be easily executed with a volt-ohm meter (VOM). As a result of this intent, it is specified that power line carrier systems, or other systems which command multiple outputs over a single pair of wires, shall not be utilized.

B-ASC's shall be in continuous, direct communication with the network which forms the facility wide building automation system. The B-ASC's shall communicate with the B-BC at a baud rate of no less than 38,400 baud.

# Non-Volatile Memory

All control sequences programmed into the B-ASC shall be stored in non-volatile memory, which is not dependent upon the presence of a battery, to be retained. Power failures shall not cause the B-ASC memory to be lost, nor shall there be any need for batteries to be recharged or replaced to maintain the integrity of the controller database. The B-ASC shall allow for the creation of unique application control sequences.

The B-ASC shall be provided with the ability to interface with a laptop computer. The interface port shall be provided at the wall sensor or within the unitary equipment. Connection to the wall sensor must be a standard RJ-45 or USB port.

The B-ASC shall provide an input/output point trending utility that is capable of accumulating 48 analog point samples and 10 digital point samples per Input/Output point. Each sample shall be taken on a user defined interval, ranging from 1 second to 255 hours per sample. The digital readings shall be on a change of state occurrence for the digital points. All samples shall be recorded with the engineering units for the value, along with a time and date identifier for each sample taken.

Systems unable to provide the above capability shall provide for the individual input/output point trending at the B-BC. Specifics as to how each B-ASC point will be trended, at the B-BC, shall be provided in the submittal documents. Included in the explanation shall be the sample intervals, the memory allocation in the B-BC and the number of B-ASC's per B-BC that can be expected.

#### Controller Location

To simplify controls and mechanical service troubleshooting, the B-ASC shall be mounted directly in the controls compartment of the unitary system. The B-ASC shall be provided with a sheet metal or polymeric enclosure that is constructed of material allowing for the direct mounting within the primary air stream, as defined by UL-465. The direct mounting shall allow all controls maintenance and troubleshooting to be made while at the unitary equipment. The B-ASC shall be directly wired to sensory devices, staging relays or modulating valves for heating and cooling.

For compatibility to the environment of the unitary equipment, B-ASC shall have wide ambient ratings. B-ASC's shall be rated for service from 32 DegF (Degrees Fahrenheit) to

140 DegF.

Contractor shall submit description of location of B-ASC's on all mechanical and unitary equipment.

**B-ASC Naming Convention** 

B-ASC devices shall be named using the following naming convention:

B-ASC devices shall be named using the following format: Building\_Floor\_RoomNumber\_B-ASC Device Type

All B-ASC points shall be named using the following format: Function

# Examples:

A VAV controller in the Pavilion HA room HA498 would be named as follows:

PAVHA\_04\_HA498\_VAV

The discharge air temperature point for the above room would be named as follows:

DAT

Therefore, when this point is learned, the entire point name will be:

PAVHA 04 HA498 VAV DAT

For function short names and building short names and numbers, contact the University Controls Engineering Department.

# **CONTROL PANELS**

Panelboard shall contain all instruments and accessories. Provide each item of equipment with an engraved nameplate. Panelboard shall be wall-mounted or stand-mounted and shall be completely enclosed.

As far as is practical, the control components for each system shall be grouped. Provide each group of components with identification.

The entire panelboard shall be pre-wired and brought to a main terminal strip. All relays, switches, etc., shall be installed, furnished and wired on panelboard. Clearly mark each terminal strip as to which wire from which component is to be connected.

Fabricate panels of 0.06-inch- (1.5-mm-) thick, furniture-quality steel or extruded-aluminum alloy, totally enclosed, with hinged doors and keyed lock, with manufacturer's standard shop-painted finish and color.

Panel-Mounted Equipment: Temperature and humidity controllers, relays, and automatic switches; except safety devices. Mount devices with adjustments accessible through front of panel.

Door-Mounted Equipment: Flush-mount (on hinged door) manual switches, including damper-positioning switches, changeover switches, thermometers, and gages.

Graphics: Color-coded graphic, laminated-plastic displays on doors, schematically showing system being controlled, with protective, clear plastic sheet bonded to entire door.

# **SENSORS**

Electronic Sensors used in air ducts or liquid lines shall utilize non-adjustable RTD or thermostat sensing elements with + or -0.36°F, accuracy and stability of at least + or -0.05°F per year. All sensors used in liquid line shall be provided with separable stainless steel immersion wells. Averaging sensors shall be a minimum of five (5) feet in length, and shall be installed in such a manner so as to sense representative sample of the medium being controlled.

Equipment Operation Sensors: As follows:

Status Inputs for Fans: Differential-pressure switch with adjustable range set to 175 percent of rated fan static pressure. A hawkeye sensor should also be provided so that the owner knows if belts are lost or fans are running backwards.

Status Inputs for Electric Motors: Current-sensing relay with current transformers, adjustable and set to 175 percent of rated motor current.

Digital-to-Pneumatic Transducers: Convert plus or minus 12-V dc pulse-width-modulation outputs (preference is 4-20mA or 0-10 Volts), or continuous proportional current or voltage to 0 to 20 psi (0 to 138 kPa).

Damper Position Indication: Potentiometer mounted in enclosure with adjustable crank-arm assembly connected to damper to transmit 0 to 100 percent damper travel.

# **SENSOR INPUT AND OUTPUT DEVICES:**

The following sensors and devices, or their equivalents, shall be considered acceptable. Other sensors and devices required for this specification are outlined in their respective subsystem.

Analog sensing elements for remote indication shall be independent of local pneumatic sensors used for local control loops.

System Accuracy: The system shall maintain an end-to-end accuracy for one year from sensor to operator's console display for the application specified.

STANDARD Temperature Sensors

TYPE Electronic

APPLICATION BAS, HVAC, BTU, Boiler Control

STANDARD 100 or 1000 ohm platinum wire wound RTD

element

Standard J (3 wire) configuration European curve, Alpha = .00385

Ohms/Ohm/deg.C., meets DIN SID 43760

Wire in conduit

MECHANICAL 1/4" stainless steel sheath

SPACE TEMPERATURE Sensor housing to be similar in appearance to existing

thermostats except that thermometers are not required. Similarity to be Owner's decision. Locate on an outside wall

if possible.

DUCT TEMPERATURE Standard lengths -- 5.5", 11.5" and 17.5"

Other lengths with owner's written approval.

Locate in central area of airstream at minimum of 18" from

reheat coil.

1/2" NPT mounting thread and flange and conduit

connection.

Glass encapsulated element unless otherwise approved.

THERMOWELL Drilled brass or stainless steel or brass fitting with stainless steel

sheath built-up well with Owner approval.

Glass encapsulated element unless otherwise approved.

3/4" process connection with drilled wells.

1/2" NPT process connection on built-up wells.

Insertion into measured medium - 1" + 1/2" diameter of pipe.

Cast iron connector head - 1/2" NPT process connection and conduit

connection.

Rated thermowell pressure = 250 psi.

ELEMENT ACCURACY must meet .1% DIN and the DIN 43760 standard.

OVERALL ACCURACY + 1 deg.F. General duct, space and

thermowell temperatures.

+ .75 deg.F. for thermowell ele. on 4" or larger

pipes.

+ .5 deg.F. for thermowell ele. on 8" or larger pipes.

OVERALL RANGE -20% to I20% of possible operating conditions.

GENERAL NOTE If wires from RTD probe to DGP are to be more than 200 feet long, provide extra large cast iron connector head (nominal size 2-11/16 x 1/4) or junction box to accommodate a resistance to 4-20 mA convertor transmitter.

STANDARD Pressure Sensor

TYPE Electronic with LVDT element.

APPLICATION 4-20 mA Output (2 wire)

Wire in conduit

Input voltage 10-35 volts DC

Loop resistance greater than or equal to 500 ohms

MECHANICAL Linear variable differential transformer

(LVDT) element

Allowable Standard Ranges 0-30 PSI

0-100 PSI 0-200 PSI

Other ranges with Owner written approval 1/2" NPT input thread and conduit connection.

Provide differential inputs unless otherwise approved.

Provide an air filter on unused differential ports.

Provide with a NEMA 4 watertight enclosure unless otherwise

approved.

Min. rate pressure - I50% FS proof and 450 PSI static.

OVERALL ACCURACY + 0.5% F.S. including Linearity, hysteresis and repeatability.

ACCURACY NOTE: If pressure transducer is used to calculate flow with a pilot tube, then the accuracy of the pressure sensor should be dictated by the overall accuracy requirement of the system and would probably require a high accuracy sensor.

This section covers all new transducers provided. All new transducers provided shall be of the following type:

INPUT		OUTPUT
l.	Temperature (deg.F.) Temperature (deg.F.)	4-20 mA, 2 wire 100 ohm platinum wire RTD
2.	Pressure	4-20 mA, 2 wire
3.	Flow Instantaneous	4-20 mA, 2 wire
4.	Flow Integrated	Pulse 10 PPS Max A25

msec open (min.) 40 msec

closed (min.)

5. KW Instantaneous 4-20 mA, 2 wire

6. KWH - Integrated Pulse – 10 PPS Max A25

msec open (min.) 40 msec

closed (min.)

Digital inputs from devices with isolated, dry type contacts (no grounds, no voltage) of either normally open (N.O.) or normally closed (N.C.) configuration. Live contact inputs, those that have voltage present, shall be provided with isolating devices to meet dry contact requirement.

# THERMOSTATS:

Room Thermostats: Provide room thermostats that work in conjunction with the B-AAC and B-ASC terminal unit controllers. Thermostats shall have visible thermometers, setpoint indication and exposed setpoint adjustment in all areas except public spaces. Thermostats are to have push buttons on the front face for adjusting the temperature setpoints. Thermostats are to have no doors.

In cases where a single room sensor is to be shared by multiple controllers the slave box reheat control valves and dampers shall be individually controlled to track the discharge temperature of the master unit. The Master shall be identified locally and on the FMS.

An RJ-11 type connection to serial port shall allow a local portable operator or programmer's terminal to access all program blocks and attributes for complete programmability.

Room Thermostat Accessories: As follows:

Insulating Bases: For all thermostat installations.

Thermostat Guards: Locking transparent-plastic mounted on separate base.

Adjusting Key: As required for device.

Aspirating Boxes: Where indicated for thermostats requiring flush installation.

#### DAMPERS:

Provide automatic control dampers as indicated, with damper frames not less than 13-gage galvanized steel. Provide mounting holes for enclosed duct mounting. Provide damper blades not less than formed 16-gage galvanized steel, with maximum blade width of 8".

Secure blades to 1/2" diameter zinc-plated axles using zinc-plated hardware. Seal off against spring stainless steel blade bearings. Provide blade bearings of nylon and provide thrust bearings at each end of every blade. Construct blade linkage hardware of zinc-plated steel and brass. Submit leakage and flow characteristics plus size schedule for controlled dampers.

Do not exceed maximum 48"x48" damper size. For sizes larger then this maximum in either dimension, use multiple dampers with a separate operator for each damper. Do not link separate dampers together.

Operating Temperature Range: From -20 degrees to 200 degrees F. (-29 degrees to 93 degrees C.). The occupant shall have an operation local range of 68 degrees and 74 degrees on rooms with Occupancy sensors.

For standard applications as indicated, provide parallel or opposed blade design (as selected by manufacturer's sizing techniques) with inflatable steel blade edging, or replaceable rubber seals, rated for leakage less than 10 CFM/sq.ft. of damper area, at differential pressure of 4" w.g. when damper is being held by torque of 50 inch-pounds.

Smoke Dampers: Provide smoke and combination fire/smoke dampers in accordance with applicable requirements of Specification Section "Ductwork Accessories".

# **ACTUATORS:**

Electric Valve and Damper Motors: Size each motor to operate dampers or valves with sufficient reserve power to provide smooth modulating action or 2-position action as specified.

For reheat coils in branch ductwork and heating coils for air terminal units and fan terminal units, provide non-spring return, fully proportional, floating valve actuators.

For all other applications, provide permanent split-capacitor or shaded pole type motors with gear trains completely oil-immersed and sealed. Equip spring-return motors, with integral spiral-spring mechanism. Furnish entire spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.

Equip motors for outdoor locations and for outside air intakes with "O ring" gaskets designed to make motors completely weatherproof, and equip with internal heaters to permit normal operation at -40 degrees F. (-40 degrees C.)

Provide separate motor for each outside air, return air and exhaust air damper. Do not link dampers with different functions together on one damper motor.

Provide separate motor for each damper when overall damper size exceeds 48" in either dimension. Do not link different dampers together on one damper motor.

Binary backed-up motors are not acceptable.

# **MISCELLANEOUS:**

Wells for Pipe Mounted Sensor: Wells shall have minimum working pressure of 150 WOG psig. Wells shall be brass or stainless steel.

Lightning Protection: All electric/electronic equipment supplied must be internally or externally lightning/transient surge voltage protected on all external power feeder and input/output connections which are subject to surge voltage transients. Provide high speed clamping elements which meet IEEE. STD. 472 (SWC) on all digital or analog date channels.

# Pressure Instruments:

Differential Pressure and Pressure Sensors: Sensors shall have 4-20 mA output proportional signal with provisions for field checking. Sensors shall withstand up to 150% of rated pressure, without damaging device. Accuracy shall be within 2% of full scale.

Pressure Switches: Pressure switches shall have repetitive accuracy of +2% of range and withstand up to 150% of rated pressure. Sensors shall be diaphragm or bourdon tube design. Switch operation shall be adjustable over operating pressure range. Switch shall have application rated Form C, snap-acting, self-wiping contact of platinum alloy, silver alloy or gold plating.

Current Sensing Relays: Relays shall monitor status of motor loads. Switch shall have self-wiping, snap-acting Form C contacts rated for application. Setpoint of contact operation shall be field adjustable.

Low Voltage Wiring: Control wiring for analog functions shall be 18 AWG minimum with 600 volt insulation, twisted and shielded, 2 or 3 wire to match analog function hardware.

Low Voltage Wiring: Wiring for electric or electronic circuits less than 25 volts shall be cabling manufactured for express use in air plenums. The plenum cable shall be 24 gauge or larger as required, tinned copper, Teflon insulated, twisted pairs, shielded or unshielded, as required, a color coded, overall tape wrap, with transparent Teflon jacket, 150V., NEC725, Class 2 classified for use in air plenum non-conduit signaling application.

Manual Override Switches: In case of failure of the DDC system, provide override switches to operate fans, pumps, air handling units, cooling tower, heat exchangers, etc., manually in local interface control panel. Also for temperature and pressure control provide switches to allow supply temperatures, water temperatures, supply air pressure and fans to be manually regulated. All switches shall be located in locked panel to prevent unauthorized use of the manual override switches.

# **PART 3 - EXECUTION**

# INSPECTION:

Examine areas and conditions under which control systems are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

# **INSTALLATION OF AUTOMATIC TEMPERATURE CONTROLS**

General: Install systems and materials in accordance with manufacturer's instructions, roughing-in drawings and details shown on the Drawings.

# **CONTROL WIRING:**

Contact the project manager for all required Ethernet connections for this project.

Install control wiring, without splices between terminal points, color-coded. Install in neat workmanlike manner, securely fastened. Install in accordance with National Electrical Code. Install wiring in electrical conduit in all areas. All controls conduit shall be green in color.

Conceal conduit, except in mechanical rooms and areas where other conduit and piping are exposed.

Install all control wiring with color-coded wire in 3/4" minimum size conduit. Wire gauge to be in accordance with National Electrical Code.

Connect electrical components to wiring systems and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torqueing requirements are not indicated, tighten connectors and terminals according to tightening requirements specified in UL 486A.

#### **POWER WIRING:**

Provide power wiring and conduit to air terminal units (if required) and to smoke dampers and combination fire/smoke dampers and their damper motors.

Furnish and install power cabling and conduit for temperature controls panels and equipment from emergency power panels. Each temperature control panel shall be connected to a separate circuit. Conduits shall connect to panels at the locations directed by the Contractor under Division 26. Final connection in the power panels shall be by Temperature Control Contractor in coordination with Division 26 Contractor.

# **MISCELLANEOUS:**

Software Programming: All software programs shall be programmed by this Contractor.

Installation of Mechanical Devices: Refer to Mechanical Division sections for installation of valve bodies, control wells and dampers; not work of this section.

# **ADJUSTMENT AND SERVICE:**

After completion of the installation, the automatic temperature control manufacturer shall regulate and adjust all thermostats, control valves, motors, and other equipment provided under his contract and shall place them in complete operating condition, subject to approval by the Engineer and Owner.

This shall include but not be limited to "tuning" of all control systems. Systems shall be tuned for decaying wave response and minimal overshoot of setpoint. Contractor is to not leave any system in an Auto Tune mode.

Room temperature controls shall have one temperature setpoint with less than a 0.5°F between calculated heating and cooling temperatures.

This Contractor shall work with Balancing Contractor to provide verification of CFM reading from the DDC terminal unit controllers.

Final adjustment shall be performed by specially trained personnel in direct employ of manufacturer of primary temperature control system.

After completion of installation, perform the following:

#### Installation.

Check proper installation and connection of each control device.

Verify electric power.

Verify each sensor and actuator connection to field computer.

# Field Computer Operation.

# Point Test.

- check of wiring of each sensor and actuator end-to-end
- verify calibration of each sensor.
- verify manual operation of each actuator.

# Local loop control.

- bring each local loop under control.
- check response to upset, change in setpoint.
- check full and partial load operation.

# Supervisory functions.

- verify time clock schedules.
- verify reset control.

# Verify communication with each field device.

- perform end-to-end sensor and actuator checks.
- verify that the database is correct.

# Test other software.

Trend Logging.

Report Generation.

Remote Access.

System Documentation.

Verify proper operation of every control point in the presence of the Engineer. Include pointby-point checkout.

The control manufacturer shall provide a period of free service extending through one complete heating season and one complete cooling season, after acceptance of the control system, and shall report the condition of the control equipment to the Owner and the Architect.

#### PART 4 - SEQUENCE OF OPERATION:

(The consultant is responsible for providing the appropriate Sequences of Operation required by the project. Following are some guidelines for use in the development of the drawings and specifications as they relate to University projects.)

# **AIR HANDLING UNITS (AHU)**

For all AHUs, the following is a minimum points list that is required for each unit:

Supply discharge temperature

Return temperature

Mixed Air temperature

Preheat temperature

OA temperature

Damper positions - OA, RA, MA

Pressures – Discharge Static, 2/3 Static, Return Static

Fan Commands & Statuses of all fans – Supply, Return and Exhaust

Heating & Cooling Coil Valve Commands

All VFD information – Fans and Pumps

Pump Commands and Status

CFM readings – Discharge, Return, Outside Air

Humidifier Commands and Humidity points

Setpoints for temperature and pressures

Filter pressure differentials

Related to freezestat operation for all AHUs, the following sequence needs to be added to each sequence: Upon tripping of the freezestat, the heating control valve is to modulate to maintain a heating plenum space temperature of 3 degrees F (adj) less than the specific unit DAT setpoint. Example: For unit with 55 DAT setpoint, plenum temperature is to control to 52 degrees.

All AHUs shall be programmed to restart on their own without any software lockout reset required.

Reference University Standard 230553S02 for the AHU naming convention.

# **CHILLED WATER SYSTEMS**

For buildings and installations that require a chilled water system decoupled loop, refer to University Standard 236000S01.

#### **ROOM TERMINAL HVAC**

For all rooms, provide the following points as a minimum:

VAV supply and/or return damper position Heating valve position CFM reading Room DAT Room temperature Room temperature setpoint Radiant Heat valve position (if applicable)

For any space that may be unoccupied during periods of operation, consideration needs to be given in the design of the space to the University Energy Guidelines.

# **HYDRONIC WATER SYSTEMS**

All hydronic water systems shall be developed using an outside air temperature reset schedule developed for each particular building.

# **BACnet Protocol Implementation Conformance Statement:**

The controls contractor shall include their BACnet PICS and BIBB statements (as described in ASHRAE 135-2001) for their BACnet Interface with their shop drawings. The interface shall comply with the following as a minimum.

Vendor Name: Tridium, Inc.

Product Family: Niagara Framework, including N4 Web Supervisor, JACE 6XX at Release 3.8, JACE 8xxx at release 4.6 or greater using the most current version of JAVA or HTML 5. All control work associated with this project must be fully compatible with this version of Tridium such that all alarms, points, etc. communicate and clear alarms seamlessly with the existing system.

Description: This product family provides bi-directional communication between the Tridium Niagara Framework and a BACnet system operating at BACnet Conformance Class 3, over Ethernet media.

BACnet Protocols are documented in Appendices A, B & C.

# **REQUIRED SUBMITTALS:**

The following chart is supplied for the benefit of the Owner, Architect, Engineer and contractor to assure a complete submission of required information. It is a reference listing of documents required by the Specifications under this Section. Refer to Specifications Section - General Provisions for the general requirements of submittals.

ITEM	SHOP DRAWING	M&O MANUAL	PARTS LIST	WRITTEN DESCRIPTION
Control equipment	X	Х	X	
Control systems	Х			

Control sequence				Х
"As-builts"	Х	Х	Х	
drawings				
Frequency drives	Х	Х	Х	
Air terminal units	Х	Х	Х	
I/O Summary	Х			
Charts				

Print and Save Excel I/O Summary Sheet in Spec Directory (Add general IO Point list)

# Appendix A – Vykon Niagara Compatibility Statement (NiCS)



VYKON Niagara<sup>AX</sup>
Compatibility
Statement (NiCS)
Includes all VYKON
branded JACE and
Software Products

# VYKON Niagara<sup>AX</sup> Compatibility Statement (NiCS)

Includes all VYKON branded JACE and Software Products

The following information describes Tridium's VYKON branded Niagara<sup>AX</sup> product licensing.

Tridium's VYKON AX branded products utilizes an open access licensing procedure. VYKON AX branded products can be connected to and managed by any Niagara based tools or systems without the need to modify the license. This means the end user does not have to authorize changes to a VYKON AX license for another systems integrator to gain access to the system. The end user does need to have the necessary user names and passwords installed by the original system integrator so they can be used by another Niagara trained system integrator.

The following is an explanation of the VYKON licensing scheme.

#### BrandiD

Every licensed station and tool has a Brand Identifier (BrandID). This field holds a text descriptor that the OEM chooses as the identifier for its product line. Each station or tool can have only one BrandID entry.

Tridium's VYKON products have the following:

BrandID - VYKON

#### Station Compatibility In

This field is a list of brands that this local station will allow Niagara AX data to come in from. Simply stated from the point of view of a JACE, "this is the list of brands that can I can accept data from". Tridium's VYKON products contain:

#### Station Compatibility In - All (In the actual license ALL is define by an \*)

Note: The compatibility fields can contain; a single brand "ABC", a list of multiple brands "ABC, XYZ", no brand

"None" or all brands "All".

#### Station Compatibility Out

This field is a list of brands that this local station will allow Niagara AX data to be shared with. Simply stated, "This is the list of brands that I can share data with". Tridium's VYKON products contain:

Station Compatibility Out - All







#### Tool Compatibility In

This field is a list of brands that this station will allow to be connected to it for engineering of its application. Simply stated, "This is the list of brands that can engineer me". Tridium's VYKON products contain:

#### Tool Compatibility In - All

#### Tool Compatibility Out

This field is a list of brands that this tool is allowed to connect to and engineer. Simply stated, "This is the list of brands that I can engineer". Tridium's VYKON products contain:

# Tool Compatibility Out - All

As long as VYKON branded products are purchased by the end user any Tridium Certified (TCP) system integrator can provide support for the end user without the need for the owner to be involved in the licensing process. For more information on Niagara Connectivity and Security visit our website library at: http://www.vykon.com/cs/library/white\_papers

#### Management Contacts:

Scott Boehm
Director, VYKON Automation Energy Security
Sboehm@tridium.com

#### Ed Merwin

Director, VYKON Automation Energy Security Ed.merwin@tridium.com

3951 Westerre Parkway Suite 350 Richmond, VA 23233 804-747-4771

www.vykon.com

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V-NICS-092009

# Appendix B – Tridium Niagara 3.8 BACnet PICS



β951 Westerre Parkway, Suite 350 Richmond, Virginia 23233 USA 1.804.747.4771 Phone 1.804.747.5204 Fax



# TRIDIUM NIAGARA<sup>AX</sup> 3.8 BACnet PICS

# BACnet Protocol Implementation Conformance Statement

Date: August 31, 2016 Vendor Name: <u>Tridium</u>

Product Name: Niagara AX BACnet Integration Product Model Number: Tridium JACE models Application Software Version: 3.8.112 or higher Firmware Revision: 3.8.112.1 or higher

BACnet Protocol Revision: 7

#### Product Description:

Niagara AX provides the ability to view, monitor, and control BACnet devices over IP, raw Ethernet, or MS/TP media. Devices, points, schedules, alarms, and logs can be learned and managed from Niagara AX. In addition, Niagara points, schedules, histories, and alarming can be exposed to BACnet for monitor and control by foreign BACnet clients.

BACnet Standardized Device Profile (Annex L):

□ BACnet Advance	d Operator Workstation (B-AWS
☐ BACnet Operator	Workstation (B-OWS)
☐ BACnet Operator	Display (B-OD)
■ BACnet Building	Controller (B-BC)
☐ BACnet Advance	d Application Controller (B-AAC
□ BACnet Applicati	ion Specific Controller (B-ASC)
□ BACnet Smart Se	nsor (B-SS)
DACnot Smoot A	stuaton (D SA)

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Tridium NiagaraAX-3.8 BACnet PICS





# Additional BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing	Device & Network Management
DS-RP-A, B	DM-DDB-A, B
DS-RPM-A. B	DM-DOB-A. B
DS-WP-A. B	DM-DCC-B
DS-WPM-A, B	DM-RD-B
DS-COV-A. B	DM-TS-B
DS-COVU-A. B	DM-UTC-B
DS-V-A	DM-LM-A. B
DS-M-A	DM-BR-B
DS-COVP-B	DM-ANM-A
	DM-ADM-A
	DM-ATS-A
	DM-MTS-A
Alarm & Event Management	Trending
Alarm & Event Management AE-N-A, -I-B	Trending T-VMT-A, I-B, -E-B
_	
AE-N-A, -I-B	T-VMT-A, I-B, -E-B
AE-N-A, -I-B AE-ACK-A, B	T-VMT-A, I-B, -E-B T-ATR-A, B
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B	T-VMT-A, I-B, -E-B T-ATR-A, B
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B	T-VMT-A, I-B, -E-B T-ATR-A, B
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B	T-VMT-A, I-B, -E-B T-ATR-A, B
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A	T-VMT-A, I-B, -E-B T-ATR-A, B
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A AE-VM-A	T-VMT-A, I-B, -E-B T-ATR-A, B T-V-A
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A AE-VM-A	T-VMT-A, I-B, -E-B T-ATR-A, B T-V-A Network Management
AE-N-A, -I-B AE-ACK-A, B AE-ASUM-B AE-ESUM-B AE-INFO-B AE-VN-A AE-VM-A Scheduling SCHED-A, I-B, -E-B	T-VMT-A, I-B, -E-B T-ATR-A, B T-V-A Network Management

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Tridium NiagaraAX-3.8 BACnet PICS



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Segmentation Capability:

Feature	Supported	Window size
Transmit Segmented Messages	yes	10
Receive Segmented Messages	yes	any

#### Standard Object Types Supported:

- The CreateObject and DeleteObject services are not supported, so no objects are dynamically creatable or deletable through BACnet service requests, although these objects are dynamically creatable and deletable through Niagara.
- No general range restrictions exist; however, certain specific applications may have specific range restrictions.
- All potentially available properties are listed for each object type.
- Optional properties are listed in italics. Not all instances support all optional properties.
- Writable properties are listed in bold. Any range limitations are expressed in parentheses following the property name.

#### Notes from Table

- The File\_Size property of File objects is only writable if the underlying system file is changeable.
- The Setpoint property of Loop objects is writable only if the setpoint is not linked from within Niagara.
- The Recipient\_List property of the Notification Class object will maintain entries that are internally configured within Niagara.
- The List\_Of\_Object\_Property\_References property of the Schedule object will
  maintain entries that are internally configured within Niagara.
- The Priority\_For\_Writing property of Schedule objects is not important for internal Niagara operation, as the priority at which a point is commanded is determined by the input to which the Schedule output is linked.
- These Trend Log object properties are not writable if the backing history for the exported Trend Log is a Niagara-generated history. If the history is created as a BACnet Trend Log, then they are writable.
- Trend Logs in Niagara use internal triggering and are either COV or Interval. So the Log Interval property cannot be written from BACnet.

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Object Type		Properties
Analog Input	Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Units Min_Pres_Value Max_Pres_Value	Resolution  COV_Increment  Time_Delay  Notification_Class  High_Limit  Low_Limit  Deadband  Limit_Enable  Event_Enable  Acked_Transitions  Notify_Type  Event_Stamps
Analog Output	Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Units Min_Pres_Value Resolution	Priority_Array Relinquish_Default COV_Increment Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps
Analog Value	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State Reliability Out_Of_Service Units Priority_Array Relinquish Default	COV_Increment Time_Delay Notification_Class High_Limit Low_Limit Deadband Limit_Enable Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps

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Object Type	Properties		
Binary Input	Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Polarity Inactive_Text Active_Text	Change_Of_State_Time Change_Of_State_Count (0) Time_Of_State_Count_Reset Elapsed_Active_Time (0) Time_Of_Active_Time_Reset Time_Delay Notification_Class Alarm_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	
Binary Output	Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Polarity Inactive_Text Active_Text Change_Of_State_Count(0)	Time_Of_State_Count_Reset Elapsed_Active_Time (0) Time_Of_Active_Time_Reset Minimum_Off_Time Minimum_On_Time Priority_Array Relinquish_Default Time_Delay Notification_Class Feedback_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	
Binary Value	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State Reliability Out_Of_Service Inactive_Text Active_Text Change_Of_State_Count_(0) Time_Of_State_Count_Reset	Elapsed_Active_Time (0) Time_Of_Active_Time_Reset Minimum_Off_Time Minimum_On_Time Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	

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Object Type	Properties		
	Object_Identifier	Description	
Calendar	Object Name	Present_Value	
	Object_Type	Date_List	
	Object_Identifier	Segmentation_Supported	
	Object_Name	Max_Segments_Accepted	
	Object_Type	Local_Time	
	System_Status	Local_Date	
	Vendor_Name	UTC_Offset	
	Vendor_Identifier	Daylight_Savings_Status	
	Model_Name	APDU_Segment_Timeout	
	Firmware_Revision	APDU_Timeout	
Device	Application_Software_Revision	Number_Of_APDU_Retries	
	Location	Max_Master	
	Description	Max_Info_Frames	
	Protocol_Version	Device_Address_Binding	
	Protocol_Revision	Database_Revision	
	Protocol_Services_Supported	Configuration_Files	
	Protocol_Object_Types_Supported	Last_Restore_Time	
	Object_List	Backup_Failure_Timeout	
	Max_APDU_Length_Accepted	Active_COV_Subsriptions	
	Object_Identifier	File_Size <sup>1</sup>	
File	Object_Name	Modification_Date	
(Stream Access Only)	Object_Type	Archive	
(Stream Access Only)	Description	Read_Only	
	File_Type	File_Access_Method	

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Tridium NiagaraAX-3.8 BACnet PICS





Object Type	Properties		
Loop	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State Raliability Out_Of_Service Output_Units Manipulated_Variable_Reference Controlled_Variable_Reference Controlled_Variable_Units Setpoint_Reference Setpoint^2 Action Proportional Constant	Proportional Constant Units     Integral Constant     Integral Constant Units     Derivative Constant     Derivative Constant Units     Bias     Maximum Output     Minimum Output     Priority For Writing     COV Increment         Time Delay     Notification Class         Error Limit         Event Enable     Acked Transitions     Notify Type     Event Time Stamps	
Multi-state Input	Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out Of Service	Number_Of_States State_Text Time_Delay Notification_Class Alarm_Values Fault_Values Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	
Multi-state Output	Object_Identifier Object_Name Object_Type Present_Value Description Device_Type Status_Flags Event_State Reliability Out_Of_Service Number_Of_States	State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class Feedback_Value Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps	

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Object Type	I	Properties
Multi-state Value	Object_Identifier Object_Name Object_Type Present_Value Description Status_Flags Event_State Reliability Out_Of_Service Number_Of_States	State_Text Priority_Array Relinquish_Default Time_Delay Notification_Class Alarm_Values Fault_Values Event_Enable Acked_Transitions Notify_Type Event_Stamps
Notification Class	Object_Identifier Object_Name Object_Type Description	Notification_Class Priority Ack_Required Recipient_List <sup>3</sup>
Schedule	Object_Identifier Object_Name Object_Type Description Effective_Period Weekly_Schedule Exception Schedule	Schedule_Default List_Of_Object_Property_References <sup>4</sup> Priority_For_Writing <sup>5</sup> Status_Flags Reliability Out_Of_Service
Trend Log	Object_Identifier Object_Name Object_Type Description Log_Enable <sup>6</sup> Start_Time Stop_Time Log_DeviceObjectProperty Log_Interval <sup>6,7</sup> COV_Resubscription_Interval Client_COV_Increment Stop_When_Full Buffer_Size	Log_Buffer Record_Count (0) <sup>6</sup> Total_Record_Count Notification_Threshold Records_Since_Notification Last_Notify_Record Event_State Notification_Class Event_Enable Acked_Transitions Notify_Type Event_Time_Stamps

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Data Link Layer Options:

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<ul> <li>         ⊠ MS/TP master (Clause 9)         □ MS/TP slave (Clause 9), t         □ Point-To-Point, EIA 232 (</li> </ul>	ause 7)  b. ARCNET (Clause 8)  c ARCNET (Clause 8), baud r.  c baud rate(s): 9600, 19200, 38  baud rate(s): (Clause 10), baud rat	400, 76800	
Device Address Binding:			
	orted? (This is currently neces: slaves and certain other device		/ay □ No
Networking Options:			
☐ Annex H, BACnet Tunnel ☑ BACnet/IP Broadcast Ma	0		
Character Sets Supported:			
Indicating support for multip supported simultaneously.	le character sets does not impl	y that they car	ı all be
<ul><li>☑ ANSI X3.4</li><li>☑ ISO 10646 (UCS-2)</li></ul>	□ IBM™/Microsoft™ DBCS □ ISO 10646 (UCS-4)		
equipment/networks(s) tha This product supports comm	nication gateway, describe th t the gateway supports: unications between BACnet as Contact Tridium for a list of s	nd any third-pa	arty system to
9 of 9	Tridium NiagaraAX-3.8		August 31, 2016

BACnet PICS

# Appendix C - BACnet Testing Laboratories Product Listing



BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet International (BI). BTL is a registered trademark of BI.

