ADDENDUM NUMBER TWO

To the Drawings and Project Manual Dated:

DEC 15, 2025

Entitled:

Indiana University
Launch Accelerator for Biosciences
1302 Indiana Ave.
Indianapolis, IN 46202

Prepared By:

BSA
175 S. Rangeline Rd., Suite 200
Carmel, IN 46032

_____

Addendum Dated: JAN 12, 2026

IU Project #: 20250072
BSALS Project #: 00360481

CONTRACTOR QUESTIONS

1. See attached list of bidder questions with design team responses.
2. See attached updated responsibility matrix for reference to procurement and installation responsibilities as reviewed by the design team, Owner, and General Contractor.

CHANGES TO THE BID SCHEDULE

1. The bid due date for Bid Package 3 is being extended to **Tuesday**, January 27th, 2026 at 2:00 PM EST.

CHANGES TO THE PROJECT MANUAL

1. **Section 07 4213.23:**
   a. Replace section in its entirety.
      i. Added 2.01, B, 2.
      ii. Added 2.01, B, 5.
      iii. Removed 2.01, B, 6.
2. **Section 07 5323:**
   a. Replace section in its entirety.
      i. Added text at 3.10, C.
      ii. Added text at 3.10, C, 4, b.
      iii. Added 3.10, C, 5, b.
3. **Section 08 4413:**
   a. Replace section in its entirety.
      i. Removed text at 1.05, I.
      ii. Added 2.01, A, 6.
      iii. Revised text at 2.02, A, 3.
      iv. Added 2.02, A, 3, a.
      v. Revised text at 2.02, A, 4.
4. **Section 09 8433:**
      i. Added 2.1, A, 2 per approved substitution request.

CHANGES TO THE DRAWINGS

5. Plumbing series drawings previously issued for BP4 100% Design Development of the Build-Out Package are being reissued in their entirety due to continued documentation progression into Construction Documents to support pricing for bid event BE3-23A.

END OF ADDENDUM NUMBER TWO

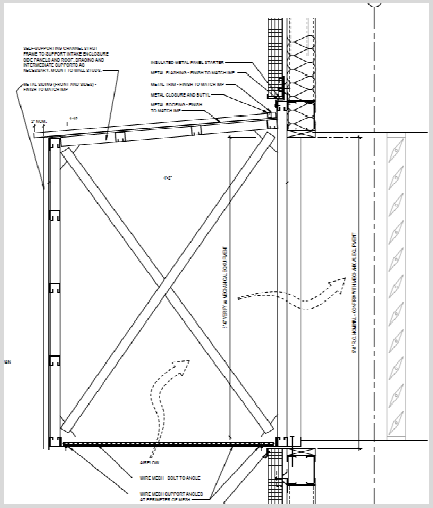
Attachments:

- Section 07 4213.23, 07 5323, 08 4413, 09 8433
- Drawing P001, P501, P502, P503, P504, P505, P506, P601, P602, PG101, PG102, PG103, PG104, PG105, PP101, PP102, PP103, PP104, PP105, PP106, PP107, PW100, PW101, PW102, PW103, PW104, PW105, PW106, PW107

20250072 - IU LAB - BP3 Bidder RFI's

RFI #	Bid Package	Discipline	Sheet/Spec Section	Question	Answer	Response By	Addendum
1	BE3-08A	Structural		Pricing is due 1/20/2026 @ 2pm with Bid Bond? Is the bid bond mandatory?	Yes to both.	FAW	ADD-02
2	BE3-08A	Structural		It appears you will be awarding the glazing package off of this round of pricing around 2/4/2026?	Yes for the exterior glass and glazing package, around that time.	FAW	ADD-02
3	BE3-08A	Structural		Field start for Glazing is August of 2026? Do you see any movement in that date at this point?	Yes schedule is preliminary and start date on glazing is best case scenerio. Goal of the project is to be substainally complete May 2027.	FAW	ADD-02
4	BE3-08A	Architectural	A390	For the visual mockup, it looks like you want "project specific materials" to be approved prior to the start of fabrication? Would you accept a similar system with the correct painted finishes and glass?	This will have to be addressed on an individual and specific item basis. It is the intent of the mockup to utilized the actual products that will be used in the installation to ensure understanding and replication of the installation and its intricacies. Glass, masonry, stone, metal panel and coping systems, AVB, flashings will all be required to be the intended final product. Please note the mock up is being reduced in scale significantly and will be issued in an additional Addendum.	BSA	ADD-02
5	BE3-07A	Structural		Scope #3 says we are to include back of parapet cover board, vapor barrier & rigid insulation, this would be detail 2 A335. Does this mean that BPE3-09A has the top of parapet wood, plywood and insulation?	Yes at the top of parapet BPE3-09A has plywood sheathing, blocking, and insulation. 07A will continue the membrane.	FAW	ADD-02
6	BE3-07A	Structural		The backs of all parapets (interior roof walls - exterior roof walls) and the tops show 4" insulation, 3/4" plywood. and wood blocking. Roof scope 8a says we are to include wood blocking we need but not shown; this is understood. It also says "to exclude wood blocking covered by BPE3-09A. Does this bid package have all back & top of parapet insulation, plywood, blocking, except for the parapet mentioned in Scope #3 detail 2 A335.	BP09A has the back & top of parapet insulation, plywood, blocking, except for the parapet mentioned in Scope #3 detail 2 A335.	FAW	ADD-02
7	BE3-07A	Structural	061613	Roof system R-4 (standing seam our scope) calls for 4" insulation and 3/4" plywood spec section 061613.04. I do not see that spec # in BPE- 09 scope or our scope. Since the vapor barrier under this nail base insulation is ours should we pick up the 4" insulation and 3/4" plywood.	Yes	FAW	ADD-02
8	BE3-07A	Structural	A204	Detail 3 / A335 the standing seam roof assuming (ours) over unit strut framing BE3-09A ? Who has the wall panels in this detail and marked E-19-page A204.	Correct standing seam roof system is 07A's and framing is by 09A. Wall panels E 19 are in package 7C.	FAW	ADD-02
9	BE3-07A	Architectural		In Scope BE3-07A there is an Alternate deduct for the decorative gravel if PV field is accepted, do we add back concrete pavers as shown. Or are the concrete paver in the PV contractors scope?	The decorative ballast system will be scaled back accordingly if the PV system moves forward. In such case, the concrete paver walkpads will be included around the periphery of the PV field. Drawing will be clarified to indicate such. Concrete paver walkpads would be part of BE3-07A scope.	BSA	ADD-02
10	BE3-07A	Architectural	075323	075323 spec section 2.03 C asks for 45 mil white EPDM. The specification 1.10 also asks for a 30-year warranty. Carlisle states you have to use the minimum of .060 EPDM. Can we get this clarification which they want 30-year warranty or .045 membrane	Specification is being edited to provide 90 mil EPDM membrane per IU standard. IU standard is for a 30 year, No Dollar Limit full systems warranty.	BSA	ADD-02
12	BE-26A	ICT		Is Securitas required for the Access and CCTV systems?	Defer to IU security. Design team can add this to an agenda for future discussion.	SmithGroup	ADD-02
13	BE-26A	ICT		The Matrix on the access drawings states rough-in only but the scope doc mentions furnishing a functioning security system. Please clarify.	Scope matrix was reviewed during a page turn on 12/17. Fully functionting security system will be CFCI including pathways, infrastructure, and equipment. Scope matrix will be revised and resubmitted as part of the next design team submission.	SmithGroup	ADD-02
14	BE3-08A	Architectural	084413	Can we use stick built curtainwall in lieu of unitized at the large curtainwall openings.	Stick-built curtain wall is acceptable from an architectural and detailing perspective. Section 08 4413 will be revised to allow "either shop/factory or field fabricated systems" at the discretion & coordination of the fabricator/bidder & FAW, as CM, regarding decision for schedule alignment, cost, and quality control in fabrication.	BSA	ADD-02
15	BE-23A	Mechanical		The Hydronic spec for the HVAC Piping specifically the Condenser piping spec's out as sch 40 stainless steel. Should this be carbon steel?	No thank you.	BSA	ADD-02
16	BE-23A			Item number 12 in BE3-23A bid package as it relates to the VIMS system conflicts stating complete system inclusion and underslab VIMS is by others. Is 23A scope to only include the schedule 40 PVC piping above grade and nothing else? VIMS contractor will have pre-building, underground inspections and post building scopes of work?	BE1-03A scope states they are to include the vapor vent system (VIMS) piping and membrane in compacted drainage fill. Piping to be stubbed up to 1' above slab on grade elevation for future connections by others. BE3-23A is to include connections , risers, fans, etc. Everything from the stub ups and above.	FAW	ADD-02
17	BE3-08A	Structural		We would need at least 20-25 days for each floor for the Panels and then for again the Glass, and you list a total for the envelope for each floor.	The dates on the schedule are what we are looking at to have the building weather tight. If metal panels need to happen later that would be acceptable.	FAW	ADD-02
18	BE-09A	Interiors		Is WDP1 and WDP2 wood wall paneling to be included in the BE3-09A bid package?	No, this will be covered by others.	FAW	ADD-02

19	BE-23A	Mechanical		Equipment pads are by others and not in our scope of work. How about concrete curbs as detailed per 1/M713?	Concrete curbs are by the BE1-03A scope of work.	FAW	ADD-02
20	BE-09A	Interiors	098433	Can more information be provided for spec section 09 8433?	Spec section covers WDP1 & WDP2. Refer to interior elevations for sizes and locations.	FPD	ADD-02
22	BE-26A	ICT	T002	On the Low voltage reasonability matrix on T002. Is this the final responsibility Matrix or will this be revised in the addendum?	Scope matrix was reviewed during a page turn on 12/17 and will be revised and resubmitted as part of the next design team submission.	SmithGroup	ADD-02
23	BE-26A	ICT	T002	Per T002 Responsibility Matrix. who is providing field end jacks? What model of field in jacks is the owner providing? Is the LV Contractor responsible for installing, terminating or testing?	LV contractor will be responsible for all division 27 scopes of work including jack terminations, installation and testing. A revised scope matrix will be issued as part of the next design team submission with all owner comments from the 12/17 page turn.	SmithGroup	ADD-02
24	BE-26A	ICT	T002	Per T002 Responsibility Matrix, Who will responsible for the warranty for the discrepancy of the OFOI scope and the CFCI scope?	Installing division 27 contractor. See above regarding scope matrix and future revisions.	SmithGroup	ADD-02
25	BE-26A	ICT	T7.0	Per T7.0 the TV's OFCI - Will the mounts be provided by the owner as well? Can they provide the types of mounts for each TV so we can better estimate the contractor installation?	Yes flat panel mounts will be owner furnished, owner installed. Design team can share our flat panel display matrix and schedules for procurement coordination for mounts and other components as required.	SmithGroup	ADD-02
26	BE-26A	ICT		Can we get more information on the AV racks that are OFCI?	Per the review meeting on 12/17, equipment racks for AV systems will be OFOI. IU to provide details as required for coordination purposes.	SmithGroup	ADD-02
27	BE-26A	ICT		Can we get more details on the mounting heights of the Telecom racks?	Please advise what information you are looking for. Telecom rack specifications are included in the IU Division 27 specs.	SmithGroup	ADD-02
44	BE3-07B	Architectural	S170A/B	17.Please confirm that penthouse steel on S170A and S170B does not require fireproofing	This is correct, no fireproofing required for penthouse steel. This is noted in the code summary on G100.	BSA	ADD-02
45	BE3-07B	Architectural	078400	18.BP3-07B Fireproofing – scope lists 078400 Firestopping – what firestopping is this package responsible for?	This spec should not be included in BE3-07B Fireproofing and is confirmed to be removed from the scope. BE3-09A, BE3-21A, BE3-23A, and BE3-26A need to include this spec (078400 Firestopping) in their scope as applicable to their work.	FAW	ADD-02
48	BE-09A	Interiors	A430-A431	Pages A430 and A431 have cut patterns for ACB3 all labeled either 1 or 2 are those supposed to have different numbers? Also, the ceiling above and the ACB3 ceiling have the same elevation 14'-6", I'm assuming the baffles hang from a grid ceiling? Please confirm. In the Finish Schedule for ACB3 calls for ceiling tile color match P3 above. Is this a custom color grid and tile ceiling above. A cut thru the ceiling might be helpful.	Cut pattern 1 or 2 refers to baffle length and locations (per baffle run) with the design intent that the "seams" are staggered one row from the next. baffles are suspended from the grid above at 14'-6" elevation. Lay-in ceiling panels install into same grid that baffles are suspended from. Lay-in tile and grid to match P3. Refer to elevations on A604 for more clarity. Details to be developed in CDs.	SmithGroup	ADD-02
51	BE-09A	Interiors	A602	Detail 5 on A602 calls out WDC1, is this supposed to be WDP1?	Should be WDP1.	FPD	ADD-02
53	BE-09A	Interiors	098433 Substitution Request Link	Sound Absorbing wall units substitution request, see attachments	This substitution request is accepted. Certainteed will be included as an acceptable manufacturer to Section 09 8433.	FPD	ADD-02
54	BE3-08B	Architectural	072100 Substitution Request Link	Mineral Wool substitution request, see attachments	The design team and Owner have agreed explicitly to a mineral wool wall insulated exterior envelope. XPS wall cavity insulation is not permitted as a subtitute.	BSA	ADD-02
55	BE3-08A	Architectural	084413 Substitution Request Link	WALTEK Company is respectfully requesting to be included in the specification by addendum as an acceptable manufacturer for Specification: 08 44 13 Glazed Aluminum Curtain Walls.	Waltek has recent history with Indiana University and local projects at similar scales and complexities. If Waltek can assure it can bid comparable products to the Basis of Design, provide detailing meeting the design intent, meet performance and finish criteria, and provide delegated design engineering services for structural performance and attachment methods, Waltek will be included as an approved manufacturer on 08 4413.	BSA	ADD-02
57				1.Please confirm that the Owner will provide the Builder's Risk insurance.	See RFI #58 response.	FAW	
58				2.Please provide the value of the Builder's Risk policy deductible for which the prime contractor is responsible.	**7. Builder's Risk Insurance** The Owner shall purchase and maintain during the course of construction Builder's Risk Insurance, on an "all risk" or equivalent policy form, providing coverage for the scope of the Project (as defined in the Contract Documents) in an amount of not less than one hundred percent (100%) of the insurable value of the Work (as defined in the Contract Documents) performed by the Contractor and the work of separate contractors on the Project, if any, including materials, equipment, and supplies to become a part of the completed Work which have been delivered to the site, which are stored temporarily off the Project site and while in transit, subject to a $25,000 deductible. The Contractor shall bear responsibility for that deductible.	FAW	
59				3.Please provide the Prime Contract for review.	Provided.	FAW	
60	BE3-08A	Architectural		There are some elevations that are not good to unitize, specifically type lower X and type BB. Can it be confirmed if these types can be stick built?	If engineering and installation require modification to a stick built system in these locations, it is permitted to do so. Refer to response to bidder RFI #14.	BSA	ADD-02

61	BE3-04A	Architectural	084413	08 4413 Para 1.06B Requires a full-size mockup and independent testing for thermal, structural, air infiltration, water infiltration, and sound attenuation testing. Please advise if existing test reports are acceptable or confirm the owner wants offsite laboratory performance testing for the project as specified. Note: This requirement will impact the schedule if the testing is required before the architect will approve shop drawings and engineering to start fabrication.	Existing test reports are not acceptable. Provide full mock-up project-specific testing as specified. Communicate to FAW, as CM, what potential schedule impact is for any further discussion.	BSA	ADD-02
62	BE3-08B	Architectural	074213.23 Substitution Request Link	Substitution Request - Engineered Facades	The substitution will be allowed, permitted the manfacturer can maintain the original design intent and meet the intricacies of the geometry (in plan) of the panels. Mfr required to provide engineering design data in order to provide proper anchorage and stiffeners to support said geometries and meet the performance/loading criteria.	BSA	ADD-02
63	BE3-07C	Architectural		 Is this bid package responsible for providing the materials on these intake enclosures?	Yes, the bid package BE3-07C is responsible for providing the materials on the intake enclosures.	FAW	ADD-02
64	BE3-07B	Architectural	074213.23 Substitution Request Link	Substitution Request - Division 7 Metals	The substitution will be allowed, permitted the manfacturer can maintain the original design intent and meet the intricacies of the geometry (in plan) of the panels. Mfr required to provide engineering design data in order to provide proper anchorage and stiffeners to support said geometries and meet the performance/loading criteria.	BSA	ADD-02
65				Are we permitted to include any qualifications with our bids?	No qualifications will be accepted. Please bid per the drawings, specs, and project bid manual	FAW	ADD-02

IU LAUNCH ACCELERATOR FOR BIOSCIENCES

Responsibility Matrix
IU Project #20250072
1/12/2026

System / Component	Responsibility					Comments
	OFOI	OFCI	CFCI	CFOI	N/A	**OFOI** = Owner (Indiana University) furnished and installed; **OFCI** = Owner (Indiana University) furnished and Contractor (F.A. Wilhelm) installed; **CFCI =** Contractor (F.A. Wilhelm) furnished and installed; **CFOI** = Contractor (F.A. Wilhelm) furnished and Owner (Indiana University) installed
General Items						
Permits, Insurance & Fees						
Tap-in and Impact Fees	X					Being further Defined
Permits	X					Paid by design team but direct reimbursed by IU
Builder's Risk Insurance	X					
Testing & Inspections						
Material Testing & Special Inspections			X			
Roofing Testing			X			
Envelope Commissioning	X					
Building Commissioning	X					
Hazardous Material Testing & Abatement	X					
Equipment & Specialties						
Computer, Data Processing Equipment	X					
Kitchen Equipment					X	Retail space being white-boxed for now. Buildout part of separate project
Sculptures & Artwork	X					
Vending Machines	X					
Civil						
Utilities						
Onsite Utilities Relocation and Removal			X			
Off-site Utility Extensions	X					By Utility Company (FAW to clarify meaning)
Natural Gas Piping to Meter	X					By Utility Company
Electrical Ductbanks			X			
Primary Cable for Electrical Service			X			
Telecom Conduit			X			
Telecom Cabling to Building	X					Fiber by IU or by others
Earthwork						
Handling & Disposal of Non-clean Fill	X					
Topsoil			X			
Site Furnishings						
Freestanding Planters	X					
Trash & Recycling Receptacles			X			
Bollards			X			
Precast Benches			X			
Monument Sign			X			
Loose Seating (Benches, Chairs & Tables)	X					
Bike Racks			X			
Flagpoles			X			

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EV Charging Stations	**X**					IU sending out RFP for manufacturer & installer selection. Pathways to be documented in drawings. Confirm landing points with selected charging station manufacturer
Trash Compactor	**X**					
Landscaping						
Permanent Seeding			**X**			
Trees, Shrubs & Plantings			**X**			
Irrigation System			**X**			

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Architectural						
Doors, Frames & Hardware						
Door Cores	X					
Keying Equipment, Supplies, & Programming	X					
Signage						
Code & Life Safety			X			
Room Number/Directional			X			
Decorative & Branding			X			
Environmental Graphics			X			
Donor Signage		X				
Exterior			X			
Specialties						
Window Treatments			X			
Toilet Accessories and Partitions			X			Kimberly Clark used on IUI campus (preferred). Other than toilet paper rolls/dispensers, soap dispensers, and paper towel dispensers noted below as OFCI
Loading Dock Equipment			X			
Tackboards & Markerboards			X			
Fire Extinguisher Cabinets			X			
Fire Extinguishers			X			
Small Appliances (Refrigerators, Icemakers, Microwaves, etc.)			X			Need stanards from IU. Energy Star required.
Toilet Paper Rolls/Dispensers		X				
Soap Dispensers		X				
Paper Towel Dispensers		X				
Furnishings						
Trash Cans			X			Provided by CFS if not in an enclosed cabinet (design enclosure to utilize standard size and be provided by CFS)
Recycle Bins			X			Provided by CFS if not in an enclosed cabinet (design enclosure to utilize standard size and be provided by CFS)
Loose Furniture (Benches, Chairs, Tables, etc.)	X					FFE Budget
Office Furniture	X					FFE Budget
Lab Stools	X					FFE Budget
Printers & Copiers	X					
PC's, Laptops & Workstations	X					
Lab Equipment & Casework						
Lab Equipment						
Cylinder Restraints & Corrals			X			
Gas Manifolds			X			Further Definition Required

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Environmental Rooms			X			
Scavenger / Extractor Arms			X			
Point Exhaust			X			
Fume Hoods			X			
Glass Washer/Dryers			X			1 Anticipated
Incubators	X					
Utensil Washer	X					
Shakers	X					
Steam Sterilizer			X			If Bench these would be OFOI.
Ice makers			X			
Refrigerators / Freezers	X					
Biological Safety Cabinets	X					All recirculating (not ducted)
High Density Shelving	X					FFE Budget but Non Anticipated
Water Polishers	X					
Peg Board			X			
Free Standing Shelving Unit	X					FFE Budget (for Support Space)
Lab Carts	X					Lab Equipment Budget
Safety Station	X					First Aide Type Items
Safety Shower / Eyewash Stations			X			
Lab Casework						
Fixed Lab Casework (Including Sinks)			X			
Adaptable Benches			X			

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Plumbing						
Meters						Coordinate w/ IU Utilities; need to include metering communications wiring; could include development fees, depending on line size.
Domestic Water			X		X	Utility company provided meter. GC likely to install duplicate meter due to LEED credit options. GC to coordinate with the utility company
Chilled Water			X			
Steam					X	
Steam Condensate					X	
Irrigation			X		X	Utility company provided meter. GC likely to install duplicate meter due to LEED credit options. GC to coordinate with the utility company
Vaults					X	
Electric			X			
Natural Gas			X		X	Utility company provided meter. GC likely to install duplicate meter due to LEED credit options. GC to coordinate with the utility company
Hot Water			X			
Mechanical						
Control Systems						
BMS Controls			X			
Lab Controls			X			
Electrical						
Building Service						
Medium Voltage Transformers			X			
Medium Voltage Switches			X			
Power						
Surface Mount Raceways & Receptacles in Labs & Classrooms			X			
Lighting						
Exterior Light Poles			X			
Decorative Light Fixtures			X			
Emergency & Standby Power Systems						
Generator & ATS			X			
Generator First Fill			X			
UPS Systems	X		X			Desktop vs. System Support treated differently?
Telecom						
Pathway						
Cable Tray			X			

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Innerduct			X			
Backbone Conduit			X			
Horizontal Conduit			X			
Back Boxes			X			
Cabling						
Line Voltage Power			X			
Low Voltage Wiring			X			
Terminations, Termination Blocks & Connectors			X			
Equipment						
In-Wall Blocking			X			
Faceplates			X			
Devices			X			
Wireless Access Points	X					
Wireless Access Point Ceiling Pans			X			
Emergency Telephone System (ETS) Outdoor Pedestal					X	IU confirmed none for this project
Elevator Emergency Phones			X			
Programming	X					
MDF/IDF						
Plywood Walls			X			
Ladder Tray			X			
Grounding Bus Bar			X			
Equipment Racks			X			
Bonding Wire and Lugs			X			
Dedicated Power to Racks			X			
Backbone to MDF			X			
Patch Panels			X			
Patch Cords	X					
Network Switches	X					
Servers	X					
ETS Hardware	X					Confirm what ETS is?
ETS Pathways and Cabling	X					Confirm what ETS is?
Convenience Power on Walls			X			

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A/V & Sound System Equipment						
Pathway						
Cable tray			X			
Conduit			X			
Back Boxes			X			
Flat Screen Display Back Boxes			X			
Cabling						
Line Voltage Power			X			
Video	X					
Audio	X					
Control	X					
Terminations, Termination Blocks & Connectors	X					
Connection to Specialty Systems	X					
Equipment						
In-Wall Blocking			X			
Faceplates	X					
Projector Mount					X	None on this project
Projection Screens					X	None on this project
Projector					X	None on this project
Speakers	X					
Amp	X					
Microphones	X					
Lighting Interface			X			
Video Conference Cameras	X					
Video Conference Monitors	X					
Video Conference Control System	X					
Video Conference Recording System	X					
Informal Meeting Space Broadcast Equipment	X					
Flat Screen Display Mounts	X					
Flat Screen Display	X					
PCs / Laptops	X					
Equipment Racks	X					
Patch Panels	X					
Patch Cords	X					
Switches	X					
Servers	X					
Programming	X					
Security/Access Control System						

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1/12/2026

System / Component	Responsibility					Comments
	OFOI	OFCI	CFCI	CFOI	N/A	**OFOI** = Owner (Indiana University) furnished and installed; **OFCI** = Owner (Indiana University) furnished and Contractor (F.A. Wilhelm) installed; **CFCI =** Contractor (F.A. Wilhelm) furnished and installed; **CFOI** = Contractor (F.A. Wilhelm) furnished and Owner (Indiana University) installed
Pathway						
Door Rough-In			X			
Cable tray			X			
Conduit, J-Hooks, Cable Tray			X			
Back Boxes			X			
Cabling & Rough-In						
Line Voltage Power			X			
Camera			X			
Access Control			X			
Output Relay (Fail Safe) for Fire Dept.			X			In stairwells
Panic Buttons			X			Confirm location(s) (security desk in lobby?). Includes camera
ADA Push Button Entry			X			
Terminations & Connectors			X			
Connection to Specialty Systems			X			Confirm applicability to project
Equipment						
In-Wall Blocking			X			
Faceplates	X					
Cameras, Housing and Mounts	X					
Card Readers	X					
Door Contacts			X			
REX Devices			X			Confirm applicability to project with door hardware
Network Interface	X					
Access Control/Power Panels	X					
Equipment Racks					X	
Head End Equipment	X					
Patch Panels					X	
Patch Cords					X	
Network Switches					X	
Servers					X	Cameras will go back to central servers
Workstations	X					
Additional Storage Devices	X					
Programming, Licensing, & Configuration	X					

IU LAUNCH ACCELERATOR FOR BIOSCIENCES

Responsibility Matrix
IU Project #20250072
1/12/2026

System / Component	Responsibility					Comments
	OFOI	OFCI	CFCI	CFOI	N/A	**OFOI** = Owner (Indiana University) furnished and installed; **OFCI** = Owner (Indiana University) furnished and Contractor (F.A. Wilhelm) installed; **CFCI =** Contractor (F.A. Wilhelm) furnished and installed; **CFOI** = Contractor (F.A. Wilhelm) furnished and Owner (Indiana University) installed
Specialty Rooms						
Computation Rack Room						
Plywood Walls			X			
Ladder Tray			X			
Grounding Bus Bar			X			
Equipment Racks	X					
Bonding Wire and Lugs			X			
Dedicated Power to Racks			X			
Cabling to Computation Rack Room	X					
Patch Panels	X					
Patch Cords	X					
Network Switches	X					
Servers	X					
Convenience Power on Walls			X			
Dedicated Cooling			X			
Other Systems						
Distributed Antenna System	X					
Fire Alarm			X			
Lightning Protection			X			

Legend: **OFOI** = Owner (Indiana University) furnished and installed; **OFCI** = Owner (Indiana University) furnished and Contractor (F.A. Wilhelm) installed; **CFCI** = Contractor (F.A. Wilhelm) furnished and installed) **CFOI** = Contractor (F.A. Wilhelm) furnished and Owner (Indiana University) installed

SECTION 07 4213.23
METAL COMPOSITE MATERIAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior cladding consisting of formed metal composite material (MCM) sheet, secondary supports, and anchors to structure, attached to solid backup.