# BACnet Testing Laboratories Product Listing

This product has been tested at a qualified BACnet Testing Laboratory and found to comply with all the necessary interoperability requirements in place on the published test date. This listing represents the tested capability of the Listed Product. For information on additional functionality that was not covered in the test process, refer to the Manufacturer's PICS statement on the BI website.

# **Listing Information**

Vendor		Listing Status
Tridium, Inc. 3951 Westerre Parkway, Suite 350 Richmond, VA 23233 USA		Listed Product
Test Requirements	BACnet Protocol Revision	Date Tested
Requirements as of July 2009	Revision 7 (135-2008)	July 2011

Product Name	Model Number(s)	Software Version
Niagara AX Supervisor with BACnet B-AWS	S-AX-AWS	3.6.35

# **Device Profiles**

Profile	Model Numbers
BACnet Advanced Workstation (B-AWS)	S-AX-AWS

# **BIBBs Supported**

Data Sharing	ReadProperty-A	DS-RP-A
	ReadProperty-B	DS-RP-B
	ReadPropertyMultiple-A	DS-RPM-A
	ReadPropertyMultiple-B	DS-RPM-B
	WriteProperty-A	DS-WP-A
	WriteProperty-B	DS-WP-B
	WritePropertyMultiple-A	DS-WPM-A
	WritePropertyMultiple-B	DS-WPM-B
	COV-A	DS-COV-A
	View-A	DS-V-A
	Advanced View-A	DS-AV-A
	Modify-A	DS-M-A
	Advanced Modify-A	DS-AM-A

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		_
Alarm and Event Management	Alarm and Event-Notification-A	AE-N-A
	Alarm and Event-ACK-A	AE-ACK-A
	Alarm and Event-View Notifications-A	AE-VN-A
	Alarm and Event-Advanced View Notifications-A	AE-AVN-A
	Alarm and Event-View and Modify-A	AE-VM-A
	Alarm and Event-Advanced View and Modify-A	AE-AVM-A
l l	Alarm and Event-Alarm Summary View-A	AE-AS-A
	Alarm and Event-Event Log View and Modify-A	AE-ELVM-A
	Scheduling-View and Modify-A	SCHED-VM-A
Scheduling	Scheduling-Advanced View and Modify-A	SCHED-AVM-A
_	Scheduling-Weekly Schedule-A	SCHED-WS-A
	•	
	Trending-View-A	T-V-A
Trending	Trending-Advanced View and Modify-A	T-AVM-A
	Automated Trend Retrieval-A	T-ATR-A
	Automated Trend NotifeVal-A	
	Dynamic Device Binding-A	DM-DDB-A
ŀ	Dynamic Device Binding-B	DM-DDB-B
ŀ	Dynamic Object Binding-A	DM-DOB-A
ŀ	Dynamic Object Binding-B	DM-DOB-B
ŀ	Automatic Device Mapping-A	DM-ADM-A
ŀ	Automatic Network Mapping-A	DM-ANM-A
Device and Network Management	Time Synchronization-A	DM-TS-A
	Time Synchronization-B	DM-TS-B
	UTC Time Synchronization-A	DM-UTC-A
	UTC Time Synchronization-B	DM-UTC-B
	Automatic Time Synchronization–A	DM-ATS-A
	Manual Time Synchronization–A	DM-MTS-A
	DeviceCommunicationControl-A	DM-DCC-A
ŀ	DeviceCommunicationControl-B	DM-DCC-B
}	ReinitializeDevice-A	DM-RD-A
ŀ	ReinitializeDevice-B	DM-RD-B
ŀ	Backup and Restore-A	DM-BR-A
ŀ	Restart-A	DM-R-A
ŀ	Object Creation and Deletion-A	DM-OCD-A
ŀ	List Manipulation-A	DM-LM-A
ŀ	List Manipulation-B	DM-LM-B

# **Object Type Support**

Device	

# **Data Link Layer Options**

Media	Options
BACnet/IP (Annex J)	BBMD
Ethernet	

# **Networking Options**

Networking Functionality	Media
Router	BACnet/IP (Annex J) – Ethernet

# **Character Set Support**

ANSI X3.4	
ISO 10646 (UCS-2)	

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# **END OF SECTION 23 09 00S03**

#### SECTION 323113 - STEEL LOUVER FENCES AND GATES

# 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. Ornamental fixed louver modular fencing panes
- 2. Gates: horizontal swing gate- Industrial grade (manual)

# B. Related Sections:

- 1. Division 31 Section "Earthwork" for site excavation, fill, and backfill where Ornamental metal fences and gates are located.
- 2. Division 33 Sections "Cast-in-Place Concrete" and "Miscellaneous Cast-in-Place Concrete" for concrete footings and fill.

# 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design steel louver fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7
  - 1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 10 feet high, and post spacing for gates with 22' clear span.
  - 2. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on louver size and pattern specified and on the following:

a. Wind Loads: 100 MPHb. Fence Height: 10'-0"

C. Lightning Protection: Ground gate as required by Gate Manufacturer.

# 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components.
  - 1. Gate posts, rails, and fittings.

- 2. Louver fabric, reinforcements, and attachments.
- 3. Gates and hardware.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.
- C. Samples for Initial Selection: For components with factory-applied color finishes.
- D. Samples for Verification: Prepared on Samples of size indicated below:
  - Coated Components: In 6-inch (150-mm) lengths for components and on full-sized units for accessories.
- E. Delegated-Design Submittal: For fences and gate framework indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified factory-authorized service representative.
- B. Product Certificates: For each type of steel louver panel and gate, from manufacturer.
- C. Product Test Reports: For framing strength according to ASTM F 1043.
- D. Field quality-control reports.
- E. Warranty: 10 year warranty for factory finish against cracking, peeling and blistering under normal operations and use.

# 1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:
  - 1. Gate hardware.
  - 2. Warranty

# 1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing fence grounding. Member company of NETA or an NRTL.
  - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

# 1.8 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for steel louver gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

# 1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of steel louver gates that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: Ten years from date of Substantial Completion.

#### PART 2 - PRODUCTS

# 2.1 STEEL LOUVER GATES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Ametco Manufacturing Company "Shadow 100" gate system or one of the following:
  - 1. American Fence Company "Palm Shield" system.
  - 2. Long Fence Company "Louver Fence."
- B. Fixed louver blades: Extruded tubular steel louver blades, inclined at 45 degrees and spaced at 2.83" and to provide 80 percent direct visual screening. ½" x 4", .09" thickness.
- C. Framing bars: Extruded steel flat bars welded to ends of louvers.
- D. Panel Height: as required to make 10' tall gates.
- E. Panel width: as shown on plans
- F. Posts: 6" or 8" square extruded tubular steel with solid steel caps.

# 2.2 SWING GATES

- A. Gate Configuration: double leaf swing gate, manual operation.
- B. Gate Frame Height: 10' / as indicated on drawings
- C. Gate Opening Width: 22' clear opening space.
- D. Steel Frames and Bracing: Fabricate members from square steel tubing 2"x2"'1/8" wall thickness.
- E. Frame Corner Construction: Welded
- F. Additional Rails: Provide as indicated, complying with requirements for fence rails.
- G. Infill: Louver panel.

Construction Documents
April. 2023

UK Parking Structure 8 Expansion UK Project Number: 2565.0

- H. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf Provide gate stops that allow gates to be open greater than 90 degrees and cane bolt. Latch to allow for locking mechanism.
- I. Spring Hinges: BHMA A156.17, Grade 1, suitable for exterior use.
  - 1. Function: Gate spring pivot hinge, adjustable
  - 2. Function: 39 Full surface, triple weight, antifriction bearing.
  - 3. Material: Cast steel with finish to match louver system.
- J. Mortise Locks: BHMA A156.13, Grade 1, suitable for exterior use.
  - 1. Function: holdback lock.
  - 2. Material: Brass or bronze.
  - 3. Levers: Cast, forged, or extruded brass or bronze.
  - 4. Mounting Box: Configuration necessary to enclose locks. Fabricate from 1/8" thick steel
- K. Cane Bolts: Provide for inactive leaf of pairs of gates. Fabricated from ½" diameter steel bar.
- L. Finish exposed welds to comply with NOMMA Guideline 1, Finish # 4
- M. Steel Finish: high performance powder coating.
- N. General: Welded frame fabricated from extruded steel tubing with steel fixed louver panels to match height indicated on plans. Frame configuration shall be as indicated on Drawings and approved shop drawings.
- O. Nominal Size: Gate opening shall be minimum 22'-0" clear opening when the gate is in the open position. Gate size by manufacturer in accordance with gate opening size criteria.
- P. Pipe and Tubing:
  - 1. Steel: Comply with ASTM B 429/B 429M; manufacturer's standard finish.
- Q. Frame Corner Construction: Welded or assembled with corner fittings.
- R. Extended Gate Posts and Frame Members: Extend gate posts and frame end members above top of steel louver fabric at both ends of gate frame as indicated on plans.
- S. Hardware:
  - 1. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate].
  - 2. Lock: internal device
- T. Finishes: To match specified fence finish.

### 2.3 ACCESSORIES

A. Fasteners: Stainless steel bolts of type, size and spacing as recommended by fence manufacturer for specific installation conditions. Provide anti-intruder bolts consisting of cup

UK Parking Structure 8 Expansion UK Project Number: 2565.0

head bolt and nut with clamping hexagon such that tightening shears hexagon and renders bolt impossible to release.

### 2.4 FACTORY FINISH

- A. Steel fence panels and posts shall receive powder coat. Gate panels shall be coated with 2-part polyurethane coating. Colors to be selected by Architect from Manufacturer's full range.
- B. Polyester Powder Coat: Electrocstatically applied colored polyester powder coating heat cured to chemically bond finish to metal substrated.
  - 1. Minimum hardness per ASTM D3363
  - 2. Direct impact resistant per ASTM D2794. Withstand 160 inch-pounds
  - 3. Salt spray resistance in accordance with ASTM B117
  - 4. Weatherability per ASTM D822.

### 2.5 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

### 2.6 FENCE GROUNDING

- A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.
  - 1. Material above Finished Grade: Copper.
  - 2. Material on or below Finished Grade: Copper.
  - 3. Bonding Jumpers: Braided copper tape, 1 inch (25 mm) wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.
  - 4. As required by Gate Manufacturer for their specific product.

### PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
  - Do not begin installation before final grading is completed unless otherwise permitted by Architect.

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

### 3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts.

### 3.3 INSTALLATION, GENERAL

- A. Install steel louver fencing to comply with ASTM F 567 and more stringent requirements indicated.
  - 1. Install fencing where indicated on plans, inside property line.

### 3.4 STEEL LOUVER GATE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- B. Post Setting: Set posts in concrete.
  - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
  - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
- C. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### 3.5 GROUNDING AND BONDING

- A. Grounding Method: At each grounding location required by gate manufacturer, drive a grounding rod vertically until the top is 6 inches (150 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location, including the following:
- B. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame per gate Manufacturer's written instructions.
- C. Connections: Make connections to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
  - 2. Make connections with clean, bare metal at points of contact.
  - 3. Make steel -to-steel connections with stainless-steel separators and mechanical clamps.
  - 4. Make steel -to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.

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5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

### 3.6 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

### 3.7 DEMONSTRATION

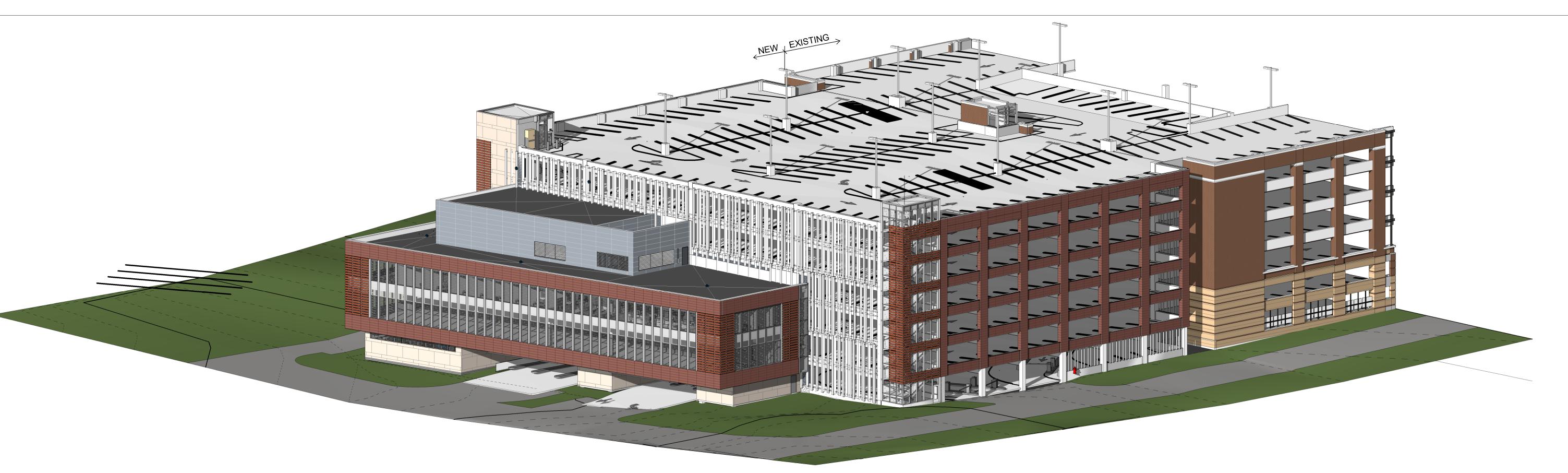
A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain steel louver fences and gates.

END OF SECTION 32 31 21



# UNIVERSITY OF KENTUCKY PS-8 EXPANSION

110 TRANSCRIPT AVE, PARKING STRUCTURE #8 LEXINGTON, KY 40508 UK PROJECT NUMBER: 2565.0



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	AL					
G-000	COVER SHEET					
G-101	INFORMATION DRAWING					
G-102	LOCATIONS AND LAYOUT RULES					
G-103	LIFE SAFETY PLANS					
G-103A	LIFE SAFETY PLANS - ALTERNATE					
CIVIL						
	OUTE ON ALL LITTLE OF AN					
C100	SITE CIVIL UTILITIES PLAN					
C101	SANITARY SEWER PROFILES					
C200	SITE SANITARY SEWER DETAILS					
C300	SITE WATER DETAILS					
LANDS	CADE					
L000	SITE PHASING & LOGISTICS PLAN					
L001	SITE LOGISITCS PLAN- PHASE 2					
L100	EROSION PREVENT SEDIMENT CONTROL PLAN					
L200	SITE CLEARING & DEMOLITION PLAN					
L201	TEMPORARY EXIT PLAN					
L202	SITE CLEARING & DEMOLITION PLAN- PHASE 2					
L300	SITE GRADING - PHASE 1					
L301	SITE DRAINAGE					
L302	STORM SEWER PROFILES					
L303	UNDERGROUND STORAGE DETAILS					
L304	UNDERGROUND STORAGE DETAILS					
L305	UNDERGROUND STORAGE DETAILS					
<b>∟306</b> √√	SITE GRADING PHASE 2					
L307	UNDER SLAB DRAIN PLAN					
£400	SITE LAYOUT					
L401	SITE MATERIALS					
L500	SITE LANDSCAPE PLAN					
L501	SITE LANDSCAPE DETAILS					
L600	SITE DETAILS					
L601	SITE DETAILS					
L602	SITE DETAILS					
L603	SITE DETAILS					
L604	SITE DETAILS					
DEMOL	ITION					
U-100	SITE UTILITIES DEMOLITION PLAN					
SD100 DEMOLITION PLANS						
SD101 DEMOLITION PLANS						
SD102	DEMOLITION SECTIONS					
SD103	DEMOLITION SECTIONS					
SD104	DEMOLITION SECTIONS AND PLANS					
ED-100	GROUND TIER ELECTRICAL DEMOLITION PLAN					
AGD101	GROUND TIER STRIPING DEMOLITION PLAN					
ACD102	SECOND TIER STRIPING DEMOLITION PLAN					
AGD102	SECOND TIER STRIPING DEMOLITION PLAN					
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STRUC S-001 S-002 S-003 S-100 S-101 S-102 S-103 S-104 S-104 S-140 S-140 S-141 S-142 S-410 S-420 S-430 S-431 S-432 S-501 S-511 S-513 S-530 S-531 S-532 S-535 S-540 S-541	TURAL  STRUCTURAL GENERAL NOTES  POST-TENSION POUR SEQUENCE  GRID KEY PLAN  FOUNDATION PLAN  GROUND TIER STRUCTURAL PLAN  SECOND TIER STRUCTURAL PLAN  TYPICAL TIER STRUCTURAL PLAN  TOP TIER STRUCTURAL PLAN  BUILDING ALTERNATE PLANS  BUILDING ALTERNATE PLANS  BUILDING ALTERNATE PLANS  BUILDING ALTERNATE PLANS  GARAGE NW TOWER ENLARGED PLANS  GARAGE SW TOWER ENLARGED TOWER PLANS  BUILDING ALTERNATE ENLARGED TOWER PLANS  BUILDING ALTERNATE ENLARGED STAIR PLANS  BUILDING ALTERNATE ENLARGED STAIR PLANS  ENLARGED PLANS  TYPICAL DETAILS  FOUNDATION WALL DETAILS  FOUNDATION WALL DETAILS  CIP BEAM SCHEDULE AND DETAILS  CIP BEAM DETAILS  BUILDING ALTERNATE CIP BEAM SCHEDULE AND DETAILS  CAST-IN-PLACE WALL DETAILS  STRUCTURAL DETAILS					
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STRUC S-001 S-002 S-003 S-100 S-101 S-102 S-103 S-104 S-140 S-140 S-141 S-142 S-410 S-420 S-430 S-431 S-432 S-450 S-501 S-511 S-513 S-530 S-531 S-532 S-535 S-540 S-541 S-550	TURAL  STRUCTURAL GENERAL NOTES  POST-TENSION POUR SEQUENCE  GRID KEY PLAN  FOUNDATION PLAN  GROUND TIER STRUCTURAL PLAN  SECOND TIER STRUCTURAL PLAN  TYPICAL TIER STRUCTURAL PLAN  TOP TIER STRUCTURAL PLAN  BUILDING ALTERNATE PLANS  BUILDING ALTERNATE PLANS  BUILDING ALTERNATE PLANS  GARAGE NW TOWER ENLARGED PLANS  GARAGE SW TOWER ENLARGED PLANS  BUILDING ALTERNATE ENLARGED TOWER PLANS  BUILDING ALTERNATE ENLARGED TOWER PLANS  BUILDING ALTERNATE ENLARGED STAIR PLANS  BUILDING ALTERNATE ENLARGED STAIR PLANS  ENLARGED PLANS  TYPICAL DETAILS  FOUNDATION WALL DETAILS  FOUNDATION WALL DETAILS  BUILDING ALTERNATE FOUNDATION AND GROUND TIER DETAILS  CIP BEAM SCHEDULE AND DETAILS  BUILDING ALTERNATE CIP BEAM SCHEDULE AND DETAILS  COST-TENSION SLAB DETAILS  STRUCTURAL DETAILS  BUILDING ALTERNATE STRUCTURAL DETAILS  CIP COLUMN SCHEDULE & DETAILS					

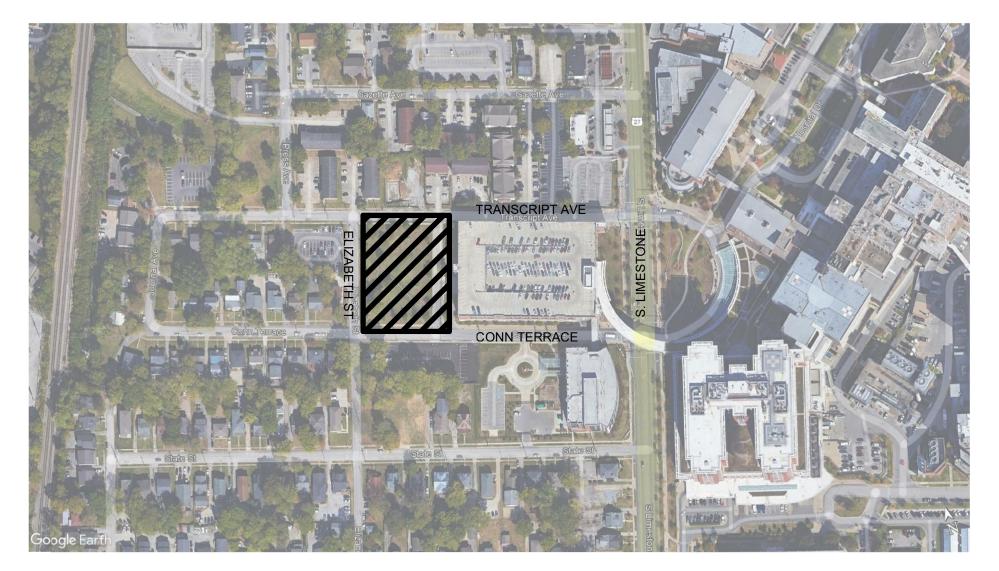
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PROJECT SITE PLAN

# CONSTRUCTION DOCUMENTS 4/24/2023

# University of Kentucky Lexington, KY 40506 859.257.9000

# Prime Designer and Structural Engineer:



Walker Consultants 6602 E. 75th Stree, Suite 210 Indianapolis, IN 46250 317.842.6890

## Architect of Record:



JRA Architects 3225 Summit Square PI # 200, Lexington, KY 40509 859.252.6781

Design Architect:



Ratio 101 S. Pennsylvania St, Indianapolis, IN 46204 317.633.4040

MEP Engineer:



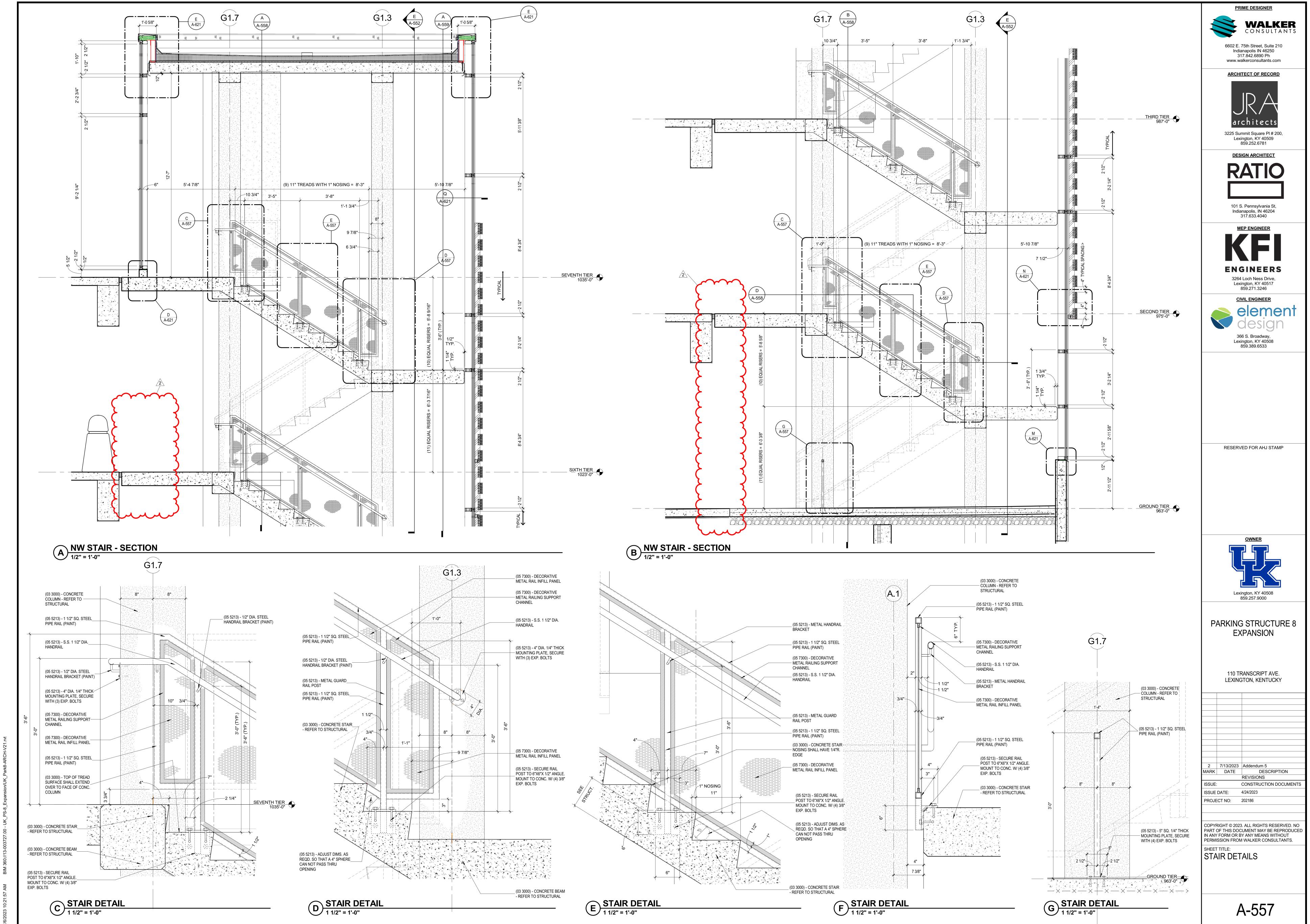
KFI Engineers 3264 Loch Ness Drive, Lexington, KY 40517 859.271.3246

Civil Engine

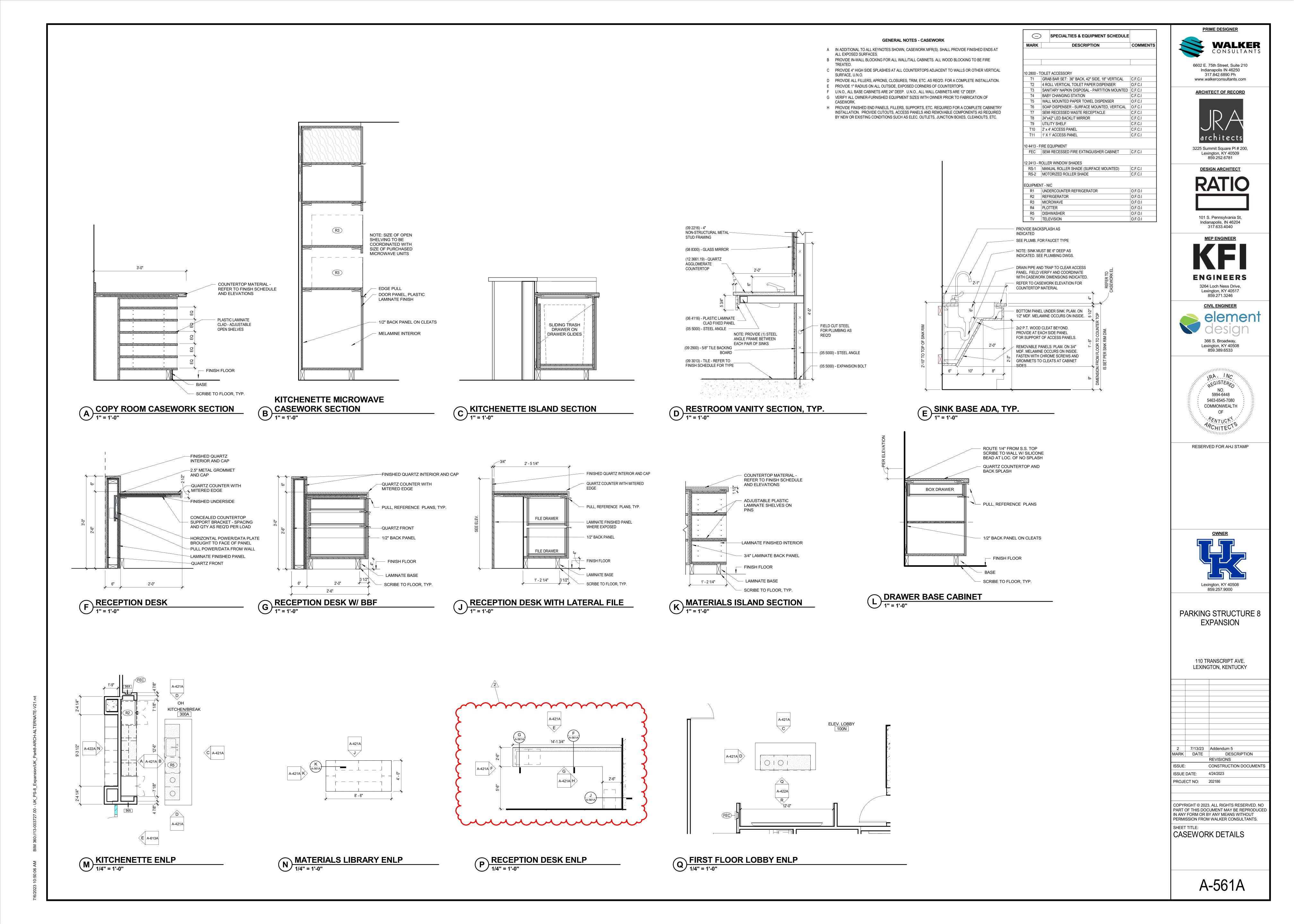


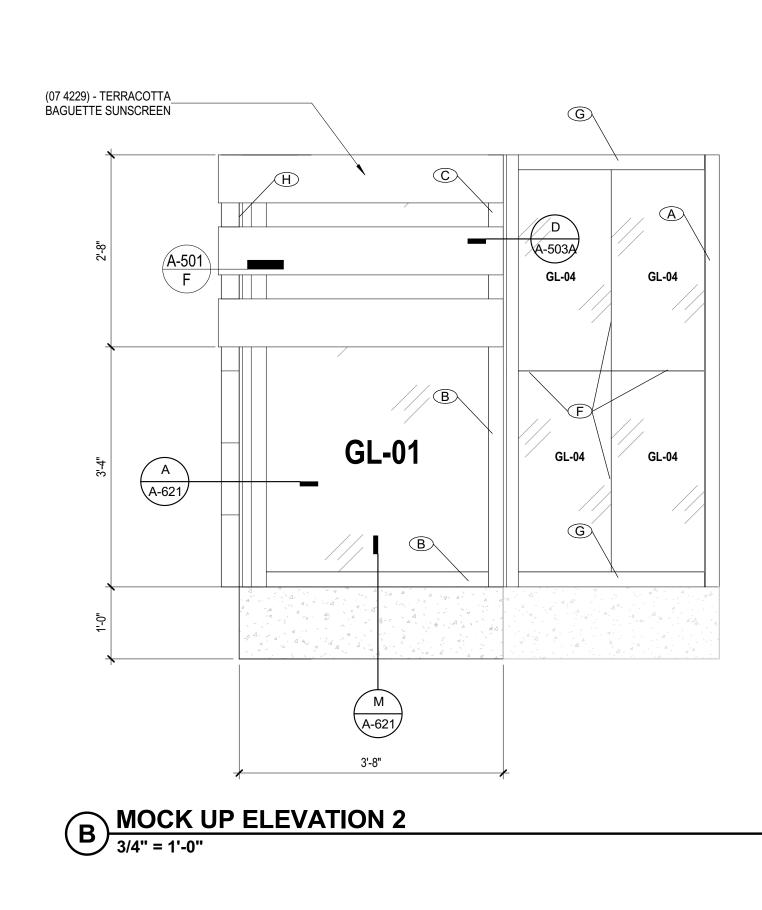
Element Deisgn 366 S. Broadway, Lexington, KY 40508 859.389.6533

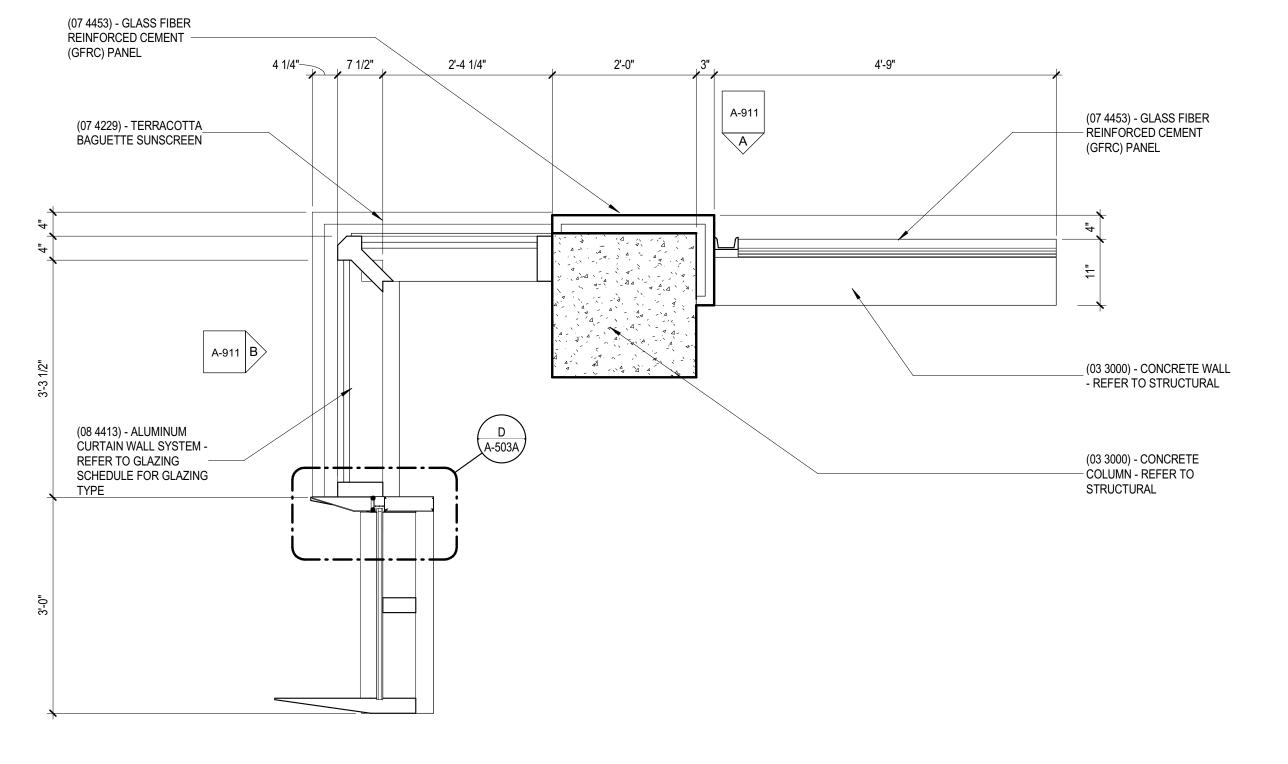
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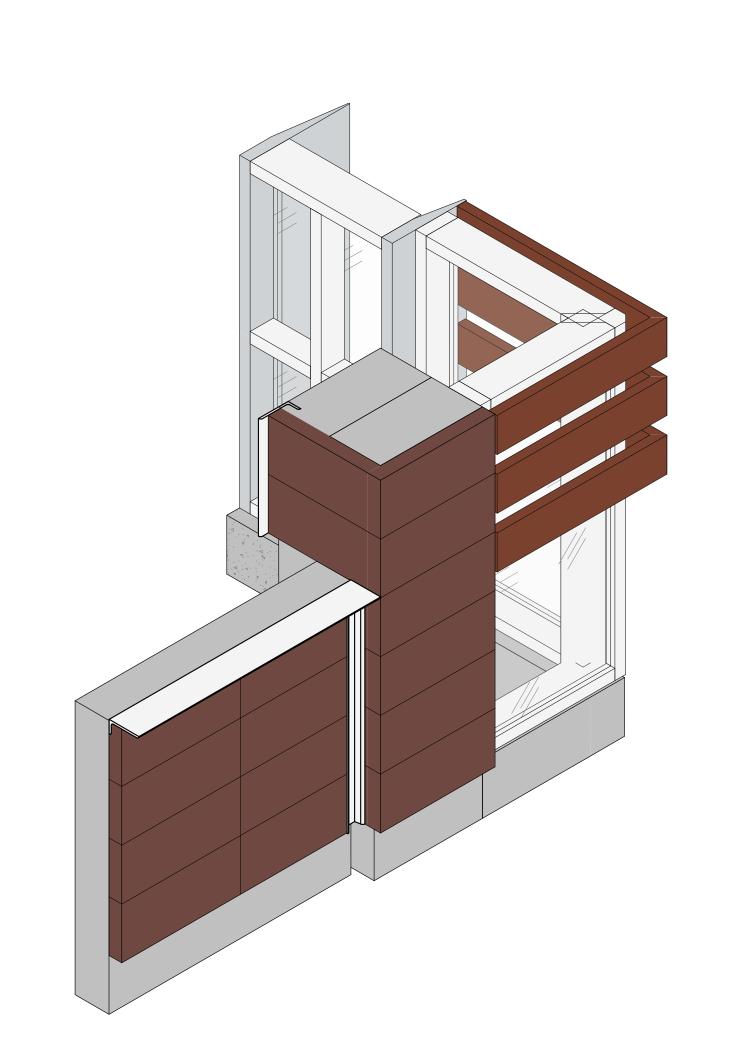


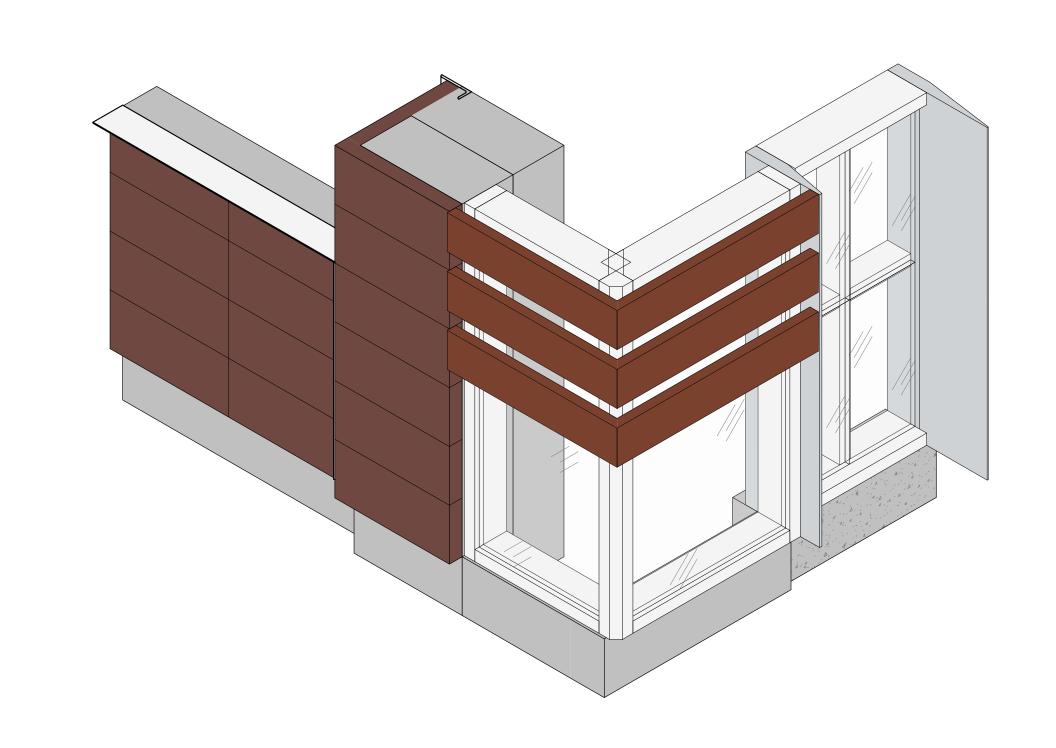
C MOCK UP PANEL - PLAN
3/4" = 1'-0"

NOTE: REFERENCE A-611A FOR MULLION AND GLAZING TYPES

MOCK UP ELEVATION 1

3/4" = 1'-0"





D MOCK UP 3D ISO

(E) MOCK UP 3D ISO

MOCK UP 3D ISO

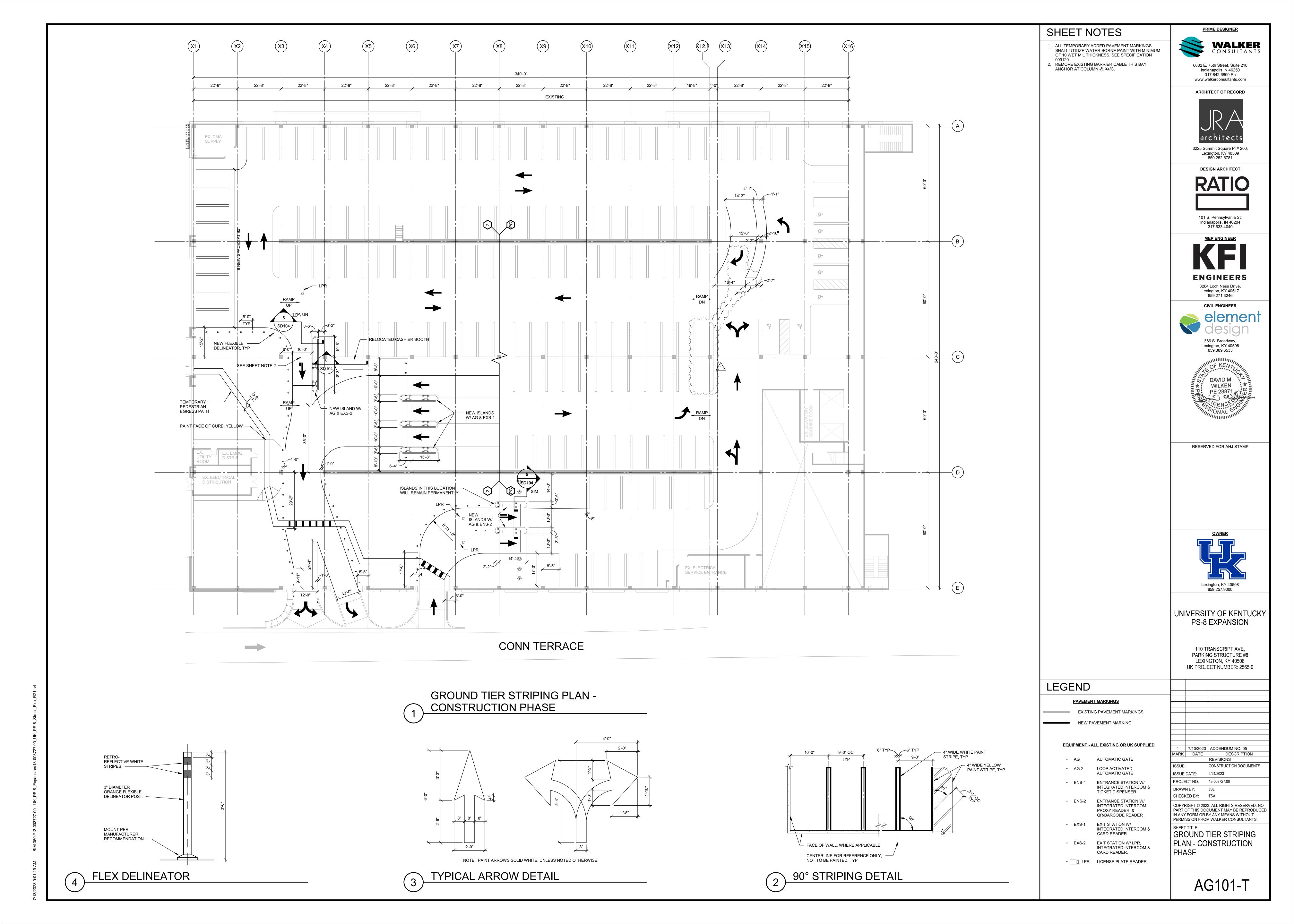
317.842.6890 Ph www.walkerconsultants.com ARCHITECT OF RECORD 3225 Summit Square PI # 200, Lexington, KY 40509 859.252.6781 **DESIGN ARCHITECT** 101 S. Pennsylvania St, Indianapolis, IN 46204 317.633.4040 MEP ENGINEER **ENGINEERS** 3264 Loch Ness Drive, Lexington, KY 40517 859.271.3246 **CIVIL ENGINEER** 366 S. Broadway, Lexington, KY 40508 859.389.6533 RESERVED FOR AHJ STAMP Lexington, KY 40508 859.257.9000 PARKING STRUCTURE 8 **EXPANSION** 110 TRANSCRIPT AVE. LEXINGTON, KENTUCKY CONSTRUCTION DOCUMENTS ISSUE DATE: 4/24/2023 PROJECT NO: 202186 COPYRIGHT © 2023. ALL RIGHTS RESERVED. NO PART OF THIS DOCUMENT MAY BE REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT PERMISSION FROM WALKER CONSULTANTS. MOCK UP PANEL A-911

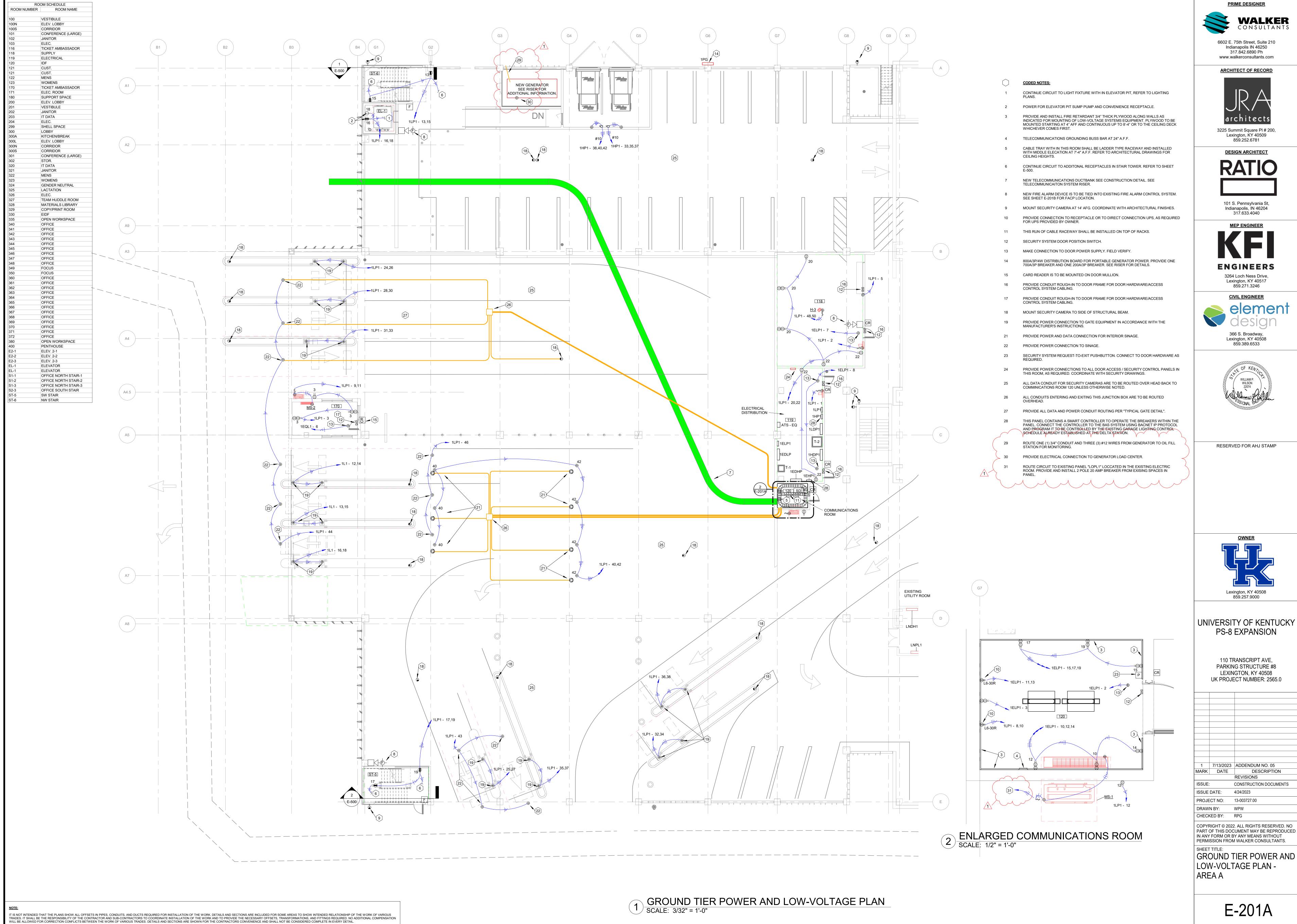
PRIME DESIGNER

6602 E. 75th Street, Suite 210 Indianapolis IN 46250

WALKER CONSULTANTS

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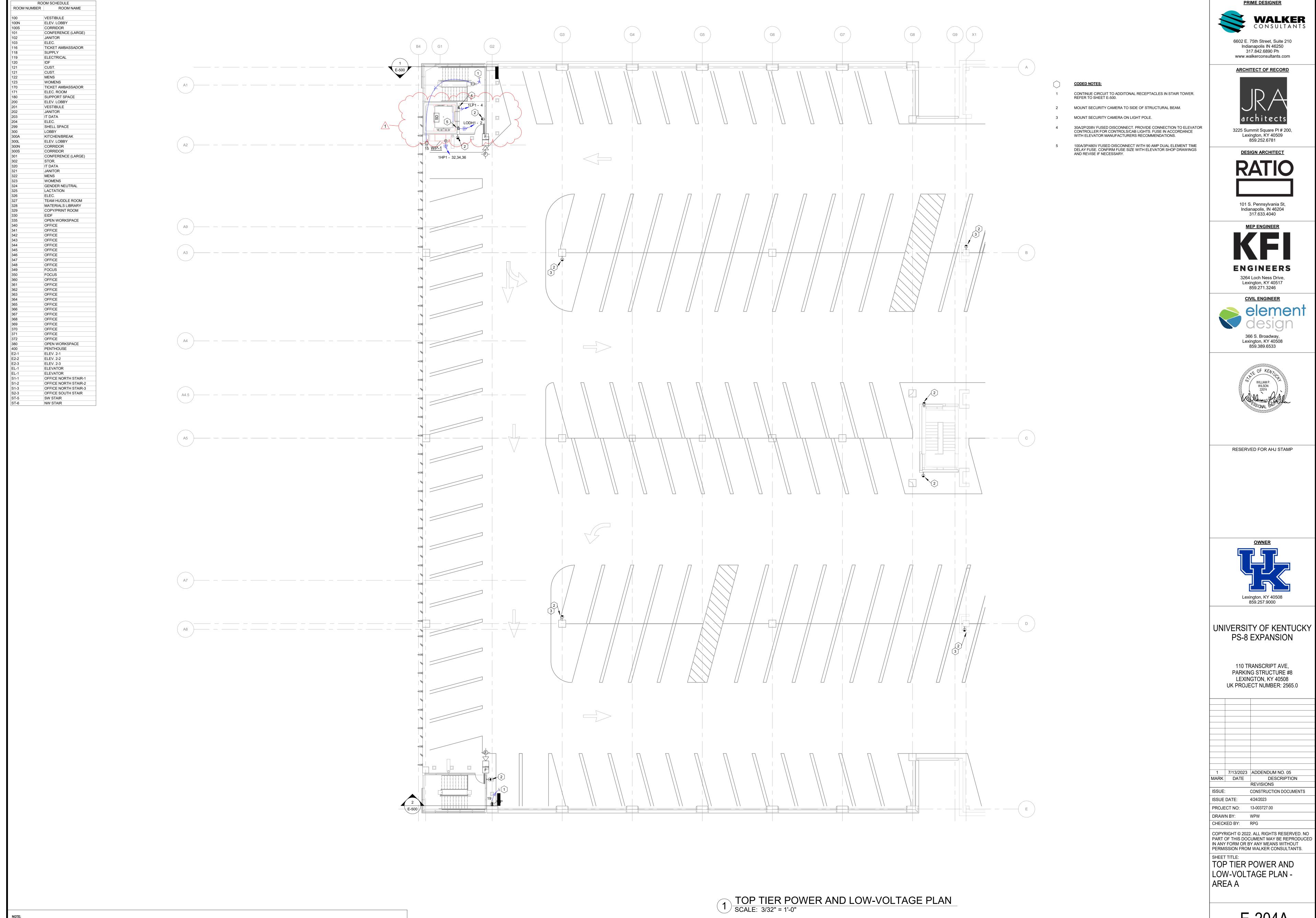






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		REVISIONS
ISSUE:		CONSTRUCTION DOCUMENTS
ISSUE	DATE:	4/24/2023
PROJE	ECT NO:	13-003727.00

GROUND TIER POWER AND



IT IS NOT INTENDED THAT THE PLANS SHOW ALL OFFSETS IN PIPES, CONDUITS, AND DUCTS REQUIRED FOR INSTALLATION OF THE WORK. DETAILS AND SECTIONS ARE INCLUDED FOR SOME AREAS TO SHOW INTENDED RELATIONSHIP OF THE WORK OF VARIOUS TRADES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SUB-CONTRACTORS TO COORDINATE INSTALLATION OF THE WORK AND TO PROVIDE THE NECESSARY OFFSETS, TRANSFORMATIONS, AND FITTINGS REQUIRED. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CORRECTION CONFLICTS BETWEEN THE WORK OF VARIOUS TRADES. DETAILS AND SECTIONS ARE SHOWN FOR THE CONTRACTORS CONVENIENCE AND SHALL NOT BE CONSIDERED COMPLETE IN EVERY DETAIL.

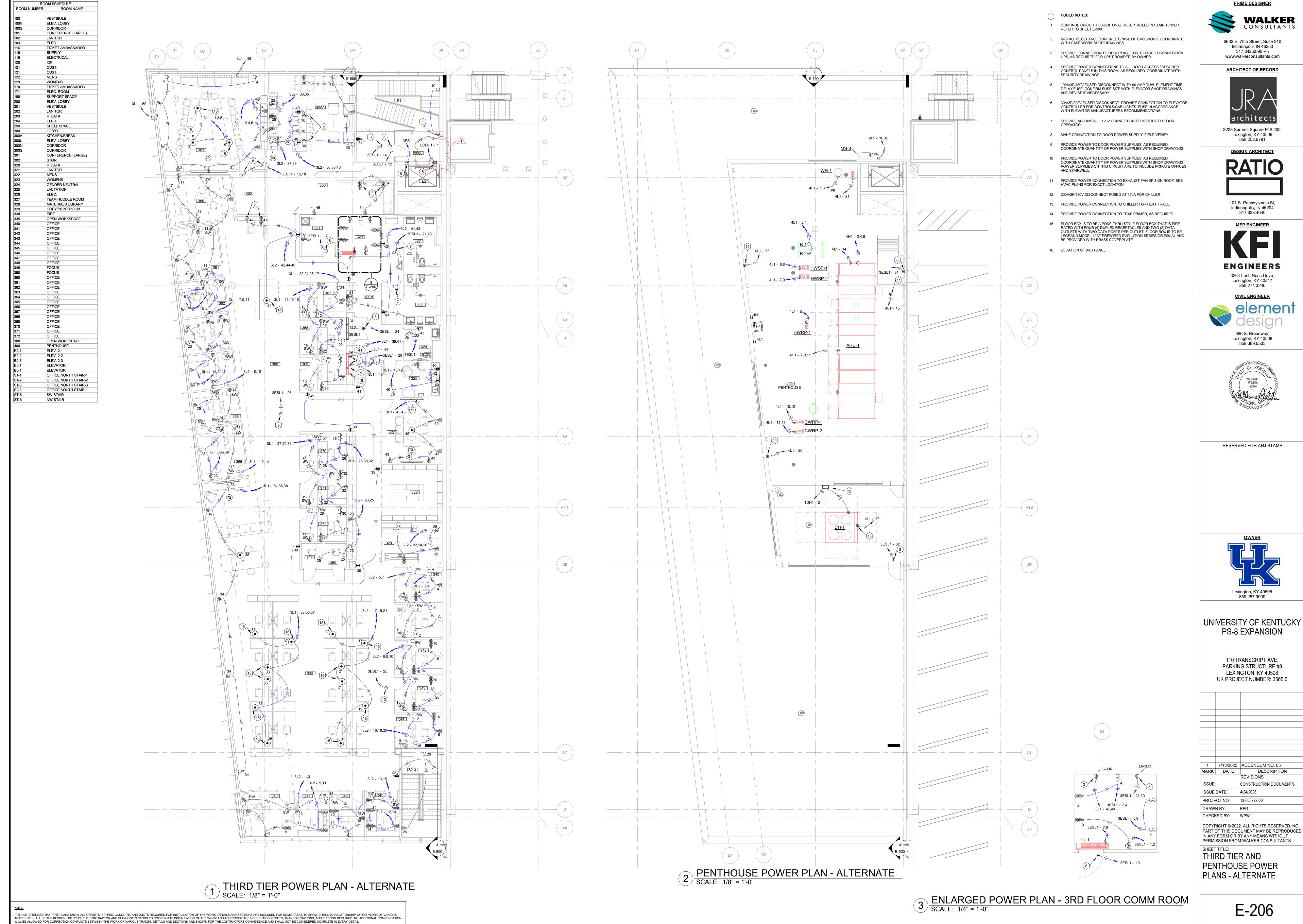
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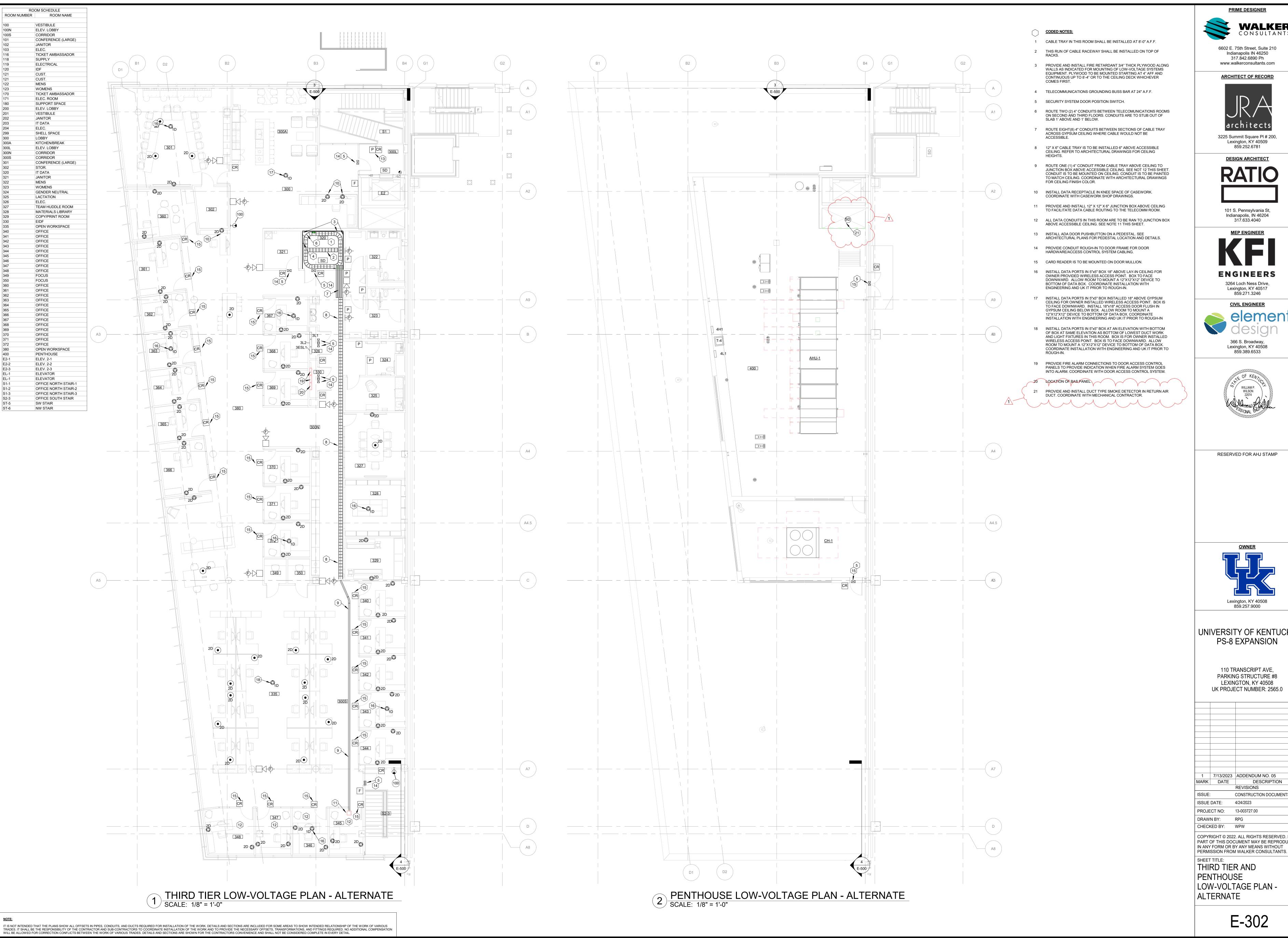
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1	7/13/2023	ADDENDUM NO. 05
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SUE	DATE:	4/24/2023
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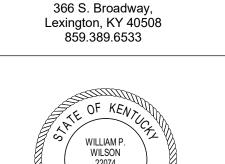


**DESIGN ARCHITECT** 

101 S. Pennsylvania St, Indianapolis, IN 46204



859.271.3246 CIVIL ENGINEER



RESERVED FOR AHJ STAMP



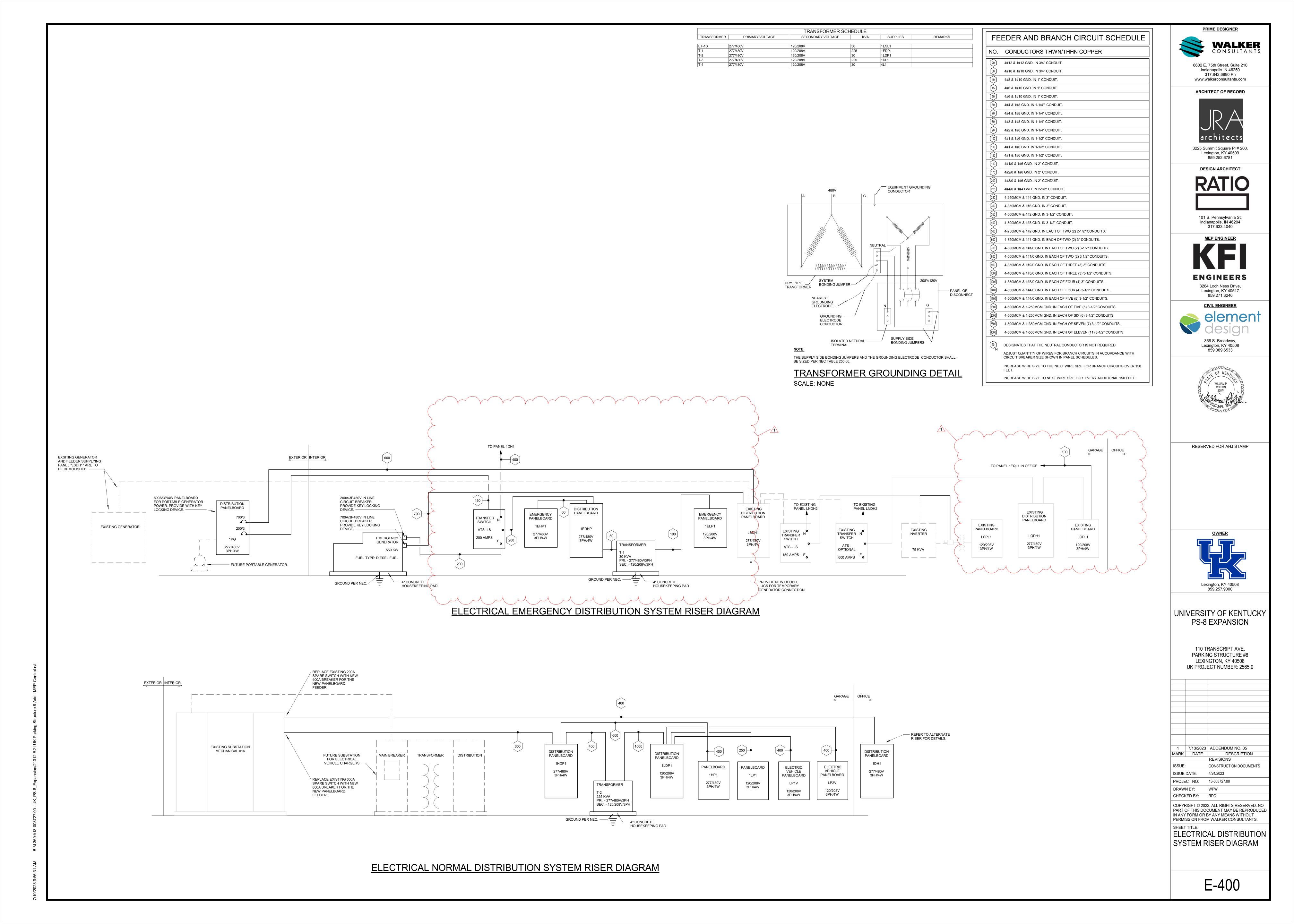
UNIVERSITY OF KENTUCKY **PS-8 EXPANSION** 