B. Matching flashing and trim, including parapet coping.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Installation of anchors.

B. Section 05 4000 - Cold-Formed Metal Framing: Panel support framing.

C. Section 07 2700 - Air Barriers: Air and water-resistive barrier behind wall panel system.

D. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashing components integrated with this wall system.

E. Section 07 9200 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes.

F. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

H. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

I. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

J. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

K. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

L. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

M. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

N. ASTM D1781 - Standard Test Method for Climbing Drum Peel for Adhesives.

O. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.

P. ASTM D4145 - Standard Test Method for Coating Flexibility of Prepainted Sheet.

Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

R. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

S. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

T. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

U. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Meeting: Convene one week before starting work of this section to verify project requirements, coordinate with installers of other work, establish condition and completeness of building substrate, and review manufacturers' installation instructions and warranty requirements.
   1. Require attendance by the installer and relevant sub-contractors.
   2. Include MCM sheet manufacturer’s representative and wall system manufacturer’s representative to review storage and handling procedures.
   3. Review in detail truck transportation, parking, vertical transportation, schedule, personnel, installation of adjacent materials and substrate.
   4. Review procedures for protection of work and other construction.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data - MCM Sheets: Manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
   1. Finish manufacturer's data sheet showing physical and performance characteristics.
   2. Storage and handling requirements and recommendations.
   3. Fabrication instructions and recommendations.
   4. Specimen warranty for finish, as specified herein.

C. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
   1. Physical characteristics of components shown on shop drawings.
   2. Storage and handling requirements and recommendations.
   3. Installation instructions and recommendations.
   4. Specimen warranty for wall system, as specified herein.

D. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, connections, details and location of joints, sealants and gaskets, method of anchorage, support clips, fasteners, number of anchors, supports, reinforcement, trim, flashings, and accessories.
   1. Indicate panel numbering system.
   2. Differentiate between shop and field fabrication.
   3. Indicate substrates and adjacent work with which the wall system must be coordinated.
   4. Include large-scale details of anchorages and connecting elements.

5. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches.
6. Include design engineer's stamp or seal on shop drawings for attachments and anchors.

E. Selection Samples: For each finish product specified, submit at least three sample color chips representing manufacturer's custom range of available colors and patterns.
1. Sealant Color: Color to match wall panels.

F. Verification Samples: For each finish product specified, submit at least three samples, minimum size 12 inch square, and representing actual product in color and texture.

G. Design Data: Submit structural calculations stamped by design engineer, for Architect's information and project record.

H. Test Report: Submit report of full-size mock-up tests for air infiltration, water penetration, and wind performance.

I. Test Report: Submit test report verifying compliance with NFPA 285 for previously-tested exterior wall assembly.

J. Manufacturer's Field Reports: Provide within 48 hours of field review. State what was observed and what changes, if any, were requested or required.

K. Designer's qualification statement.

L. Manufacturer's qualification statement.

M. Installer's qualification statement.

N. Testing agency's qualification statement.

O. Maintenance Data: Care of finishes and warranty requirements.

P. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

Q. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.06 QUALITY ASSURANCE

A. Design Engineer's Qualifications: Design structural supports and anchorages under direct supervision of a Structural Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing wall panel systems specified in this section.
1. With not less than ten years of documented experience.
2. Approved by MCM sheet manufacturer.

C. Installer Qualifications: Company specializing in performing work of type specified in this section.
1. With minimum five years of documented experience.
2. Approved by wall panel system manufacturer.

D. Testing Agency Qualifications: Independent agency experienced in testing assemblies of the type required for this project and having the necessary facilities for full-size mock-up testing of the type specified.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Provide a mock-up for evaluation of fabrication workmanship.
   1. Build mockup of typical composite metal panel assembly including outside and inside corner conditions, custom panel profiles, interfaced with curtainwall as applicable, supports, stud framing, and all required attachments and accessories.
   2. Demonstrate continuity, air and water-tightness of air and water barrier and installation and attachment of continuous exterior insulation.
   3. Maintenance: Maintain mock-up during construction for workmanship comparison.
   4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically indicates such deviations in writing.

C. Locate as indicated on drawings.

D. Provide specified finish on panels.

E. Mock-up may not remain as part of work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
   1. Protect finishes by applying heavy-duty removable plastic film during production.
   2. Package for protection against transportation damage.
   3. Provide markings to identify components consistently with drawings.
   4. Exercise care in unloading, storing, and installing panels to prevent bending, warping, twisting, and surface damage.

C. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
   1. Store in well-ventilated space out of direct sunlight.
   2. Protect from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
   3. Store at a slope to ensure positive drainage of accumulated water.
   4. Do not store in enclosed space where ambient temperature can exceed 120 degrees F.
   5. Avoid contact with other materials that might cause staining, denting, or other surface damage.

1.09 FIELD CONDITIONS

A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Special Warranty: Provide 10-year warranty covering water tightness and integrity of seals of wall panels. Complete forms in Owner's name and register with warrantor.

C. Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Composite Material (MCM) Sheet Manufacturers:
   1. ALUCOBOND by 3A Composites USA; ALUCOBOND PLUS: www.alucobondusa.com/#sle.
   2. ALPOLIC Materials; ALPOLIC/fr (Fire Retardant core): www.alpolic-americas.com/#sle.
   3. Fairview Architectural LLC; VitraBond (Fire Rated): www.fairview-na.com/#sle.

B. Wall Panel System Manufacturers:
   1. Sobotec Ltd; SL-2000: www.sobotec.com/#sle.
   2. Architectural Metals North America (AMNA); AM 2000 (FR Core): www.amna.ca/#sle.
   3. Metal Design Systems; Series 20: www.metaldesignsystems.com/#sle.
   4. Universe Facade Solutions; Universe 2000R; www.www.universecorp.com/#sle.
   5. Division 7 Mtls; D7-Fusion; www.division7mtls.com/#sle.
   6. ~~Substitutions: See Section 01 6000 - Product Requirements.~~

2.02 WALL PANEL SYSTEM

A. Wall Panel System: Metal panels, fasteners, and anchors designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage, or failure.
   1. Provide structural design by or under direct supervision of a Structural Engineer licensed in the State in which the Project is located.
   2. Provide panel jointing and weatherseal using reveal joints and gaskets but no sealant.
   3. Anchor panels to supporting framing without exposed fasteners.

2.03 PERFORMANCE REQUIREMENTS

A. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees F to 180 degrees F without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
   1. Wind Performance: Provide system tested in accordance with ASTM E330/E330M without permanent deformation or failures of structural members under the following conditions:
   2. Design Wind Pressure: In accordance with local building code.
   3. Maximum deflection of perimeter framing member of L/175 normal to plane of the wall; maximum deflection of individual panels of L/60.
   4. Maximum anchor deflection in any direction of 1/16 inch at connection points of framing members to anchors.

B. Air Leakage: 0.060 cfm/sq ft maximum leakage when tested at 6.24 psf pressure difference in accordance with ASTM E283/E283M.

C. Water Penetration: No water penetration under static pressure when tested in accordance with ASTM E331 at a differential of 10 percent of inward acting design load, 6.24 psf minimum, after 15 minutes.
   1. Water penetration is defined as the appearance of uncontrolled water on the interior face of the wall.
   2. Design to drain leakage and condensation to the exterior face of the wall.

D. Fire Performance: Use test method complying with NFPA 285.

2.04 PANELS

A. Panels: 2-1/2 to 12-3/8-inch- deep pans formed of metal composite material sheet by routing back edges of sheet, removing corners, and folding edges.
   1. Form custom panel profiles as indicated on drawings.
   2. Reinforce corners with riveted aluminum angles.
   3. Provide concealed attachment to supporting structure by adhering attachment members to back of panel; attachment members may also function as stiffeners.
   4. Maintain maximum panel bow of 0.8 percent of panel dimension in width and length; provide stiffeners of sufficient size and strength to maintain panel flatness without showing local stresses or read-through on panel face.
   5. Secure members to back face of panels using structural silicone sealant approved by MCM sheet manufacturer.
   6. Metallic Finished Panels: Maintain consistent grain of MCM sheet; specifically, do not rotate sheet purely to avoid waste.
   7. Fabricate panels under controlled shop conditions.
   8. Where final dimensions cannot be established by field measurement before commencement of manufacturing, make allowance for field adjustments without requiring field fabrication of panels.
   9. Fabricate as indicated on drawings and as recommended by MCM sheet manufacturer.
      a. Make panel lines, breaks, curves, and angles sharp and true.
      b. Keep plane surfaces free from warp or buckle.
      c. Keep panel surfaces free of scratches or marks caused during fabrication.
   10. Provide joint details providing a watertight and structurally sound wall panel system that allows no uncontrolled water penetration on inside face of panel system.
   11. For "dry" jointing, secure extrusions to returned pan edges with stainless steel rivets; provide means of concealed drainage with baffles and weeps for water that might accumulate in members of system.

2.05 MATERIALS

A. Metal Composite Material (MCM) Sheet: Two sheets of aluminum sandwiching a core of extruded thermoplastic material; no foamed insulation material content.
   1. Overall Sheet Thickness: 0.157 inch, minimum.
   2. Face Sheet Thickness: 0.020 inch, minimum.
   3. Bond and Peel Strength: No adhesive failure of the bond between the core and the skin nor cohesive failure of the core itself below 22.4 inch-pound/inch with no degradation in bond performance, when tested in accordance with ASTM D1781, simulating resistance to panel delamination, after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F.
   4. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
   5. Flammability: Self-ignition temperature of 650 degrees F or greater when tested in accordance with ASTM D1929.

B. Metal Framing Members: Include sub-girts, zee-clips, base and sill angles and channels, hat-shaped and rigid channels, and furring channels required for complete installation.
   1. Provide material strength, dimensions, configuration as required to meet applied loads and in compliance with applicable building code.
   2. Sheet Steel Components: ASTM A653/A653M galvanized to G90/Z275 or zinc-iron alloy-coated to A60/ZF180; or ASTM A792/A792M aluminum-zinc coated to AZ60/AZM180.
   3. Aluminum Components: ASTM B209/B209M; or ASTM B221 (ASTM B221M).

2.06 FINISHES

A. Factory Finish: Two coat fluoropolymer resin coating, approved by coating manufacturer for length of warranty specified for project, and applied by coil manufacturing facility that specializes in coil applied finishes.
   1. Coating Flexibility: Pass ASTM D4145 minimum 1T Bend at time of manufacturing.
   2. Long-Term Performance: Not less than that specified under WARRANTY in PART 1.

B. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, with at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer's custom range.
   1. Products:
      a. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com/#sle.
      b. Arkema, Inc; Kynar 500: www.arkema.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

C. Color/Texture: As selected by Architect from manufacturer's custom range.

2.07 ACCESSORIES

A. Flashing: Sheet aluminum; 0.040 inch thick, minimum; finish and color to match MCM sheet; see Section 07 6200 for additional requirements.

B. Support for Cladding and Continuous Insulation: Continuous thermal Z-girts.
   1. Fiberglass reinforced plastic (FRP) girts that provide cladding attachment support for metal wall panels.
   2. Depth: As indicated on drawings.
   3. Length: 6 inches for clips and 96 inches for girts.
   4. Spacing: 16 inches on center, vertically.
   5. Fasteners: As recommended by clip manufacturer.
   6. Products:
      a. Advanced Architectural Products; GreenGirt Max CMH Z-Girts: www.greengirt.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

C. Anchors, Clips, and Accessories: Use one of the following:
   1. Stainless steel complying with ASTM A276/A276M, ASTM A480/A480M, or ASTM A666/A666M.
   2. Steel complying with ASTM A36/A36M and hot-dip zinc coating to ASTM A153/A153M.
   3. Steel complying with ASTM A36/A36M and hot-dip galvanized to ASTM A123/A123M, with Coating Thickness Grade of 100.

D. Fasteners:
   1. Screws: Self-drilling or self-tapping Type 410 stainless steel or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal wall panels.
   2. Bolts: Stainless steel.
   3. Fasteners for Flashing and Trim: Blind fasteners of high-strength aluminum or stainless steel.

E. Bituminous Coating: Cold-applied asphalt mastic, noncorrosive compound free of asbestos, sulfur, and other deleterious impurities; 15-mil dry film thickness per coat.

F. Joint Sealer: Provide color to match wall panels silicone sealant of type approved by MCM sheet manufacturer, and in compliance with ASTM C920.
   1. See Section 07 9200 for additional requirements.

G. Provide panel system manufacturer's and installer's standard corrosion resistant accessories, including fasteners, clips, anchorage devices, and attachments.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine dimensions, tolerances, and interfaces with other work.
   1. Verify that air barrier system is properly installed; see Section 07 2700 for requirements.

B. Provide tests on full-size mock-ups, performed specifically for this project, unless otherwise indicated.

C. Examine substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Notify Architect in writing of conditions detrimental to proper and timely completion of work, and do not proceed with erection until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect adjacent work areas and finish surfaces from damage during installation.

B. Provide anchorage items to be built into masonry to appropriate installer(s) together with setting templates.
   1. See Section 04 2000 for additional unit masonry requirements.

3.03 INSTALLATION

A. Do not install products that are defective, including warped, bowed, dented, and broken members, and members with damaged finishes.

B. Comply with instructions and recommendations of MCM sheet manufacturer and wall system manufacturer, as well as with approved shop drawings.

C. Install wall system securely allowing for necessary thermal and structural movement; comply with wall system manufacturer's instructions for installation of concealed fasteners.

D. Do not handle or tool products during erection in manner that damages finish, decreases strength, or results in visual imperfection or failure in performance. Return component parts that require alteration to shop for refabrication, if possible, or for replacement with new parts.

E. Do not form panels in field unless required by wall system manufacturer and approved by the Architect; comply with MCM sheet manufacturer's instructions and recommendations for field forming.

F. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.

G. Install flashings as indicated on shop drawings. At flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.

H. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:

1. Variation From Plane or Location: 1/2 inch in 30 feet of length and up to 3/4 inch in 300 feet, maximum.
2. Deviation of Vertical Member From True Line: 0.1 inch in 25 feet run, maximum.
3. Deviation of Horizontal Member From True Line: 0.1 inch in 25 feet run, maximum.
4. Offset From True Alignment Between Two Adjacent Members Abutting End To End, In Line: 0.03 inch, maximum.

I. Replace damaged products.
1. Exception: Field repairs of minor damage to finishes are permitted only when approved in writing by Architect, panel manufacturer, and fabricator.
2. Field Repairs to Finishes: Using materials and methods sufficient that repairs are not discernible when viewed at distance of 10 feet under all typical light conditions experienced at the project.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Wall System Manufacturer's Field Services: Provide field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with instructions.

C. Site Visits: Schedule two site visits during execution of installation.

3.05 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.

C. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

D. Remove temporary coverings and protection of adjacent work areas.

E. Clean installed products in accordance with manufacturer's instructions.

3.06 PROTECTION

A. Protect installed panel system from damage until Date of Substantial Completion.

END OF SECTION 07 4213.23

SECTION 07 5323
EPDM THERMOSET SINGLE-PLY ROOFING - CARLISLE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered roof system with ethylene propylene diene monomer (EPDM) roofing membrane and decorative ballast.

B. Insulation, flat and tapered.

C. Vapor retarder.

D. Deck sheathing.

E. Roofing cant strips, stack boots, and walkway pads.

1.02 RELATED REQUIREMENTS

A. Section 05 3123 - Steel Roof Decking.

B. Section 07 5556 - Fluid-Applied Protected Membrane Roofing: Rubberized asphalt fluid-applied membrane roofing, including base flashings and roof insulation, at exterior roof terrace.

C. Section 07 7100 - Roof Specialties: Counterflashing, reglets, and flow-through, interlocking gravel edge trim.

1.03 REFERENCE STANDARDS

A. FM 4470 - Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.

B. FM DS 1-49 - Perimeter Flashing; 2021, with Editorial Revision (2025).

C. FM DS 1-34 - Hail Damage; 2018, with Editorial Revision (2023).

D. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2024.

E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

F. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

G. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

H. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

I. ASTM D4263 - Standard Practice for Indicating Moisture in Concrete by the Plastic Sheet Method.

J. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.

K. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

L. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

M. FM (AG) - FM Approval Guide.

N. FM DS 1-28 - Wind Design.

O. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components.

P. SPRI RP-4 - Wind Design Standard for Ballasted Single-Ply Roofing Systems.

Q. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's written information listed below.
   1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, fasteners, and decorative ballast.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, paver layout, and decorative ballast locations with perimeter trim conditions.

D. Samples for Selection:
   1. Precast pavers 3 by 3 inches in size illustrating manufacturer's full range.

E. Samples for Verification:
   1. Submit two samples 6 by 6 inches in size illustrating roofing materials, including base sheet, roofing membrane sheet, flashing backer sheet, membrane cap sheet, and flashing sheet, of color specified.
   2. Aggregate surfacing material in gradation and color indicated. One-half pound sealed bag.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, special procedures, and perimeter conditions requiring special attention.

H. Sustainable Design Submittals:
   1. Test report showing solar reflectance index of membrane
   2. Certification documenting recycled content.
   3. Documentation of distance to manufacturing facilities.
   4. Documentation of adhesive and sealant contents.

I. Specimen Warranty: For approval.

J. Warranty:
   1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
   2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.

K. Manufacturer's Qualification Statement.

L. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty (20) years of documented experience.

B. Installer Qualifications: Company specializing in performing work of this section:

1. With minimum ten years documented experience.
2. Approved by membrane manufacturer.
3. Extend manufacturer's labor and materials guarantee.
4. Extend manufacturer's No Dollar Limit guarantee.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Provide mock-up for evaluation of surface preparation, installation methods, and workmanship.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.

C. Protect products in weather protected environment, clear of ground and moisture.

D. Protect foam insulation from direct exposure to sunlight.

E. Keep Safety Data Sheets (SDS) at the project site at all times during transportation, storage, and installation of materials.

F. Comply with requirements from Owner to prevent overloading or disturbance of the structure when loading materials onto the roof.

1.09 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather. Refer to manufacturer's written instructions.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 90 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.

F. Do not allow grease, oil, fats, or other contaminants to come into direct contact with membrane.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Full System Warranty: Provide manufacturer's standard system warranty or customed form, without monetary limitation (No Dollar Limit), agreeing to repair or replace roofing that leaks, fails, or is damaged due to wind or other natural causes or workmanship within specified warranty period.
   1. Warranty Term: 30 years.
   2. For repair and replacement include costs of both material and labor in warranty.

3. Includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, substrate boards, adhesives, roofing accessories, and all other components of membrane roofing system to comply with warranty requirements.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:
   1. Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carlisle SynTec Systems: www.carlisle-syntec.com/#sle.

B. Substitutions: See Section 01 6000 - Product Requirements.
   1. Other Acceptable Manufacturers:
      a. Holcim Elevate: www.elevatecommercialbp.com/#sle.
      b. Johns Manville: www.jm.com/#sle.

2.02 ROOFING APPLICATIONS

A. EPDM Membrane Roofing: One ply membrane, fully adhered with decorative ballast, over vapor retarder and insulation.

B. Roofing Assembly Performance Requirements and Design Criteria:
   1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
      a. Calculate SRI in accordance with ASTM E1980.
      b. Field applied coating may not be used to achieve specified SRI.
   2. Roof Covering External Fire Resistance Classification: Class A when tested per UL 790or ASTM E108.
   3. Wind Uplift:
      a. Designed to withstand wind uplift forces calculated with ASCE 7.
      b. Design Wind Speed: As indicated on drawings.
   4. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28 or FMG 4470.
      a. Design fastener quantity and pattern to prevent uplift in corners, perimeters and field of roof, in accordance with FMG 1-28 and 1-29.
      b. Design perimeter flashing and accessory attachment in compliance with FMG 1-49.
   5. Hail Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34, Severe Hail (SH) hazard area.
   6. Insulation Thermal Resistance (R-Value): Provide R-20, minimum, over entire roof deck. R-33 (aged), average minimum, over entire roof deck with crickets and tapered insulation in compliance with ASTM C1289-13e1.
   7. Drainage: No standing water within 48 hours after precipitation.

C. Ballast: See drawings for ballast layout.
   1. Field: Use No.2 decorative aggregate ballast of 1,300 lb/100 sq ft over remaining area of roof as indicated on drawings.
      a. Large Format Meramec Stone.
      b. Crushed Blue-Grey Slate Stone.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Single Source Responsibility: Provide and install products from single source.

B. Base Sheet: Self-adhering, rubberized asphalt membrane laminated to spun-bonded polyester fabric; 40 mil, 0.040 inch thick, minimum.
   1. Product: Carlisle 725TR.

C. Membrane:
   1. Material: Ethylene propylene diene monomer (EPDM); ASTM D4637/D4637M, Type I (non-reinforced).
   2. Thickness: 90 mil, 0.090 inch, minimum.
   3. Sheet Width: Factory fabricated into largest sheets possible.
   4. Color: White on Black.
   5. Products:
      a. Carlisle SynTec Systems; Sure-White.

D. Seaming Materials: As recommended by membrane manufacturer.

E. Vapor Retarder: Material approved by roof manufacturer complying with requirements of fire rating classification; compatible with roofing and insulation materials.
   1. Fire-retardant adhesive.
   2. Vapor Permeability: 0.1 perm inchor less, measured in accordance with ASTM E96/E96M.

F. Flexible Flashing Material: Same material as membrane.

G. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.

2.04 DECK SHEATHING AND COVER BOARDS

A. Deck Sheathing and Cover Board: Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type, 5/8 inch thick.
   1. Deck Sheathing Size: 48 by 96 inches.
   2. Cover Board Size: 48 by 48 inches.
   3. Product:
      a. GP Dens-Deck Prime, distributed by Carlisle SynTec Systems.

2.05 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: ASTM C1289, Type II, Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of the core foam; Grade 3.
   1. Compressive Strength: 25 psi.
   2. Board Size: 48 by 48 inches.
   3. Product:
      a. Carlisle InsulBase.

2.06 BALLAST MATERIALS

A. Rounded, Water-Worn Gravel:
   1. No. 2 Aggregate: 2-1/2-inch nominal diameter, sound, hard, washed, water-worn gravel; ASTM D448, with size classification of 2.
      a. Build up to a depth of 3 inches.