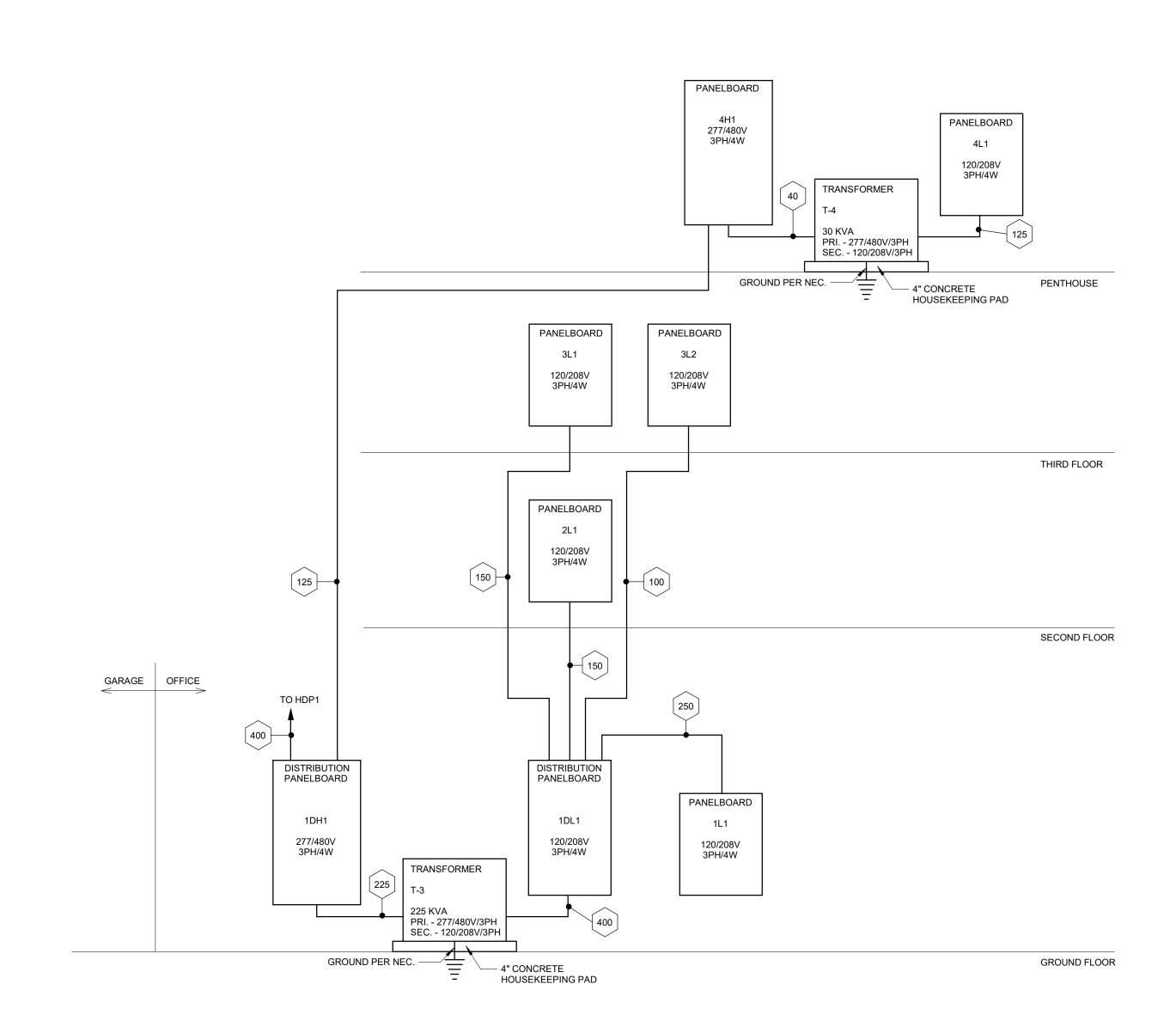
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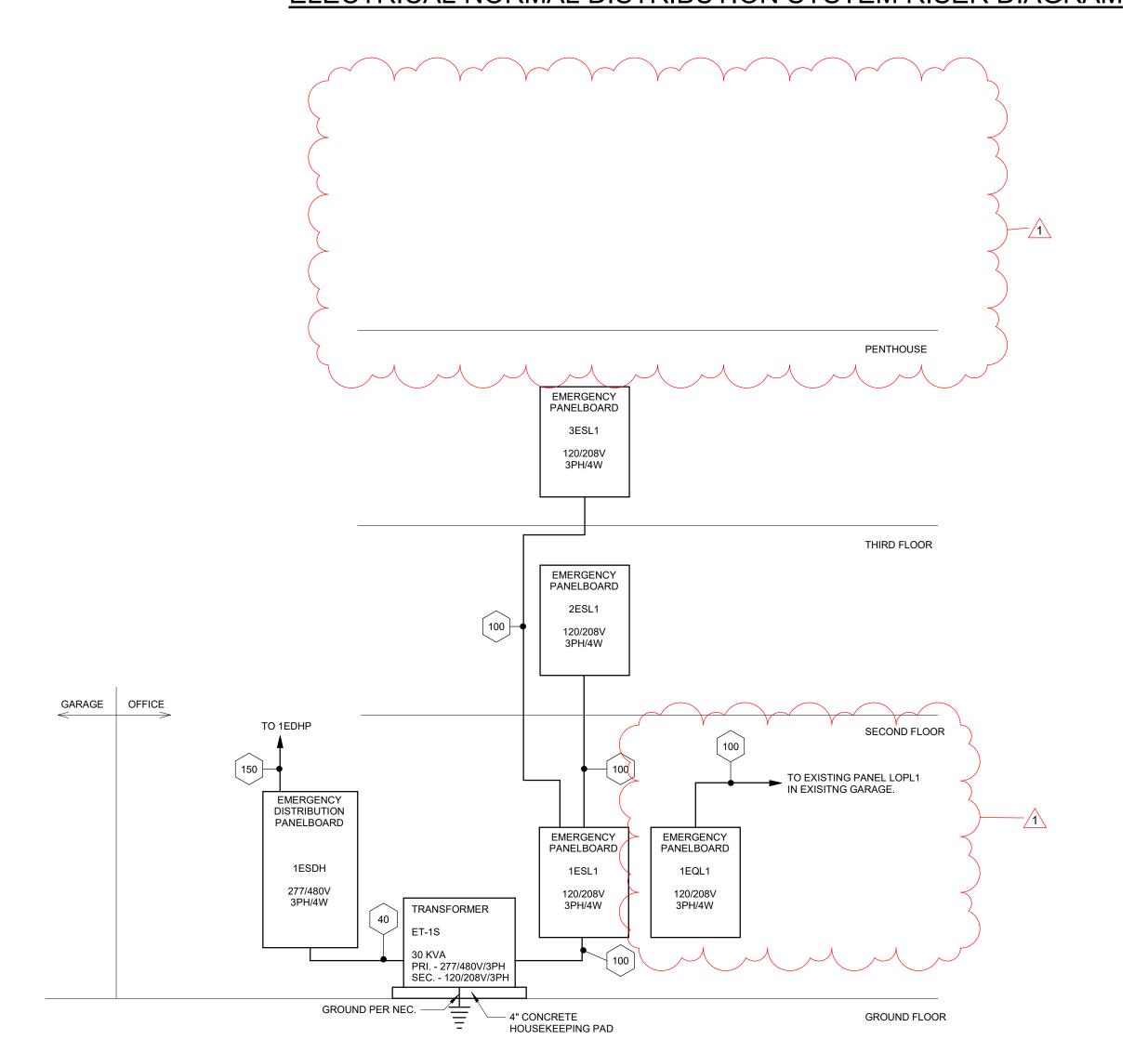
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THIRD TIER AND PENTHOUSE LOW-VOLTAGE PLAN -

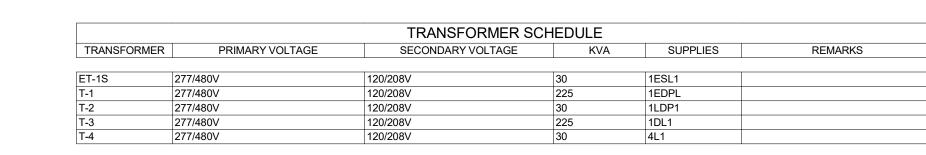




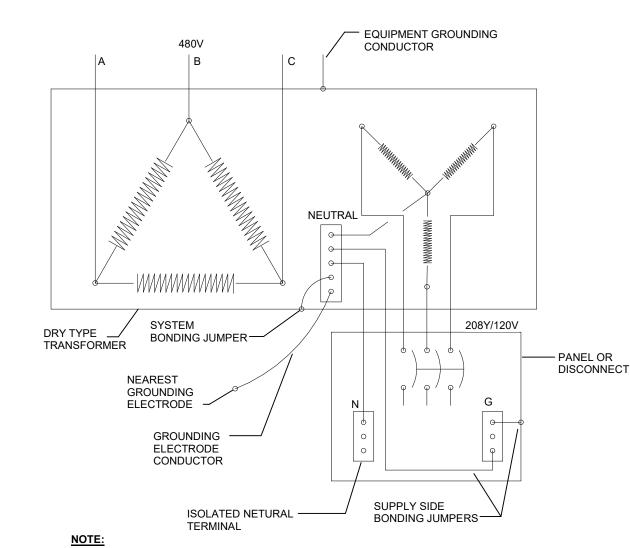
# ELECTRICAL NORMAL DISTRIBUTION SYSTEM RISER DIAGRAM



ELECTRICAL EMERGENCY DISTRIBUTION SYSTEM RISER DIAGRAM



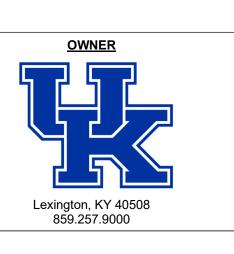




THE SUPPLY SIDE BONDING JUMPERS AND THE GROUNDING ELECTRODE CONDUCTOR SHALL BE SIZED PER NEC TABLE 250.66.

TRANSFORMER GROUNDING DETAIL SCALE: NONE





Lexington, KY 40508

859.389.6533

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1	7/13/2023	ADDENDUM NO. 05
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ISSUE	DATE:	4/24/2023
PROJE	ECT NO:	13-003727.00

PROJECT NO: 13-003727.00

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ELECTRICAL DISTRIBUTION SYSTEM RISER DIAGRAM -ALTERNATE



		Location: Supply From: Mounting: Enclosure:	SURFACE				Volts: Phases: Wires:		Wye			N	A.I.C. Rating: 42,000  Mains Type: MLO  MCB/MLO Rating: 250	
ı	Notes:													
	СКТ	Circuit Description	Trip	Poles		Α		В		С	Poles	Trip	Circuit Description	СКТ
	1	ELECTRIC ROOM EXHAUST FAN	20 A	1	120 VA	120 VA					1	20 A	STORAGE ROOM EXHAUST FAN	2
	3	RECS - ATTENDANT BOOTH	20 A	1			900 VA	800 VA			1	20 A	ELEVATOR CAB LIGHTS	4
	5	ROLLER DOOR SUPPLY ROOM	20 A	1					1200 VA	0 VA	1	20 A	SPARE	6
	7	EXTERIOR SINAGE TRANSCRIPT AV	E 20 A	1	500 VA	1500 VA					2	20. 4	DECS IDE 120	8
	9	LIVAC ATTENDANT DOOM	20.4	2			750 VA	1500 VA			]2	20 A	RECS - IDF 120	10
	11	HVAC - ATTENDANT ROOM	20 A	2					750 VA	180 VA	1	20 A	RECS - CONVIENENCE IT	12
	13	RECS - NORTH STAIRS	20 A	1	1080 VA	0 VA					1	20 A	SPARE	14
	15	RECS - NORTH STAIRS	20 A	1			1440 VA	220 VA			1	20 A	RECS - ELEVATOR CONVIENENCE	16
	17	RECS - GARAGE STAIRS	20 A	1					1080 VA	1000 VA	1	20 A	RECS - ELEVATOR SUMP PUMP	18
	19	RECS - GARAGE STAIRS	20 A	1	1260 VA	540 VA					1	20 A	RECS - STORAGE	20
	21	RECS - THIRD FLOOR PAY STATION	20 A	1			540 VA	720 VA			1	20 A	RECS - ELECTRICAL DISTRIBUTION/STORAGE	22
	23	RECS - THIRD FLOOR PAY STATION	20 A	1					540 VA	4000 VA	2	20. 4	CECURITY CATE ENTRANCE	24
	25	CECUDITY CATEC	20.4	_	2000 VA	4000 VA					12	20 A	SECURITY GATE ENTRANCE	26
	27	SECURITY GATES	30 A	2			2000 VA	4000 VA				00.4	OF OUR ITY OATE ENTRANCE	28
	29	SPARE	20 A	1					0 VA	4000 VA	- 2	20 A	SECURITY GATE ENTRANCE	30
	31	OF OUR IT / OATE FUTDANCE	00.4	_	4000 VA	2000 VA					_	00.4	OF OUR IT YOU AT TO	32
	33	SECURITY GATE ENTRANCE	20 A	2			4000 VA	2000 VA			2	30 A	SECURITY GATES	34
	<b>√</b> 35								2000 VA	2000 VA	_			36
	37	SECURITY GATES	30 A V	2	2000 VA	2000 VA		1			12	30 A	SECURITY GATES	38
	39	GENERATOR LOAD CENTER	100 A	1			7900 VA	600 VA			1	20 A	DIGITAL SIGNS GROUND LEVEL	40
(	41									800 VA	1	20 A	DIGITAL SIGNS GROUND LEVEL	42
1	43 ^	ENTRANCE/EXIT SIGNS CONN TERR	ACE 20 A	1 ~	400 VA	600 VA	~	$\mathcal{I}$			1	20 A	ENTRANCE/EXIT SIGNS ELIZABETH ST	44
	45	RECS - FLOOR BOX PEDWAY KIOSK	20 A	1			360 VA	500 VA			1	20 A	ENTRANCE/EXIT SIGNS ELIZABETH ST	46
	47	RECS - FLOOR BOX PEDWAY KIOSK	20 A	1					360 VA	2500 VA	_			48
	49	SPARE	20 A	1	0 VA	2500 VA					2	20 A	HVAC H-2 STORAGE 118	50
	51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52
	53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54
		1	Total Loa	ad:	24620 V	4	28074 VA	4	20410 VA	4				1
			Total Am		211 A		239 A		170 A		_			
-														

Branch Panel: 1LP1

	Distribution Board: 1LDP1				
	Location:	Volts: 120/208	Wye		<b>A.I.C. Rating:</b> 42,000
	Supply From: T-2   Mounting: SURFACE   Enclosure: TYPE 1	Phases: 3			Mains Type: MCB
	Mounting: SURFACE	Wires: 4			MCB/MLO Rating: 1000
	Enclosure: TYPE 1				
Notes:					
CVT	Circuit Description	# of Poles	Trip Rating	Load	Remarks
		3	250 A	73102 VA	Remarks
		3	400 A	162600 VA	
		3	400 A	124800 VA	
	LPZV	3	400 A	124600 VA	
10					
				360500 VA	
				1001 A	
Notes:					
1000.					

otes:	Branch Panel: 3ESL1  Location: ELEC. 326  Supply From: 1ESL1  Mounting: SURFACE  Enclosure: TYPE 1					Volts: Phases: Wires:		Wye			N	A.I.C. Rating: 42,000  Mains Type: MLO  ICB/MLO Rating: 100	
СКТ	Circuit Description	Trip	Poles		A		В		 С	Poles	Trip	Circuit Description	CK
1	RECS - COMM ROOM	20 A	1	360 VA	360 VA					1	20 A	RECS - COMM ROOM	2
3	RECS - COMM ROOM	20 A	1	333 771	300 V/1	360 VA	360 VA			1	20 A	RECS - COMM ROOM	4
5	RECS - COMM-ROOM	20 A	1			333 171		360 VA	1170 VA	1	20 A	LTG - 3RD FLOOR	6
7	Y Y	Y	Υ Υ	125 VA	360 VA	_	^			1	20 A	RECS - Space 105	
9	HVAC - COMM ROOM	20 A	2	1=0 111		125 VA	274 VA			1	20 A	LTG - PENTHOUSE	1
11									600 VA	1	20 A	DOOR OPERATOR 300	1
13					120 VA	1				1	20 A	DOOR POWER SUPPLY 300	1
15							120 VA			1	20 A	DOOR POWER SUPPLY 301	1
17	DOOR POWER SUPPLY 321	Д 20 A	1 ,	٨				120 VA	120 VA	1	20 A	DOOR POWER SUPPLY 302	1
19	DOOR POWER SUPPLY 320	20 A	1	120 VA	120 VA					1	20 A	DOOR POWER SUPPLY 324	
21	DOOR OPERATOR 323	20 A	1			600 VA	600 VA			1	20 A	DOOR OPERATOR 324	7
23	DOOR OPERATOR 322	20 A	1					600 VA	120 VA	1	20 A	DOOR POWER SUPPLY	2
25	DOOR POWER SUPPLIES	20 A	1	1080 VA	1080 VA					1	20 A	DOOR POWER SUPPLY	2
27	ELEVATOR CAB LIGHTS	20 A	1			0 VA	500 VA			2	20 1	LIDG V	
29	DOOR POWER SUPPLY	20 A	1					120 VA	500 VA		30 A	UPS Y Y Y	3
31	DOOR POWER SUPPLY PENTHOUSE	20 A	1	120 VA	120 VA					1	20 A	DOOR POWER SUPPLY PENTHOUSE	3
33	\$PARE /	20 A <sub>A</sub>	1	<b>J</b>	٨	0 VA	0 VA	J		1	20 A	SPARE /	3
35	SRARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	3
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	3
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	4
		Total Lo	ad:	3965 VA		2927 VA		3670 VA					
		Total Ar		34 A		24 A		32 A					

	Branch Panel: 2L1												
	Location: ELEC. 204					Volts	: 120/208 \	Nye				<b>A.I.C. Rating:</b> 42,000	
	Supply From: 1DL1					Phases	: 3					Mains Type: MLO	
	Mounting: SURFACE					Wires	: 4					MCB/MLO Rating: 150	
	Enclosure: TYPE 1												
lotes:													
СКТ	Circuit Description	Trip	Poles		A		В		С	Poles	Trip	Circuit Description	ск
1	LTG - 2ND FLOOR	20 A	1		360 VA					1	20 A	RECS - 2ND FLOOR	2
3	RECS - 2ND FLOOR	20 A	1			360 VA	540 VA			1	20 A	RECS - 2ND FLOOR	4
5	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	6
7	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	8
9	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	10
11	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	32
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	34
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	38
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	40
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	42
43	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	44
45	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	46
47	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	48
49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	50
51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	52
53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	54
		Total L	.oad:	1121 VA		900 VA		0 VA					
		Total A	mno:	10 A		9 A		0 A					

	Branch Panel: 2ESL1												
	Location: ELEC. 204					Volts:	120/208	Wye				A.I.C. Rating: 42,000	
	Supply From: 1ESL1					Phases:						Mains Type: MLO	
	Mounting: SURFACE	Wires: 4 MCB/MLO Rating: 100											
	Enclosure: TYPE 1						•					<b>go</b>	
Notes:													
СКТ	Circuit Description	Trip	Poles		A		В		С	Poles	Trip	Circuit Description	скт
1	DOOR OPERATOR 200	20 A	1	600 VA	417 VA					1	20 A	LTG - 2ND FLOOR	2
3	DOOR POWER SUPPLY 200	20 A	1			120 VA	120 VA			1	20 A	DOOR POWER SUPPLY 203	4
5	DOOR POWER SUPPLY 202	20 A	1					120 VA	120 VA	1	20 A	DOOR POWER SUPPLY S2-2	6
7	DOOR POWER SUPPLY 205	20 A	1	120 VA									8
9													10
11													12
13													14
15													16
17													18
19													20
21													22
23													24
25													26
27													28
29													30
		Total Lo	ad:	1124 VA		240 VA		240 VA					
		Total An	nns:	9 A		2 A		2 A		_			

	Branch Panel: 4H1												
	Location:					Volts:	480/277	Nye				<b>A.I.C. Rating:</b> 42,000	
	Supply From: 1DH1					Phases:	3	-				Mains Type: MLO	
	Mounting: SURFACE					Wires:	4					MCB/MLO Rating: 125	
	Enclosure: TYPE 1											•	
lotes:													
.0.001													
СКТ	Circuit Description	Trip	Poles		Α		В			Poles	Trip	Circuit Description	СКТ
1				8467 VA	5200 VA								2
3	T-4	40 A	3			10100	5200 VA			3	25 A	AHU-1	4
5								8450 VA	5200 VA				6
7				7800 VA	0 VA					1	20 A	SPARE	8
9	AHU-1	40 A	3			7800 VA	0 VA			1	20 A	SPARE	10
11								7800 VA	0 VA	1	20 A	SPARE	12
13	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	14
15	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	16
17	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	18
19	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	20
21	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	22
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	24
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	26
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	28
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	30
		Total Lo	oad:	21467 V	A	23100 V	4	21450 VA	1				
			mps:	78 A		83 A		77 A		_			

	Branch Panel: 3L2												
	Location: ELEC. 326	3				Volts: 120/208	Wye				A.I.C. Rating: 42,000		
	Supply From: 1DL1					Phases: 3	•				Mains Type: MLO		
	Mounting: SURFACE	:				Wires: 4					MCB/MLO Rating: 100		
	Enclosure: TYPE 1	-				VIII 00: 4					Mediate rating. 100		
	Eliciosule. TTPE I												
lotes:													
	ANEL CONTAINS OF PREALERS												
HIS PF	ANEL CONTAINS GFI BREAKERS.												
CKT	Circuit Description	Trip	Poles		A	В		С	Poles	Trip	Circuit Description		CKT
1	SWITCHED RECS Space 88	20 A	1	360 VA	900 VA				1	20 A	RECS - Space 95		2
3	SWITCHED RECS - Space 89	20 A	1			360 VA 900 VA			1	20 A	RECS - Space 96		4
5	SWITCHED RECS - Space 96	20 A	1				360 VA	360 VA	1	20 A	SWITCHED RECS - Space 92		6
7	SWITCHED RECS - Space 95	20 A	1	360 VA	360 VA				1	20 A	SWITCHED RECS - Space 94		8
9	RECS - Space 88	20 A	1			720 VA 360 VA			1	20 A	SWITCHED RECS - Space 93		10
11	RECS - Space 89	20 A	1				900 VA	900 VA	1	20 A	RECS - Space 90		12
13	SWITCHED RECS - Space 91	20 A	1	360 VA	900 VA				1	20 A	RECS - Space 91		14
15	SWITCHED RECS - Room 90, 91	20 A	1			360 VA 720 VA			1	20 A	RECS - Space 92		16
17	RECEPTACLES WORKSTATIONS	20 A	1				1080 VA	900 VA	1	20 A	RECS - Space 94		18
19	RECEPTACLES WORKSTATIONS	20 A	1	1080 VA	900 VA				1	20 A	RECS - Space 93		20
21	RECEPTACLES WORKSTATIONS	20 A	1			1080 VA 500 VA			1	20 A	RECS - Space 97		22
23	RECS - CORRIDOR 120	20 A	1				360 VA	500 VA	1	20 A	RECS - Space 97		24
25	RECS - Room 113, 114	20 A	1	360 VA	720 VA				1	20 A	RECS - Space 97		26
27	LTG - 3RD FLOOR	20 A	1			1600 VA 1041 VA			1	20 A	LTG - 3RD FLOOR		28
29	LTG - 3RD FLOOR	20 A	1				964 VA	0 VA	1	20 A	SPARE		30
31	SPARE	20 A	1	0 VA	1863 VA				1	20 A	LTG - 3RD FLOOR		32
33	RECS - REFRIGERATOR	GFI 20 A	1			180 VA 540 VA			1	20 A	RECS - RECEPTION		34
35	RECS - Space 108	20 A	1				360 VA	1080 VA	1	20 A	RECS - Space 108		36
37	RECS - MICROWAVE	20 A	1	180 VA	180 VA				1	20 A	RECS - DISHWASHER	GFI	38
39	RECS - MICROWAVE	20 A	1			180 VA 360 VA			1	20 A	RECS - Space 108		40
41	RECS - WATER COOLER	GFI 20 A	1				360 VA	720 VA	1	20 A	RECS - CORRIDOR RECEPTION		42
43	RECS - RESTROOMS	20 A	1	540 VA	180 VA				1	20 A	RECS - FLOORBOX111		44
45	SPARE	20 A	1			0 VA 900 VA			1	20 A	RECS - CORRIDOR		46
47	SPARE	20 A	1				0 VA	0 VA	1	20 A	SPARE		48
49	SPARE	20 A	1	0 VA	0 VA				1	20 A	SPARE		50
51	SPARE	20 A	1			0 VA 0 VA			1	20 A	SPARE		52
53	SPARE	20 A	1				0 VA	0 VA	1	20 A	SPARE		54
	1	Total Lo	oad:	9168 VA		9728 VA	8816 VA			1	- 1		
		Total A		77 A		82 A	73 A						

	Location: ELEC. 326  Supply From: 1DL1  Mounting: SURFACE Enclosure: TYPE 1		Volts: 120/208 Wye Phases: 3 Wires: 4									A.I.C. Rating: 42,000 Mains Type: MLO MCB/MLO Rating: 150				
Notes:  THIS PA  CKT	ANEL CONTAINS GFI BREAKERS	Tuin	Poles		A		В		c	Poles	Trip	Circuit Decerintian	С			
1	Circuit Description FLOOR BOX Space 65	Trip 20 A	Poles		720 VA		D			1	20 A	Circuit Description  RECS - Space 65				
3	FLOOR BOX Space 65	20 A	1	100 VA	120 VA	180 VA	720 VA			1	20 A	RECS - Space 65				
	FLOOR BOX Space 65	20 A	1			100 VA	120 VA	180 VA	540 VA	1	20 A	RECS - Space 65				
7	SWITCHED RECS RM.	20 A	1	360 VA	360 VA			100 VA	040 VA	1	20 A	SWITCHED RECS RM.				
9	SWITCHED RECS RM.	20 A	1	555 V/1	000 V/1	360 VA	360 VA			1	20 A	SWITCHED RECS RM.				
11	SWITCHED RECS RM.	20 A	1			333 771	333 77	360 VA	360 VA	1	20 A	SWITCHED RECS RM.				
13	SWITCHED RECS RM.	20 A	1	360 VA	360 VA					1	20 A	SWITCHED RECS RM.				
15	SWITCHED RECS RM.	20 A	1			360 VA	360 VA			1	20 A	SWITCHED RECS RM.				
17	RECS - Space 78	20 A	1					540 VA	900 VA	1	20 A	RECS - Space 82	<u> </u>			
19	RECS - Space 80	20 A	1	720 VA	900 VA					1	20 A	RECS - Space 81				
21	RECS - Space 79	20 A	1			720 VA	900 VA			1	20 A	RECS - Space 102				
23	RECS - Space 84	20 A	1					900 VA	900 VA	1	20 A	RECS - Space 103				
25	RECS - Space 83	20 A	1	900 VA	900 VA					1	20 A	RECS - Space 101				
27	SWITCHED RECS RM.	20 A	1			360 VA	900 VA			1	20 A	RECS - Space 87				
29	SWITCHED RECS RM.	20 A	1					360 VA	900 VA	1	20 A	RECS - Space 85	;			
31	SWITCHED RECS RM.	20 A	1	360 VA	900 VA					1	20 A	RECS - Space 86	;			
33	RECEPTACLES WORKSTATIONS	20 A	1			1080 VA	540 VA			1	20 A	RECS -				
35	RECEPTACLES WORKSTATIONS	20 A	1					1080 VA	360 VA	1	20 A	RECS - Space 111				
37	RECEPTACLES WORKSTATIONS	20 A	1	1080 VA	180 VA					1	20 A	RECEPTACLES Space 111				
39	RECS - CORRIDOR	20 A	1			720 VA	720 VA			1	20 A	RECS - Space 100	4			
41	RECS - CORRIDOR	20 A	1					540 VA	1000 VA	1	20 A	Space 100 REFRIGERATOR GFI	4			
43	RECS - Space 99	20 A	1	720 VA	500 VA					1	20 A	DOOR ACCESS/ SECURITY CONTROL PANEL				
45	RECS - Space 99	20 A	1			540 VA	500 VA			1	20 A	DOOR ACCESS/ SECURITY CONTROL PANEL				
47	TELECOMM UPS	20 A	2					500 VA	1000 VA	1	20 A	WINDOW ROLLER SHADES RM 301				
49				500 VA	1000 VA					1	20 A	WINDOW ROLLER SHADES RM 301				
51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE				
53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE				
55	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE				
57	SPARE	20 A	1			0 VA	0 VA		1	1	20 A	SPARE	+ ;			
59	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	-			
61	SPARE	20 A	1	0 VA	0 VA	0.145				1	20 A	SPARE	- '			
63	SPARE	20 A	1			0 VA	0 VA	0.141	2.11	1	20 A	SPARE	-			
65	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE				
		Total L	oad:	11000 V	A	9320 VA 78 A		10420 V	A							



architects

3225 Summit Square PI # 200,
Lexington, KY 40509
859.252.6781

PATIO

101 S. Pennsylvania St, Indianapolis, IN 46204 317.633.4040 <u>MEP ENGINEER</u>

ENGINEERS

3264 Loch Ness Drive,
Lexington, KY 40517
859.271.3246

elemental design

366 S. Broadway,
Lexington, KY 40508
859.389.6533



RESERVED FOR AHJ STAMP



UNIVERSITY OF KENTUCKY PS-8 EXPANSION

> 110 TRANSCRIPT AVE, PARKING STRUCTURE #8 LEXINGTON, KY 40508 UK PROJECT NUMBER: 2565.0

1 7/13/2023 ADDENDUM NO. 05

MARK DATE DESCRIPTION

REVISIONS

ISSUE: CONSTRUCTION DOCUMENTS

ISSUE DATE: 4/24/2023

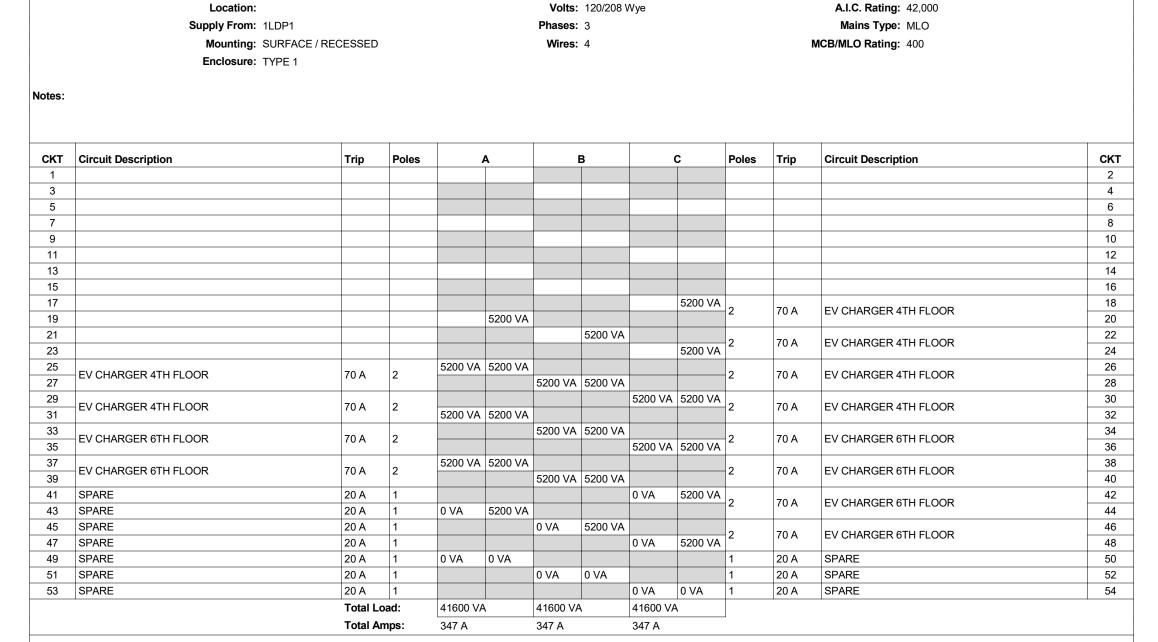
PROJECT NO: 13-003727.00

DRAWN BY: RPG

CHECKED BY: WPW

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SHEET TITLE:
ELECTRICAL PANEL
SCHEDULES