B. Crushed Stone: Install only over Sure-Seal HP Protection Mat.
   1. No. 2 Aggregate: 2-1/2-inch nominal diameter; ASTM D448, with size classification of 2.
      a. Build up to a depth of 3 inches.

C. Pavers: Precast concrete units, 7,500 psi air entrained mix.

1. Size: 24 by 24 by 3 inches, maximum.
2. Weight: 22 lb per sq ft
3. Finish: Smooth (steel trowel).
4. Color: As selected.
5. Install only over Sure-Seal HP Protection Mat.
6. Acceptable Manufacturers:
   a. Hanover Architectural Products: www.hanoverpavers.com/#sle.
   b. Rapid Building Systems: www.rapidbuilding.com/#sle.
   c. Roofblok, Ltd.: www.https://www.roofblok.com/#sle.
   d. Sunny Brook Pressed Concrete Co.: www.https://sunnybrookpressedconcrete.com/#sle.
   e. Wausau Tile, Inc. Terra-Paving Div.: www.wausautile.com/#sle.
   f. Westile Roofing Products.

2.07 ACCESSORIES

A. Prefabricated Flashing Accessories:
   1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
   2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
   3. Sealant Pockets: Same material as membrane, with manufacturer's standard accessories, in manufacturer's standard configuration.
   4. Sure-White Pressure-Sensitive Reinforced Universal Securement Strip (RUSS): 6 inches wide, 45 mil, 0.045 inch thick, reinforced EPDM membrane with 3 inches wide, 30 mil, 0.030 inch thick cured synthetic rubber with pressure-sensitive adhesive laminated to one edge.

B. Insulation Adhesive: Two-part, low-rise urethane foam adhesive or water-based adhesives compatible with roof systems and approved by roofing manufacturer.

C. Insulation Fasteners: Appropriate for purpose intended and approved by Factory Mutual FM (AG) and roofing manufacturer.
   1. Length as required for thickness of insulation material and penetration of deck substrate , with metal or plastic plates.
   2. Insulation Fastening Plate: 3-inch nominal diameter metal or plastic plate, for use with the appropriate fastener to attach insulation.

D. Membrane Adhesive: As recommended by membrane manufacturer.

E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

F. Sealants: As recommended by membrane manufacturer.

G. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.

H. Primer: Manufacturer's recommended product.

I. Edgings and Terminations: Manufacturer's standard edge and termination accessories.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION, GENERAL

A. Clean substrate thoroughly prior to roof application.

B. Apply manufacturer's recommended vapor retarder or temporary roof before roof installation.

3.03 CONCRETE DECK PREPARATION

A. Fill surface honeycomb and variations with latex filler.

B. Confirm dry deck by moisture meter with 12 percent moisture maximum when tested per ASTM D4263.

3.04 METAL DECK PREPARATION

A. Install deck sheathing on metal deck:
   1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
   2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
   3. Tape joints.

B. Mechanically fasten sheathing to roof deck, in accordance with Factory Mutual FM DS 1-28 recommendations and roofing manufacturer's instructions.

3.05 INSTALLATION - GENERAL

A. Perform work in accordance with manufacturer's instructions.

B. Do not apply roofing membrane during unsuitable weather.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

F. Coordinate the work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

G. When substrate preparation is responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.

3.06 VAPOR RETARDER INSTALLATION

A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
   1. Extend vapor retarder under cant strips and blocking to deck edge.
   2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.

3.07 INSULATION APPLICATION

A. Attachment of Insulation on Metal Decks:

1. Mechanically fasten first layer of insulation to metal deck in accordance with roofing manufacturer's instructions and Factory Mutual FM DS 1-29 requirements.
2. Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturer's instructions.

B. Attachment of Insulation on Concrete Decks: Embed each layer of insulation in adhesive in full contact, in accordance with roofing and insulation manufacturer's instructions.

C. Do not install wet, damaged, or warped insulation boards.

D. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.

E. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

F. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

G. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

H. At roof drains, use factory-tapered boards to slope down to roof drains over 24 inches.
1. Provide sumps at all roof drains, minimum size of 48 by 48 inches.
2. Install ballast guard over roof drains.

I. Do not apply more insulation than can be completely waterproofed in the same day.

3.08 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate in direction of drainage.

C. Fully Adhered Application: Apply adhesive at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof.

E. At intersections with vertical surfaces:
1. Extend membrane over cant strips and up a minimum of 8 inches onto vertical surfaces.
2. Fully adhere flexible flashing over membrane and up to nailing strips.

F. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

G. Coordinate installation of roof drains and sumps and related flashings, locate field splices away from low areas and roof drains, and lap upslope sheet over downslope sheet.

H. Lay concrete pavers loose over manufacturer approved protection sheet and according to manufacturer's instructions.

I. Daily Seal: Install daily seal per manufacturer's instructions at the end of each workday. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.

3.09 BALLAST INSTALLATION

A. Install ballast in accordance with manufacturer's instructions.

B. Aggregate Ballast:
1. Install protective mat over membrane.

2. Install ballast-anchored flow-thru metal edge trim at locations as indicated on drawings.
3. Apply ballast per SPRI RP-4 guidelines.
4. Evenly distribute aggregate ballast.

3.10 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for general requirements for field quality control and inspection.

B. Require site attendance of roofing and insulation material manufacturers daily during installation of this work.

C. Electronic Leak Detection (ELD) Testing: Test waterproofed and roofing membrane areas for leaks using ELD method that locates discontinuities in fluid-applied waterproofing and roofing membranes in accordance with ASTM D7877 or ASTM D8231.
   1. Testing agency to submit Daily Field Report (DFR) in accordance with ASTM D8231 indicating daily details of work performed.
   2. Testing agency to submit training certification to ensure technician performing ELD testing is currently certified in accordance with relevant training program.
   3. Point-of-use operation testing system monitoring for real-time anomalies and incorporated into roof system; comprised of physical sensors and conductive media.
   4. Components:
      a. Moisture Detection Sensors: 2-inch stainless steel sensor pucks, attached together with 1/16-inch 316 stainless steel cable. Install sensors 120 inches apart in grid pattern for effective sensor range.
      b. Conduction Media: Install conductive fabric to moisture-detection sensors, and connect to monitoring grid; connect monitoring grid to connection plates to electrically energize the system; conform to manufacturer's written instructions and approved shop drawings.
   5. Products:
      a. Sentinel Roof Technologies; Leak Sentry: www.sentinelrooftechnologies.com/#sle.
      b. International Leak Detection; Vector Mapping Grid (VMG): www.leak-detection.com/#sle.
      c. Substitutions: See Section 01 6000-Product Requirements.

3.11 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove wrappings, empty containers, paper, and other debris from the roof daily. Dispose of debris in compliance with local, State, and Federal regulations.

C. Remove bituminous markings from finished surfaces.

D. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

E. Repair or replace defaced or damaged finishes caused by work of this section.

3.12 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

3.13 ROOFING INSTALLER'S SAMPLE WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
   1. Owner: Indiana University.
   2. Building Name: LAUNCH ACCELERATOR FOR BIOSCIENCES
   3. Project/Building Address: 1302 Indiana Ave., Indianapolis, IN 46202.
   4. Area of Work: Roofing Systems.
   5. Date of Substantial Completion of the Project (not the date of final roofing Work): MONTH xx, 202x
   6. Warranty Period: 2 Years.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:
   1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
      a. lightning;
      b. peak gust wind speed exceeding 100 mph;
      c. fire;
      d. failure of roofing system substrate (i.e. the support structure on which the roofing system has been installed), including cracking, settlement, excessive deflection, deterioration, and decomposition;
      e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
      f. vapor condensation on bottom of roofing; and
      g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
   2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
   3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from faults or defects of the support structure on which the roofing system has been installed.
   4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or deter Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.
1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 07 5323

SECTION 08 4413
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed curtain wall, with vision glazing and infill panels.

B. Delegated design engineering (DDE) by a licensed professional engineer for all glazed aluminum curtain wall and curtain wall door systems.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Weld plates embedded in concrete for attachment of anchors.

B. Section 05 1200 - Structural Steel Framing: Steel attachment members.

C. Section 05 5000 - Metal Fabrications: Steel attachment devices.

D. Section 07 8400 - Firestopping: Firestop at system junction with structure.

E. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

F. Section 08 8000 - Glazing.

G. Section 09 2116 - Gypsum Board Assemblies: Metal stud and gypsum board wall at interior of curtain wall.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.

B. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.

C. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

D. AAMA 501.4 - Recommended Static Test Method for Evaluating Window Wall, Curtain Wall and Storefront Systems Subjected to Seismic and Wind-Induced Inter-Story Drift.

E. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems.

F. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

G. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

H. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

I. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

J. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

K. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

L. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

N. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

O. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.

P. ASTM C793 - Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants.

Q. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

R. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

S. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.

T. ASTM C1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.

U. ASTM C1184 - Standard Specification for Structural Silicone Sealants.

V. ASTM C1249 - Standard Guide for Secondary Seal for Sealed Insulating Glass Units for Structural Sealant Glazing Applications.

W. ASTM C1401 - Standard Guide for Structural Sealant Glazing.

X. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

Y. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

Z. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

AA. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, internal drainage details, glazing, and infill.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, joinery including concealed welds, anchorage, expansion provisions, glazing, flashing and drainage, and field welding required.

1. Include design engineer's (DDE) stamp or seal on shop drawings for attachments and anchors.
2. Shop drawings and all product data shall also be analyzed by the DDE, in concert with his engineering.

3. Manufacturer's generic details only will be rejected.

D. Shop Drawings: Provide details of proposed structural sealant glazing (SSG) and weather sealant joints indicating dimensions, materials, bite, thicknesses, profile, and support framing.
   1. Include design engineer's (DDE) stamp or seal on shop drawings for attachments and anchors.
   2. Shop drawings and all product data shall also be analyzed by the DDE, in concert with his engineering.
   3. Manufacturer's generic details only will be rejected.

E. Samples: Submit two samples 12 by 12 inches in size illustrating finished aluminum surface, glazing, infill panels, and glazing materials.

F. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

G. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations; include load calculations at points of attachment to building structure.
   1. Include design engineer's (DDE) stamp or seal on engineering calculations.
   2. All product data shall also be analyzed by the DDE, in concert with his engineering.

H. Structural Sealant Glazing (SSG): Submit product data and calculations showing compliance with performance requirements.
   1. Include design engineer's (DDE) stamp or seal on engineering calculations.
   2. All product data shall also be analyzed by the DDE, in concert with his engineering.

I. Test Reports: Submit results of full-size mock-up testing~~. Reports of tests previously performed on the same design are acceptable.~~

J. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

K. Designer's Qualification Statement.

L. Installer's Qualification Statement.

M. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design curtain wall and its structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the State in which the Project is located.

B. Full-Size Mock-Up Testing: Have a specimen representative of project conditions tested by an independent testing agency for compliance with specified thermal, structural, air infiltration, water penetration, sound attenuation, and sealant adhesion criteria.

C. Verify that each component is appropriate for use in structural sealant glazing (SSG) application in regards to at least the following properties: size, shape, dimensions, material, durability, storage conditions, and color.

D. Installer Qualifications: Company specializing in performing work of type specified and with at least ten years of documented experience and approved by manufacturer.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Construct mock-up as part of composite wall assembly mock-up as indicated on drawings. Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.

C. Locate where directed.

D. Mock-up may not remain as part of work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.09 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including, but not limited to, excessive deflection.
      b. Deterioration of metals.
      c. Noise or vibration created by wind and thermal and structural movements.
      d. Water penetration through fixed glazing and framing areas.
      e. Failure of operating components.
   2. Warranty Period: Five (5) years from date of Substantial Completion.

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

D. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glazed Aluminum Curtain Walls Manufacturers:
   1. EFCO: www.efco.com/#sle.
   2. Kawneer North America; (Basis of Design): www.kawneer.com/#sle.
      a. Field Fabricated Stick System: 1600UT System 2.
      b. Shop/Factory Unitized system: 2500UT SGT Unitwall.
   3. Tubelite, Inc: www.tubeliteinc.com/#sle.
   4. YKK AP America, Inc: www.ykkap.com/commercial/#sle.

5. C.R. Laurence Co.; U.S. Aluminum: www.crlaurence.com/#sle.
6. WALTEK Company Ltd.: www.https://waltekltd.com/#sle.
   a. Field Fabricated Stick System: 7000 Series Umax Wall.
   b. Shop/Factory Unitized system: 7000 Series CHS Unitized Wall.

2.02 CURTAIN WALL

A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Outside glazed, with pressure plate and mullion cover, where indicated on drawings.
   2. Structural sealant glazing (SSG) adhesive on two (2)-sides, with temporary glazing stops, and pressure plate and mullion cover on 2-sides, where indicated on drawings.
   3. Fabrication Method: Either shop/factory or field fabricated system.
      a. Appropriate fabrication method to be reviewed by manufacturer, DDE, and General Contractor at parapet conditions to maintain specified thermal performance and thermal construction.
   4. Glazing Method: Either shop/factory or field glazed system.
   5. Vertical Mullion Dimensions: As indicated in drawings.
   6. Finish: Superior performing organic coatings.
      a. Factory finish surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
      c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   7. Provide flush joints and corners, weathersealed, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   8. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   9. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   10. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.

B. Structural Performance Requirements: Design and size components to withstand the following load requirements without damage or permanent set.
   1. Design Wind Loads: Comply with the requirements of ASCE 7 and requirements of Chapter 16 of the International Building Code (IBC) 2012 edition, as amended by the State of Indiana.
      a. Member Deflection: For spans less than 13 feet 6 inches, limit member deflection to flexure limit of glass in any direction, and maximum of 1/175 of span or 3/4 inch, whichever is less and with full recovery of glazing materials.
      b. Member Deflection: For spans over 13 feet 6 inches and less than 40 feet, limit member deflection to flexure limit of glass in any direction, and maximum of 1/240 of span plus 1/4 inch, with full recovery of glazing materials.
   2. Seismic Loads: Design and size components to withstand seismic loads and sway displacement in accordance with requirements of ASCE 7.
   3. Interstory Differential Lateral Movement: Meeting pass/fail criteria of AAMA 501.4 for Use Group I, Standard Occupancy, when tested at design displacement of 0.010 times greater

adjacent story height, maximum, and 1.5 times design displacement, through three complete cycles.

4. Movement: Accommodate the following movement without damage to components or deterioration of seals:
   a. Expansion and contraction caused by 180 degrees F surface temperature.
   b. Expansion and contraction caused by cycling temperature range of 170 degrees F over a 12 hour period.
   c. Movement of curtain wall relative to perimeter framing.
   d. Deflection of structural support framing, under permanent and dynamic loads.
   e. Shortening of structural concrete columns.
   f. Creep of structural concrete members.
5. Structural Sealant Glazing (SSG) System: For individual glass lites, design framing members to not exceed a deflection normal to the wall of L/175 between supports with 3/4 inch maximum, and a deflection parallel to the wall of L/360 with 1/8 inch maximum, whichever is less.

C. Water Penetration Resistance on Manufactured Assembly: No water on indoor face when tested as follows:
   1. Test Pressure Differential: 12 psf.
   2. Test Method: AAMA 501.1.

D. Air Leakage: 0.06 cfm/sq ft maximum leakage of wall area when tested in accordance with ASTM E283/E283M at 6.24 psf pressure difference across assembly.

E. Thermal Performance Requirements:
   1. Condensation Resistance Factor of Framing: 65, minimum, measured in accordance with AAMA 1503.
   2. Overall U-value Including Glazing: 0.24 Btu/(hr sq ft deg F), maximum.

F. Structural designs shall be prepared by a qualified Professional Engineer registered in the State of Indiana.

2.03 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed, wide stile, entrance doors for manual-swing and automated-swing operation.
   1. Door Construction:
      a. Manufacturer’s internally rigid and reinforced, mechanically joined and welded.
         1) Engineered to resist same wind-loading requirements as curtainwall specified herein before.
         2) Additional Loads: Incorporate push/pull, open/close cycling, and abuse impact operation loads per DDE.
      b. Door Overall Thickness: 2-1/4-inch, with minimum 0.125-inch thick, extruded-aluminum tubular rail and stile members.
      c. Thermal Construction: Manufacturer’s thermally-engineered thermal break construction of exterior aluminum members from members exposed to the interior.
      d. All doors are to be factory-prepared for all door hardware, specified elsewhere in the Project Manual.
         1) Coordinate with door schedule for door hardware requirements.
   2. Door Design: Wide stile; 5-inch nominal width; 10-inch high bottom rail, 5-inch top rail.
   3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
      a. Provide non-removable glazing stops on outside of door.

b. Accommodate 3/4-inch insulating glass at all exterior entrance and interior vestibule doors.

2.04 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.
   2. Cross-Section: As indicated on drawings.
   3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Glazing: See Section 08 8000.

C. Insulated Spandrel Panels: Insulated, aluminum sheet back, with edges formed to mechanically fasten to curtain wall framing and sealed set behind insulated spandrel glazing.
   1. Core: Unfaced semi-rigid mineral wool board insulation core with R-value of 4 per inch.
   2. Back Sheet at Exposed Locations: 0.040 inch thick.
   3. Backpan Metal: 0.040 inch thick.
   4. Interior Finish: Factory enameled, color as selected.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123Mfor connections and inserts in concrete and masonry.

D. Structural Steel Sections: ASTM A36/A36M; shop primed for connections to structural steel that are exposed to view.

E. Structural Supporting Anchors: See Section 05 1200.

F. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.

G. Structural Supporting Anchors Attached to Reinforced Concrete Members: Design for welded attachment to weld plates embedded in concrete.

H. Fasteners: Stainless steel; type as required or recommended by curtain wall manufacturer.

I. Exposed Flashings: Aluminum sheet, 20-gauge, 0.032-inch minimum thickness; finish to match framing members.

J. Concealed Flashings: Sheet aluminum, 26-gauge, 0.017-inch minimum thickness.

K. Firestopping: See Section 07 8400.

L. Structural Sealant Glazing (SSG) Adhesive: Neutral curing, silicone sealant formulated for SSG applications in compliance with ASTM C1184 and structural glazing industry guidelines, ASTM C1401.
   1. SSG adhesive in compliance with ASTM C920; Type S - Single-component, Grade NS, Class 50, Use NT, G, and A.
   2. Ultimate Tensile Strength: Minimum of 50 psi as determined by test method ASTM C1135 under the following conditions.
      a. Exposure to air temperatures of 190 degrees F and minus 20 degrees F.
      b. Water immersion for seven (7) days, minimum.
      c. Exposure to weathering for 5,000 hours, minimum.
   3. Sealant Design Tensile Strength: 20 psi, maximum.
   4. Hardness: 20 to 60 with Type A-2 durometer in compliance with test method ASTM C661.

5. Color: As selected by Architect from manufacturer's custom range.
6. SSG sealant tested for compatibility with glazing accessories in compliance with ASTM C1087, tested for accelerated weathering in compliance with ASTM C793, and in compliance with insulating glass secondary sealant design standards of ASTM C1249.

M. Weatherseal Sealant: Silicone, with adhesion in compliance with ASTM C794; compatible with glazing accessories.

N. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, and compatible with flashing material.

O. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

P. Glazing Accessories: See Section 08 8000.

Q. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

R. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.06 FINISHES

A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.

B. Color: To be selected by Architect from manufacturer's custom range.
1. Exterior-side and interior-side of curtain wall mullions from glazing and insulated spandrel panel locations to be different colors, as selected by Architect.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other related work.

B. Verify that curtain wall openings and adjoining water-resistive and air barrier seal materials are ready to receive work of this section.

C. Verify that anchorage devices have been properly installed and located.

3.02 INSTALLATION

A. Install curtain wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill and head flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Coordinate installation of firestopping at each floor slab edge.

H. Fill voids in shim spaces at perimeter of assembly to maintain continuity of thermal barrier with non-expanding insulating foam similar to Hilti CF812.

I. Pressure Plate Framing: Install glazing and infill panels using exterior wet/dry glazing method; see Section 08 8000.

J. Structural Sealant Glazing (SSG) Adhesive: Install structural sealant glazing adhesive and weatherseal sealant in accordance with manufacturer's instructions.

K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet noncumulative or 0.5 inches per 100 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

C. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch and minimum of 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. Provide services of curtain wall manufacturer's field representative to observe for proper installation of system and submit report.

B. See Section 01 4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

C. Water-Spray Test: Provide water spray quality test of installed curtain wall components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
   1. Perform a minimum of three tests in each designated area as directed by Architect.
   2. Conduct tests in each area prior to 10 percent, 35 percent, and 70 percent completion of this work.

D. Provide field testing of installed curtain wall system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
   1. Perform a minimum of three tests in each designated area as directed by Architect.
   2. Conduct tests in each area prior to 10 percent, 35 percent, and 70 percent completion of this work.
   3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 6.24 psf.
      a. Do not use the AAMA definition of water penetration. Water penetration is to be defined as any water penetration past the interior face of glazing, including any accumulation of water on the interior face of glass or frame.
   4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf.
      a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft.

E. Repair or replace curtain wall components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove protective material from pre-finished aluminum surfaces.

C. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, take care to remove dirt from corners, and wipe surfaces clean.

D. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Wherever aluminum is in contact with steel, concrete, or other material potentially creative of electrolytic action, provide permanent isolation of the aluminum by backpainting with first quality bituminous paint or by such other isolation as is approved in advance.

END OF SECTION 08 4413

SECTION 09 84 33.01 - SOUND ABSORBING WALL UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Flat Veneer Wall Panels

B. Acoustic Wall Panels

1.2 RELATED SECTIONS

A. Section 07 90 00 - Joint Protection.

B. Section 08 31 13 - Access Doors and Frames.

C. Section 28 31 00 - Fire Detection and Alarm.

D. Section 21 00 00 - Fire Suppression.

E. Section 26 51 00 - Interior Lighting.

1.3 REFERENCES

A. ASTM E 84 - Title; 2001.

B. FSC STD-01-001 - FSC Principles and Criteria for Forest Stewardship

C. FSC STD-40-004 - FSC Standard for Chain of Custody Certification

D. U.S. Green Building Council, LEED Building Design and Construction (BD+C)Version 4.0 Rating System. (LEED v4.0)

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Wood is a natural product that will undergo changes with variations in the environment. Therefore, all dimensional tolerances are plus or minus 1/8 inch (3 mm).

B. Fire Performance Characteristics: Wood wall panels shall conform to Class 1, or A flame spread rating, tested according to ASTM E 84; Flame Spread: 25 or less. Smoke Developed: 450 or less.

C. Certified Wood: Wood wall panels shall be certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and FSC STD-40-004, "FSC Standard for Chain of Custody Certification

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Provide layout of wood wall panels, z-clips, and furring strips coordinated with other trades that will penetrate the wood walls or interfere with the installation and recessed or surface mounted devices located within the wall panels. Indicate method of attachments where interference exists.

D. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
1. LEED v4.0: Wood wall panels may contribute as required to the following LEED v4 credits: MR BPD&O - Sourcing of Raw Materials, MR BPD&O - Material Ingredients, EQ Low-Emitting Materials.

E. Selection Samples: For each finish product specified, two complete sets of color brochures representing the manufacturer's full range of available colors and patterns.

F. Verification Samples: For each finish product specified, two samples, minimum size 12 inches (305 mm) square, representing actual product, color, and patterns.

G. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

H. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment and periodic cleaning and maintenance of all components.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Minimum 2 years documented experience installing projects of similar size and complexity.

C. Provide seismic design of suspended wall under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.
4. Accepted mock-ups shall be comparison standard for remaining Work

E. Pre-Installation Conference: Convene minimum two weeks prior to starting work of this section. Agenda shall include project conditions, coordination with work of other trades, and layout of items that penetrate walls.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver material in the manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store products off the floor in manufacturer's unopened packaging protected from exposure to harmful environmental conditions and at temperature and humidity conditions as recommended by the manufacturer.

C. A minimum of 72 hours prior to wall installation, wood wall panels shall be stored in the room in which they will be installed. Temperature and humidity of the room during this period shall closely approximate those conditions that will exist when the building is occupied.

D. Handle materials to avoid damage.

1.8 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 PROJECT CONDITIONS

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

B. Space shall be fully enclosed with all exterior windows and doors in place, glazed, and weather-stripped. Roof is to be watertight, and all wet trades' work is to be completed, and thoroughly dry.

C. Mechanical, electrical, and other utility services behind the wall plane shall be completed. No materials should rest against, or wrap around, the wall attachment components or connecting z-clips.

D. Install only when the temperature and humidity closely approximate the interior conditions that will exist when the building is occupied. Heating and cooling systems shall be operating before, during, and after installation, with the humidity of the interior spaces maintained between 25 and 55 percent, and a temperature between 60 to 90 degrees F.

1.10 COORDINATION

A. Coordinate layout and installation of the wood wall panels with other work penetrating the wall including light fixtures, HVAC equipment, and fire suppression system components.

1.11 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements.

B. Deliver materials for Owner's use in maintenance.
   1. Provide 2 percent of each type actually installed for use by owner in building maintenance and repair.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Rulon International, which is located at: 2000 Ring Way Rd.; St Augustine, FL 32092; Toll Free Tel: 800-227-8566; Tel: 904-584-1400; Fax: 904-584-1499; Email: request info (info@rulonco.com); Web:rulonco.com
2. Certainteed / Saint Gobain 20 Moores Road, Malvern, PA (800) 233-8990; certainteed.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 MATERIALS - GENERAL

A. Wood is a natural product that will undergo changes with variations in the environment. Therefore, all dimensional tolerances are plus or minus 1/8 inch (3 mm).

2.3 FLAT VENEER CEILING PANELS – WDP1

A. Flat Veneer Panels are made with a face veneer applied to a 3/4 inch (19 mm) thick core material.
1. Panel Size: As indicated in drawings.
2. Trim and Border Treatment: Provide end caps or junction trims as indicated.
3. Veneer Species:
a. Rift cut white oak.
4. Finish:
a. 20 Sheen Clear
b. Custom Stain as indicated in drawings.

B. ACCESSORIES
1. Integrated Lighting System: Coordinate wall panels with lighting specified in Section 26 51 00 - Interior Lighting
2. Z-Clips: Male/female aluminum attachment clips, similar to a French cleat but with a thinner profile, used to hang wood wall panels on furring strips.

C. ATTACHMENT SYSTEMS
1. Furring Strips: Thin strips of fire-treated plywood or other non-combustible or limited combustible material shall be used in conjunction with fire treated or other non-combustible or limited combustible shims to level or raise z-clip attachment points so that, when installed, wood wall panels are flush and plumb.

D. FABRICATION
1. Edges, borders, and perimeter trims shall be indicated on the Drawings in accordance with the manufacturer's standard design details. All wood wall panel products specified shall be supplied by the wood wall panel manufacturer.

2.4 ACCESSORIES

A. Acoustic Nonwoven Backers: Thin, sound-absorbing fabrics that can be applied to a substrate in order to increase sound attenuation.

B. Integrated Lighting System: Coordinate wall panels with lighting specified in Section 26 51 00 - Interior Lighting

C. Z-Clips: Male/female aluminum attachment clips, similar to a French cleat but with a thinner profile, used to hang wood wall panels on furring strips.

2.5 ALURATONE WALL PANELS – WDP2

A. Aluratone 700 Series acoustic panels are made from premium grade veneers adhered to a MDF or particleboard substrate and provided with perforation patterns through the panel designed to allow for direct sound absorption. Acoustical absorptive black backing is applied in the factory. Acoustical performance is dependent on project design, application mounting method, and additional sound absorbent material. Acoustical performance can be achieved up to NRC-0.90.
   1. Panel Size: as indicated in drawings.
   2. Perforation Openings:
      a. Diameter:
         1) 1/4inch (6mm)
         2) 5/16 inch (8mm)
         3) 3/8 inch (10mm)
      b. Spacing:
         1) 5/8 inches (16mm)
         2) 1-1/4 inches (32mm)
         3) Straight Spacing
      c. Alignment:
         1) Straight Spacing
         2) Staggered Spacing
   3. Trim and Border Treatment: Provide end caps or junction trims as indicated.
   4. Veneer Species:
      a. Rift cut white oak.
   5. Finish:
      a. 20 Sheen Clear
      b. Custom Stain as indicated in drawings.

B. ACCESSORIES
   1. Acoustic Nonwoven Backers: Thin, sound-absorbing fabrics that can be applied to a substrate in order to increase sound attenuation.
   2. Integrated Lighting System: Coordinate wall panels with lighting specified in Section 26 51 00 – Interior Lighting.
   3. Z-Clips: Male/female aluminum attachment clips, similar to a French cleat but with a thinner profile, used to hang wood wall panels on furring strips.

C. ATTACHMENT SYSTEMS
   1. Furring Strips: Thin strips of fire-treated plywood or other non-combustible or limited combustible material shall be used in conjunction with fire treated or other non-combustible or limited combustible shims to level or raise z-clip attachment points so that, when installed, wood wall panels are flush and plumb.

D. FABRICATION
   1. Edges, borders and perimeter trims shall be indicated on the Drawings in accordance with the manufacturer's standard design details. All wood wall panel products specified shall be supplied by the wood wall panel manufacturer.

END OF SECTION

ABBREVIATIONS

AC	AIR COMPRESSOR	ID	INSIDE DIAMETER
AAP	AREA ALARM PANEL	IE	INVERT ELEVATION
ADJ	ADJUSTABLE	IM	ICE MAKER
AFF	ABOVE FINISHED FLOOR	IN	INCHES
ALT	ALTERNATE	IN WC	INCHES WATER COLUMN
AP	ACCESS PANEL	IW	INDIRECT WASTE
AV	ACID VENT		
AW	ACID WASTE	LA	LABORATORY AIR
		LAV	LAVATORY
BAS	BUILDING AUTOMATION SYSTEM	LV	LABORATORY VACUUM
BHP	BRAKE HORSEPOWER	LWT	LEAVING WATER TEMPERATURE
BOP	BOTTOM OF PIPE ELEVATION		
BOT	BOTTOM	MA	MEDICAL AIR
BTU	BRITISH THERMAL UNIT	MAP	MASTER ALARM PANEL
BTUH	BRITISH THERMAL UNITS PER HOUR	MB	MOP BASIN
		MBH	ONE THOUSAND BTUH
CA	COMPRESSED AIR	MFR	MANUFACTURER
CFM	CUBIC FEET PER MINUTE	MH	MANHOLE
CLG	CEILING		
CO	CLEANOUT	N2	NITROGEN
CO2	CARBON DIOXIDE	N2O	NITROUS OXIDE
CM	COFFEE MAKER	NIC	NOT IN CONTRACT
CTR	CENTER	NPSH	NET POSITIVE SUCTION HEAD
		NPT	NATIONAL PIPE THREAD
D	DRAIN LINE	NTS	NOT TO SCALE
DCW	DOMESTIC COLD WATER		
DDCA	DOUBLE DETECTOR CHECK ASSEMBLY	O2	OXYGEN
DET	DETAIL	OC	ON CENTER
DFU	DRAINAGE FIXTURE UNIT	OD	OUTSIDE DIAMETER
DHR	DOMESTIC HOT WATER RETURN	OFD	OVERFLOW DRAIN
DHW	DOMESTIC HOT WATER		
DI	DEIONIED WATER	P	PUMP
DIA	DIAMETER	PH	PHASE
DIM	DIMENSION	PRV	PRESSURE REDUCING VALVE
DN	DOWN	PSF	POUNDS PER SQUARE FOOT
DW	DISHWASHER	PSI	POUNDS PER SQUARE INCH
		PSIG	POUNDS PER SQUARE INCH GAUGE
EA	EACH		
EFF	EFFICIENCY	RD	ROOF DRAIN
EJ	EXPANSION JOINT	RO	REVERSE OSMOSIS WATER
ELEC	ELECTRICAL	RPM	REVOLUTIONS PER MINUTE
ELEV	ELEVATION	RPZ	REDUCED PRESSURE ZONE
EP	ELEVATOR PIT		BACKFLOW PREVENTER
EPP	ELEVATOR PIT PUMP	RV	RELIEF VALVE
EQUIP	EQUIPMENT		
ET	EXPANSION TANK	S	STORM
ES	EMERGENCY SHOWER	SAN	SANITARY
EW	EYEWASH	SCH	SCHEDULE
EWC	ELECTRIC WATER COOLER	SD	SUBSOIL DRAIN
EWH	ELECTRIC WATER HEATER	SF	SQUARE FEET
EWT	ENTERING WATER TEMPERATURE	SH	SHOWER
EXT	EXTERIOR	SP	SUMP PIT
		S/S	STAINLESS STEEL
F	FAHRENHEIT	STD	STANDARD
FCO	FLOOR CLEANOUT	STM	STORM
FD	FLOOR DRAIN		
FLA	FULL LOAD AMPERES	TD	TRENCH DRAIN
FLR	FLOOR	TDH	TOTAL DYNAMIC HEAD
FPM	FEET PER MINUTE	TEMP	TEMPERATURE
FT	FEET	TMV	THERMOSTATIC MIXING VALVE
FTHD	FEET HEAD	TP	TRAP PRIMER
FTG	FOOTING	TYP	TYPICAL
G	GAS	UR	URINAL
GA	GAUGE		
GAL	GALLON	V	VENT
GM	GAS METER	VAC	VACUUM
GPH	GALLONS PER HOUR	VFD	VARIABLE FREQUENCY DRIVE
GPM	GALLONS PER MINUTE	VTR	VENT THRU ROOF
GWH	GAS WATER HEATER		
		W	WASTE/WATER
H2	HYDROGEN	WAGD	WASTE ANESTHETIC GAS DISPOSAL
HB	HOSE BIBB	WC	WATER CLOSET
HD	HUB DRAIN	WCO	WALL CLEANOUT
HE	HELIUM	WH	WALL HYDRANT
HP	HORSEPOWER	WM	WASHING MACHINE
HT	HEAT TRACE		
HTR	HEATER	ZVB	ZONE VALVE BOX

FITTINGS

	FLANGE
	UNION
	ANCHOR
	PIPE GUIDE
	PIPE SLEEVE
	ELBOW DOWN
	ELBOW UP
	PIPE CAP

VALVES

	GAS SHUT OFF VALVE
	GATE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	BALANCING VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE
S	SOLENOID VALVE
	PRESSURE RELIEF VALVE
	THERMOSTATIC MIXING VALVE
	REDUCED PRESSURE BACKFLOW PREVENTER
	STRAINER
	PIPE FLEXIBLE CONNECTION
	GAS REGULATOR
	THERMOMETER
	PRESSURE GAUGE
HB	WALL HYDRANT/HOSE BIBB
	FILTER
S	WATER METER
	VACUUM BREAKER
	PIPING OR EQUIPMENT TO BE DEMOLISHED
	EYE WASH STATION

GENERAL SYMBOLS

	EQUIPMENT TAG
	KEYNOTE
	POINT OF NEW CONNECTION TO EXISTING WHEN ON DEMO SHEET: END POINT OF DEMO
	ELEVATION SYMBOL
1 / P-1	DETAIL REFERENCE (TOP=DETAIL NUMBER, BOTTOM=DRAWING NUMBER)
REFER / P-1	PLAN CONTINUATION REFERENCE (BOTTOM=DRAWING NUMBER)
1 / P-1	SECTION DESIGNATION (TOP=SECTION NUMBER, BOTTOM=DRAWING NUMBER)

PIPING ANNOTATION

AV	ACID VENT
AW	ACID WASTE
CA	COMPRESSED AIR
CO2	CARBON DIOXIDE
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHR	DOMESTIC HOT WATER RETURN
DI	DEIONIZED WATER
DT	DRAIN TILE
DX	DIRECT EXPANSION REFRIGERANT
H2	HYDROGEN
He	HELIUM
IW	INDIRECT WASTE
LA	LAB COMPRESSED AIR
LV	LAB VENT
LVAC	LAB VACUUM
MA	MEDICAL COMPRESSED AIR
MVAC	MEDICAL VACUUM
MW	MEDICAL WASTE
N2	NITROGEN
N2O	NITROUS OXIDE
NG	NATURAL GAS
O2	OXYGEN
OD	OVERFLOW DRAIN LINE
SAN	SANITARY WASTE LINE
STRM	STORM
V	VENT LINE
WAGD	WASTE ANALYTICAL GAS
0° AIR	ZERO DEGREE AIR

DRAINS AND CLEANOUTS

	FLOOR SINK
FD	FLOOR DRAIN
RD	ROOF DRAIN
	PIPE TRAP
	CLEANOUT
FCO	FLOOR CLEANOUT

SHEET INDEX - PLUMBING

BSA

SWITCH PLACEHOLDER FAMILY
TYPE FOR CORRECT BSA OFFICE

SMITHGROUP

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE

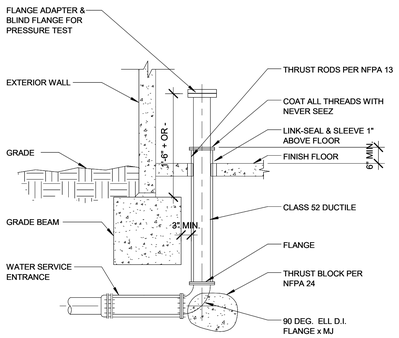
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING SYMBOLS AND ABBREVIATIONS

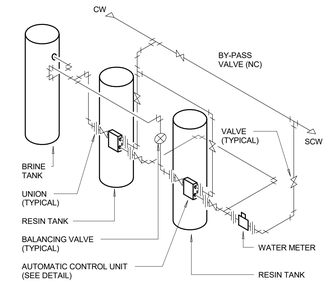
DATE **REF: SHEET INDEX**

BSA PROJECT NO. **00360481**

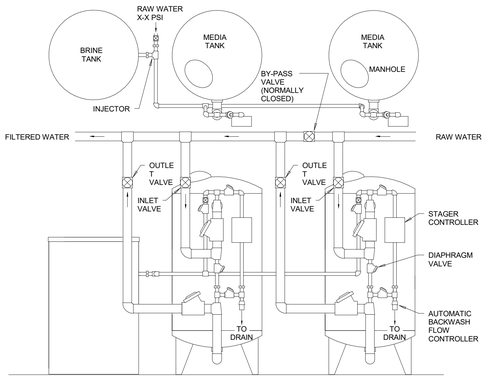
P001

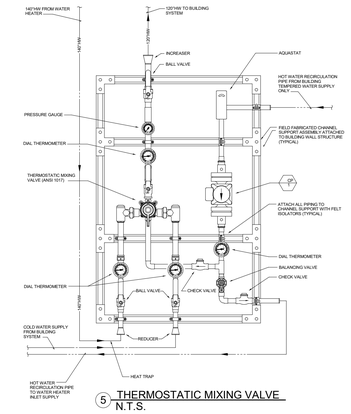


2 WATER SERVICE
N.T.S.

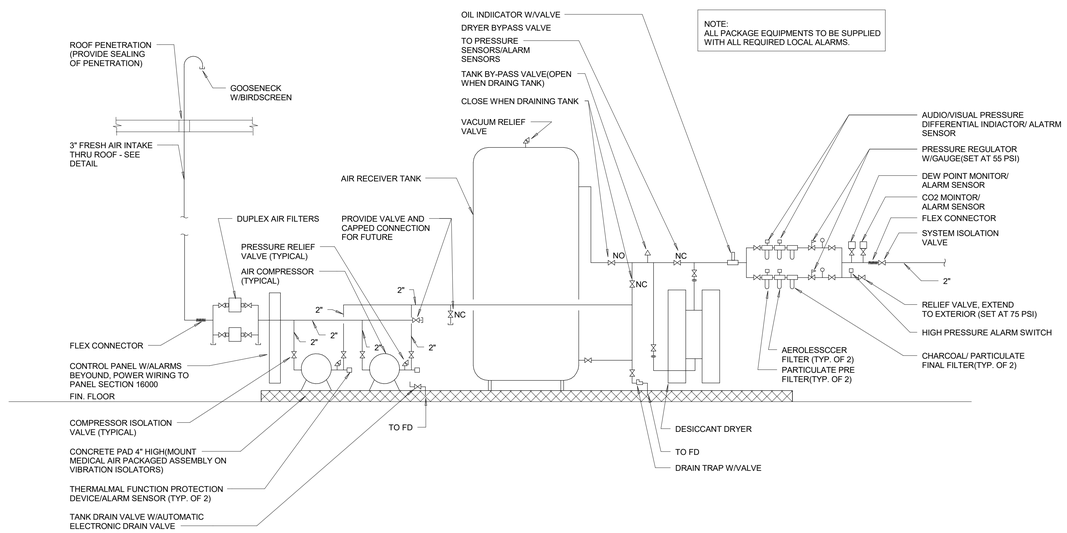


3 WATER SOFTENER
N.T.S.

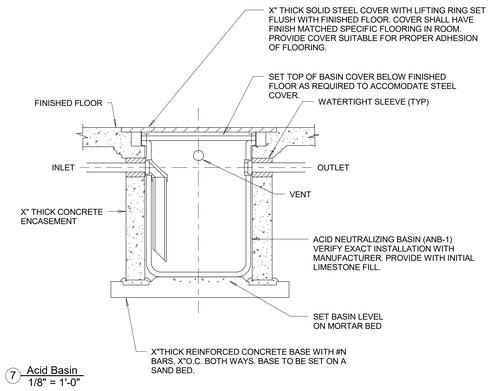




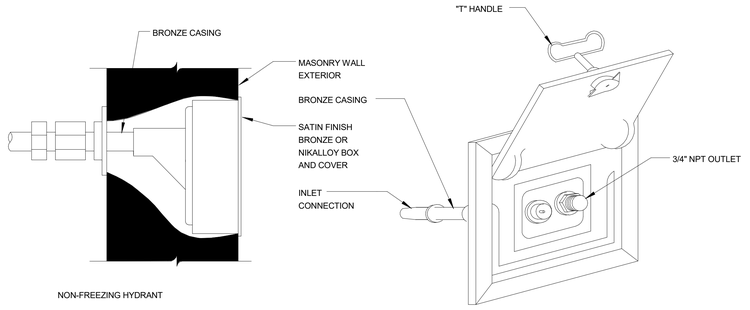
5 THERMOSTATIC MIXING VALVE
N.T.S.



6 LAB AIR COMPRESSOR
1/8" = 1'-0"



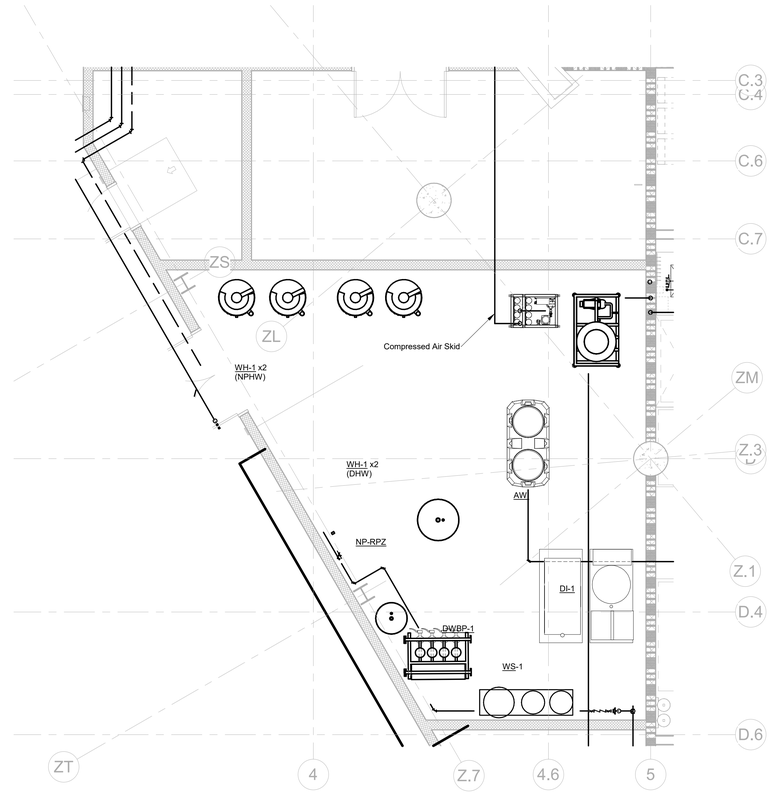
7 Acid Basin
1/8" = 1'-0"



NON-FREEZING HYDRANT

CAST BRONZE NON-FREEZE BOX TYPE WALL HYDRANT WITH 3/4" HPT OUTLET, "T" HANDLE, POLISHED FACE, HINGED LOCKING COVER, INTEGRAL VACUUM BREAKER.

4 WALL HYDRANT
1/8" = 1'-0"



1 PLUMBING PIPING PLAN - LEVEL 1 - Callout 1
1/4" = 1'-0"

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TYPE FOR CORRECT BSA OFFICE

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-100% CORE AND SHELL PACKAGE

ISSUED / REVISIONS SCHEDULE

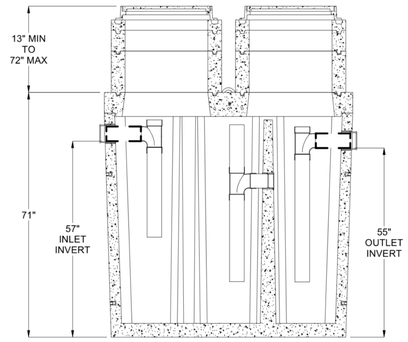
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING DETAILS

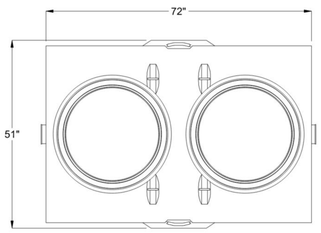
DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

P501

1/5/2026 4:29:38 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250073-IULAB_R24.rvt

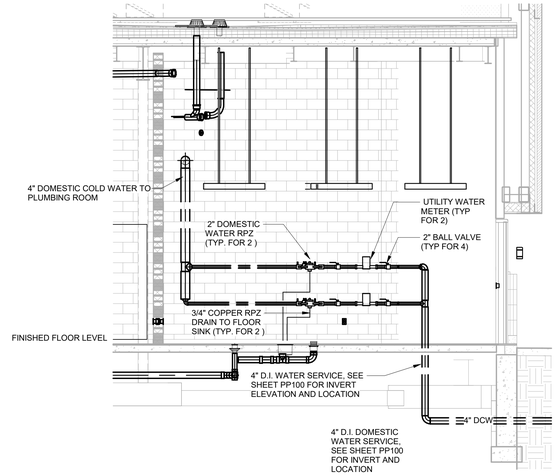


CROSS SECTION

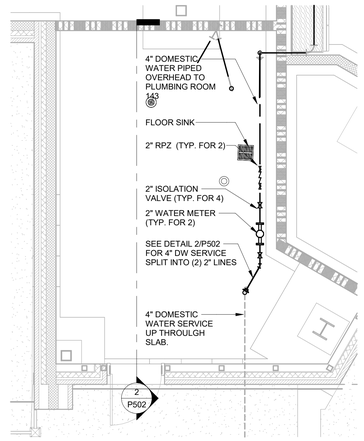


PLAN VIEW

4 GREASE INTERCEPTOR
N.T.S.



2 INCOMING DOMESTIC WATER SERVICE
1/4" = 1'-0"



1 DOMESTIC WATER SERVICE ENTRANCE
1/4" = 1'-0"

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
3	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
2	12/15/2025	BP1-CD; ASI #4
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING DETAILS

DATE
BSA PROJECT NO. 00360481

REF: SHEET INDEX

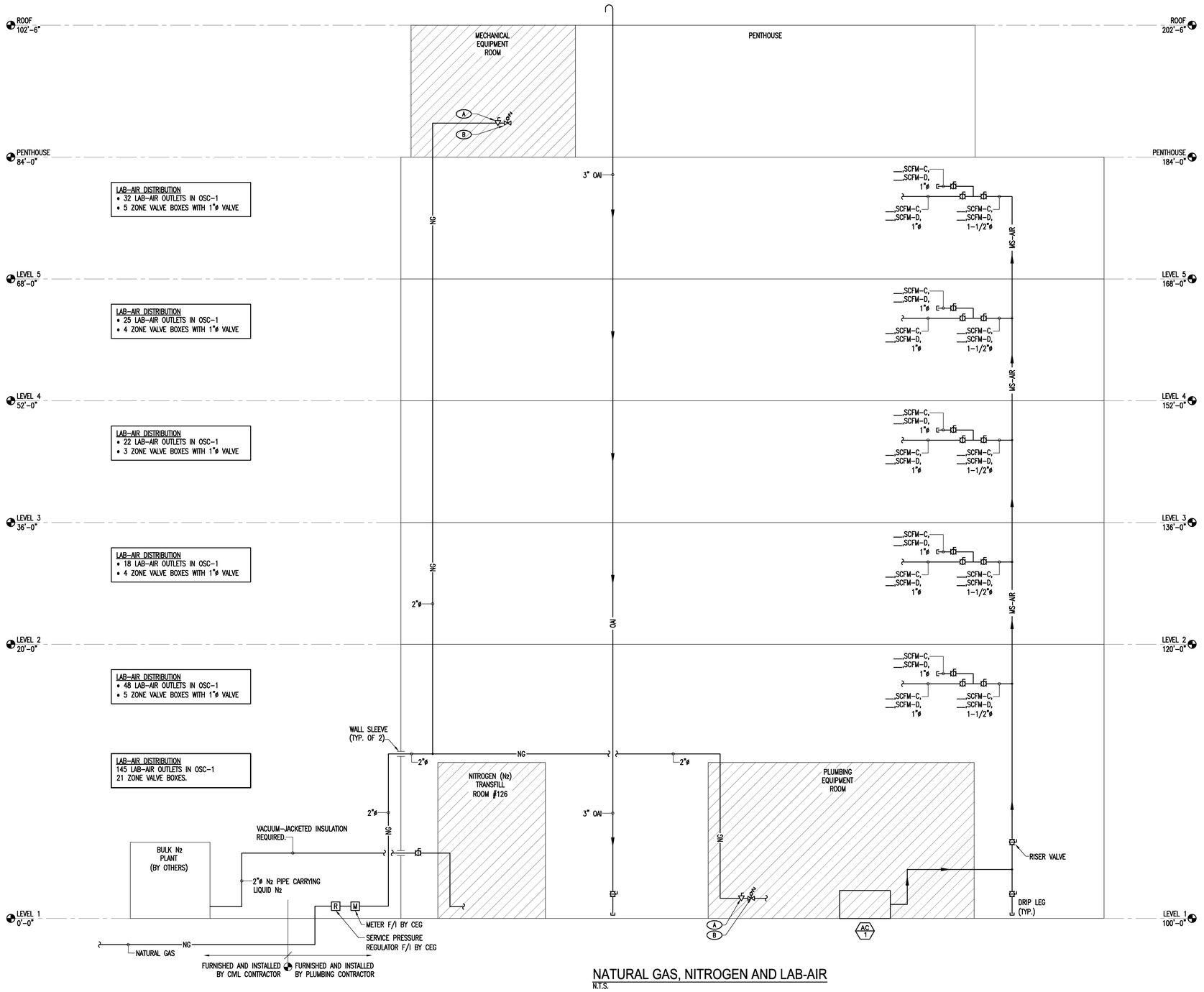
P502

1/9/2026 4:29:41 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-IULAB_R24.rvt

KEY NOTES:

(A) (NATURAL GAS): PROVIDE A MANUAL OPERATED SHUTOFF VALVE THAT CAN BE CLOSED DURING NORMAL OPERATION AND IN CASE OF EMERGENCY; THIS VALVE SHALL BE LOCATED IN CONSPICUOUS LOCATION NEAR THE EXIT; THIS VALVE SHALL BE TAGGED "NATURAL GAS SHUTOFF VAVLE CLOSE IN EMERGENCY".