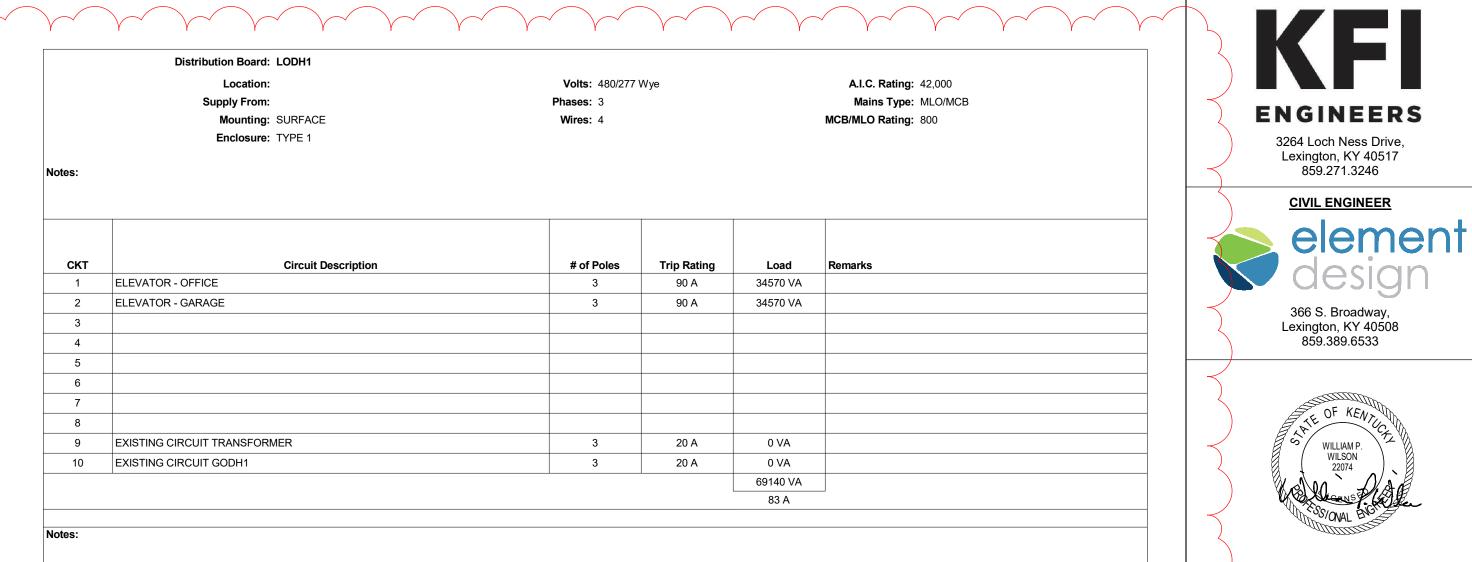
Branch Panel: LP2V

	Branch Panel: LP1V												
	Location: Supply From: 1LDP1					Volts: Phases:	120/208 \	Vye				A.I.C. Rating: 42,000  Mains Type: MLO	
	Mounting: SURFAC					Wires:						MCB/MLO Rating: 400	
	Enclosure: TYPE 1											<b>3</b>	
lotes:													
СКТ	Circuit Description	Trip	Poles		<b>4</b>	E	 3		:	Poles	Trip	Circuit Description	CK
1	RECS - EV CHARGER - 1ST FLOOR	20 A	1	1000 VA	5200 VA					_	70.4	·	2
3							5200 VA			2	70 A	EV CHARGER - 3RD FLOOR	4
5	RECS - EV CHARGER - 1ST FLOOR	20 A	1					1000 VA	5200 VA	0	70.4	EV CHARGER ORD ELCOS	6
7	RECS - EV CHARGER - 1ST FLOOR	20 A	1	1000 VA	5200 VA					2	70 A	EV CHARGER - 3RD FLOOR	8
9	RECS - EV CHARGER - 1ST FLOOR	20 A	1			1000 VA	1000 VA			1	20 A	RECS - EV CHARGER - 1ST FLOOR	1
11	RECS - EV CHARGER - 1ST FLOOR	20 A	1					1000 VA	1000 VA	1	20 A	RECS - EV CHARGER - 1ST FLOOR	1
13	RECS - EV CHARGER - 1ST FLOOR	20 A	1	1000 VA	1000 VA					1	20 A	RECS - EV CHARGER - 1ST FLOOR	1
15	RECS - EV CHARGER - 1ST FLOOR	20 A	1			1000 VA	1000 VA			1	20 A	RECS - EV CHARGER - 1ST FLOOR	1
17	RECS - EV CHARGER - 1ST FLOOR	20 A	1					1000 VA	1000 VA	1	20 A	RECS - EV CHARGER - 1ST FLOOR	1
19	RECS - EV CHARGER - 1ST FLOOR	20 A	1	1000 VA									2
21	RECS - EV CHARGER - 1ST FLOOR	20 A	1			1000 VA	5200 VA			_	70.4	EL/OUADOED, ADD ELOOD	2
23	RECS - EV CHARGER - 1ST FLOOR	20 A	1					1000 VA	5200 VA	2	70 A	EV CHARGER - 3RD FLOOR	2
25	RECS - EV CHARGER - 1ST FLOOR	20 A	1	1000 VA	5200 VA					_	70.4	EL/OUADOED, ADD ELOOD	2
27	EV SUADOED ODD EL COD	70.4				5200 VA	5200 VA			2	70 A	EV CHARGER - 3RD FLOOR	2
29	EV CHARGER - 3RD FLOOR	70 A	2					5200 VA	5200 VA	_	70.4	EL/OUADOED, ADD ELOOD	3
31	EV CUADOED ETHE COD	70.4		5200 VA	5200 VA					2	70 A	EV CHARGER - 3RD FLOOR	3
33	EV CHARGER 5TH FLOOR	70 A	2			5200 VA	5200 VA			_			3
35	51/ 01/ 10 0 5 5 5 5 1 5 1 0 0 5 5 5 5 5 5 5 5							5200 VA	5200 VA	2	70 A	EV CHARGER 5TH FLOOR	3
37	EV CHARGER 5TH FLOOR	70 A	2	5200 VA	5200 VA					_			3
39	51/01/15055 151/51/005					5200 VA	5200 VA			2	70 A	EV CHARGER 5TH FLOOR	4
41	EV CHARGER - 4TH FLOOR	70 A	2					5200 VA	5200 VA	_			4
43	EV QUADOED ATUELOGE	70.		5200 VA	5200 VA					2	70 A	EV CHARGER 5TH FLOOR	4
45	EV CHARGER - 4TH FLOOR	70 A	2			5200 VA	5200 VA				70.4	EV QUADOED ETU EL COD	4
47	SPARE	20 A	1					0 VA	5200 VA	2	70 A	EV CHARGER 5TH FLOOR	4
49	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	5
51	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	5
53	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	5
	1	Total L	oad:	52800 VA	\	57000 VA		52800 VA			'	-	

	Branch Panel: 4L1												
	Location:					Volts:	120/208	Wye				A.I.C. Rating: 42,000	
	Supply From: T-4					Phases:	3					Mains Type: MCB	
	Mounting: SURFAC	CE				Wires:	4					MCB/MLO Rating: 125	
	Enclosure: TYPE 1											gg.	
Notes:													
СКТ	Circuit Description	Trip	Poles		Α		В			Poles	Trip	Circuit Description	
1			0	2250 VA	1000 VA					1	20 A	BOILER B-1	
3	WATER HEATER	40 A	2			2250 VA	1000 VA			1	20 A	BOILER B-2	
5	HW RECIRC PUMP	20 A	1					600 VA	1600 VA	2	20 A	HWSP-1	
7	HWSP-2	20 A	2	1600 VA	1600 VA					]2	20 A	HWSP-1	
9	HWSF-2	20 A	2			1600 VA	1600 VA			2	20 A	CWRP-1	
11	CWRP-2	20 A	2					1600 VA	1600 VA	2			
13		20 A		1600 VA	0 VA					1	20 A	AHU-1 CONTROLS	
15	EF-3	20 A	1			600 VA	2450 VA			2	40 A	HVAC - MS-1	
17	CHILLER HEAT TRACE	20 A	1					600 VA	2450 VA				
19	LTG - PENTHOUSE	20 A	1	312 VA	120 VA					1	20 A	TRAP PRIMER	
21	RECIRCULATING PUMP	20 A	1			480 VA	120 VA			1	20 A	TRAP PRIMER	
23	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	
25	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	
27	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	
29	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	
31	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	
33	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	
35	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	
37	SPARE	20 A	1	0 VA	0 VA					1	20 A	SPARE	
39	SPARE	20 A	1			0 VA	0 VA			1	20 A	SPARE	
41	SPARE	20 A	1					0 VA	0 VA	1	20 A	SPARE	
		Total L		8467 VA		10100 V	4	8450 VA					
		Total A		71 A		84 A		70 A					

	Distribution Board: LODH1  Location: Supply From: Mounting: SURFACE Enclosure: TYPE 1	Volts: 480/277 Phases: 3 Wires: 4	Wye		A.I.C. Rating: 42,000  Mains Type: MLO/MCB  MCB/MLO Rating: 800	
otes:	<u></u>					
СКТ	Circuit Description	# of Poles	Trip Rating	Load	Remarks	
1	ELEVATOR - OFFICE	3	90 A	34570 VA		
2	ELEVATOR - GARAGE	3	90 A	34570 VA		
3						
4						
5						
6						
7						
8						
9	EXISTING CIRCUIT TRANSFORMER	3	20 A	0 VA		
10	EXISTING CIRCUIT GODH1	3	20 A	0 VA		
				69140 VA		
				83 A		
otes:						







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PRIME DESIGNER

6602 E. 75th Street, Suite 210

Indianapolis IN 46250

317.842.6890 Ph

www.walkerconsultants.com

**ARCHITECT OF RECORD** 

architects

3225 Summit Square PI # 200, Lexington, KY 40509 859.252.6781

**DESIGN ARCHITECT** 

101 S. Pennsylvania St, Indianapolis, IN 46204

317.633.4040

MEP ENGINEER

UNIVERSITY OF KENTUCKY **PS-8 EXPANSION** 

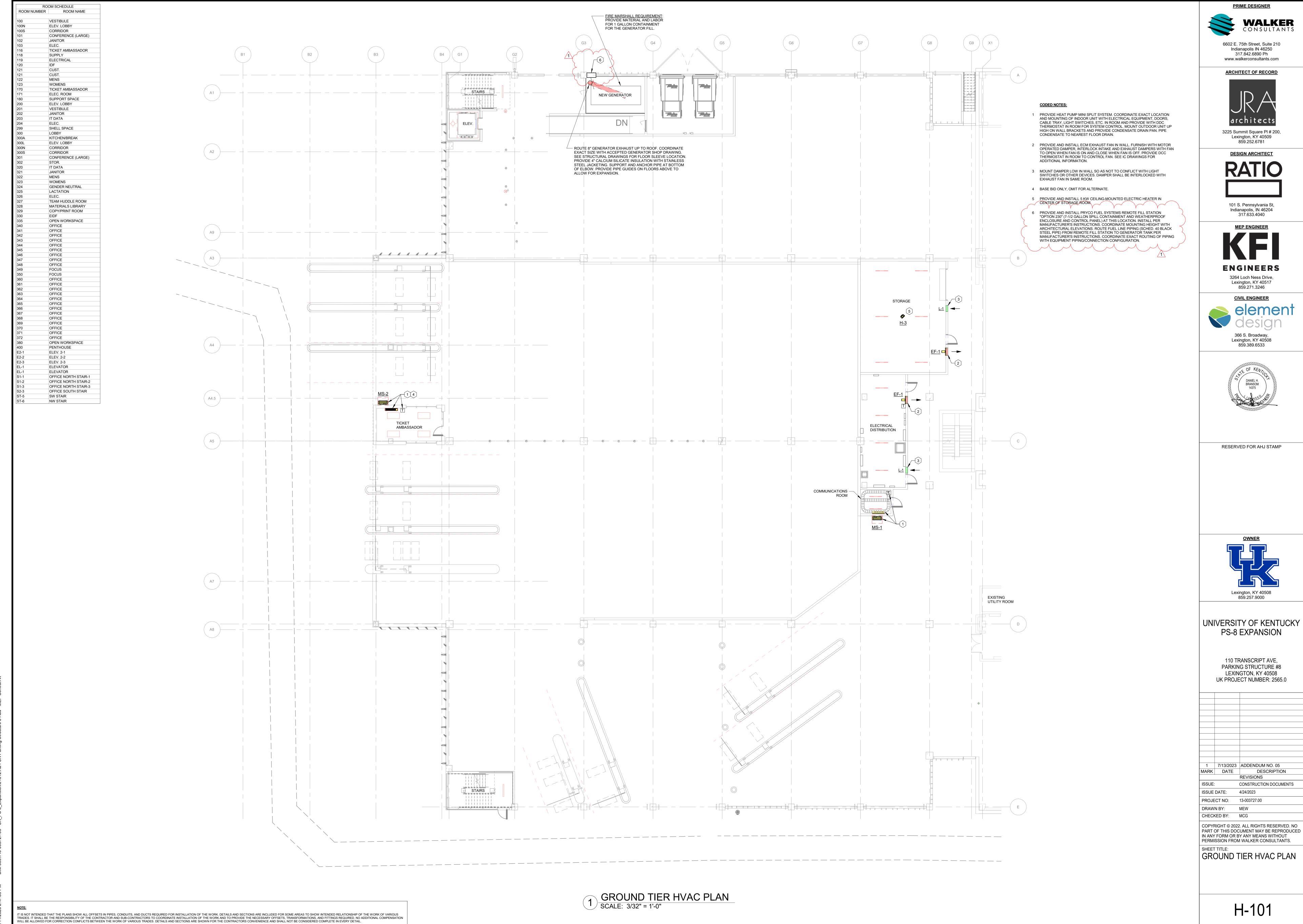
110 TRANSCRIPT AVE, PARKING STRUCTURE #8 LEXINGTON, KY 40508 UK PROJECT NUMBER: 2565.0

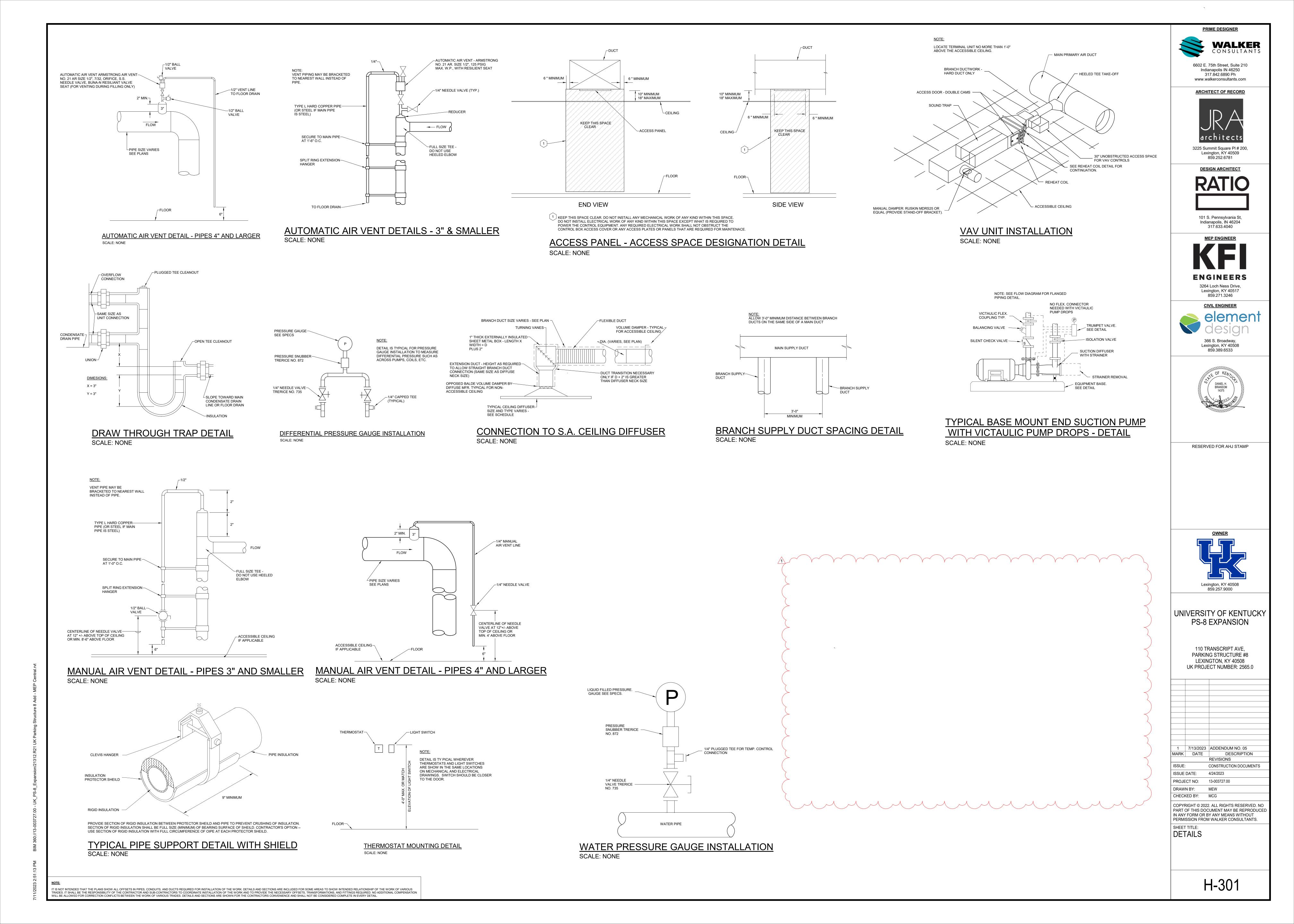
	7/13/2023	ADDENDUM NO. 05
RK	DATE	DESCRIPTION
		REVISIONS
UE:	:	CONSTRUCTION DOCUMENTS
UE	DATE:	4/24/2023
OJE	CT NO:	13-003727.00
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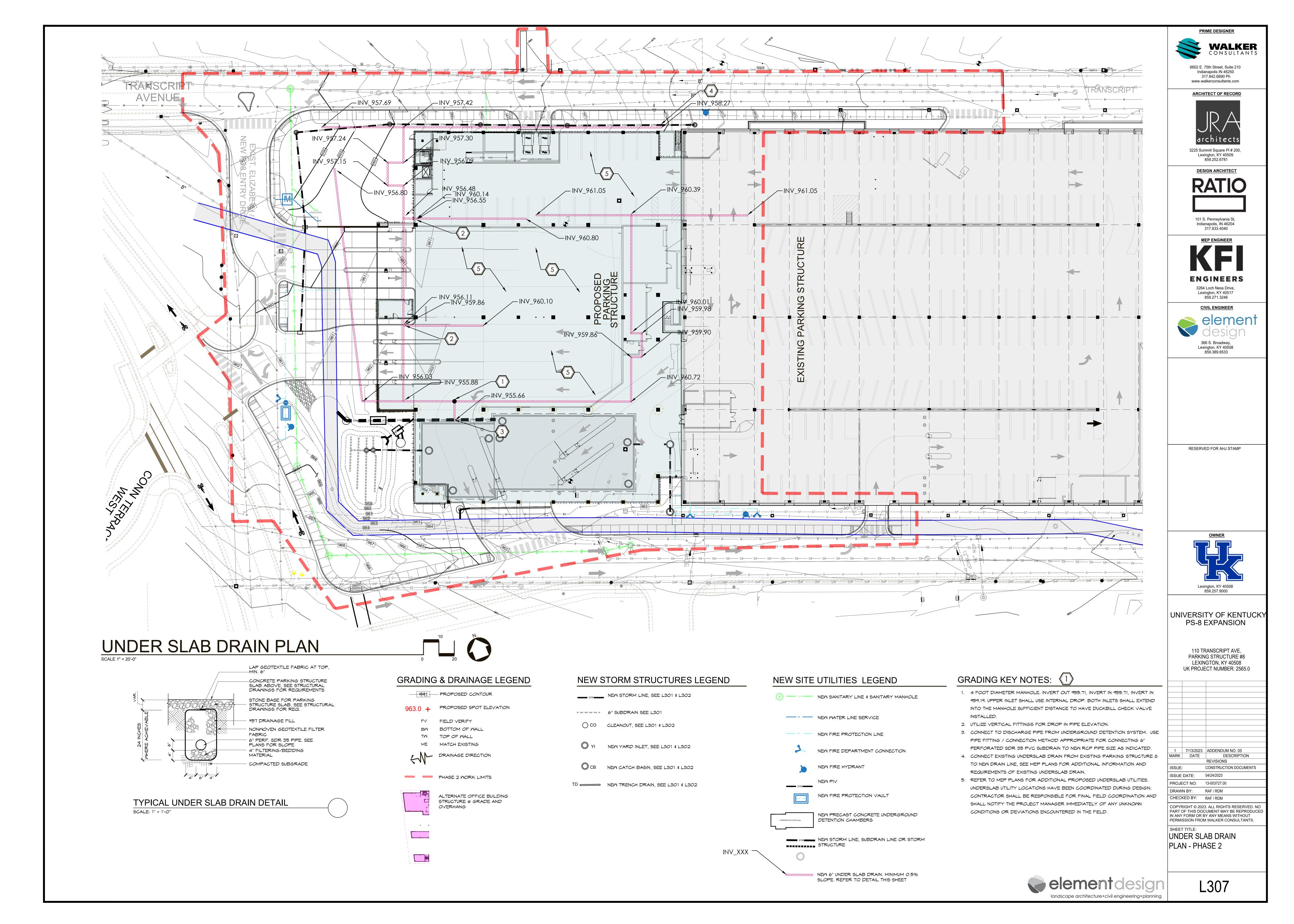
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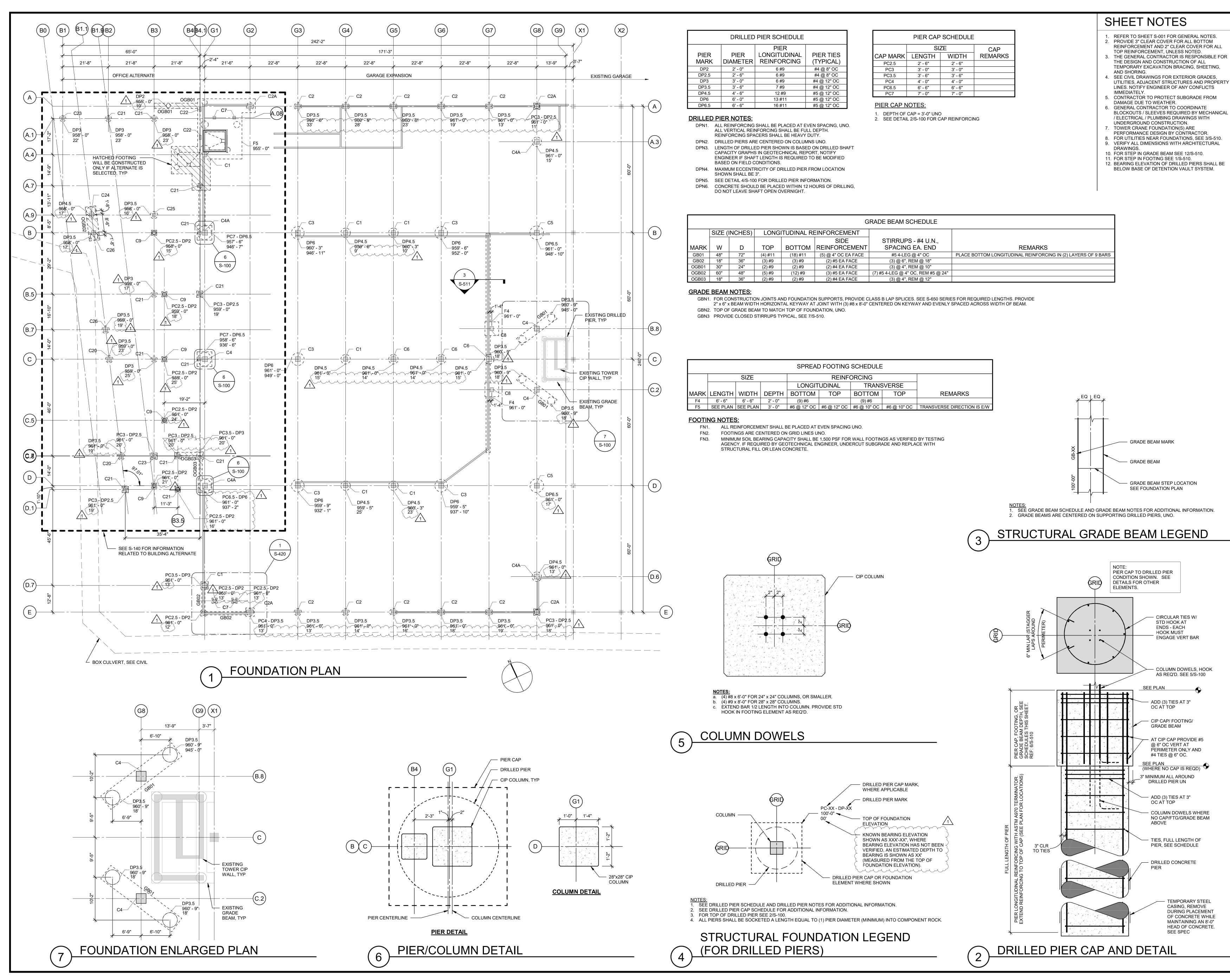
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SHEET TITLE:
ELECTRICAL PANEL SCHEDULES









PRIME DESIGNER **WALKER** 

6602 E. 75th Street, Suite 210 Indianapolis IN 46250 317.842.6890 Ph www.walkerconsultants.com

ARCHITECT OF RECORD

architects 3225 Summit Square PI # 200, Lexington, KY 40509 859.252.6781

**DESIGN ARCHITECT** 

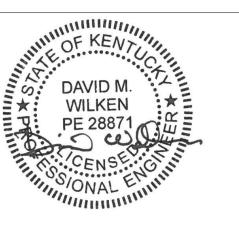
101 S. Pennsylvania St, Indianapolis, IN 46204 317.633.4040

**ENGINEERS** 3264 Loch Ness Drive,

MEP ENGINEER

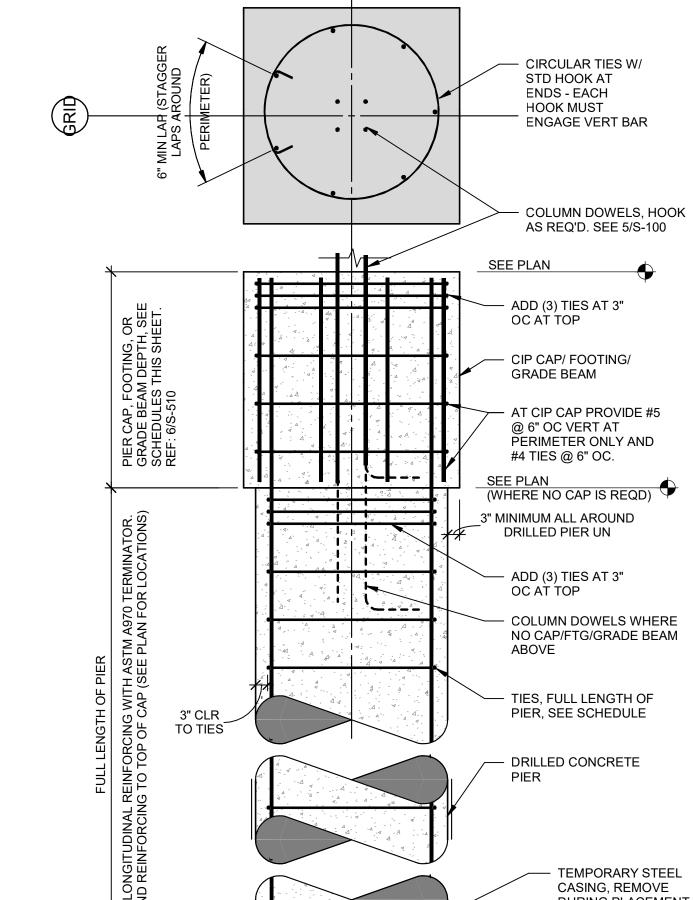
Lexington, KY 40517 859.271.3246 **CIVIL ENGINEER** 





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STRUCTURAL GRADE BEAM LEGEND



Lexington, KY 40508 859.257.9000

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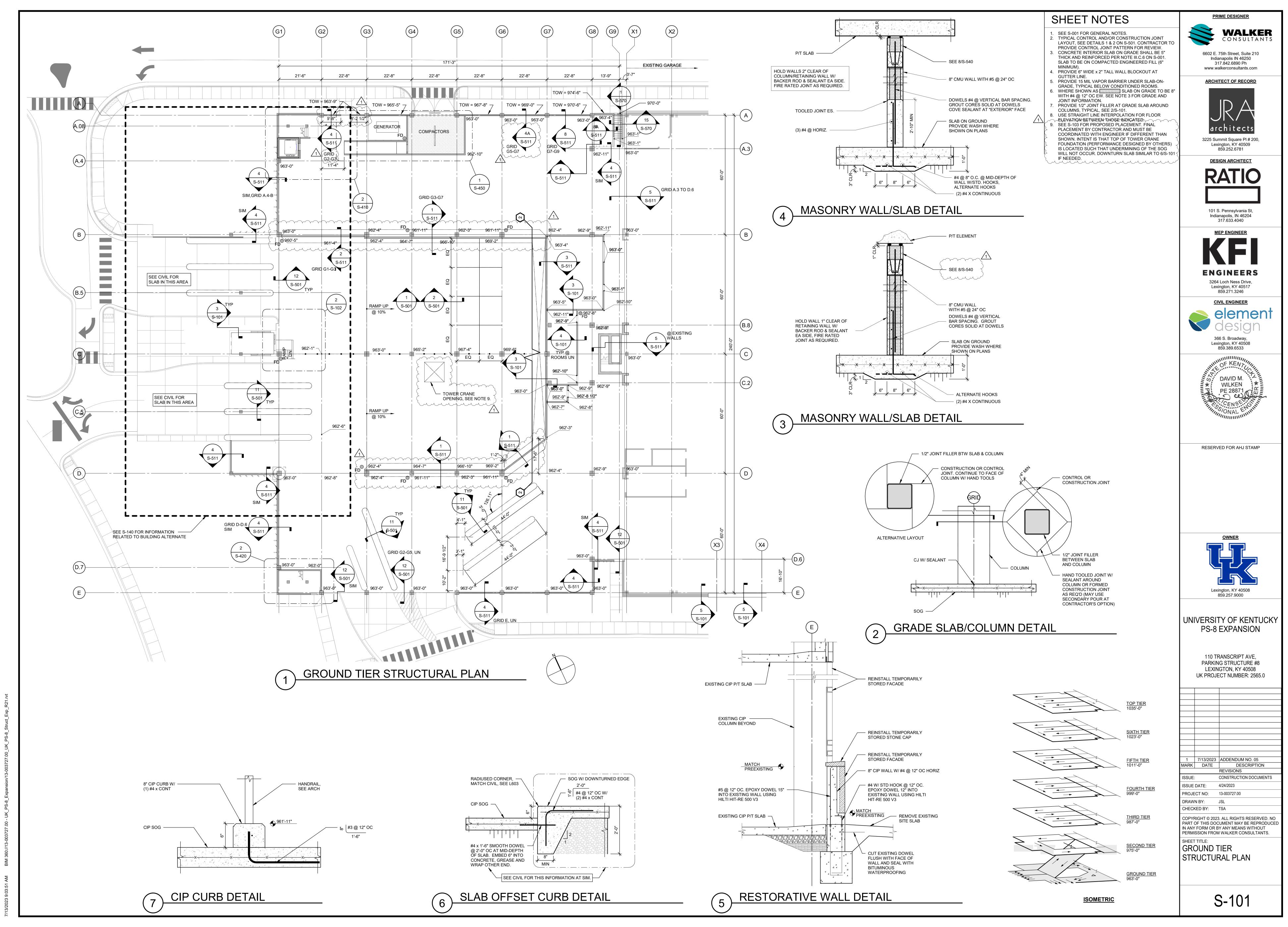
7/13/2023 | ADDENDUM NO. 05 MARK DATE DESCRIPTION CONSTRUCTION DOCUMENTS ISSUE DATE: 4/24/2023 PROJECT NO: 13-003727.00 DRAWN BY: CHECKED BY: TSA COPYRIGHT © 2023. ALL RIGHTS RESERVED. NO PART OF THIS DOCUMENT MAY BE REPRODUCED

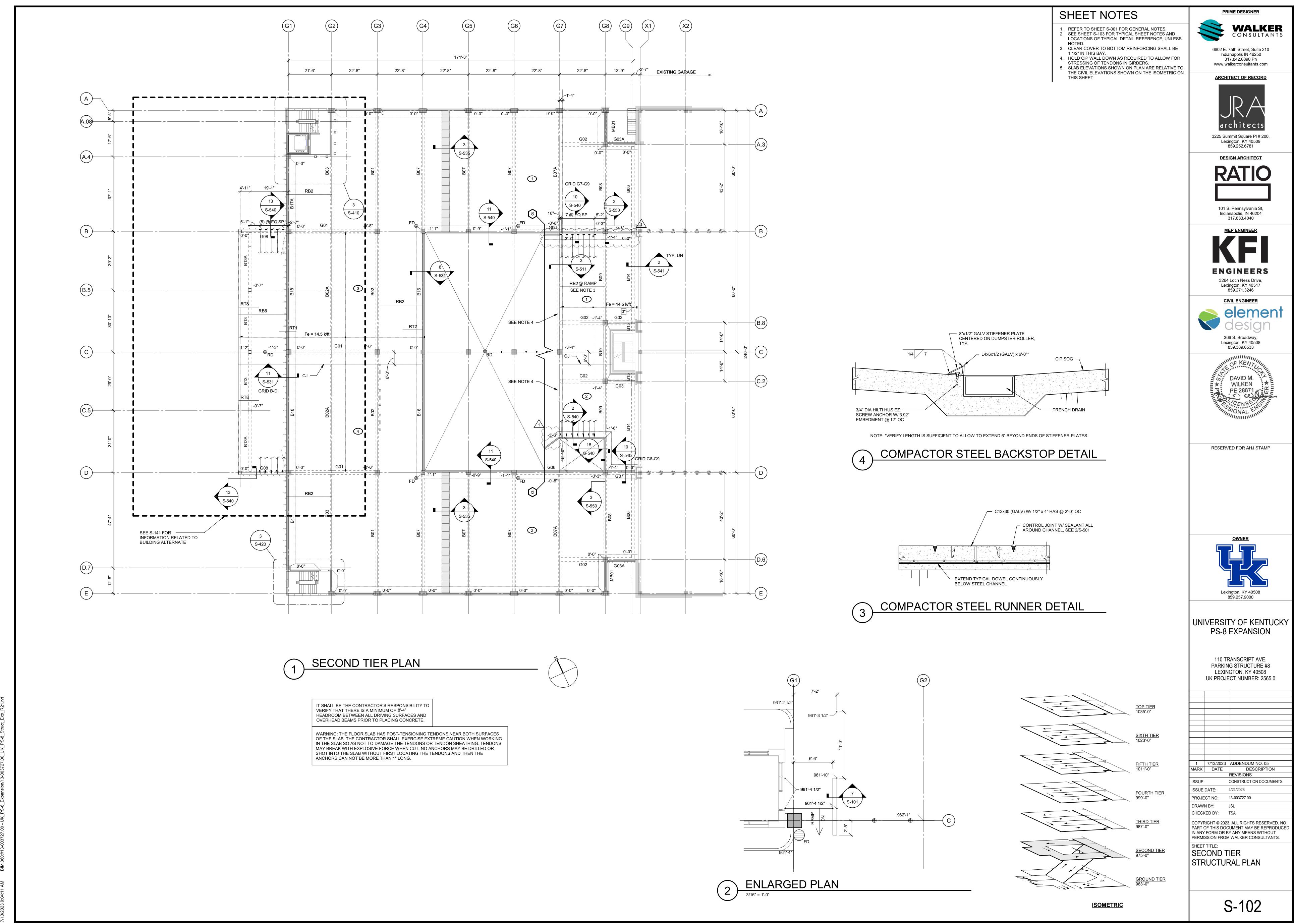
SHEET TITLE: FOUNDATION PLAN

IN ANY FORM OR BY ANY MEANS WITHOUT

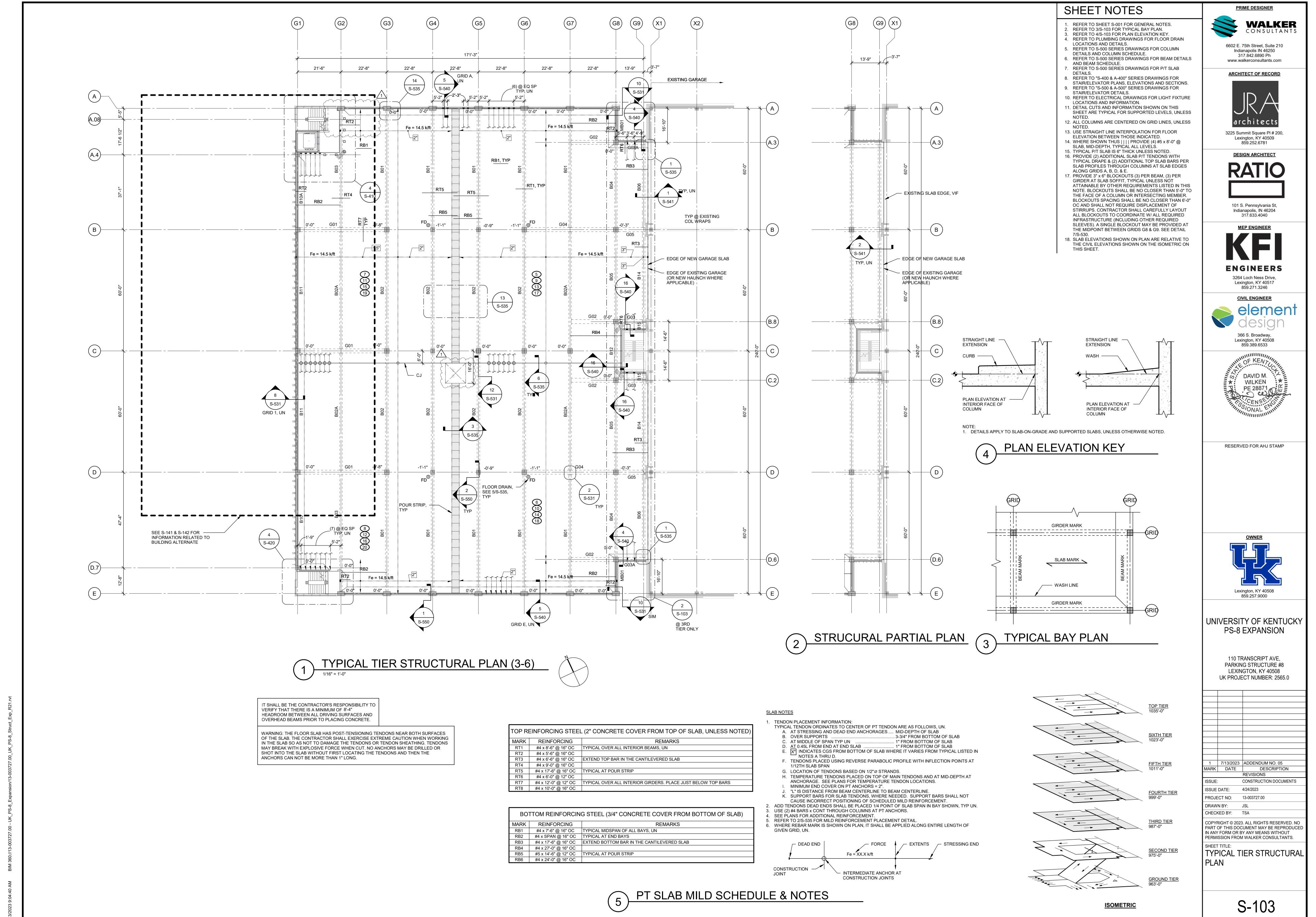
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S-100





7/13/2003 Q:04:11 AM BIM 360://13\_003727 00 \_11K PS\_8 Expansion/13\_003727 00 11K PS\_8 Strict Exp



# SHEET NOTES

- REFER TO SHEET S-001 FOR GENERAL NOTES.
   SEE SHEET S-103 FOR TYPICAL SHEET NOTES AND
- LOCATIONS OF TYPICAL DETAIL REFERENCE, UNLESS NOTED.