(B) (NATURAL GAS): PROVIDE AN AUTOMATICALLY OPERATED SHUTOFF VALVE (SOLENOID VALVE) THAT IS ACTIVATED BY A BUILDING OCCUPANCY USING A REMOTELY LOCATED PUSH BUTTON HARD-WIRED KILL SWITCH; THIS KILL SWITCH SHALL BE CONNECTED TO THE BUILDING AUTOMATIC SYSTEM AS AN ALARM (BINARY INPUT).



NATURAL GAS, NITROGEN AND LAB-AIR
N.T.S.

1 GAS RISER DIAGRAM
N.T.S.

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

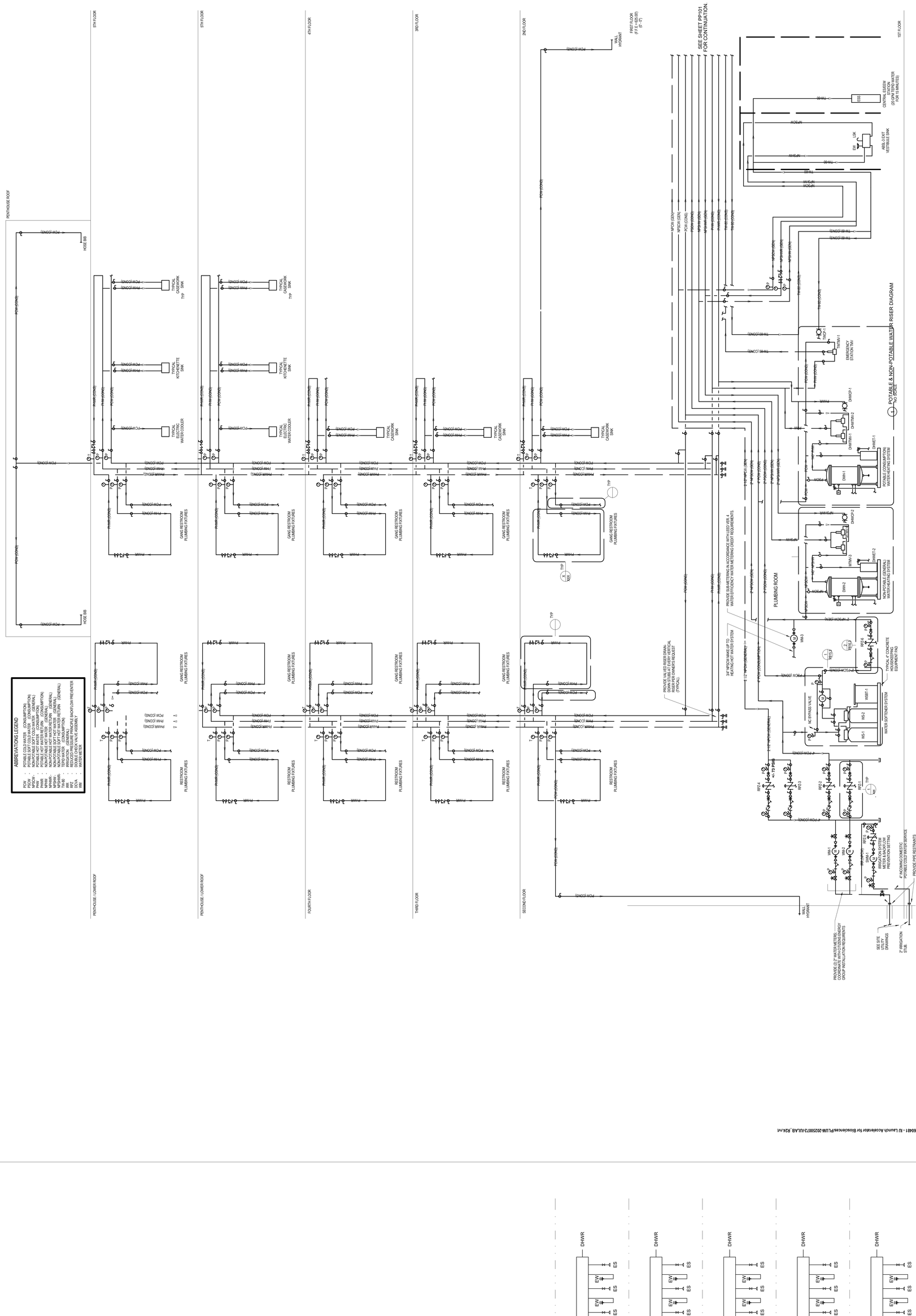
BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING NATURAL AND LAB GAS RISER DIAGRAM

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

P503


ABBREVIATIONS LEGEND
POW : POTABLE COLD WATER (CONSUMPTION)
PCW : POTABLE COLD WATER (RECIRCULATION)
NPCW : NON-POTABLE SOFT COLD WATER (GENERAL)
NPCW- : NON-POTABLE SOFT COLD WATER (CONSUMPTION)
PHW : POTABLE HOT WATER (GENERAL)
PHWR : POTABLE HOT WATER RETURN (CONSUMPTION)
NPHW : NON-POTABLE HOT WATER (GENERAL)
NPHWR : NON-POTABLE HOT WATER RETURN (GENERAL)
NPSHW : NON-POTABLE SOFT HOT WATER (GENERAL)
NPSHW- : NON-POTABLE SOFT HOT WATER RETURN (CONSUMPTION)
TW-60 : TEPID WATER (CONSUMPTION)
RW : RECLAIMED WATER (GENERAL)
RPZ : REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
DCVA : DOUBLE CHECK VALVE ASSEMBLY
WM : WATER METER
PENTHOUSE ROOF
5TH FLOOR
4TH FLOOR
3RD FLOOR
2ND FLOOR
1ST FLOOR
FIRST FLOOR (VOID) (F.F. (GRADE) (0' - 0")
PENTHOUSE / LOWER ROOF
HOSE BIB
TYPICAL ELECTRIC WATER COOLER
TYPICAL KITCHENETTE SINK
TYPICAL CASEWORK SINK
GANG RESTROOM PLUMBING FIXTURES
RESTROOM PLUMBING FIXTURES
FIRE HYDRANT
SEE SHEET PP101 FOR CONTINUATION
PROVIDE SUBMETERING IN ACCORDANCE WITH LEED VER. 4 WEATHERTECH'S WITH METERING DATA REQUIREMENTS
PLUMBING ROOM
DWH-1
DWH-2
DWHP-1
DWHP-2
DWHTW-1
DWHTW-2
DWHRT-1
DWHRT-2
MTW-1
MTW-2
EMERGENCY STATION TMV
TWTW-1
TWCP-1
ESS
CENTRAL EYEWASH STATION (SEE DETAIL)
ADA EYE WASH FAUCET
ADA L.F. SINK
ADA L.F. VESTIBULE SINK
NON-POTABLE (GENERAL) WATER SOFTENER SYSTEM
WSBT-1
WS-1
WS-2
M. BYPASS VALVE
1-1/2" NPCW (GENERAL)
1-1/2" POW (CONSUMPTION)
3/4" NPSHW MAKE-UP TO HEATING HOT WATER SYSTEM
PROVIDE VALVED RISER (DRAIN-DOWN) FOR FUTURE CHEMICAL RISER PER OWNER'S REQUEST (TYPICAL)
TYPICAL 4" CONCRETE HOUSEKEEPING EQUIPMENT PAD
WM-3
RPZ-4
RPZ-5
RPZ-6
RPZ-7
RPZ-1
RPZ-2
RPZ-3
+/- 73 PSIG
PRESSURE REGULATING VALVE
IRRIGATION SYSTEM WATER METER WITH PULSE TRANSMITTER
4" INCOMING DOMESTIC POTABLE COLD WATER SERVICE
PROVIDE PIPE RESTRAINTS ANCHORED INTO THE BASEMENT SLAB AT ALL PIPE PENETRATIONS THE BUILDING IN ACCORDANCE WITH HPPA24
PROVIDE (1) 2" WATER METERS - COORDINATE WITH CITIZENS ENERGY GROUP INSTALLATION REQUIRMENTS
SEE SITE UTILITY DRAWINGS
2" IRRIGATION SYMB
1 POTABLE & NON-POTABLE WATER RISER DIAGRAM
NO SCALE

DHWR
EW
ES

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

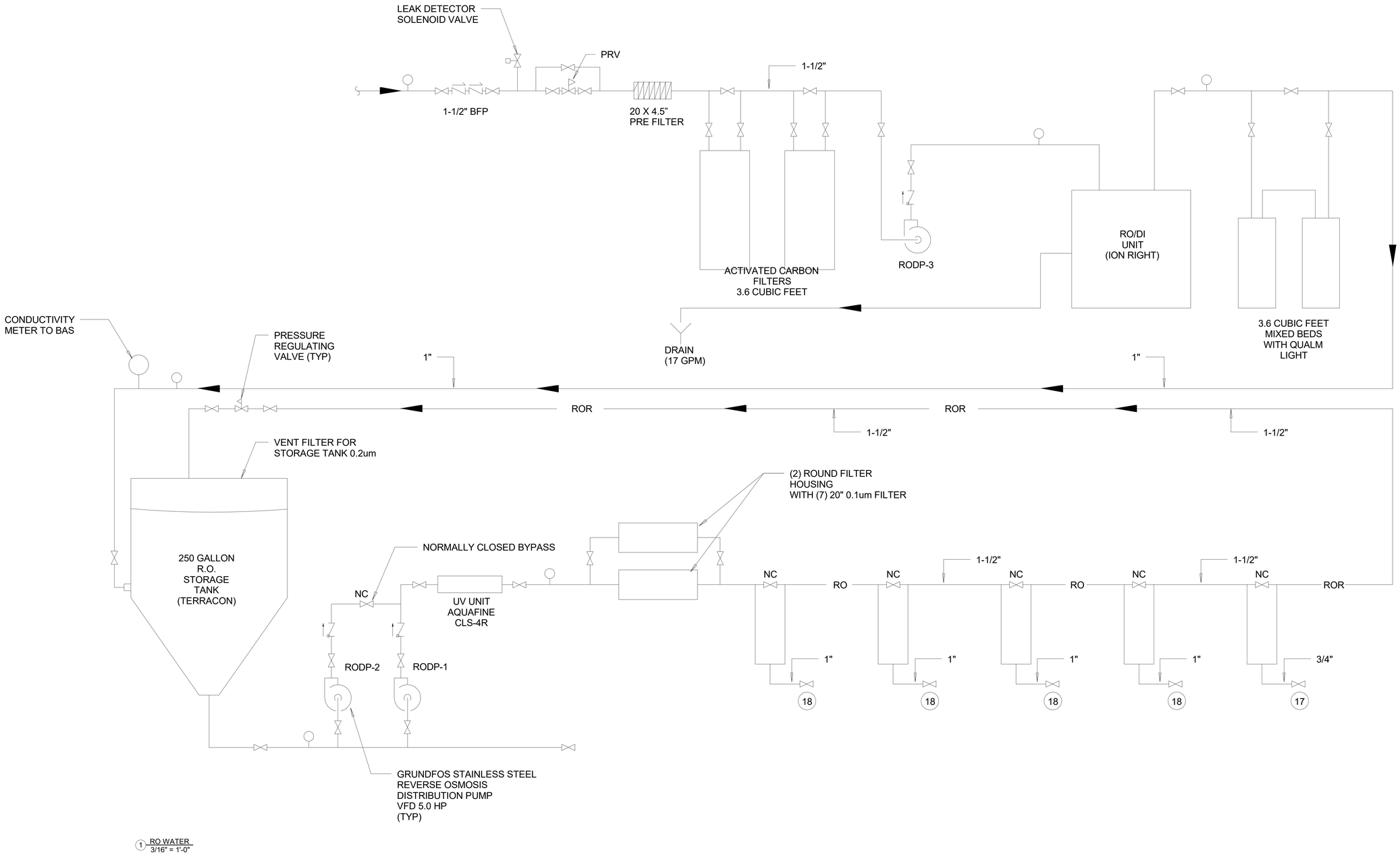
BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION

PLUMBING WASTE AND VENT RISER DIAGRAMS

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

P505



1 RO WATER
3/16" = 1'-0"

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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION

LABORATORY PURE WATER DIAGRAM

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

P506

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE TYPE	ADA	FIXTURE		FAUCET OR FLUSH VALVE			P-TRAP		DRAIN		SUPPLIES AND STOPS		SEAT		ROUGH-IN				CARRIER		MOUNTING	NOTE	TAG
			MANUFACTURER	MODEL	MANUFACTURER	MODEL	FLOWRATE	MANUFACTURER	MODEL	MANUFACTURER	MODEL	MANUFACTURER	MODEL	MANUFACTURER	MODEL	SAN [IN]	VENT [IN]	DCW [IN]	DHW [IN]	MANUFACTURER	MODEL			
EWC	ELECTRIC WATER COOLER - BILEVEL WITH BOTTLE FILLER	YES	ELKAY	LVRCGRNTLBWSK	--	--	1.1 GPM	2" PVC P-TRAP		--	--	MCGUIRE	HZ165CC	--	--	1 1/2	1	1/2	--	--	--	WALL	--	EWC
HB-1	HOSE BIBB	NO	WOODFORD	21	--	--	--	--	--	--	--	--	--	--	--	--	--	3/4	--	--	--	WALL - 36" AFF	5	HB-1
L-1	LAVATORY - 120" 4 STATION	YES	SLOAN	FD-84000	SLOAN	(4) ETF-420	0.5 GPM	MCGUIRE	PW212SWCPRO	MCGUIRE	--	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	--	--	WALL WITH SUPPORT BACKING	1	L-1
L-2	LAVATORY - 90" 3 STATION	YES	SLOAN	FD-84000	SLOAN	(3) ETF-420	1.5 GPM	MCGUIRE	PW212SWCPRO	MCGUIRE	--	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	ZURN	Z1231	WALL - RIM TO BE AT 34" AFF	3, 4, 6	L-2
L-3	LAVATORY - SINGLE STATION	YES	SLOAN	Q80R-81000 SS	SLOAN	(1) ETF-420	1.5 GPM	MCGUIRE	PW212SWCPRO	MCGUIRE	--	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	ZURN	Z1231	WALL - RIM TO BE AT 34" AFF	3, 4, 6	L-3
MB-1	MOP BASIN	NO	FIAT	TSB 500	CHICAGO FAUCETS	897-RCF	2.2 GPM							--	--	3	1 1/2	1/2	1/2	--	--	FAUCET CENTER LINE TO BE 42" AFF	2	MB-1
HS	HAND SINK	YES	SLOAN	EHS-1000	CHICAGO FAUCETS	50-317XKABCP	1.5 GPM	MCGUIRE	B8912	ELKAY	LK-18	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	--	--	DROP IN	6, 7	HS
LS-1	INTEGRAL BASIN LAB SINK	NO	INTEGRAL	BY OTHERS	CHICAGO FAUCETS	LWM1-A11-A	1.5 GPM	MCGUIRE	B8912	ELKAY	LK-18	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	--	--	DROP IN	6, 7	LS-1
LS-2	INTEGRAL BASIN LAB SINK-ADA	YES	ELKAY	DLR221910	CHICAGO FAUCETS	930-GN8EVBET-317XK	1.5 GPM	MCGUIRE	B8812	ELKAY	LK-18	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	--	--	DROP IN	--	LS-2
BR	SINGLE COMPARTMENT STAINLESS STEEL	NO	KOHLER	K-3894	CHICAGO FAUCETS	786-GN8AE36ABCP	1.5 GPM	MCGUIRE	B8812	ELKAY	LK-18	MCGUIRE	LFST10	--	--	1 1/2	1 1/2	1/2	1/2	--	--	DROP IN	--	BR
SH-1	SHOWER	YES	ACORN	SBS-36-3F	MOEN	T9342OBM2S	2.5 GPM	--	--	--	--	--	--	--	--	3	1 1/2	1/2	1/2	--	--	--	3	SH-1
UR-A	URINAL - ADA	YES	SLOAN	WEUS-7006.1402	SLOAN	8186-0.125	0.125 GPM	INTEGRAL TO UNIT	--	--	--	--	--	--	--	2	1 1/2	3/4	--	ZURN	Z1222	WALL - RIM TO BE AT 24" AFF	3	UR-A
UR-1	URINAL	NO	SLOAN	WEUS-7006.1402	SLOAN	8186-0.125	1.28 GPF	INTEGRAL TO UNIT	--	--	--	--	--	BEMIS	1955SSCT	3	1 1/2	1 1/2	--	ZURN	1203-H	WALL MOUNT	3	UR-1
WC-A	WATER CLOSET - ADA	YES	TOTO	CT728CUG	TOTO	TET6G832#CP	1.28 GPF	INTEGRAL TO UNIT	--	--	--	--	--	BEMIS	1955SSCT	3	1 1/2	1 1/2	--	ZURN	1203-H	WALL MOUNT	3	WC-A
WC-3	WATER CLOSET	NO	TOTO	CT728CUG	TOTO	TET6G832#CP	1.6 GPF	INTEGRAL TO UNIT	--	--	--	--	--	BIG JOHN	4W	3	1 1/2	1 1/2	--	ZURN	1203-H	WALL MOUNT	1, 3	WC-3
WH-1	WALL HYDRANT	NO	WOODFORD	68	--	--	--	--	--	--	--	--	--	--	--	--	--	3/4"	--	--	--	WALL - 24" AFF	--	WH-1

NOTE:
1 - SENSOR TYPE WITH HARDWIRED THERMOSTATIC MIXING VALVE & TRANSFORMER
2 - PROVIDE WITH HOSE BRACKET, MOP HANGER, ALUMINUM BUMPER GUARDS, AND STAINLESS STEEL WALL GUARDS.
3 - PROVIDE WHITE COLOR FIXTURE.
4 - OFFSET GRID DRAIN INCLUDED WITH MCGUIRE PW212SWCPRO.
5 - INCLUDE NIDEL BA THREADED ON VACUUM BREAKER.
6 - FURNISH AND INSTALL BRASSCRAFT S8-30A F FLEXIBLE STAINLESS STEEL BRAIDED SUPPLIES, 30" LENGTH. LOOSELY COIL AND TIE EXCESS LENGTH.
7 - DEPTH OF SINK 6".
8 - PROVIDE FOR STAND ALONE COFFEE MAKER, ICE MAKER, AND WATER DISPENSER.

GAS FIRED WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	INPUT [MBTU/HR]	EFFICIENCY	STORAGE CAPACITY [GAL]	RECOVERY RATE AT 100 F RISE [GPH]	WATER TEMPERATURE [F]	COMBUSTION AIR INTAKE		EXHAUST		DCW INLET [IN]	DHW OUTLET [IN]	GAS		ELECTRICAL			DETAIL	NOTE
								MATERIAL	SIZE	MATERIAL	SIZE			INLET [IN]	PRESSURE [IN-WC]	VOLTAGE	PHASE	AMPERAGE		
DWH-1	A.O.SMITH	BTH-251(A)	251000	97%	100	289	140	PVC	6	PVC	6	1 1/2	1 1/2	1 1/2	7 - 14	120	1	3		1, 2
NPWH-1	A.O.SMITH	BTH-251(A)	251000	97%	100	289	140	PVC	6	PVC	6	1 1/2	1 1/2	1 1/2	7 - 14	120	1	3		1, 2

NOTE:
1 - PROVIDE WITH PVI CONDENSATE NEUTRALIZATION KIT.
2 - PROVIDE ET-1 EXPANSION TANK ON INCOMING WATER LINE FOR EACH TANK.

DRAIN/CLEANOUT SCHEDULE

TAG	MANUFACTURER	MODEL	SERVICE	BODY MATERIAL	STRAINER/COVER		OPTIONS		DETAIL	NOTE
					SIZE [IN]	FINISH				
FCO	ZURN	Z81400	VARIES	CAST IRON	VARIES	BRONZE	NL	--	--	ROUND COVER
FD-4	ZURN	ZH415	SANITARY	CAST IRON	VARIES	NICKEL BRONZE	NL	--	--	ROUND STRAINER, PROVIDE "PRO SEAL" TRAP GUARD
FD-2	ZURN	ZH415	SANITARY	CAST IRON	VARIES	NICKEL BRONZE	NL	--	--	ROUND STRAINER, PROVIDE "PRO SEAL" TRAP GUARD
RD-4	ZURN	Z100	STORM	CAST IRON	4"	CAST IRON	IC	--	--	PROVIDE SS GRAVEL GUARD ON ROOF
RD-6	ZURN	Z100	STORM	CAST IRON	6"	CAST IRON	IC	--	--	PROVIDE SS GRAVEL GUARD ON ROOF
OD-4	ZURN	Z100	STORM	CAST IRON	4"	CAST IRON	IC	--	--	PROVIDE SS GRAVEL GUARD ON ROOF
OD-5	ZURN	Z100	STORM	CAST IRON	6"	CAST IRON	IC	--	--	PROVIDE SS GRAVEL GUARD ON ROOF
WCO	ZURN	Z1441	VARIES	CAST IRON	VARIES	STAINLESS STEEL	--	--	--	ROUND COVER

NOTE: 1. - XXX

AIR COMPRESSOR SCHEDULE

TAG	SERVICE	LOCATION	TYPE	SYSTEM DEMAND w/o SAFETY FACTOR		SYSTEM DEMAND w/ 25% SAFETY FACTOR and 10% PURGE		INSTALLED EQUIPMENT CAPACITY		INSTALLED EQUIPMENT CAPACITY (for each of three (3) modules)		REDUNDANCY		FIRM EQUIPMENT CAPACITY (two (2) modules operating)		MOTOR DATA											TANK CAPACITY	EQUIPMENT DIMENSIONS			HOUSEKEEPING PAD DIMENSIONS			WEIGHT		VIBRATION ISOLATION		BASIS OF DESIGN		KEYED REMARKS
				FLOW (scfm)	PRESSURE (psig)	FLOW (scfm)	PRESSURE (psig)	FLOW (scfm)	PRESSURE (psig)	FLOW (scfm)	PRESSURE (psig)	DUTY	STANDBY	FLOW (scfm)	PRESSURE (psig)	NUMBER of MOTORS (per whole system)	ABSORBED POWER (per each compressor)	RATED POWER (per each motor)	ROTATIONAL SPEED	VOLTAGE	PHASE	FREQ	CURRENT DRAW (per each motor)	CURRENT DRAW (per whole system)	ALTERNATE POWER SYSTEM		VARIABLE SPEED DRIVE (VSD) (per whole system)		SYSTEM OPERATION										
																(#)	(bhp)	(mhp)	(rpm)	(volts)	(#)	(Hz)	(amps)	(amps)	(yes or no)	(branch)	(yes or no)	(#)	(continuous or intermittent)	(gal)	LENGTH (inches)	WIDTH (inches)	HEIGHT (inches)	LENGTH (inches)	WIDTH (inches)	HEIGHT (inches)	SHIPPING (lbs)	OPERATING (lbs)	TYPE (#)	MIN. STATIC DEFLECTION (inches)	MANUFACTURER	MODEL NUMBER	
AC-1	LAB COMPRESSED AIR (LAB-AIR)	1st Floor Equipment Room # 143	TRIPLEX Oil-Less (no oil anywhere) Scroll Compressor (w/o VSD)		110	65	110	102	110	34	110	2	1	68	110	3	n/a	15	3600	460	3	60	n/a	53.7	yes	n/a	no	0	intermittent	240	100	72	97	112	84	4	3648	3648	Integral	Integral	BEACON MEDAES	LAS-15-T-240-V-Txx-40	1-4

GENERAL REMARKS:

KEYED REMARKS:

1. The package can accommodate a single point of connection for power including the capacity to provide 120 volts to the control panel.
2. The package produces a sound pressure level (SPL) of 79 dBA with all three (3) modules operating simultaneously.
3. The package generates 103,073 btu/hr of sensible heat with five (5) modules operating simultaneously (maximum ambient dry bulb temperature is 105 F; design conditions are 75 F dry bulb).
4. A clearance of at least three (3) feet is required around all four (4) sides of this compressor package; however, a five (5) foot clearance is recommended in front o

LABORATORY PURE WATER SYSTEM
DISTRIBUTION OF ASTM TYPE 2 / TYPE II TO EACH LAB SINK

- **DESIGN PEAK DELIVERY (LOOP/PUMPS): 8 GPM**
- **RO PERMEATE PRODUCTION: ~3–4 GPM** (≈4,300–5,800 GPD)
- **STORAGE TANK: ~500 GALLONS NOMINAL** (TARGET ~400 GAL USABLE)
- **PUMPS:** DUPLEX RECIRC PUMPS, EACH CAPABLE OF **8 GPM** AT DESIGN HEAD
- **CONTROLS:** RO MAKE-UP MAINTAINS TANK LEVEL; LOOP RUNS CONTINUOUS; CONDUCTIVITY-RESISTIVITY MONITORING, ALARMS, DIVERT-TO-DRAIN ON OFF-SPEC
- DUPLEX CARBON FILTERS, UV STERILIZER, MIXED BED WORKER & POLISHER DI TANKS

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING SCHEDULES

DATE
BSA PROJECT NO. 00360481

REF: SHEET INDEX

P601

BACKFLOW PREVENTER SCHEDULE

TAG	LOCATION	BASIS OF DESIGN		SIZE (IN)	SYSTEM	PRESSURE DROP	STRAINER	WATER TEMPERATURE (°F)	DETAIL	REMARKS
		MANUFACTURER	MODEL							

GAS HOT WATER HEATER SCHEDULE

TAG	BASIS OF DESIGN		INPUT (MBTU/HR)	EFFICIENCY	STORAGE CAPACITY (GAL)	RECOVERY RATE AT 100 °F RISE (GPH)	WATER TEMP (°F)	COMBUSTION AIR INTAKE		EXHAUST		DCW INLET	DWH OUTLET	GAS		ELECTRICAL			DETAILS	REMARKS
	MANUFACTURER	MODEL						MATERIAL	SIZE	MATERIAL	SIZE			INLET	PRESSURE (IN-WC)	V	PH	A		

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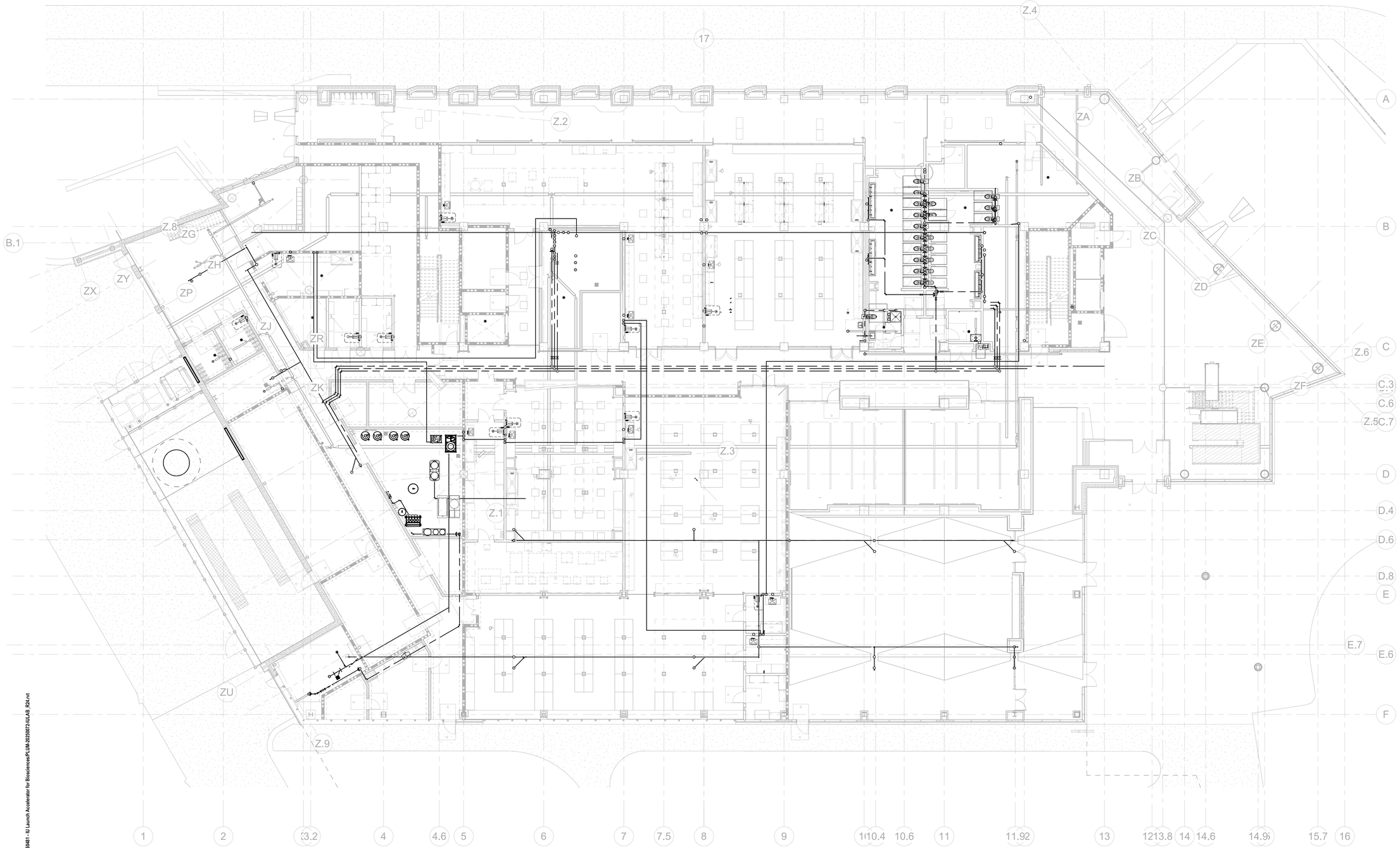
PLUMBING SCHEDULES

DATE — REF: SHEET INDEX

BSA PROJECT NO. — 00360481

P602

PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER



1 GAS PIPING PLAN - LEVEL 1
3/32" = 1'-0"

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MARK	DATE	DESCRIPTION
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1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

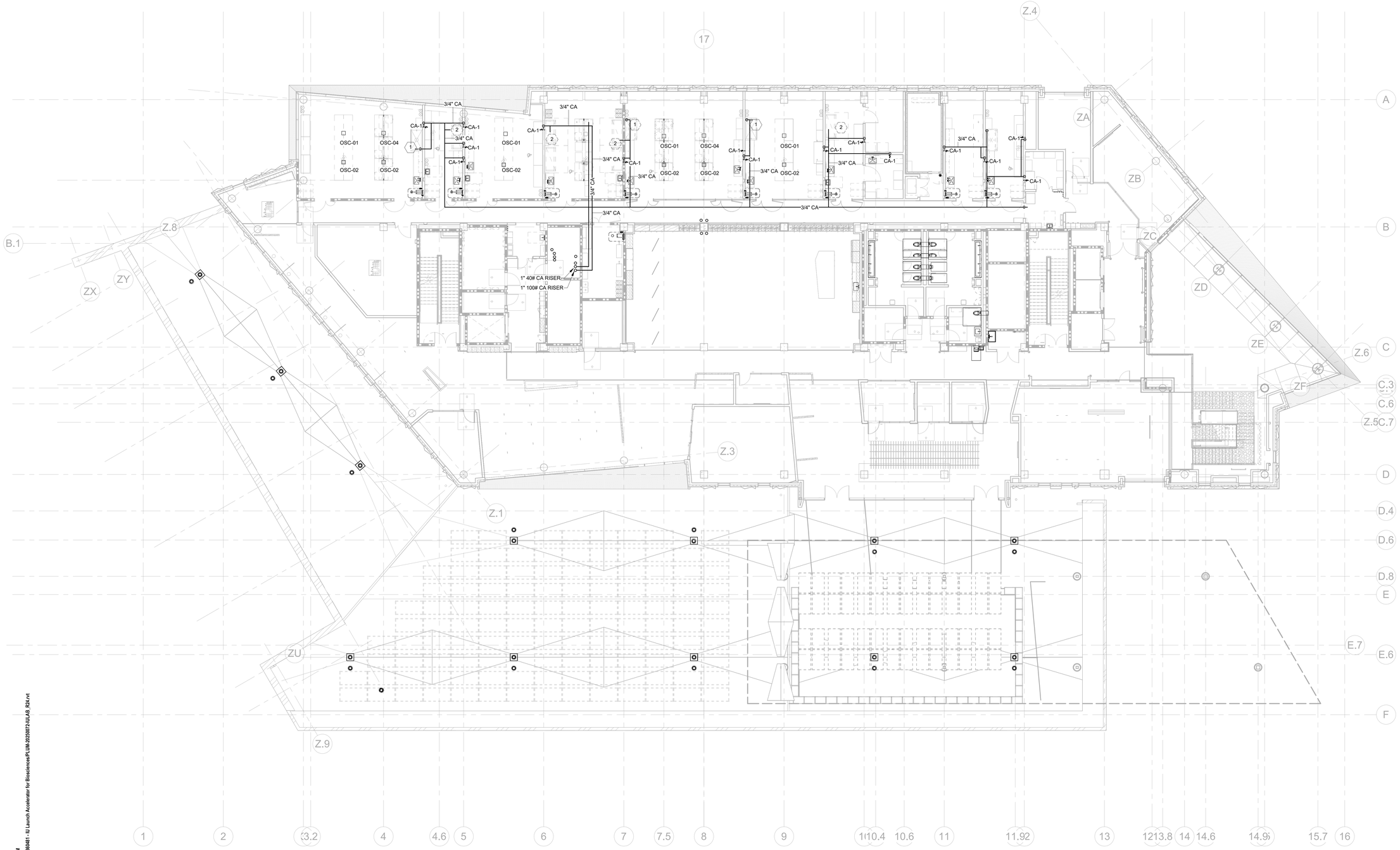
GAS PIPING PLAN - LEVEL 1

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PG101

10/2/2024 4:26:16 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-IULAB_R24.rvt

LAB GAS KEYNOTES	
NUMBER	KEYNOTE
1	1/2" CA TO FUME HOOD PIPING.
2	1/2" CA STUB WITH VALVE AND CAP FOR FUTURE.



1 GAS PIPING PLAN - LEVEL 2
3/32" = 1'-0"

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1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

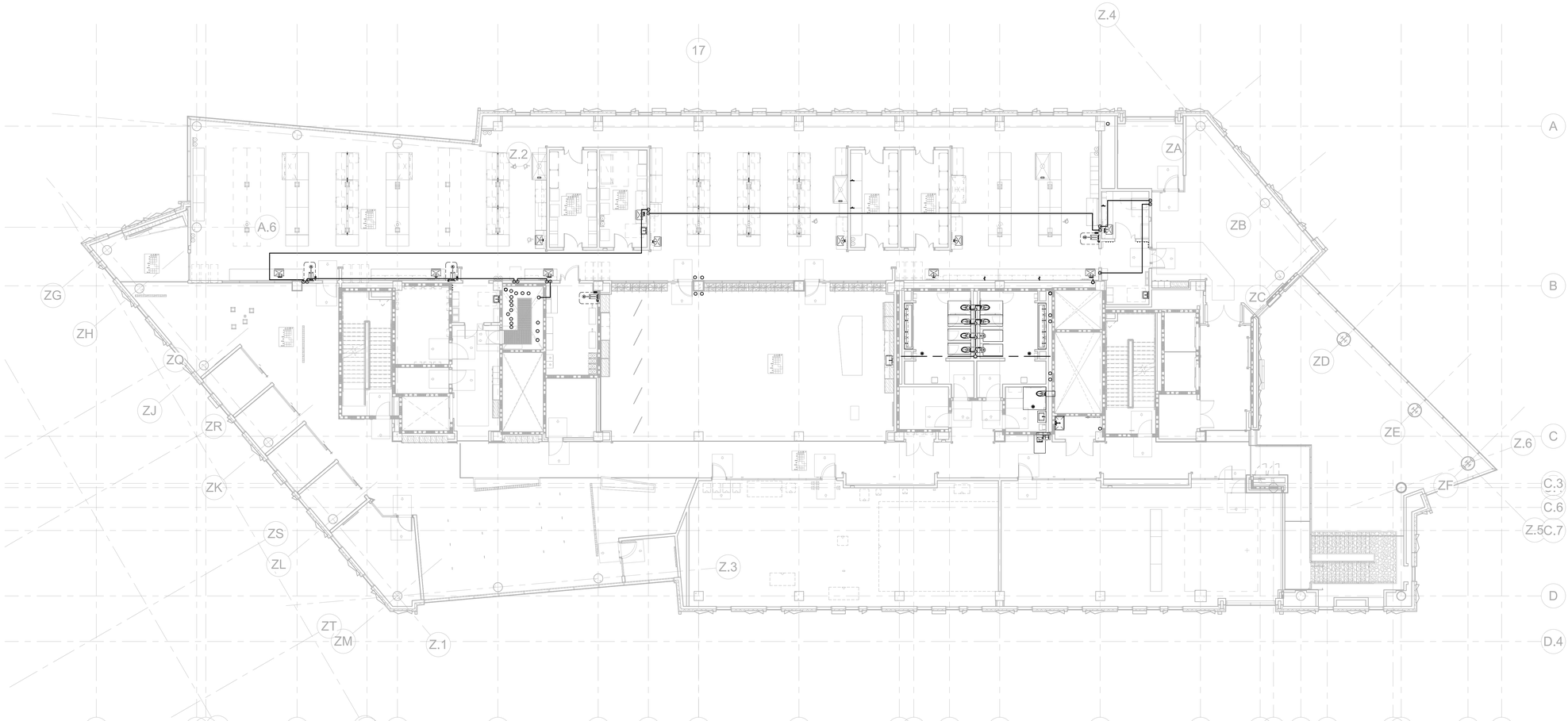
GAS PIPING PLAN - LEVEL 2

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PG102

11/7/2025 8:24:43 AM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-IULAB_R24.rvt

PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER



1 GAS PIPING PLAN - LEVEL 3
3/32" = 1'-0"

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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

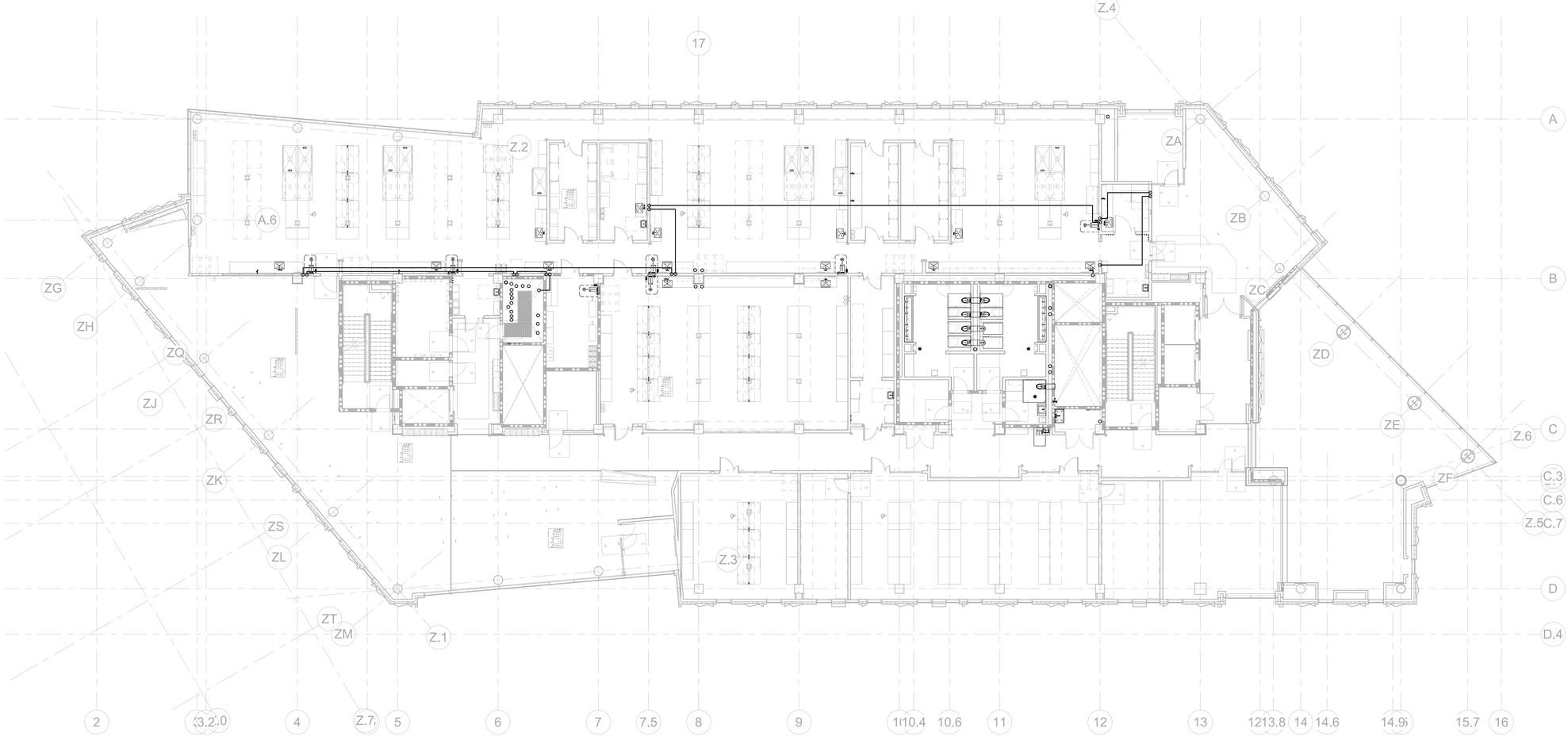
GAS PIPING PLAN - LEVEL 3

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PG103

19/2026 4:21:08 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PKUM-20250072-ALAB_R24.rvt

PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER



1 GAS PIPING PLAN - LEVEL 4
3/32" = 1'-0"

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BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
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1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

GAS PIPING PLAN - LEVEL 4

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PG104

19/2026 4:21:13 PM
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PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
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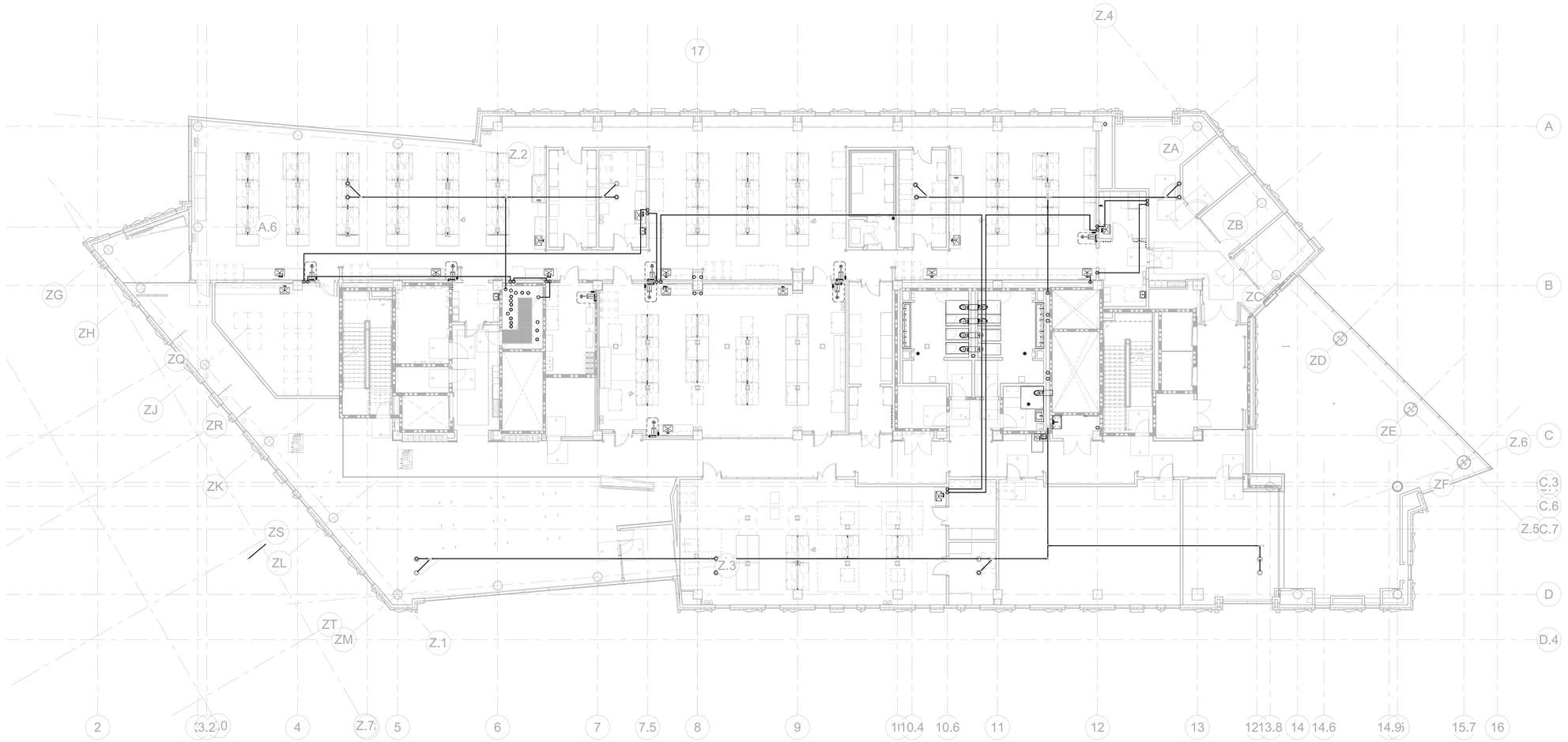

1 GAS PIPING PLAN - LEVEL 5
3/32" = 1'-0"

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MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

GAS PIPING PLAN - LEVEL 5

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PG105

19/2026 4:21:20 PM
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PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

1 PLUMBING PIPING PLAN - LEVEL 1
3/32" = 1'-0"

PLUMBING PIPING PLAN - LEVEL 1

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP101

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PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER

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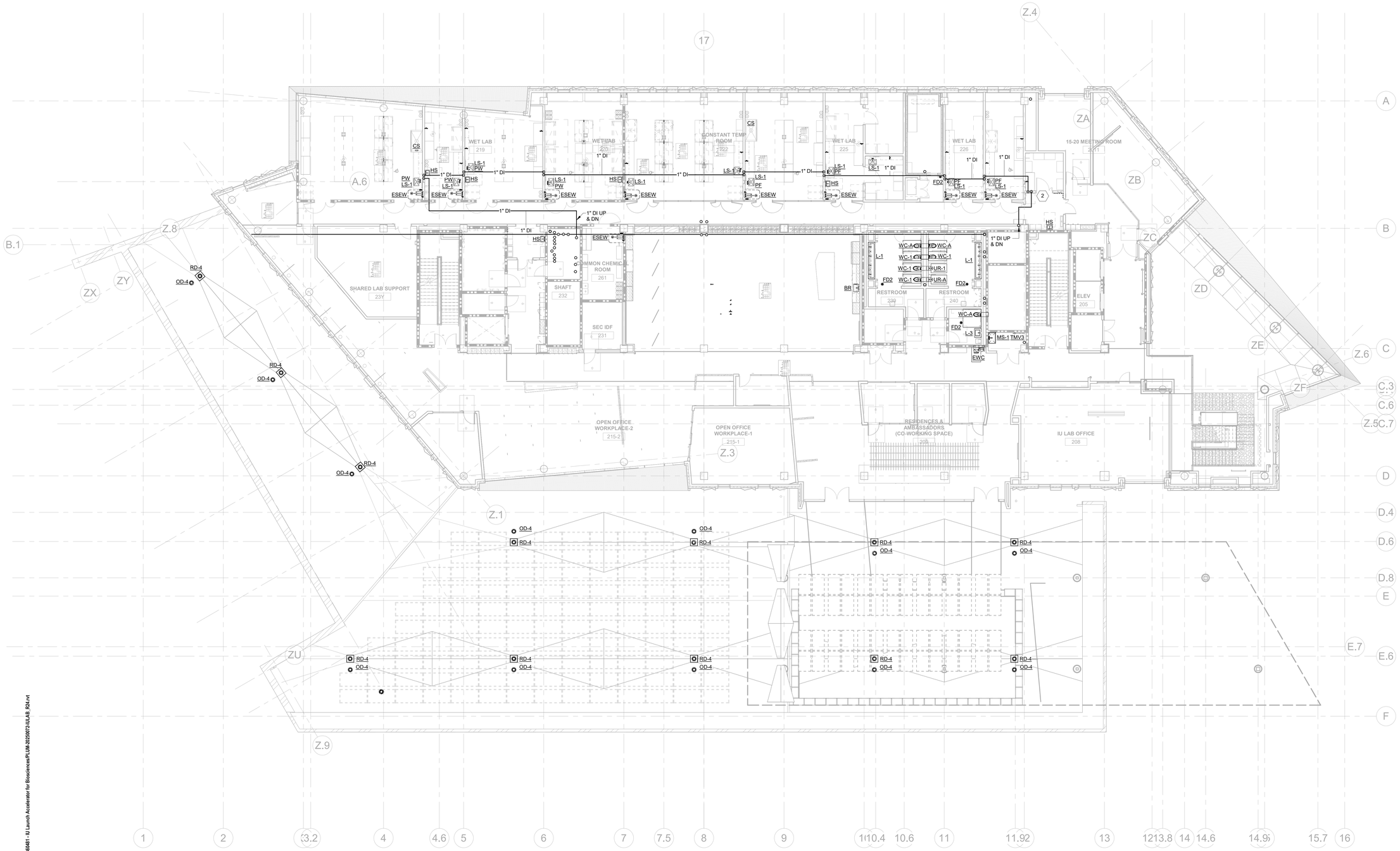
CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE



1 PLUMBING PIPING PLAN - LEVEL 2
3/32" = 1'-0"

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING PIPING PLAN - LEVEL 2

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP102

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Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-IULAB_R24.rvt

PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
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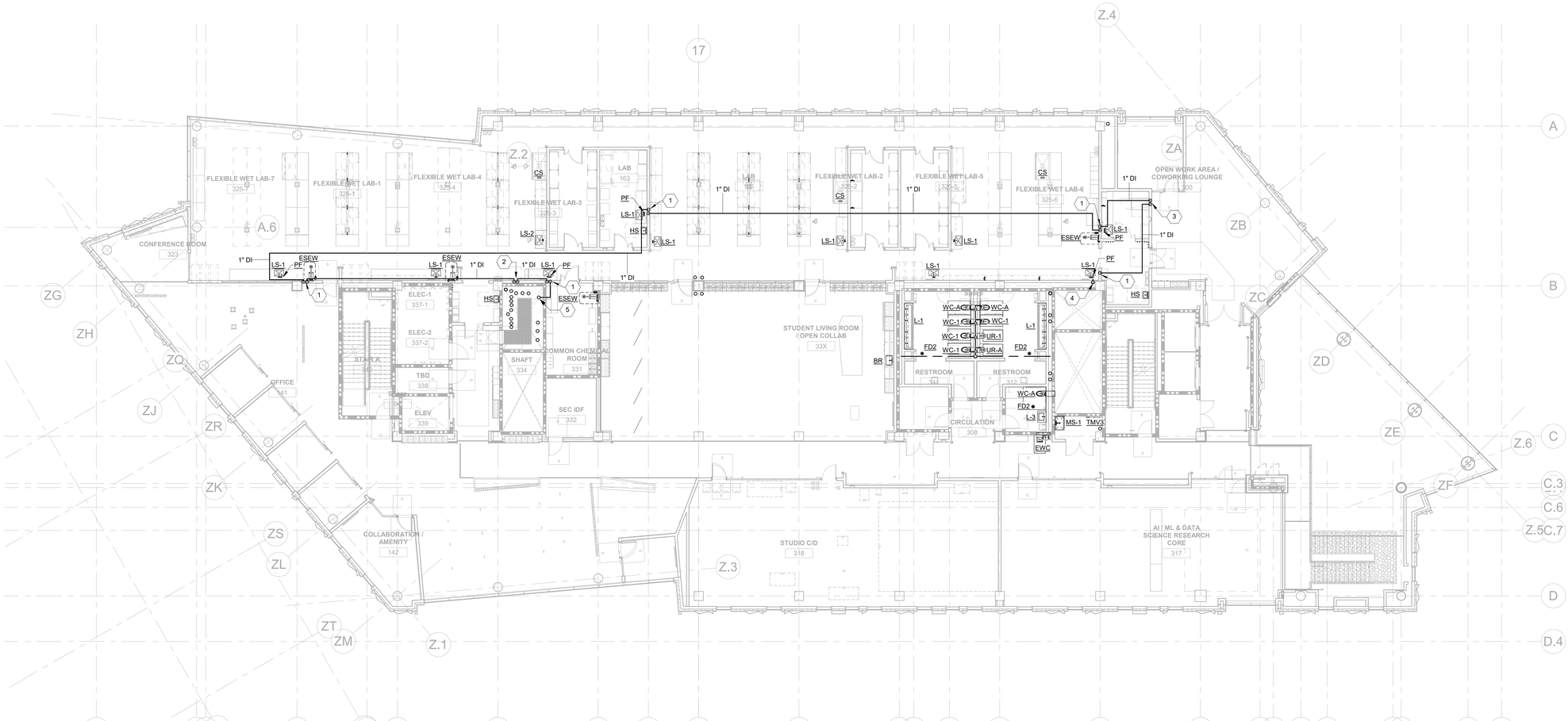
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER



1 PLUMBING PIPING PLAN - LEVEL 3
3/32" = 1'-0"

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PLUMBING PIPING PLAN - LEVEL 3

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP103

19/2026 4:21:46 PM
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PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
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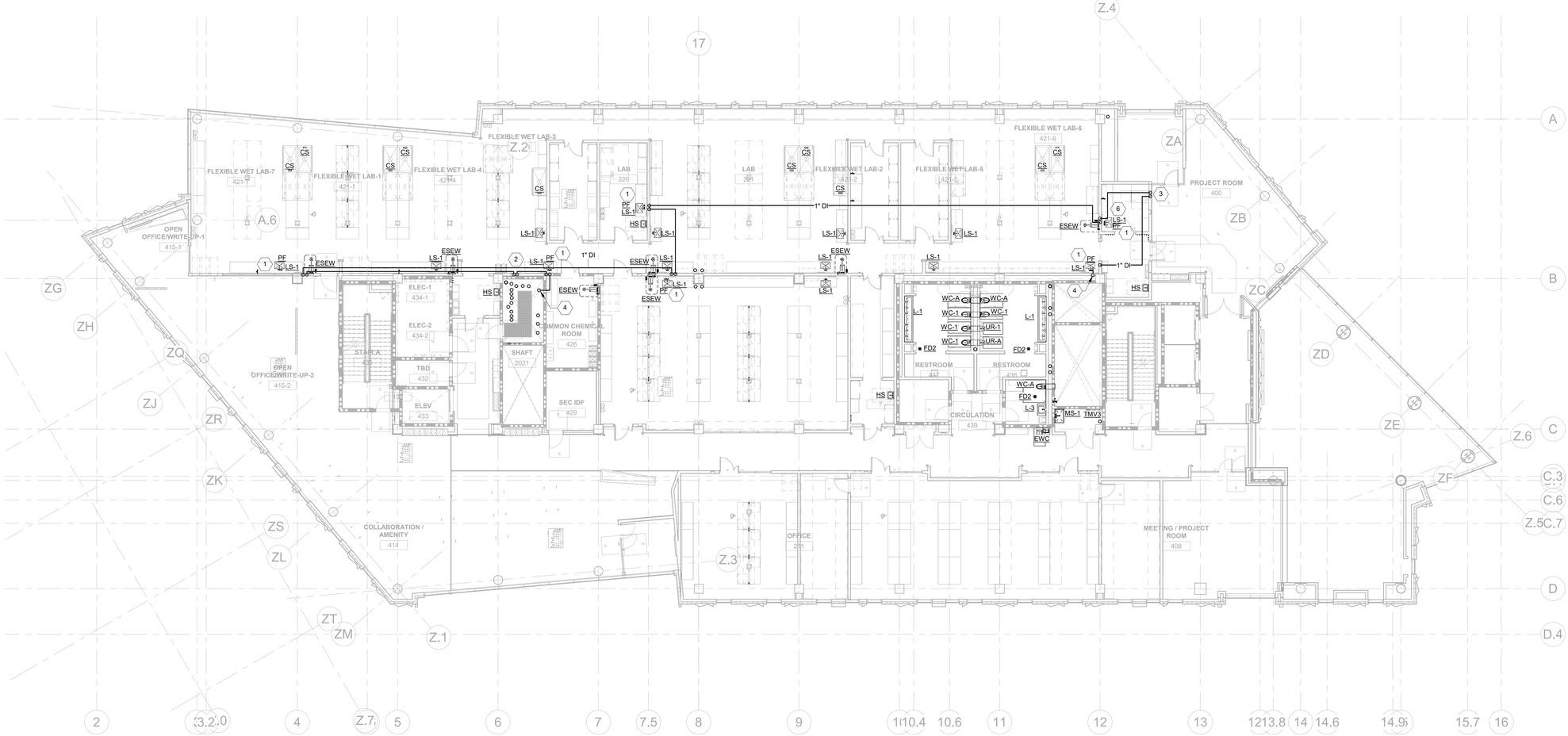

1 PLUMBING PIPING PLAN - LEVEL 4
3/32" = 1'-0"

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PLUMBING PIPING PLAN - LEVEL 4

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP104

19/2026 4:21:51 PM
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PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
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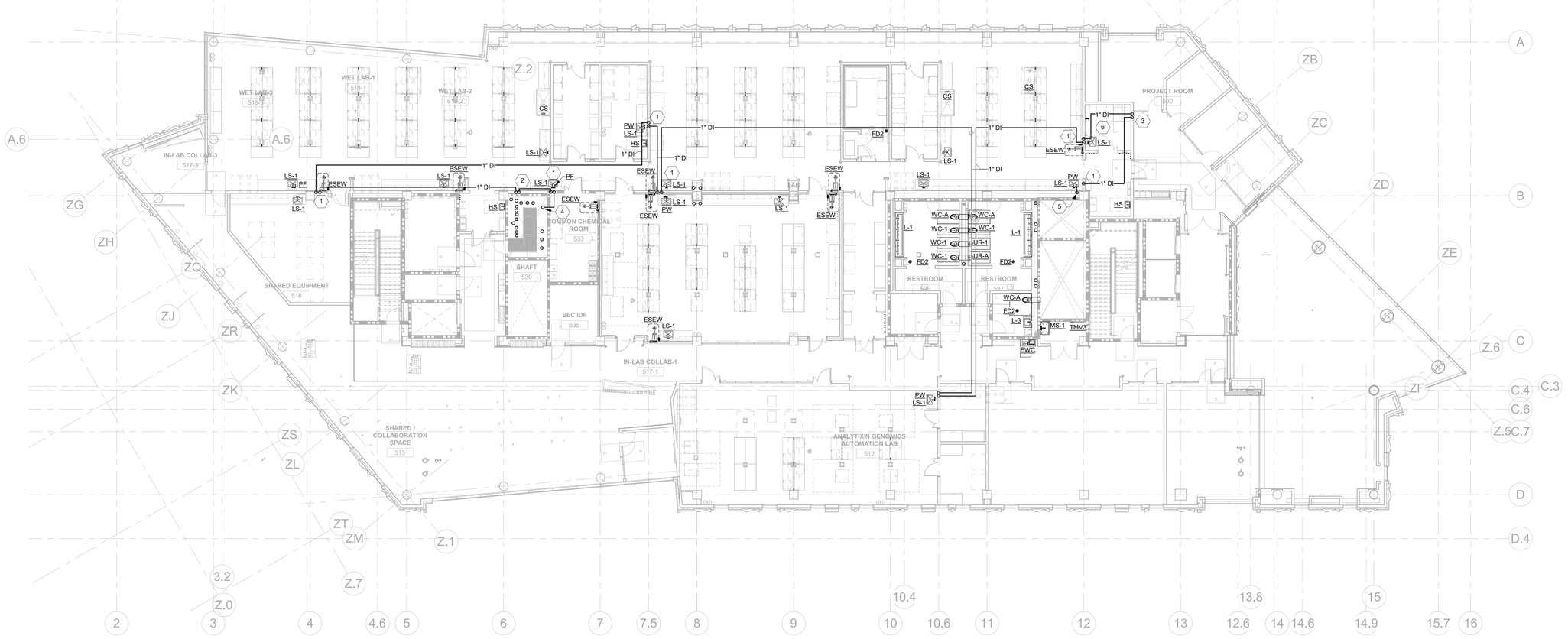

1 PLUMBING PIPING PLAN - LEVEL 5
3/32" = 1'-0"

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BP4-100% DD: BUILD-OUT PACKAGE

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PLUMBING PIPING PLAN - LEVEL 5

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP105

10/2/2026 4:21:38 PM
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PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
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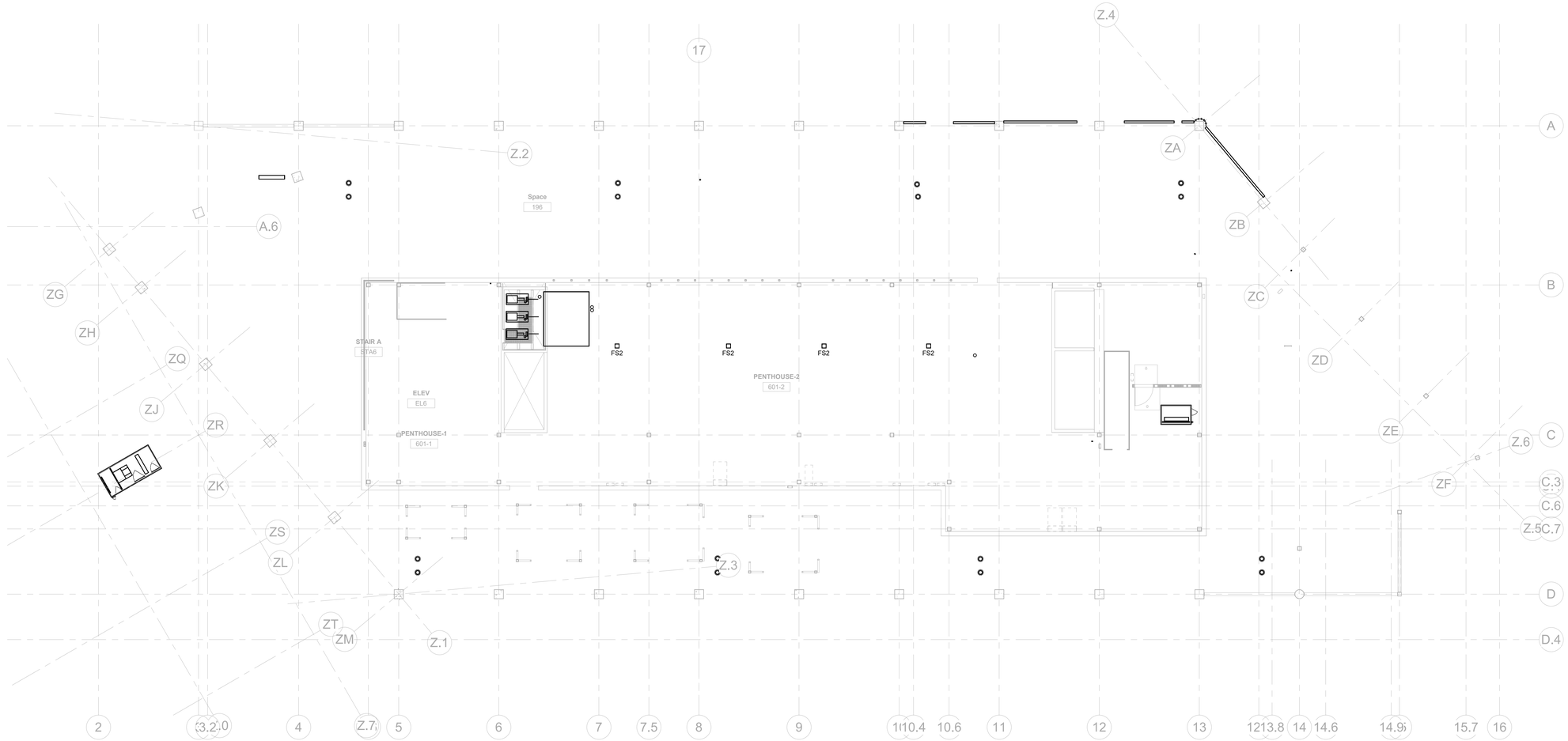

1 PLUMBING PIPING PLAN - PENTHOUSE
3/32" = 1'-0"

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

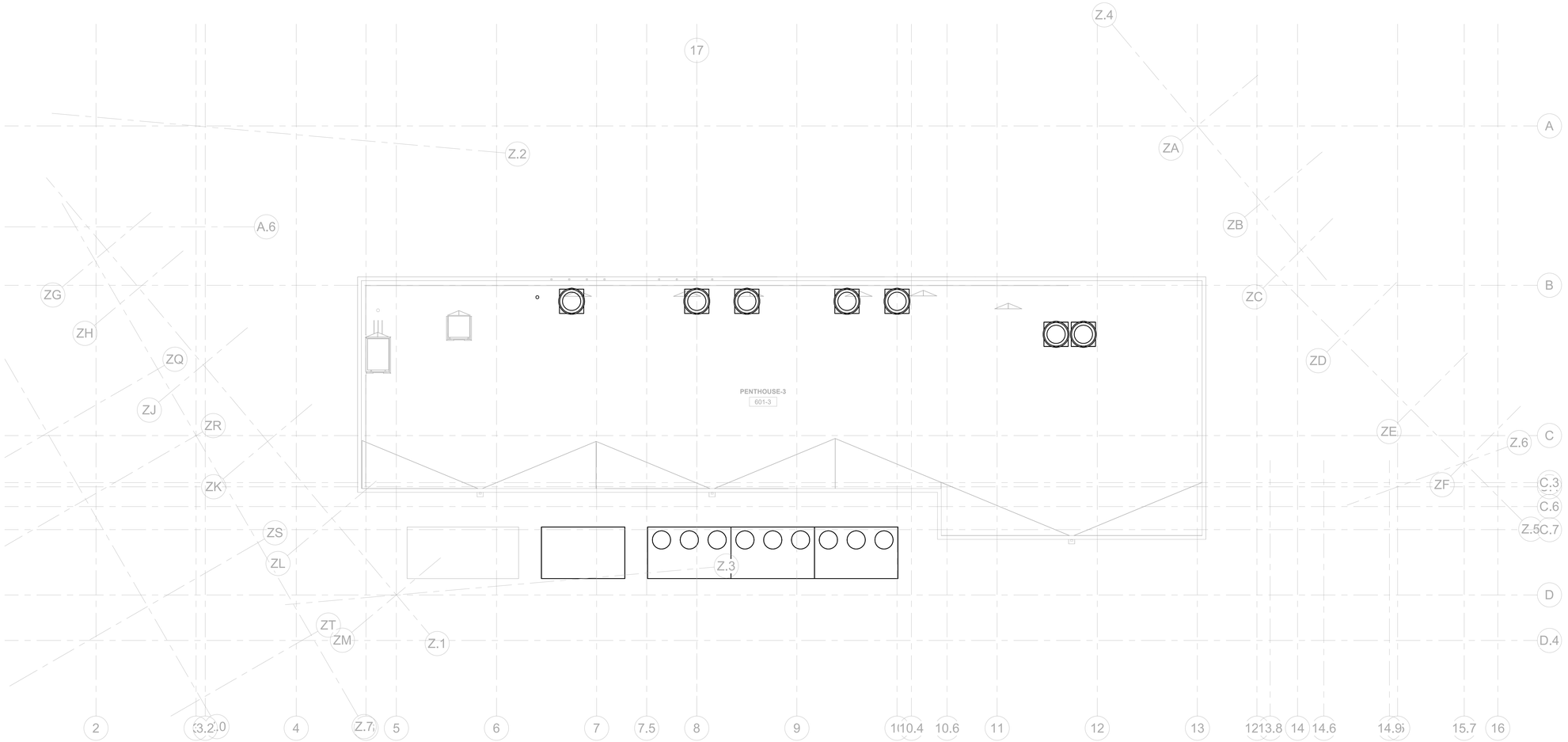
PLUMBING PIPING PLAN - PENTHOUSE

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP106

19/2026 4:21:19 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt

PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER



1 PLUMBING PIPING PLAN - ROOF
3/32" = 1'-0"

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

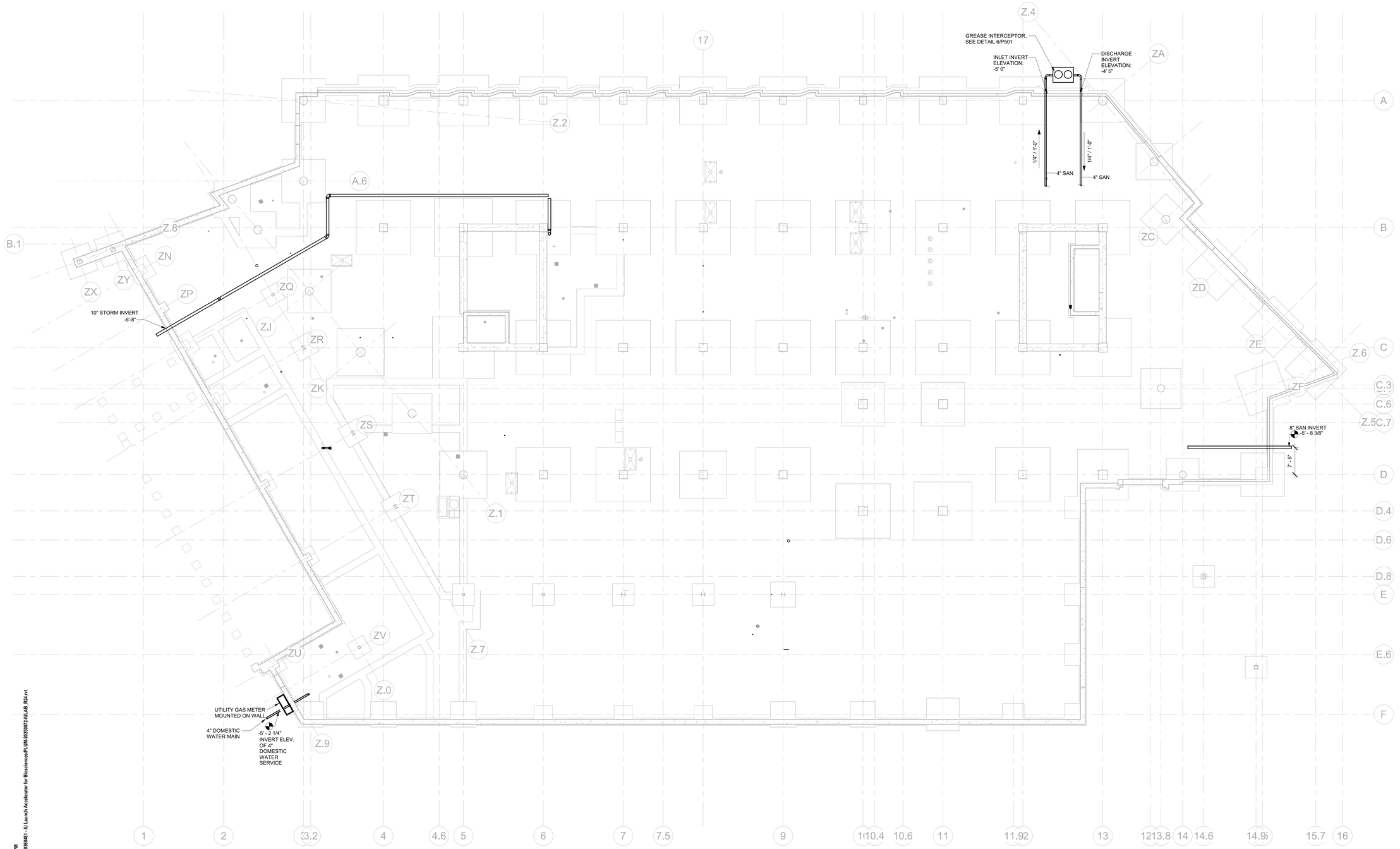
ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING PIPING PLAN - ROOF