  3. SLAB ELEVATIONS SHOWN ON PLAN ARE RELATIVE TO THE CIVIL ELEVATIONS SHOWN ON THE ISOMETRIC ON
- THE CIVIL ELEVATIONS SHOWN ON THE ISOMETRIC ON THIS SHEET

  4. AT INTERNAL GRIDS B-G6, B-G3, C-G7, C-G3, D-G6, & D-G3 THE COLUMN EXTENDS ABOVE THE FLOOR. SEE DETAIL 8/S-550.





PRIME DESIGNER

WALKER



101 S. Pennsylvania St, Indianapolis, IN 46204 317.633.4040

MEP ENGINEER



3264 Loch Ness Drive, Lexington, KY 40517 859.271.3246

CIVIL ENGINEER



366 S. Broadway, Lexington, KY 40508 859.389.6533

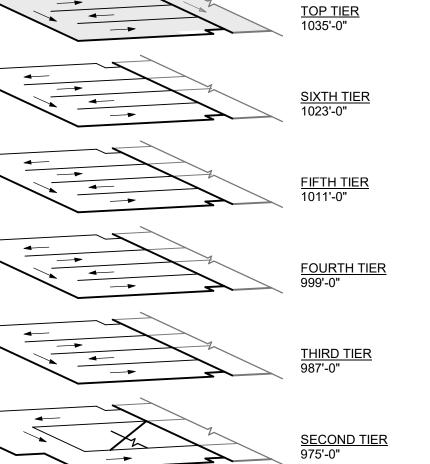


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UNIVERSITY OF KENTUCKY PS-8 EXPANSION

> 110 TRANSCRIPT AVE, PARKING STRUCTURE #8 LEXINGTON, KY 40508 UK PROJECT NUMBER: 2565.0



975'-0"

GROUND TI
963'-0"

ISOMETRIC

1 7/13/2023 ADDENDUM NO. 05

MARK DATE DESCRIPTION

REVISIONS

ISSUE: CONSTRUCTION DOCUMENTS

ISSUE DATE: 4/24/2023

PROJECT NO: 13-003727.00

DRAWN BY: JSL

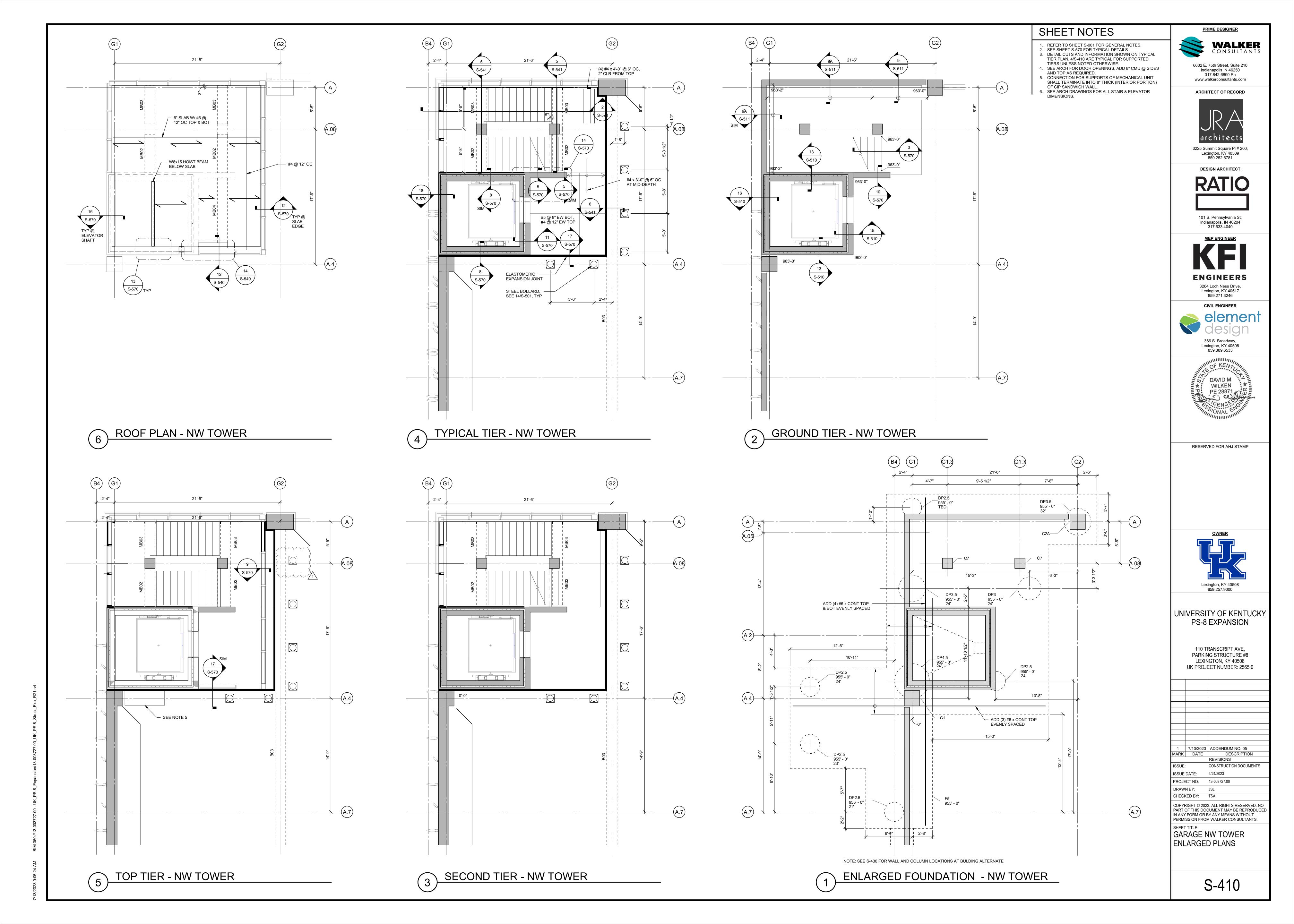
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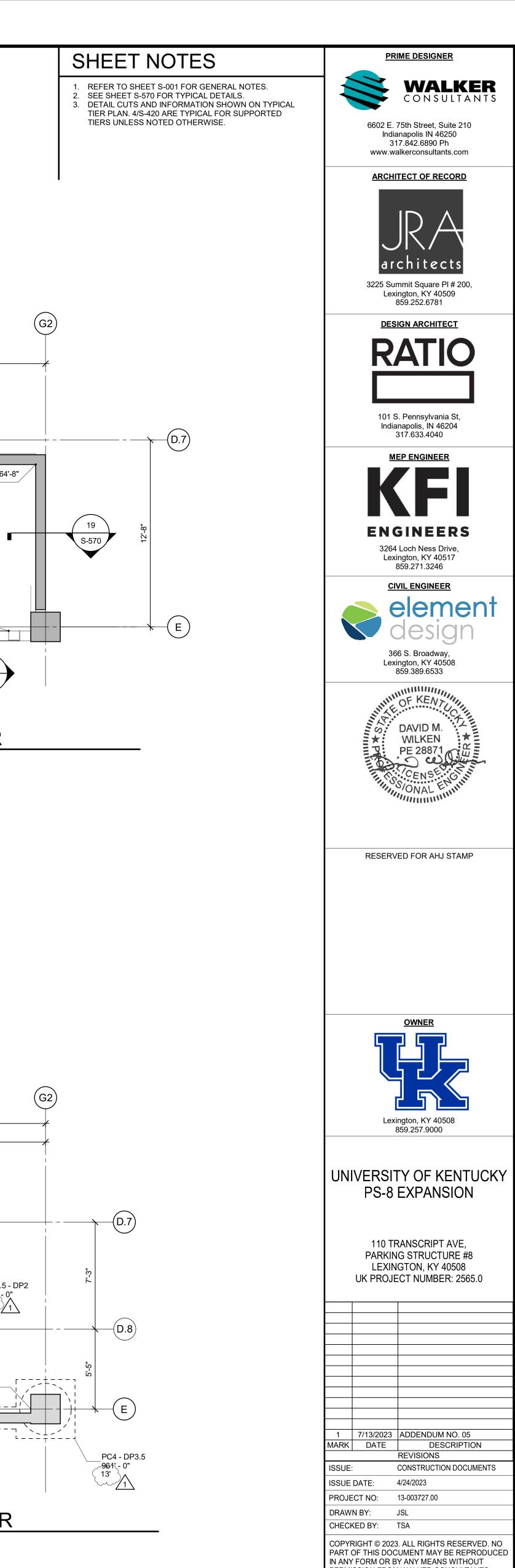
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SHEET TITLE:

TOP TIER STRUCTURAL

S-104



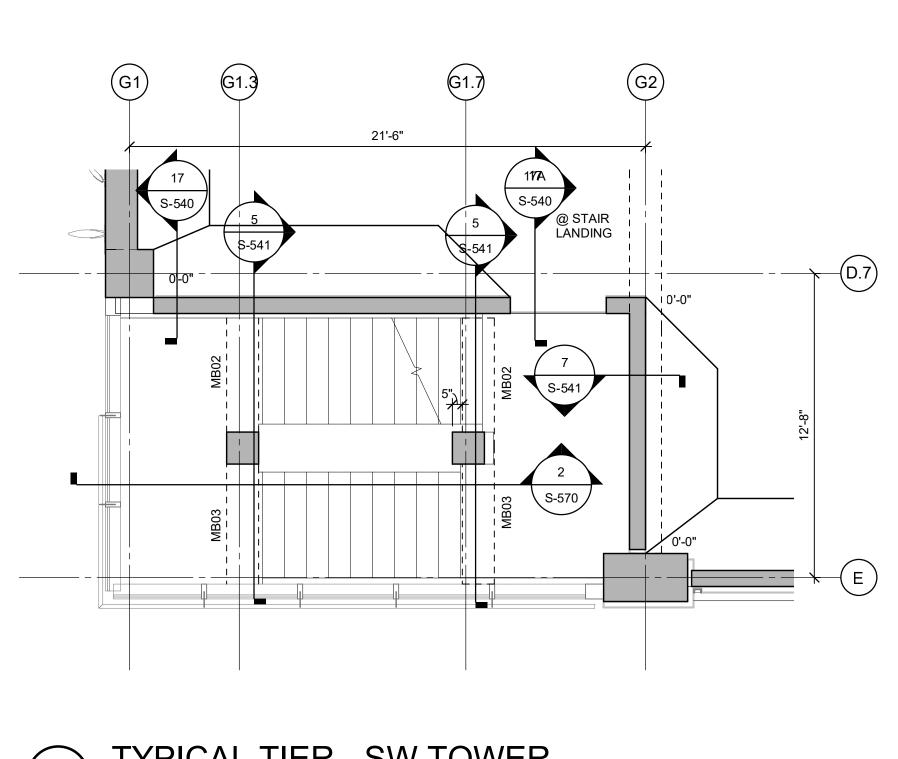


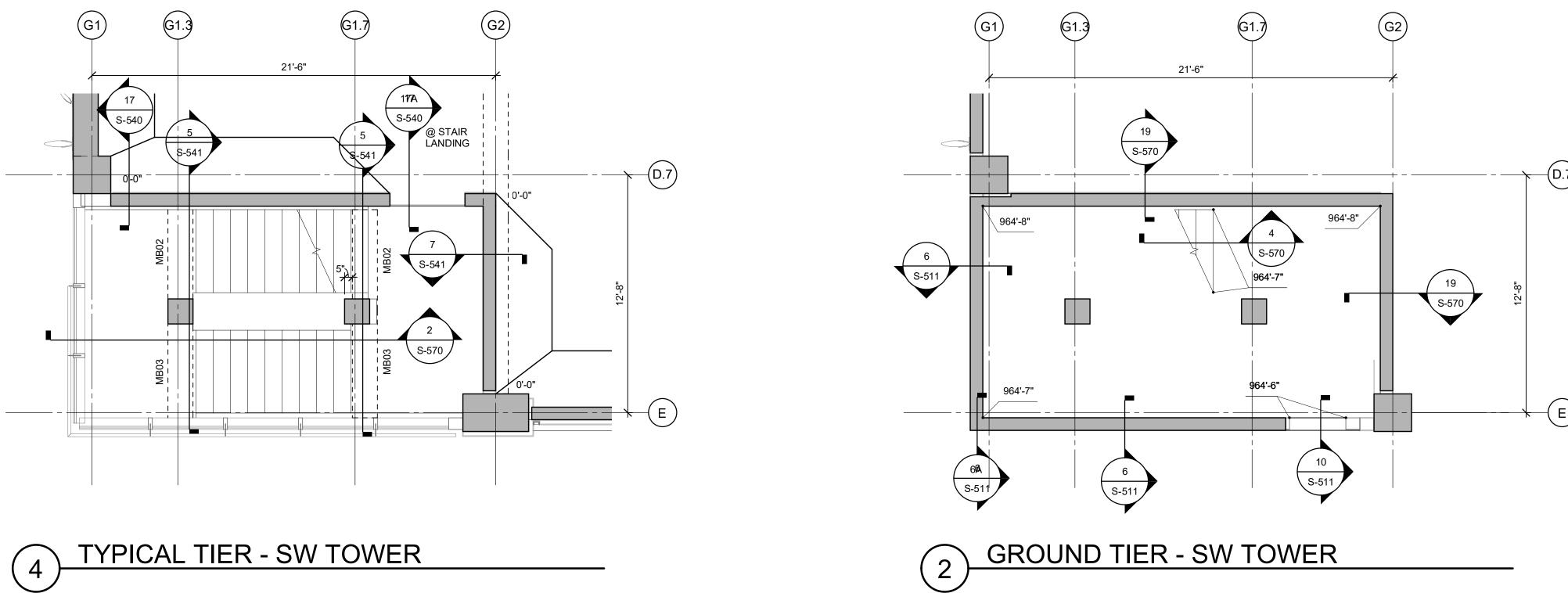
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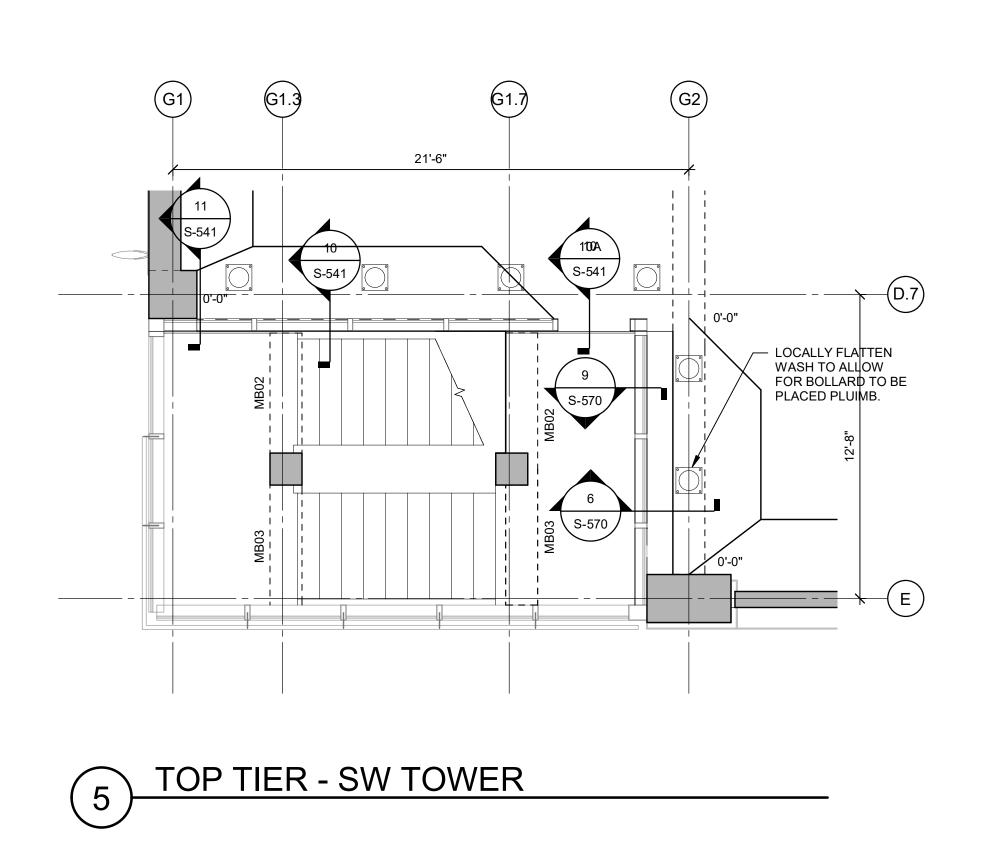
S-420

GARAGE SW TOWER

ENLARGED PLANS







(G1.3)

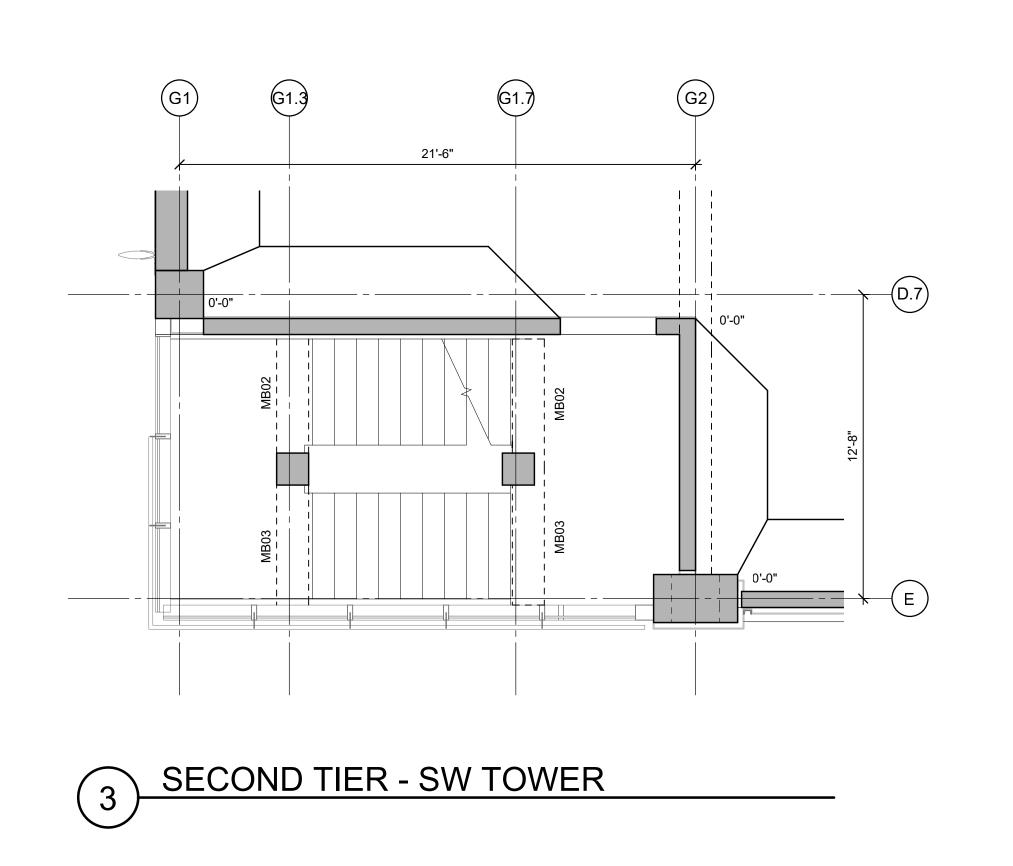
21'-6"

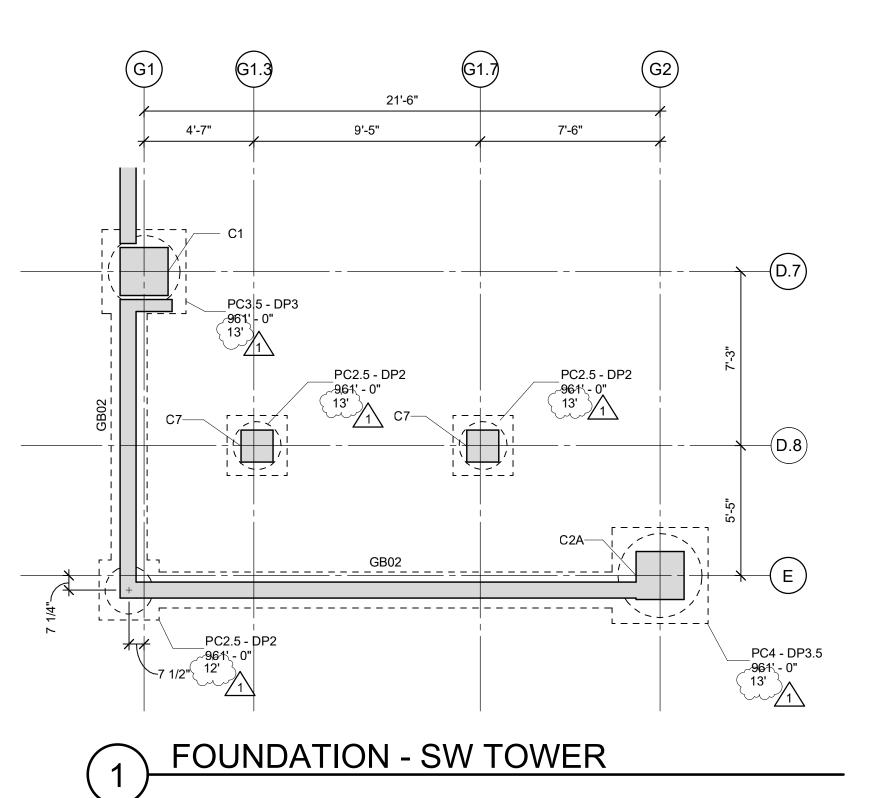
─ #5 @ 12" OC TOP

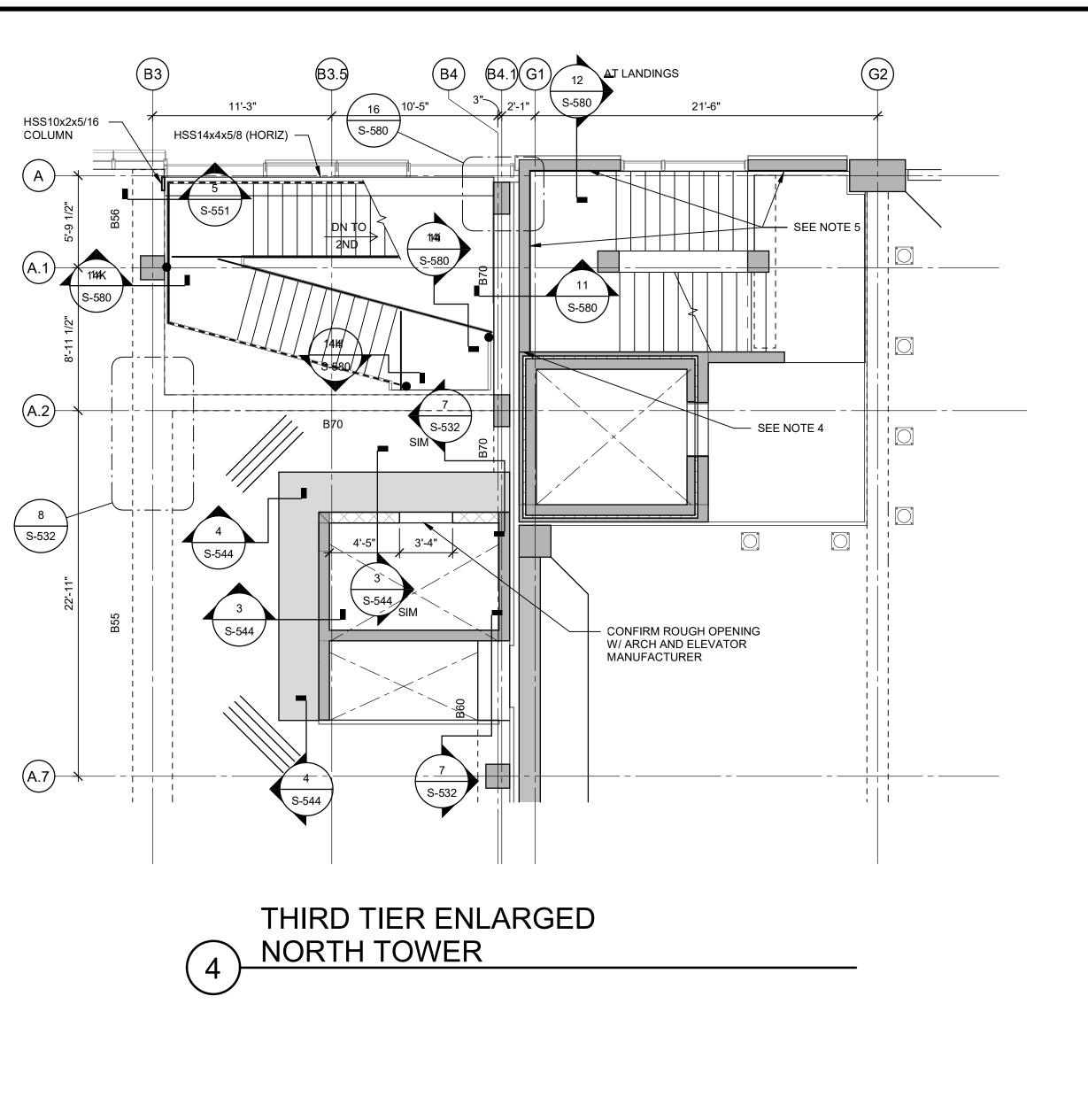
6" CIP SLAB W/ #5 @

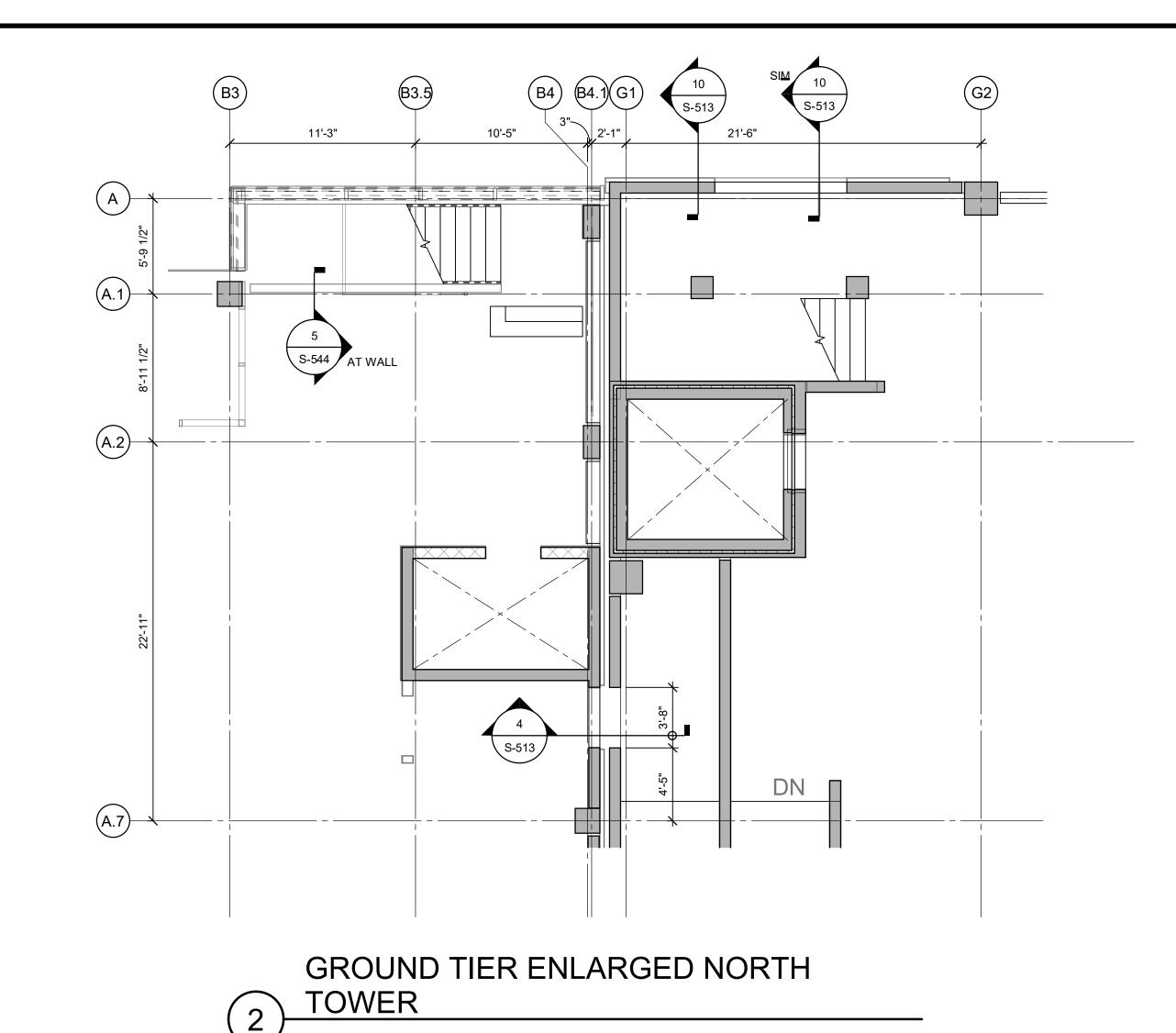
12" OC EW BOT

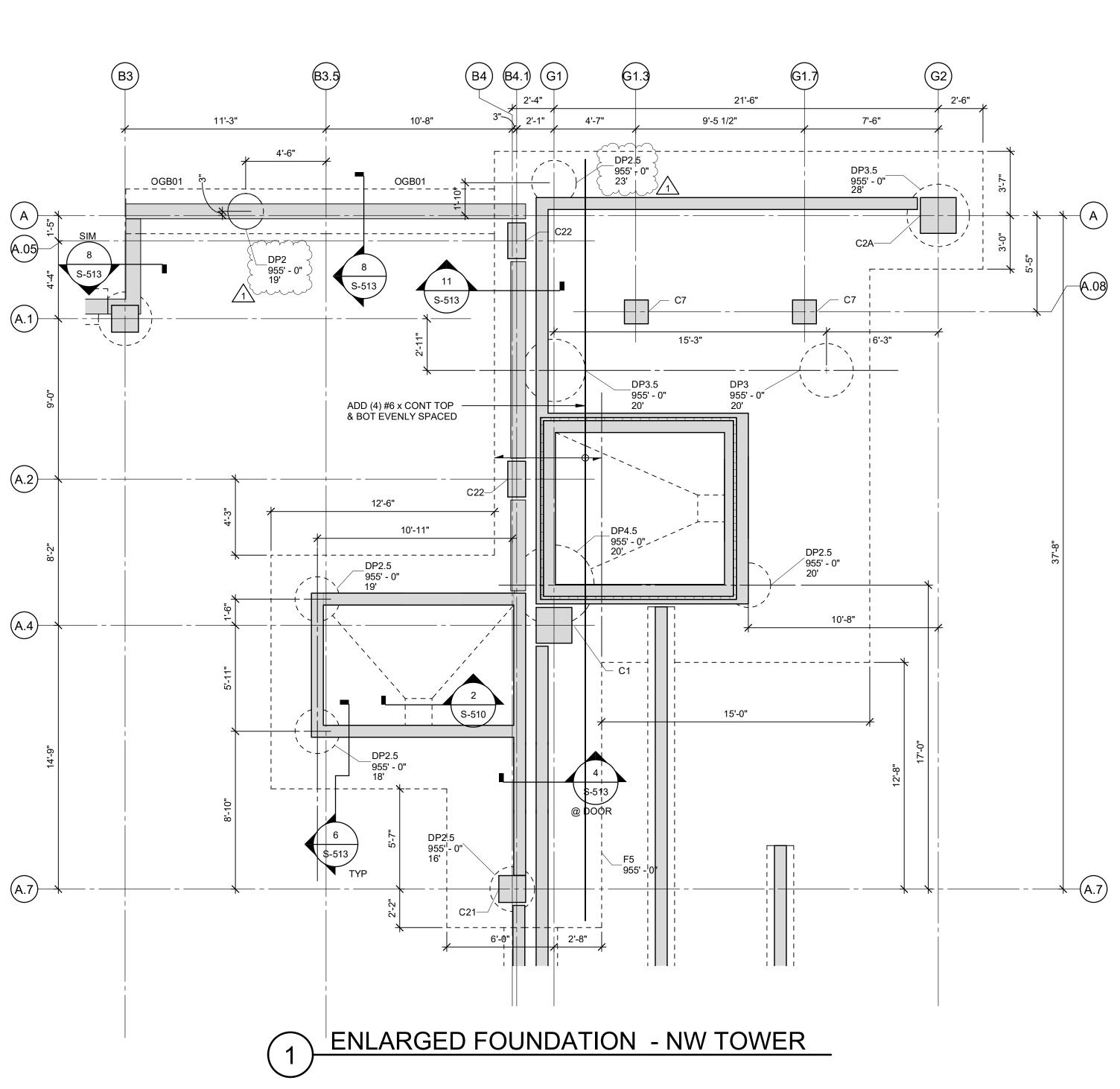
6 ROOF PLAN - SW TOWER

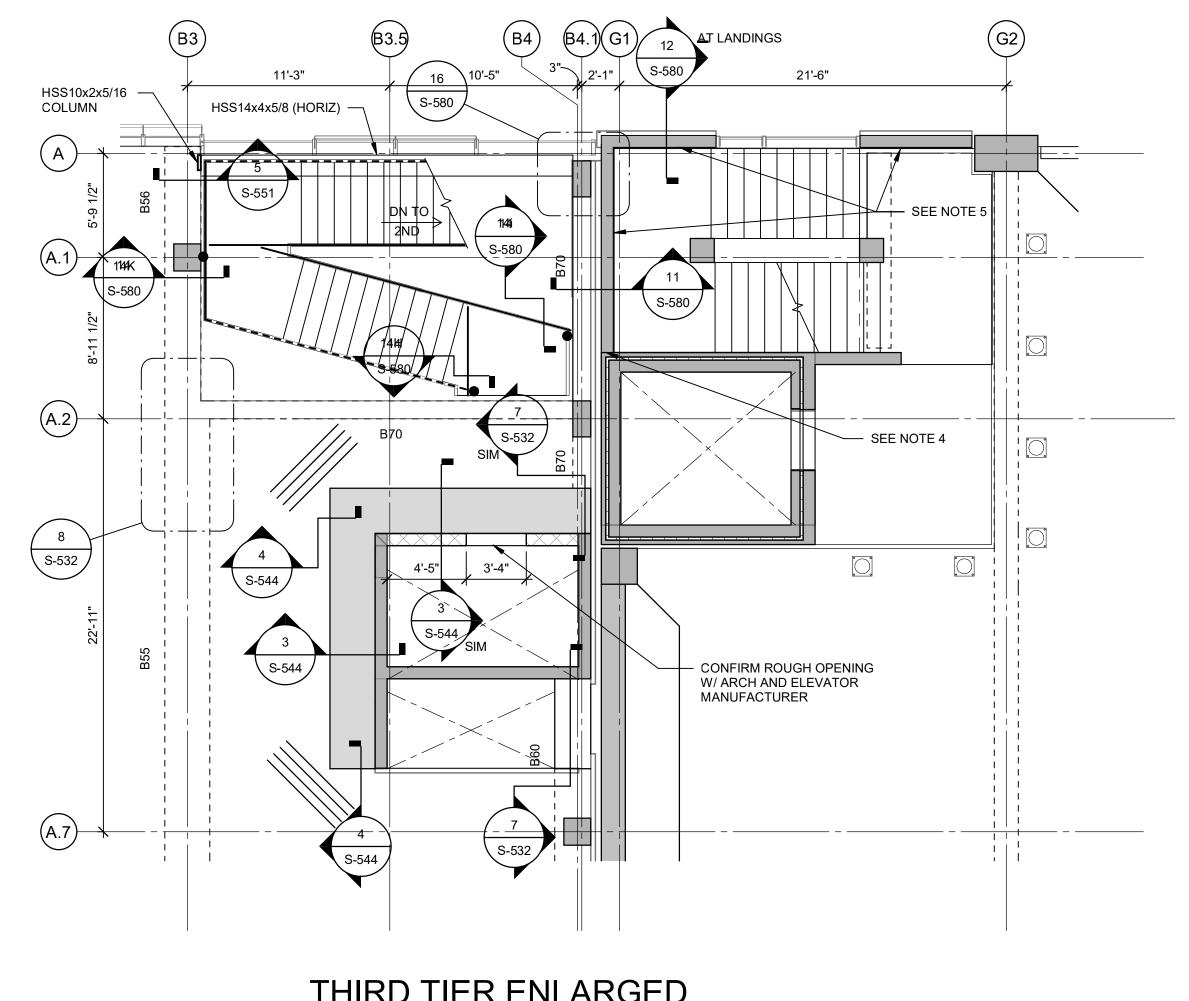


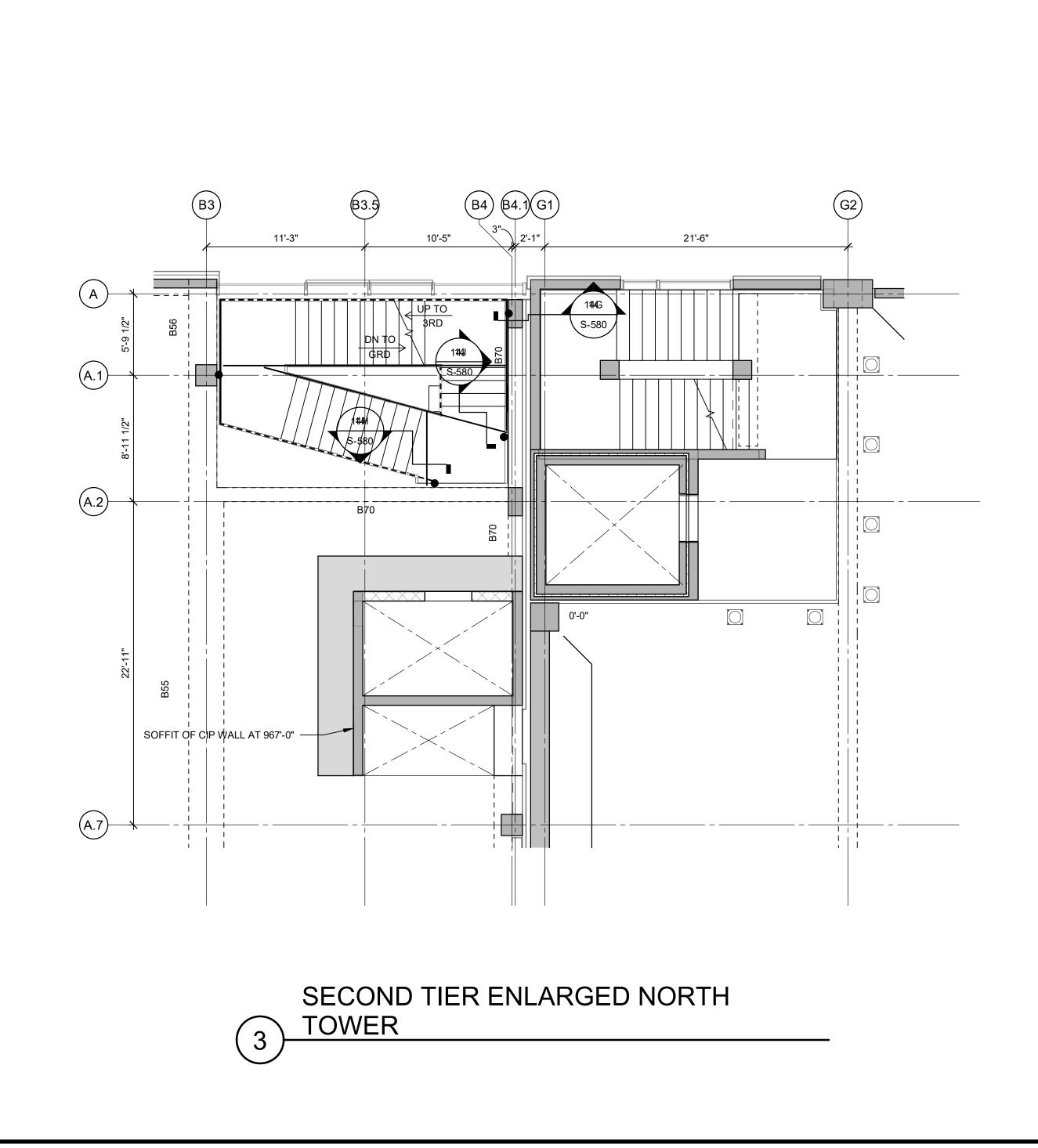


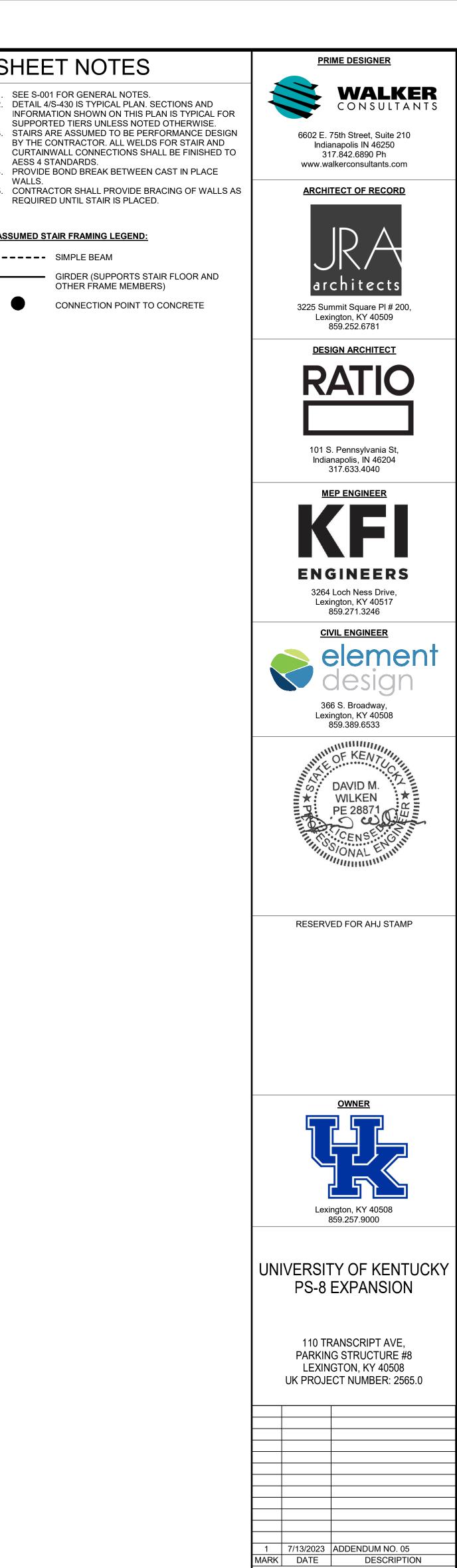












CONSTRUCTION DOCUMENTS

BUILDING ALTERNATE

ENLARGED TOWER PLANS

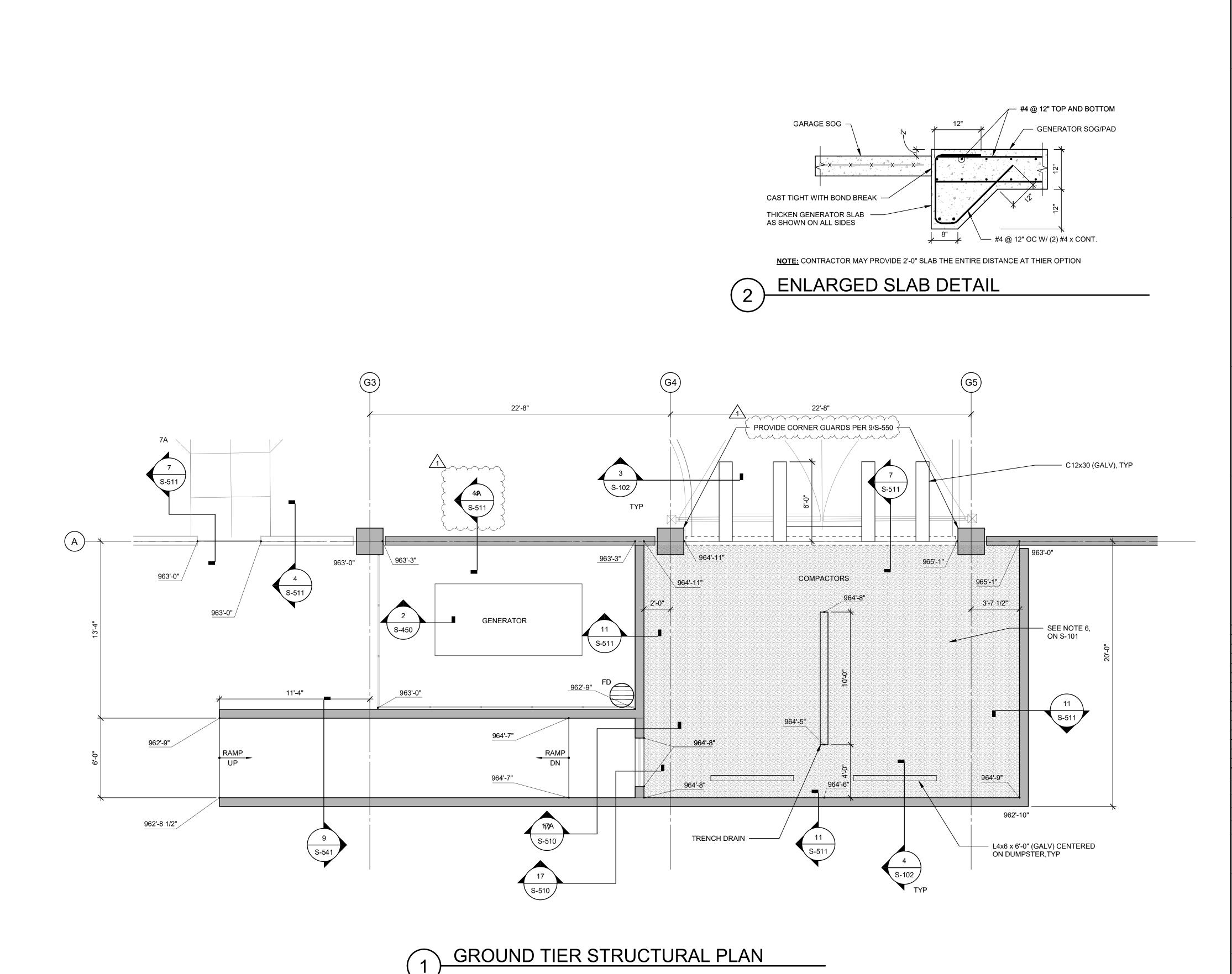
S-430

SHEET NOTES

AESS 4 STANDARDS.

. SEE S-001 FOR GENERAL NOTES.

REQUIRED UNTIL STAIR IS PLACED.







DESIGN ARCHITECT

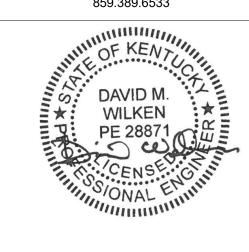
RATIO

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Indianapolis, IN 46204 317.633.4040







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> 110 TRANSCRIPT AVE, PARKING STRUCTURE #8 LEXINGTON, KY 40508 UK PROJECT NUMBER: 2565.0

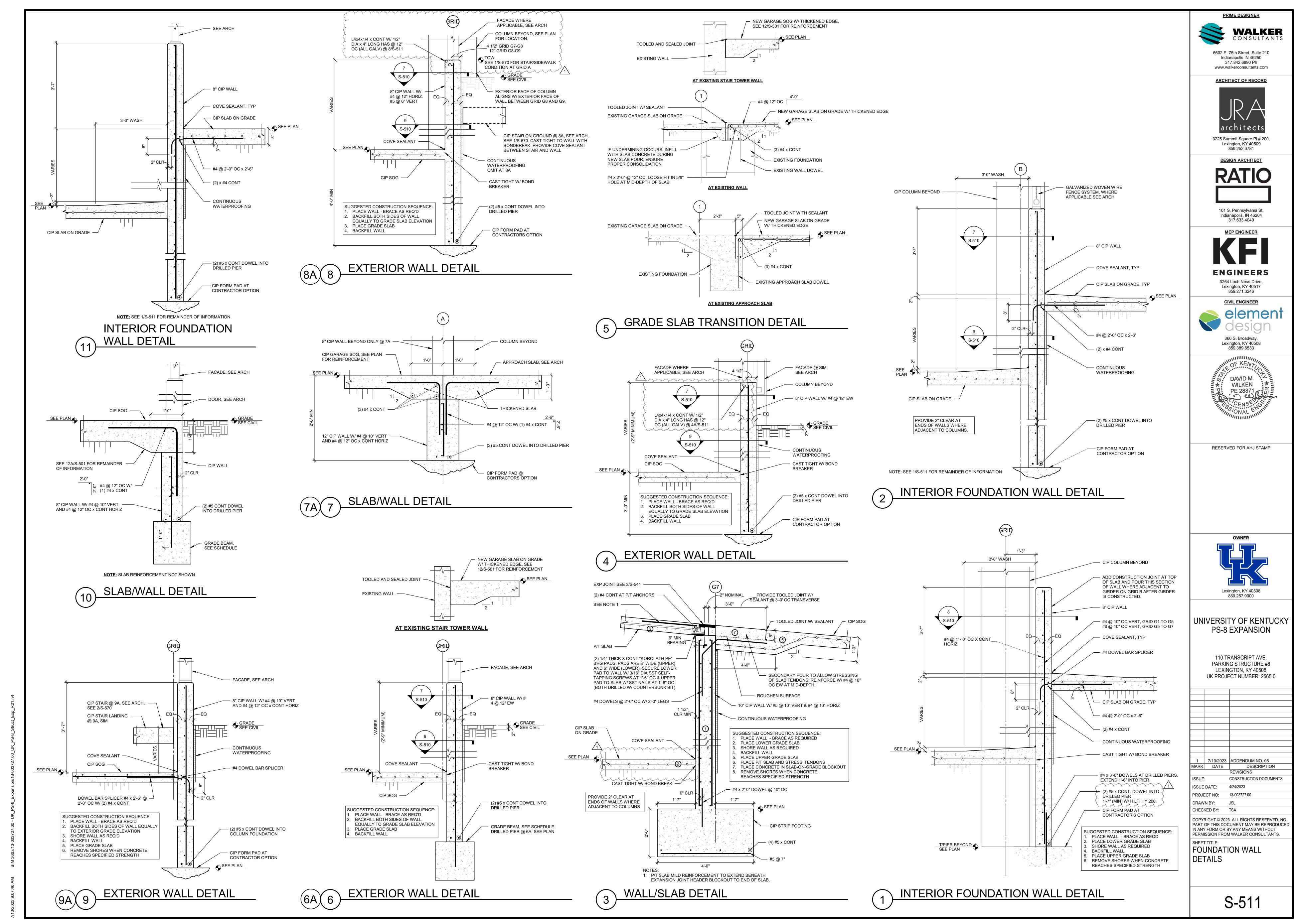
1	7/13/2023	ADDENDUM NO. 05
IARK	DATE	DESCRIPTION
		REVISIONS
SSUE:	:	CONSTRUCTION DOCUMENTS
SSUE	DATE:	4/24/2023

ISSUE: CONSTRUCTION DOCUMENTS
ISSUE DATE: 4/24/2023
PROJECT NO: 13-003727.00
DRAWN BY: JSL
CHECKED BY: TSA

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SHEET TITLE:
ENLARGED PLANS

S-450



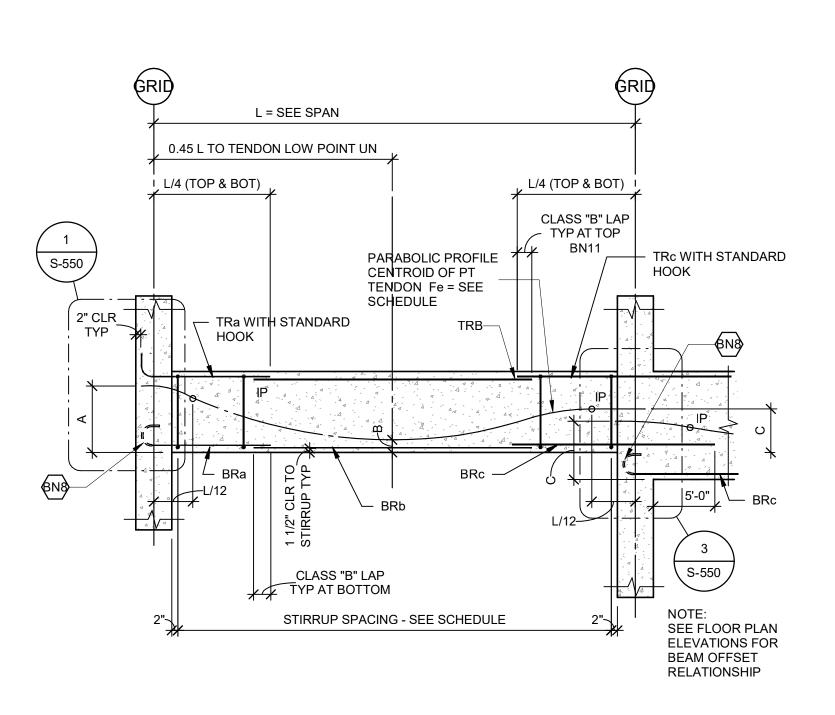
### **BEAM NOTES:**

- BN1. FOR GENERAL NOTES, SEE SHEET S-001. BN2. Fe = MINIMUM EFFECTIVE FORCE AFTER LOSSES. Fe IS BASED ON 1/2" DIA, 270 KSI LOW RELAXATION STRANDS. THE MINIMUM NUMBER OF STRANDS PER BEAM MUST BE BASED ON Fe = 26.5 KIPS/STRAND.
- FOR BEAMS OR GIRDERS THAT SUPPORT ANOTHER BEAM OR GIRDER, SEE DETAILS 1, 2, AND 3/S-531.
- ANCHORAGES FOR ADDED BEAM TENDONS SHALL BE LOCATED AT THE QUARTER POINT OF THE ADJACENT SPAN UNO AND SHALL BE PLACED AT THE CG OF THE TEE BEAM SECTION. PROVIDE REINFORCING PER 4/S-531.
- BN6. PROVIDE FOLLOWING STIRRUP SPACING EACH END OF P/T BEAMS UN IN BEAM SCHEDULE: BEAM SECTION T: (3) @ 2", (8) @ 6", REM @ 22".
- BEAM SECTIONS L, U, & R: (3) @ 2", (8) @ 6", REM @ 12". BN7. FOR MEMBERS 36" OR GREATER IN DEPTH AND FOR ALL SECTION L, U, & R BEAMS, PROVIDE #4 x CONT @ 12" OC SIDE BARS EF UN SPACED EQUALLY BETWEEN TOP & BOTTOM BARS.
- BN8. FOR BOTTOM BARS LARGER THAN #6 PROVIDE 180° STD HOOKS AT ENDS AS SHOWN.
- TO AVOID INTERFERENCE, PLACE TOP GIRDER BARS JUST BELOW TOP BEAM BARS AND BOTTOM BEAM BARS JUST ABOVE BOTTOM GIRDER BARS AS REQUIRED, UN. SEE 3/S-531. BN10. FOR PENETRATIONS THROUGH BEAMS OR GIRDERS, SEE DETAILS 5, 6, & 7 ON S-531.
- BN11. CLASS "B" LAP BASED ON TRb BAR SIZE, SEE DETAILS ON S-530.
- BN12. FOR BEAM SECTION TYPES AND OTHER BEAM DETAILS SEE S-530.
- BN13. MINIMUM INITIAL CONCRETE STRENGTH AT TIME OF STRESSING, f'ci, SHALL BE 3,000 PSI UN. BN14. SEE NOTE REGARDING "SUGGESTED POUR SEQUENCE" ON SHEET S-002.
- BN15. ALL LONGITUDINAL REINFORCEMENT SHALL BE HOOKED AT ENDS OR HAVE ASTM A970 TERMINATORS WHERE BEAM IS NOT CONTINUOUS AND IS SUPPORTED BY ANOTHER BEAM.

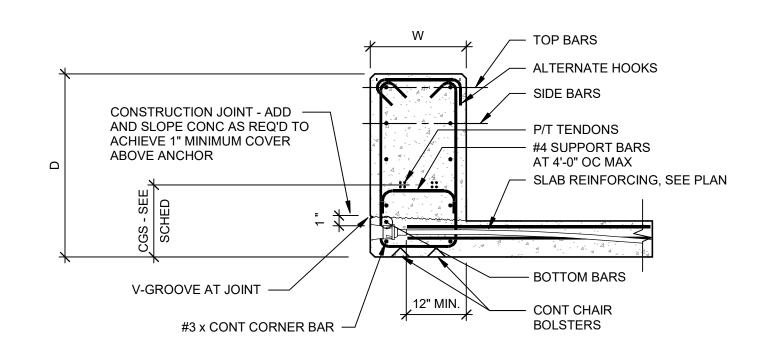
					MILD CONCRETE	BEAM AND GIRDER SCHEDULE	
		SIZE (I	NCHES)	TOP	воттом		
MARK	SECTION	W	D	4 · - ·	REINFORCEMENT	#4 STIRRUPS U.N. SPACING EA. END	REMARKS ^
MB01	U	16	49	(3) #6	(3) #6		
MB02	R	16	16	(3) #6	(3) #5	(3) @ 2", REM @ 4"	
MB03	R	16	SEE1POLAN	(3) #6	(3) #5	(3) @ 2", REM @ 4"	TAPERED BEAM SEE 5/S-541 FOR DEPTH
MR04	R	16	16	(3) #5	(3) #5	(3) @ 2" (4) @ 4" RFM @ 5"	

## MILD BEAM NOTES:

- MBN1. FOR GENERAL NOTES, SEE SHEET S-001
- MBN2. FOR BEAMS OR GIRDERS THAT SUPPORT ANOTHER BEAM OR GIRDER, PROVIDE (6) STIRRUPS SAME SIZE AS REMANING @ 3" OC EACH SIDE OF INTERSECTION. SEE DETAILS 1, 2, AND 3/S-531.
- MBN3. PROVIDE #4 STIRRUPS WITH THE FOLLOWING STIRRUP SPACING EACH END UNO IN BEAM SCHEDULE.
- A. (3) @ 2", (4) @ 4", REM @ 12". MBN4. FOR ALL SECTION L, U, AND R BEAMS, PROVIDE #4 x CONT AT 12" OC SIDE BARS EF UN. SPACE EQUALLY BETWEEN TOP AND BOTTOM BARS.
- MBN5. ALL LONGITUDINAL REINFORCEMENT SHALL BE HOOKED AT ENDS OR HAVE ASTM A970 TERMINATORS. REINFORCEMENT LARGER THAN #6 SHALL BE HOOKED AT ENDS W/ 180° HOOK WHERE BEAM IS SUPPORTED BY COLUMN.
- MBN6. TO AVOID INTERFERENCE, PLACE TOP GIRDER BARS JUST BELOW TOP BEAM BARS AND BOTTOM BEAM BARS JUST ABOVE BOTTOM GIRDER BARS AS REQUIRED. MBN7. FOR PENETRATIONS, THROUGH BEAMS OR GIRDERS, SEE DETAILS 5, 6, AND 7/S-531

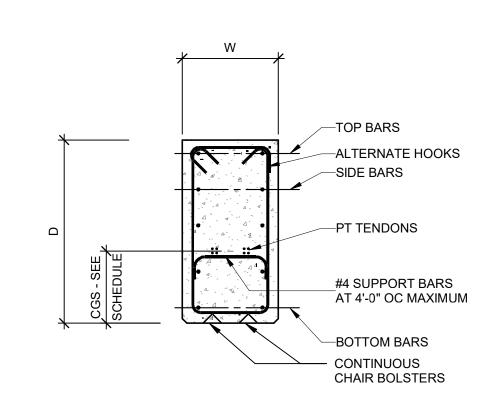


PT CONCRETE BEAM DETAIL

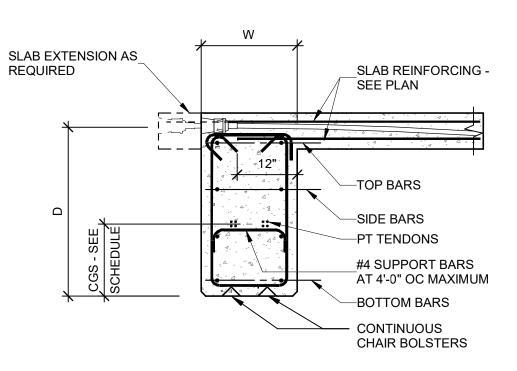


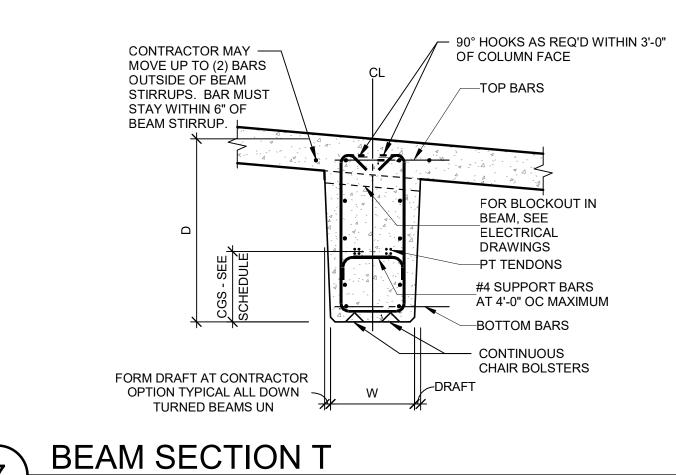
 BEAM PORTION ABOVE SLAB SHALL BE POURED WITHIN 24 HOURS OF SLAB PLACEMENT. MAINTAIN SLAB SHORES UNTIL UPTURNED BEAM IS CAST AND STRESSING RECORDS ARE APPROVED.

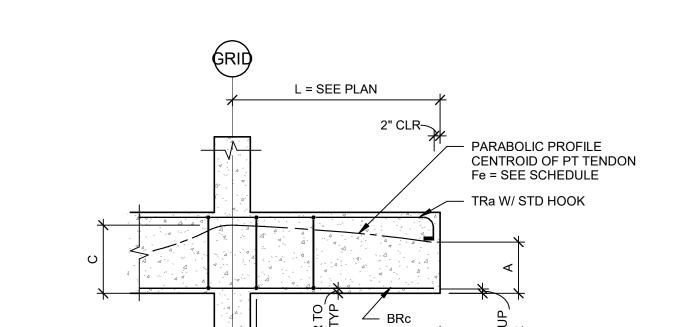
BEAM SECTION U



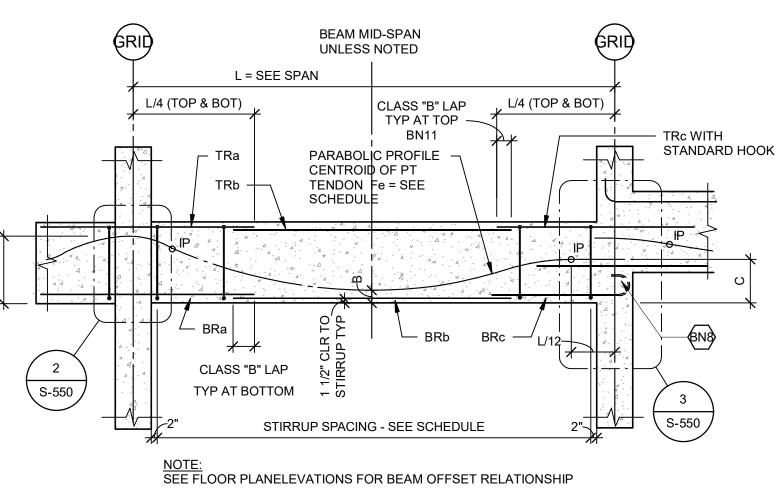
BEAM SECTION R



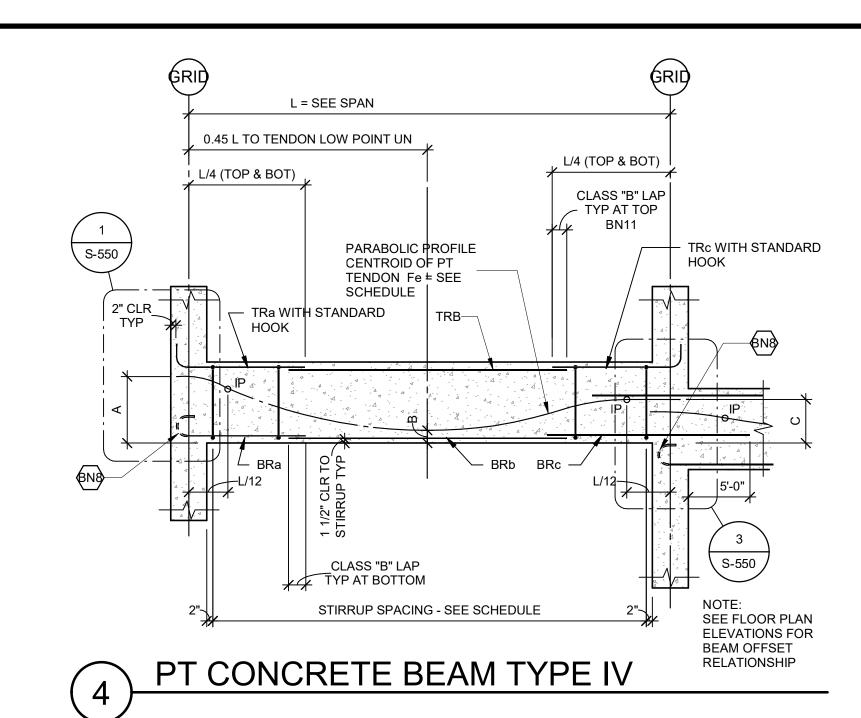


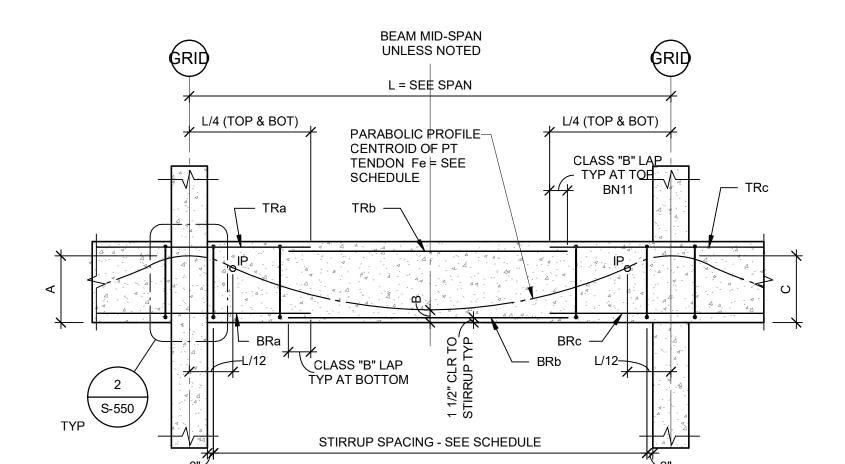


PT CONCRETE BEAM TYPE VII

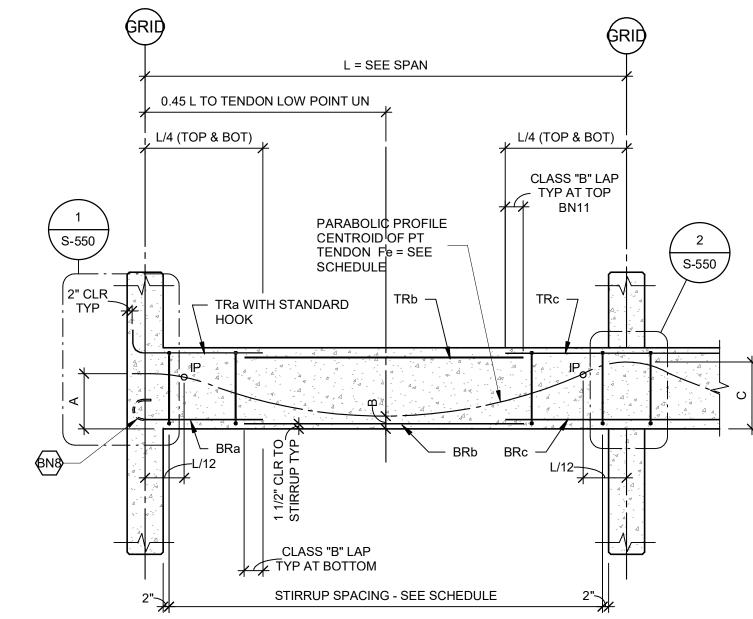


PT CONCRETE BEAM TYPE V

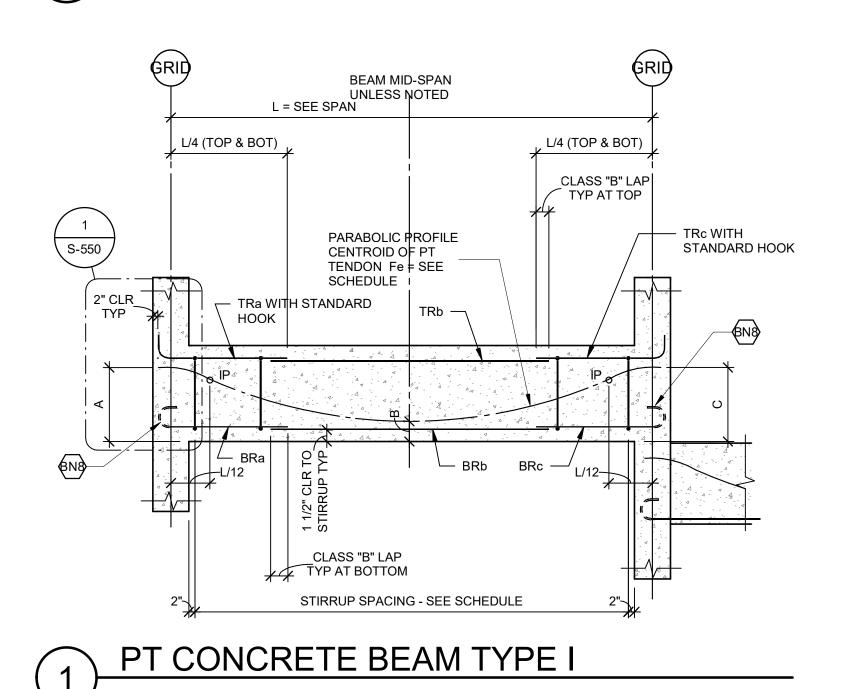




Γ CONCRETE BEAM TYPE III



PT CONCRETE BEAM TYPE II





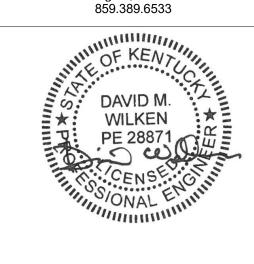
3225 Summit Square PI # 200, Lexington, KY 40509 859.252.6781

**DESIGN ARCHITECT** 101 S. Pennsylvania St, Indianapolis, IN 46204

**MEP ENGINEER ENGINEERS** 3264 Loch Ness Drive, Lexington, KY 40517 859.271.3246

317.633.4040

**CIVIL ENGINEER** 366 S. Broadway Lexington, KY 40508



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UNIVERSITY OF KENTUCKY **PS-8 EXPANSION** 

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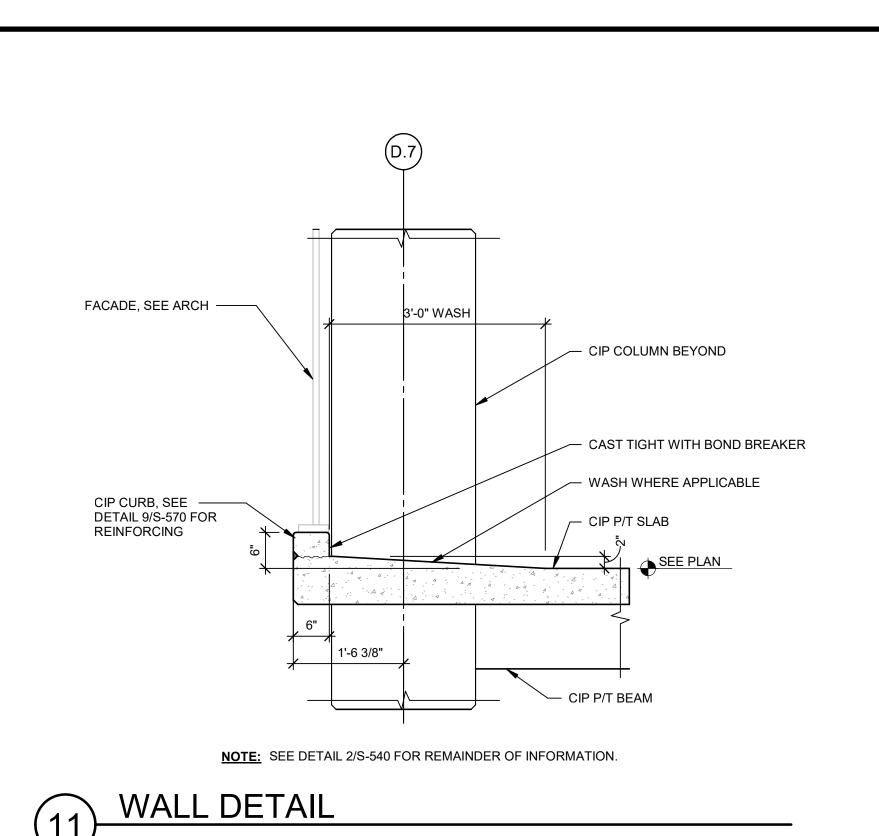
1	7/13/2023	ADDENDUM NO. 05
MARK	DATE	DESCRIPTION
		REVISIONS
ISSUE:		CONSTRUCTION DOCUMENTS
ISSUE	DATE:	4/24/2023
PROJE	ECT NO:	13-003727.00
DRAW	N BY:	JSL
CHEC	KED BY:	TSA
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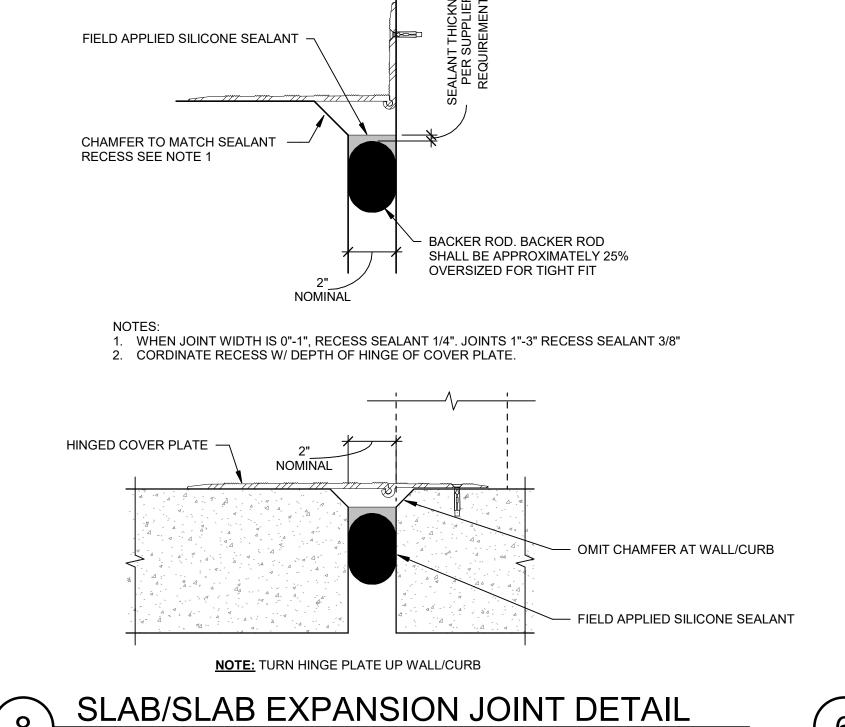
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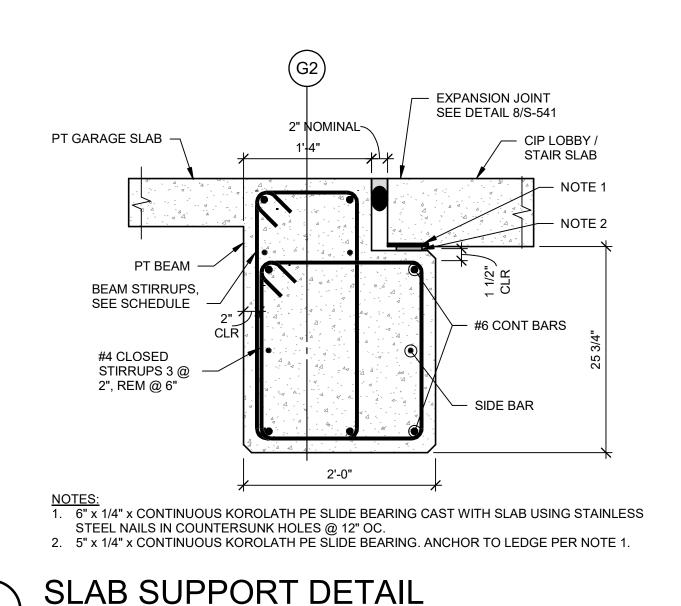
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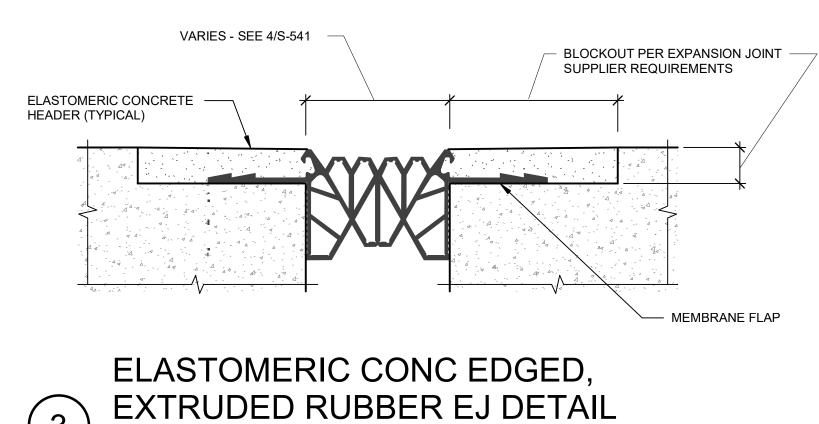
DETAILS

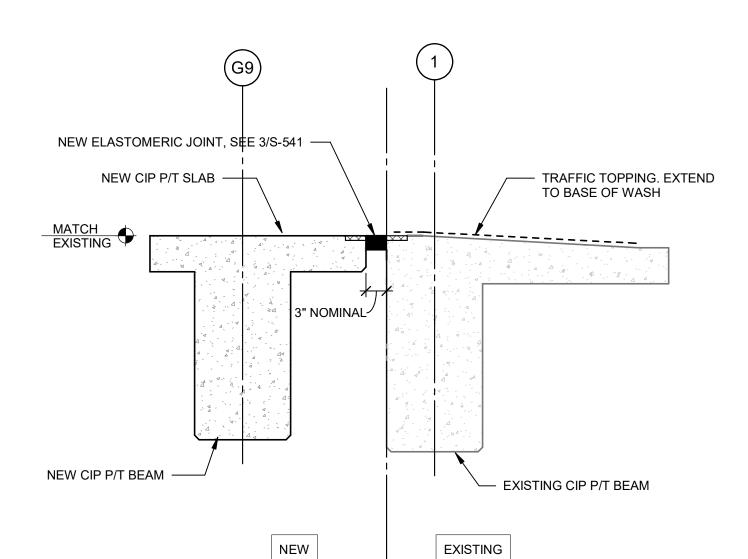
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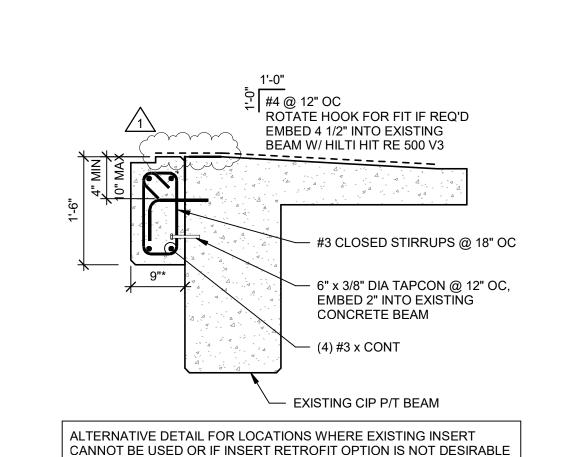




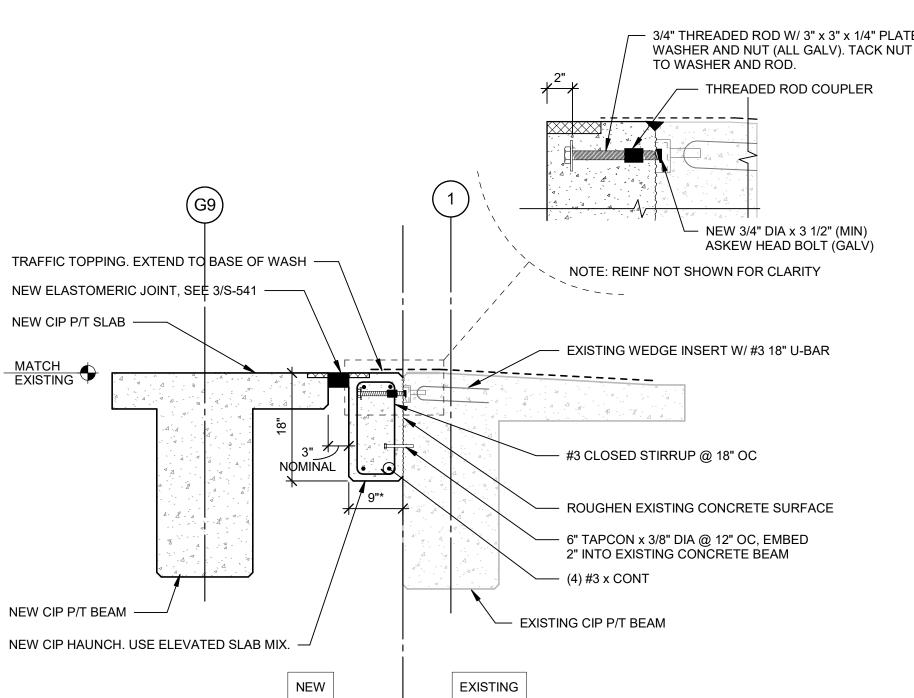


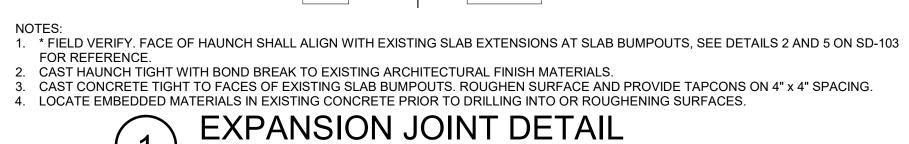


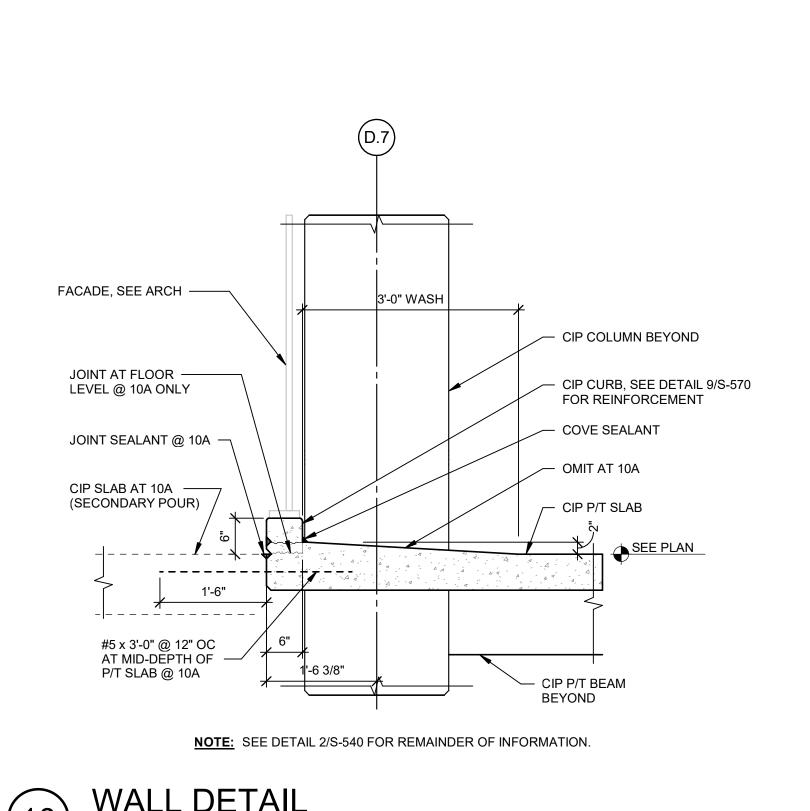


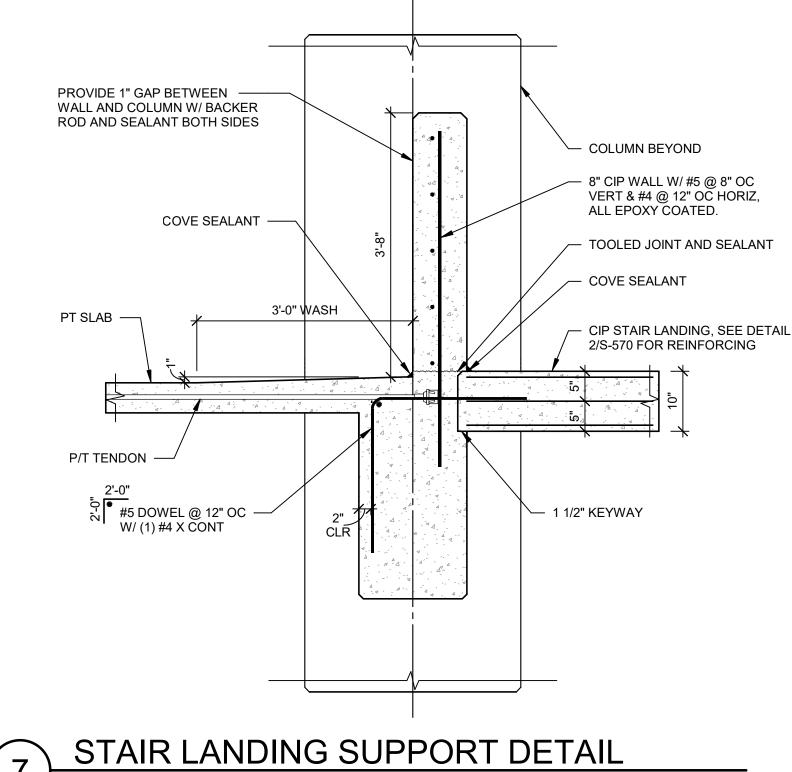


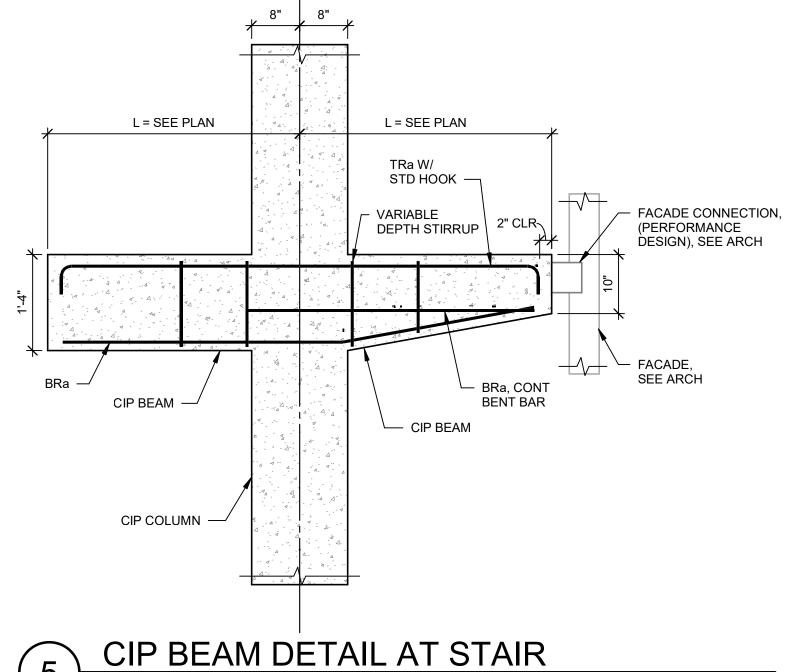
**EXPANSION JOINT DETAIL** 

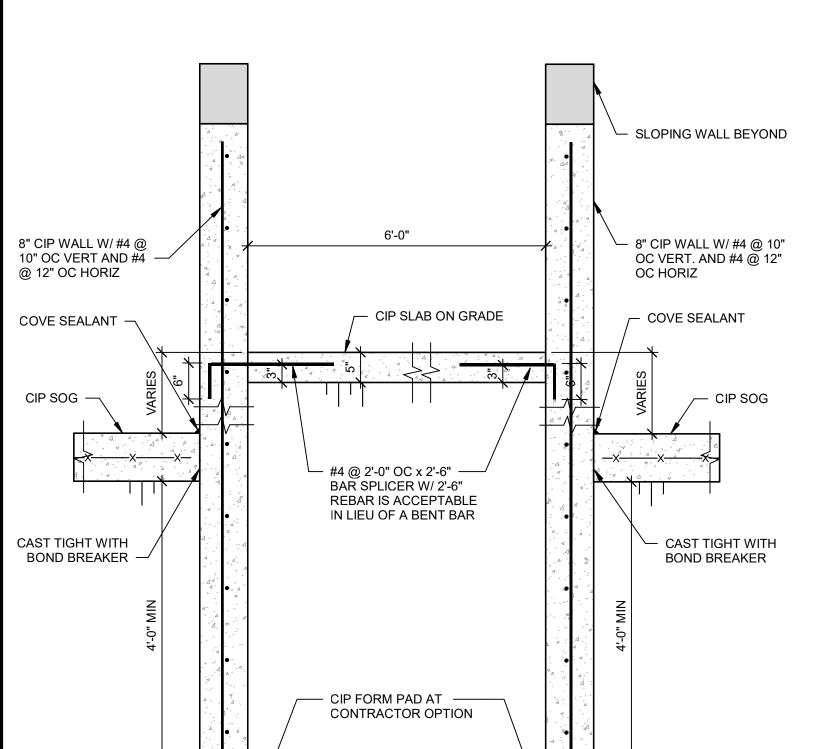












WALL DETAIL

	MOVEMENT TABLE																	
LOCATION	TYPE OF MOVEMENT		CREE	P & SHRINK <i>A</i>	AGE MOVEM	ENT (NOTE A)			T	EMPERA	TURE MO	OVEMEN	T (NOTE E	OTE B) LATERAL MOVEMENT (NOTE (				
LUCATION	TYPE OF MOVEMENT	30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS	ONE YEAR	FINAL	40° F	50° F	60° F	70° F	80° F	90° F				
	Joint closure - TOP TIER (NOTE 3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.55	1.37	1.18	1.00	0.81	0.63	0.61			
GRID 9	Joint closure - TYP TIER (NOTE 3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.00	0.81	0.63	0.44	0.26	0.07	0.61			
	Joint opening (NOTE 3)	0.21	0.28	0.33	0.36	0.41	0.48	0.59	0.63	0.81	1.00	1.18	1.37	1.55	0.61			
TRANSITION WALL -	Joint closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.17	0.14	0.11	0.08	0.05	0.01	0.25			
TRANSITION WALL	Joint opening	0.11	0.15	0.17	0.19	0.21	0.25	0.31	0.11	0.14	0.17	0.21	0.24	0.27	0.25			

# **EXPANSION JOINT MOVEMENT TABLE NOTES:**

- A. MOVEMENTS ACCOUNT FOR STRUCTURE CREEP AND SHRINKAGE OCCURRING AT THE TABULATED ELAPSED TIME AFTER CONCRETE PLACEMENT. . TEMPERATURES INDICATED ARE CONCRETE TEMPERATURE AT TIME OF CONSTRUCTION. MOVEMENTS ACCOUNT FOR CHANGE IN TEMPERATURE FROM TABULATED VALUE TO SEASONAL LOW OF 6° F (WINTER) OR SEASONAL HEIGHT OF 94° F (SUMMER). C. MOVEMENTS ACCOUNT FOR DISPLACEMENTS AT EACH ELEVATED TIER OF THE STRUCTURE FOR DESIGN WIND AND SEISMIC EVENTS.
- **EXPANSION JOINT NOTES:**
- EXPANSION JOINTS ARE PERFORMANCE DESIGN. EXPANSION JOINT SYSTEM SHALL BE DETERMINED BY EXPANSION JOINT SUPPLIER AS REQUIRED TO MEET MOVEMENT AND OTHER CRITERIA DEFINED ON DRAWINGS AND IN SPECIFICATIONS. FORM WIDTH SHOWN IN DETAILS IS A NOMINAL FORM WIDTH. INITIAL FORM WIDTH AT TIME OF CONCRETE PLACEMENT IS ADJUSTABLE AND IS PART OF PERFORMANCE DESIGN. INITIAL FORM WIDTH SHALL BE DETERMINED BY EXPANSION JOINT SUPPLIER AND COORDINATED WITH GENERAL CONTRACTOR. WIDTH DETERMINATION SHALL TAKE INTO CONSIDERATION TEMPERATURE PREVAILING AT TIME OF CONCRETE PLACEMENT, VOLUME CHANGE MOVEMENT THAT OCCURS BETWEEN TIME OF CONCRETE PLACEMENT AND TIME OF JOINT INSTALLATION, REQUIRED INSTALLATION WIDTH, FINAL MAXIMUM AND MINIMUM OPENING WIDTH, SEISMIC MOVEMENT, ETC. REFER TO EXPANSION JOINT MOVEMENT TABLE. EXPANSION JOINT SYSTEM SHALL BE CAPABLE OF HANDLING DIFFERENTIAL VERTICAL MOVEMENT OF 1/2" INCH.
- ONCE FORMED, JOINTS AND BLOCKOUTS SHALL BE PROTECTED FROM DAMAGE DUE TO CONSTRUCTION TRAFFIC. 5. JOINT ASSEMBLIES AT LOCATIONS EXPOSED TO SNOW PLOW OPERATIONS SHALL BE RECESSED TO PREVENT DAMAGE DUE TO SNOW PLOWS.

EXPANSION JOINT MOVEMENT TABLE

6602 E. 75th Street, Suite 210 Indianapolis IN 46250 317.842.6890 Ph www.walkerconsultants.com ARCHITECT OF RECORD 3225 Summit Square PI # 200, Lexington, KY 40509 859.252.6781 **DESIGN ARCHITECT** 101 S. Pennsylvania St, Indianapolis, IN 46204 317.633.4040 MEP ENGINEER **ENGINEERS** 3264 Loch Ness Drive, Lexington, KY 40517 859.271.3246 **CIVIL ENGINEER** Lexington, KY 40508 859.389.6533 DAVID M. RESERVED FOR AHJ STAMP Lexington, KY 40508 859.257.9000 UNIVERSITY OF KENTUCKY **PS-8 EXPANSION** 110 TRANSCRIPT AVE. PARKING STRUCTURE #8 LEXINGTON, KY 40508 **UK PROJECT NUMBER: 2565.0** 7/13/2023 ADDENDUM NO. 05
DATE DESCRIPTION CONSTRUCTION DOCUMENTS ISSUE DATE: 4/24/2023 PROJECT NO: 13-003727.00 DRAWN BY:

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