DATE REF: SHEET INDEX
BSA PROJECT NO. 00360481

PP107

10/2/2025 4:22:11 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt



1 PLUMBING VENT AND WASTE - UNDERGROUND
3/32" = 1'-0"

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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
4	01/12/2026	BP3-CD: ADDENDUM 02
3	12/15/2025	BP1-CD; ASI #4
2	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE
1	09/29/2025	BP1- CD: SITE AND FOUNDATION PACKAGE

PLUMBING WASTE & VENT PLAN - UNDERGROUND

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW100

1/12/2026 3:15:55 PM
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PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

1 PLUMBING VENT AND WASTE PLAN - LEVEL 1
3/32" = 1'-0"

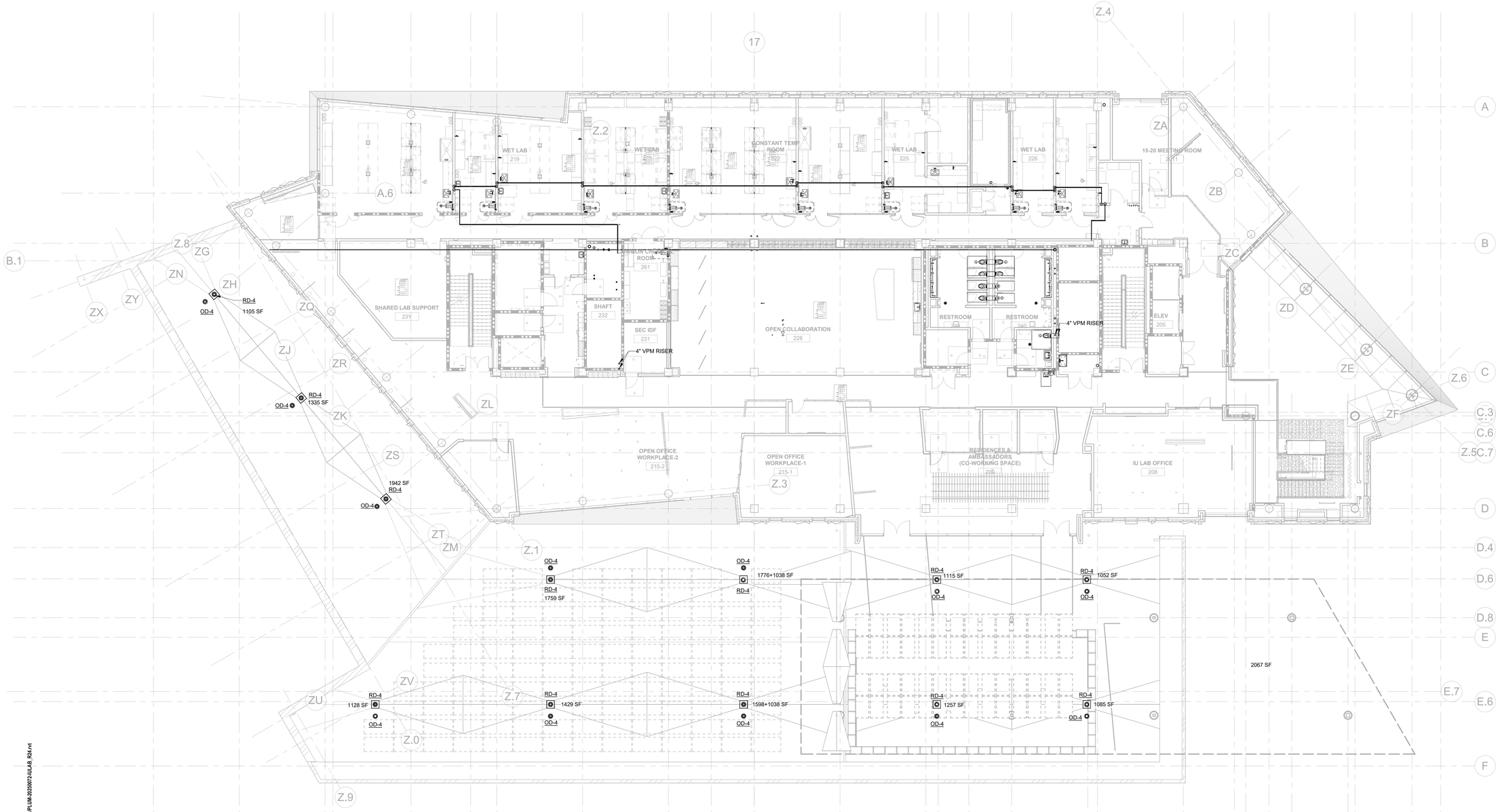
PLUMBING WASTE & VENT PLAN - LEVEL 1

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW101

1/9/2026 4:22:19 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt

PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.



1 PLUMBING VENT AND WASTE PLAN - LEVEL 2
3/32" = 1'-0"

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

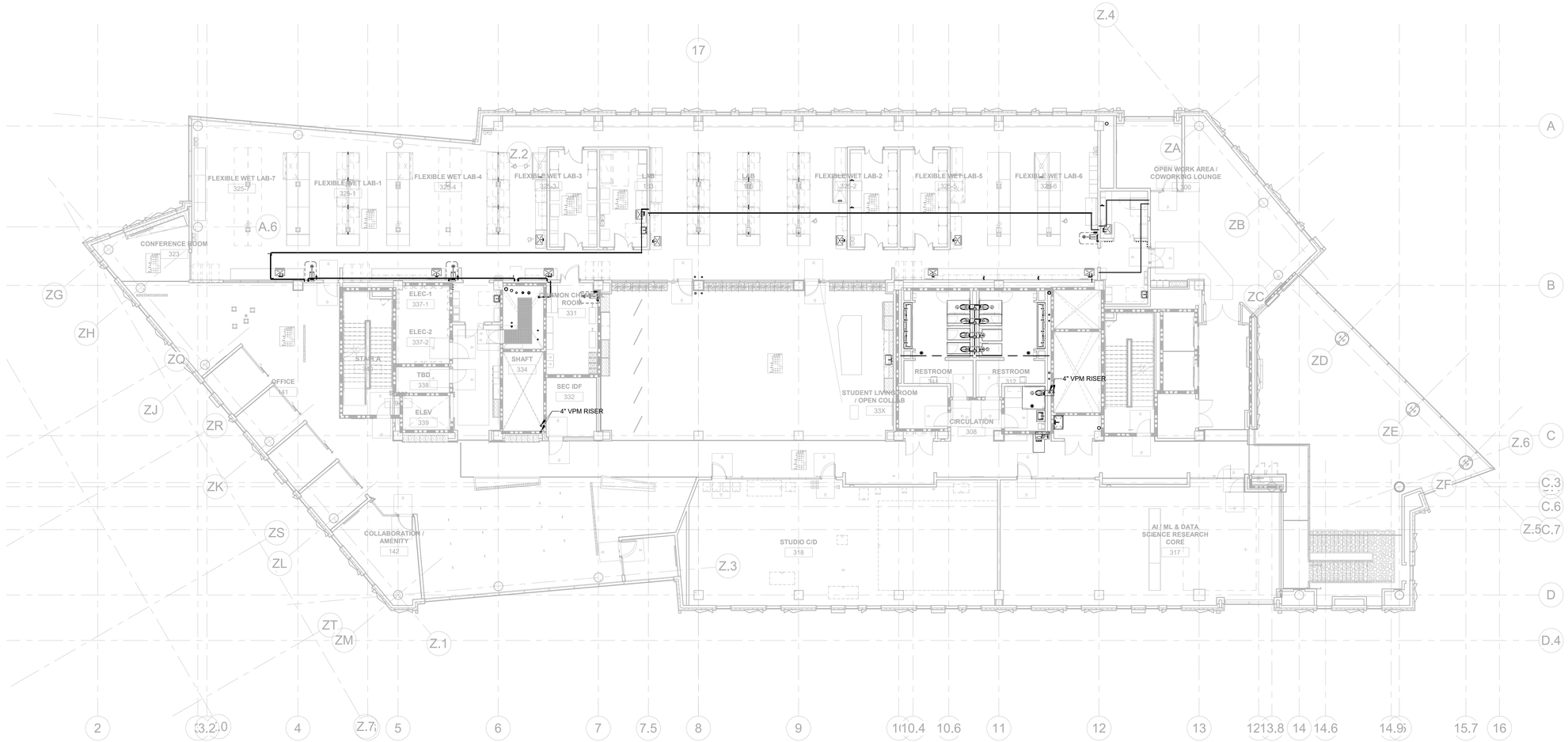
PLUMBING WASTE & VENT PLAN - LEVEL 2

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW102

1/9/2026 4:22:27 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-IULAB_R24.rvt

PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.



1 PLUMBING VENT AND WASTE PLAN - LEVEL 3
3/32" = 1'-0"

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

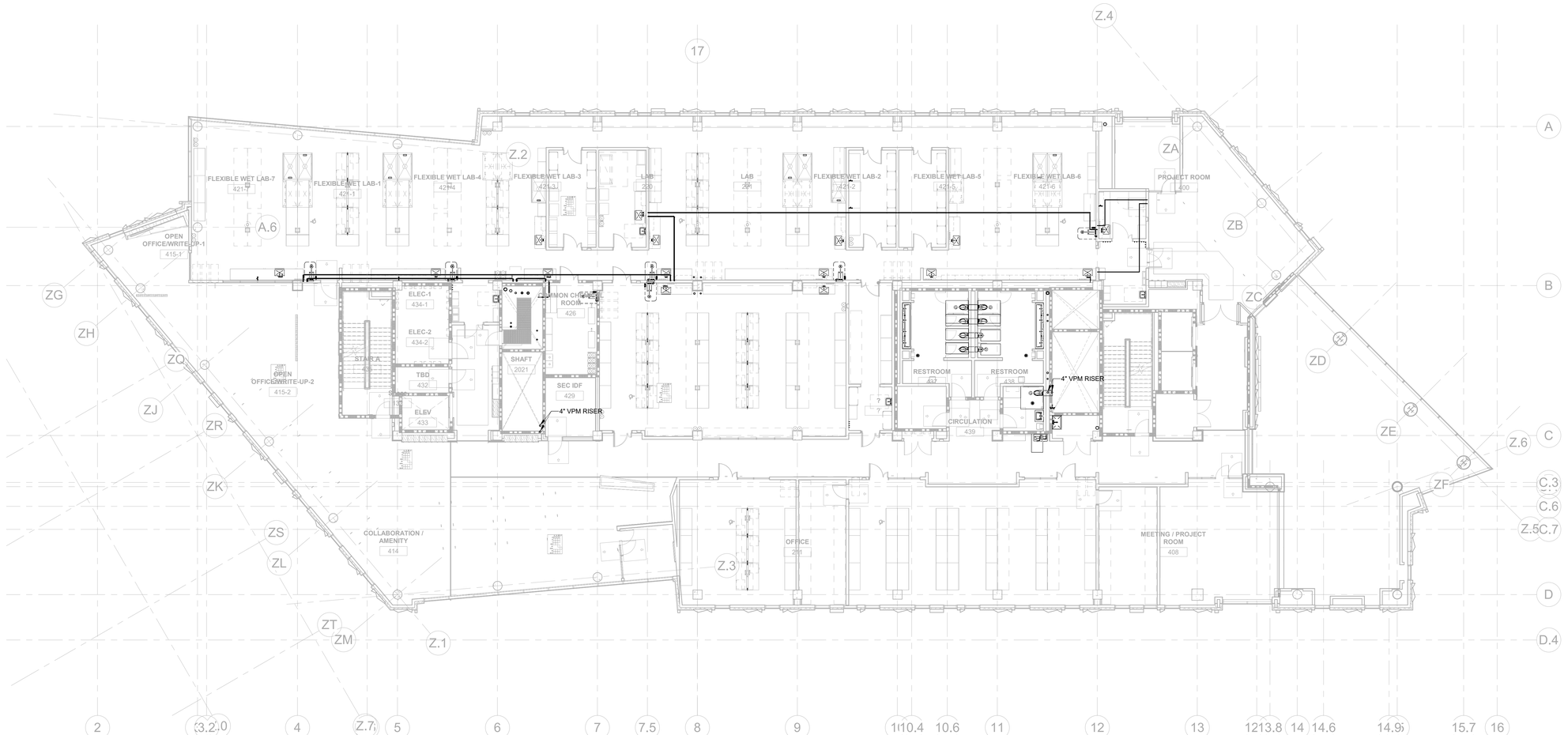
PLUMBING WASTE & VENT PLAN - LEVEL 3

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW103

19/2026 4:22:13 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt

PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.



1 PLUMBING VENT AND WASTE PLAN - LEVEL 4
3/32" = 1'-0"

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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

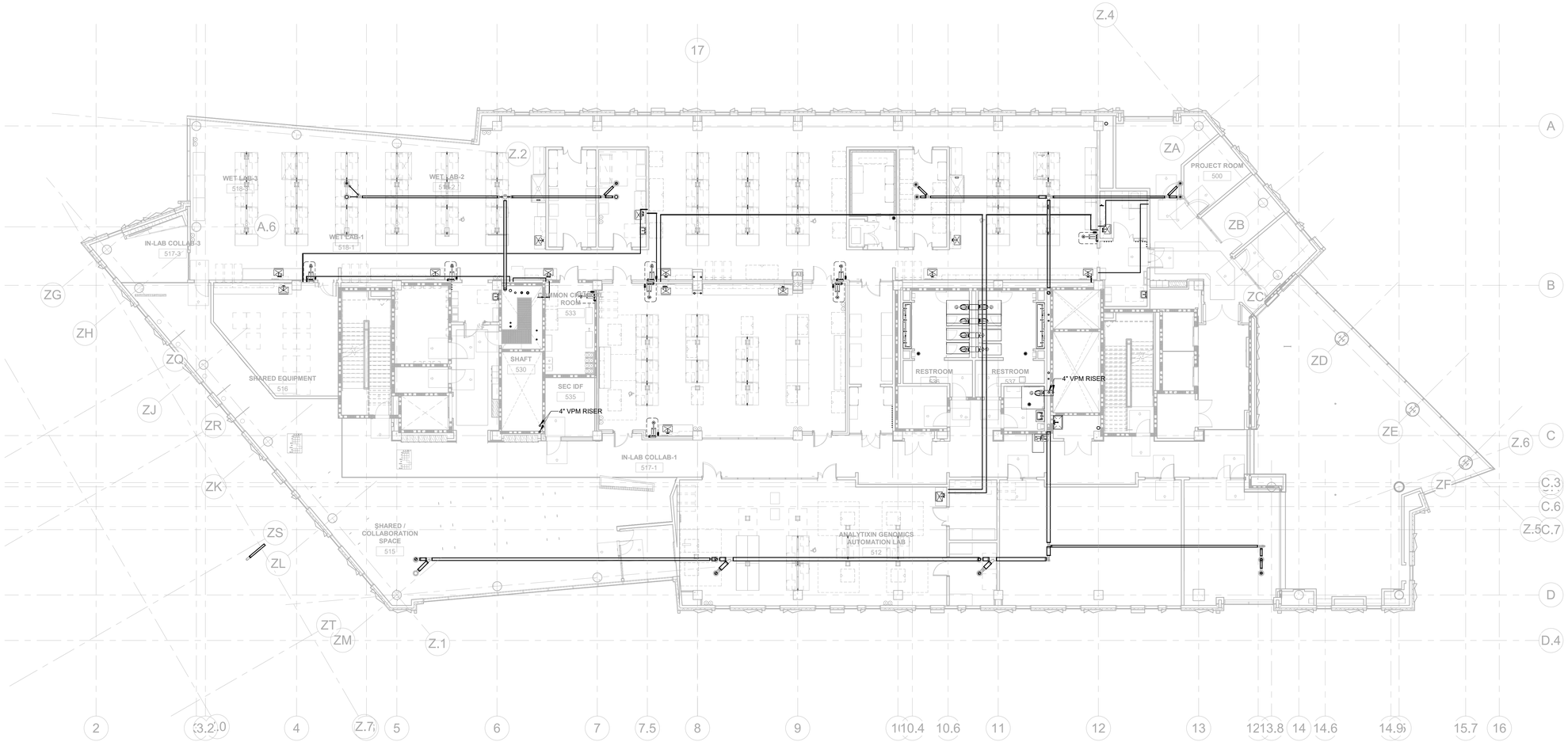
PLUMBING WASTE & VENT PLAN - LEVEL 4

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW104

10/2/2026 4:23:38 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt

PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.



1 PLUMBING VENT AND WASTE PLAN - LEVEL 5
3/32" = 1'-0"

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

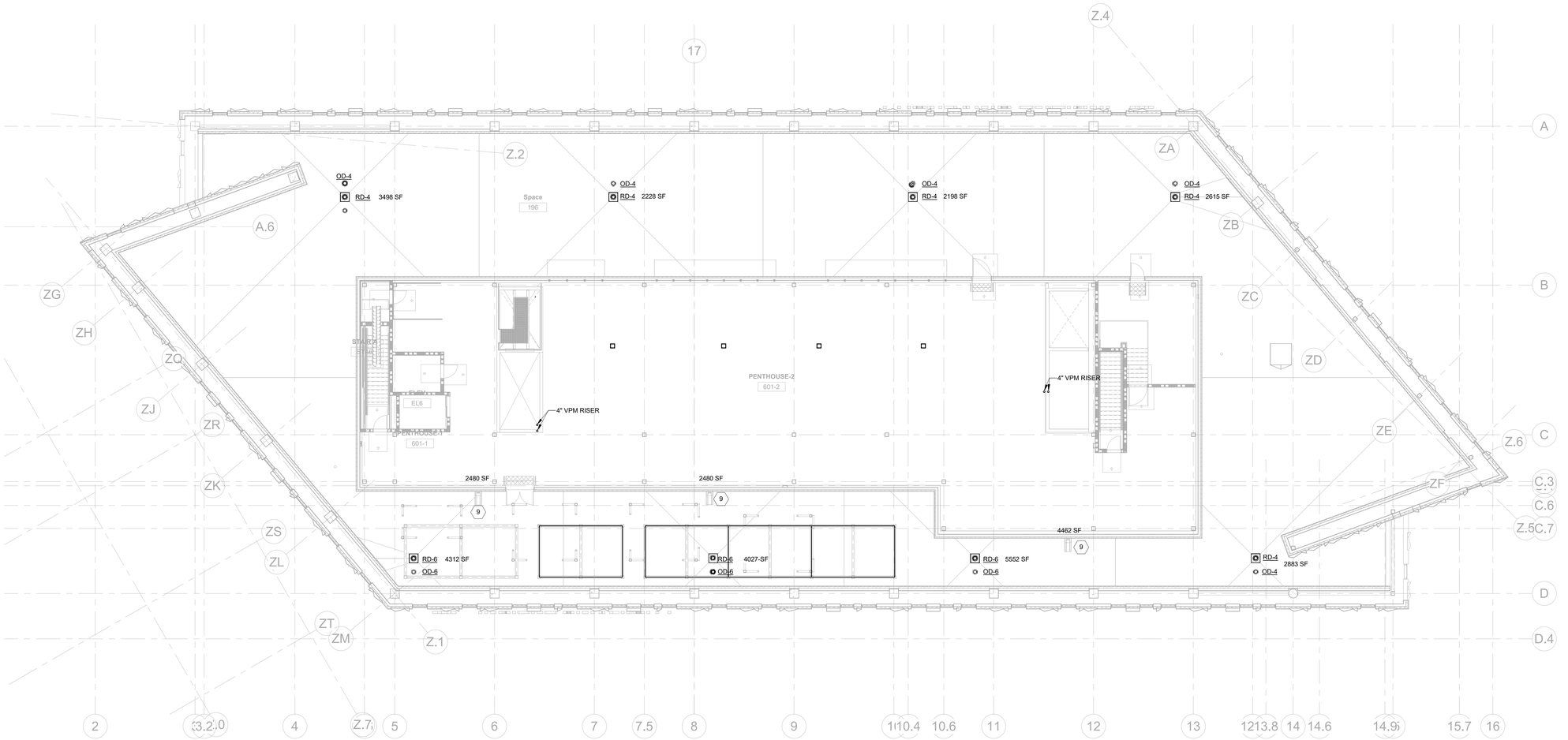
PLUMBING WASTE & VENT PLAN - LEVEL 5

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW105

19/2026 4:22:45 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ULAB_R24.rvt

PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.



1 PLUMBING VENT AND WASTE PLAN - PENTHOUSE
3/32" = 1'-0"

BSA

SWITCH PLACEHOLDER FAMILY
TYPE FOR CORRECT BSA OFFICE

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-100% CORE AND SHELL PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

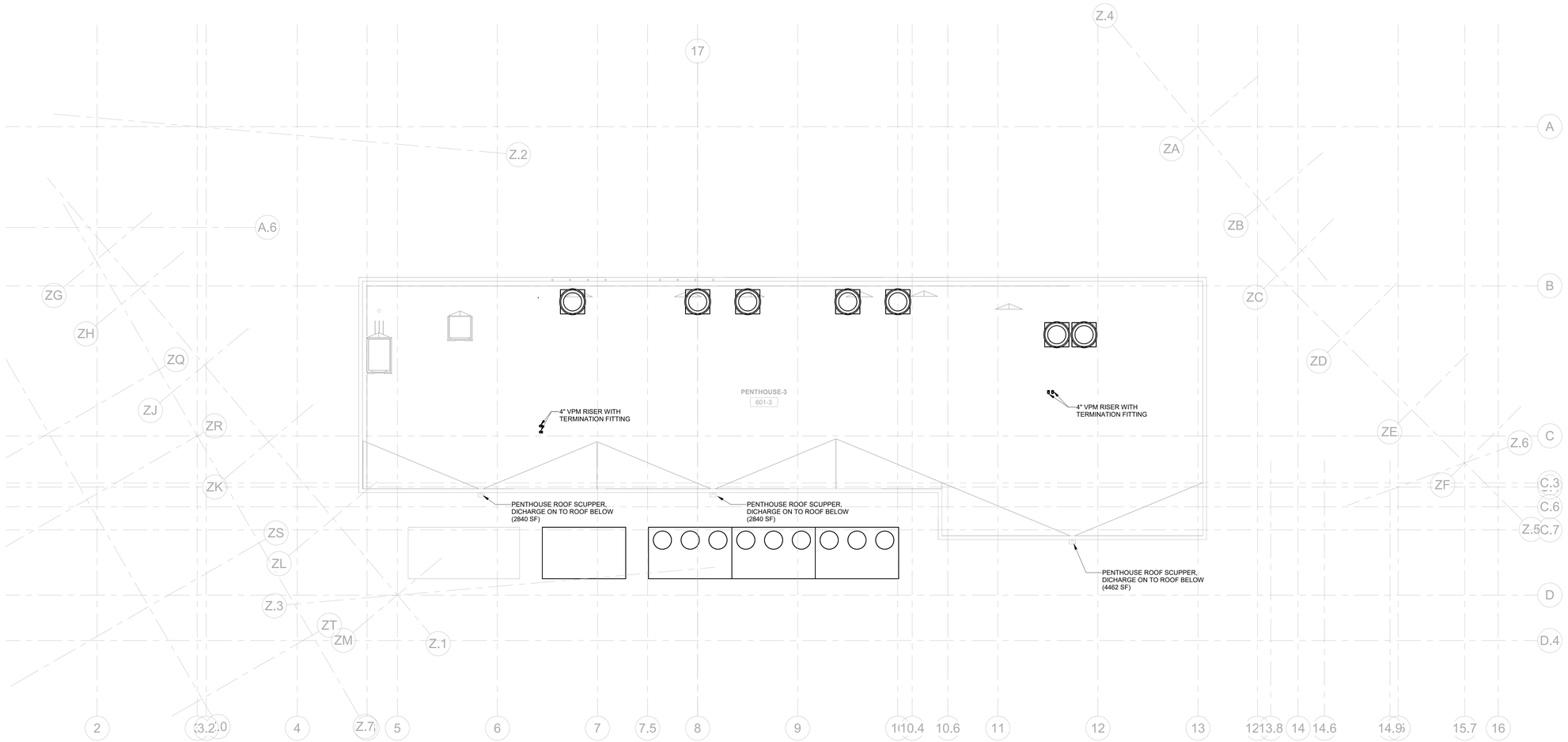
PLUMBING WASTE & VENT PLAN - PENTHOUSE

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW106

11/6/2026 4:22:41 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALL45_R24.rvt

PLUMBING WASTE AND VENT KEYNOTES	
NUMBER	KEYNOTE
9	STORM WATER DISCHARGE FROM PENTHOUSE ROOF.



1 PLUMBING VENT AND WASTE PLAN - ROOF
3/32" = 1'-0"

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
1	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE

PLUMBING WASTE & VENT PLAN - ROOF

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW107

11/6/2026 4:22:48 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt