ADDENDUM NUMBER FOUR

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 26, 2026

IU Project #: 20250072
BSALS Project #: 00360481

CONTRACTOR QUESTIONS

1. See attached list of bidder questions with design team responses.

CHANGES TO THE BID SCHEDULE

1. The bid due date for **all packages, except those listed in item #2,** in Bid Package 3 is being extended to Thursday, January 29th, 2026 at 2:00 PM EST.
2. The bid due date for the **following packages only** in Bid Package 3 is being extended to Tuesday, February 10th, 2026 at 2:00 PM EST:
    a. BE3-09A: Drywall, Framing, & Ceilings (Exterior & Interior)
    b. BE3-23A: HVAC, Mechanical & Plumbing
    c. BE3-26A: Electrical & Telecom

CHANGES TO THE PROJECT BID MANUAL

1. See the revised Bid Form Attachment 1 to include with bids for the **following packages only** in Bid Package 3:
    a. BE3-09A: Drywall, Framing, & Ceilings (Exterior & Interior)
    b. BE3-23A: HVAC, Mechanical & Plumbing
    c. BE3-26A: Electrical & Telecom

CHANGES TO THE PROJECT MANUAL

1. **Section 00 0110:**
    a. Replace section in its entirety.
        i. Removed Sections 22 1316 and 22 1413.
        ii. Added Sections 22 0500, 22 0553, 22 1005, 22 1116, 22 1119, 22 1123, 22 1123.13, 22 1300, 22 1329, 22 1400, 22 3400, 22 4000, 22 6200, 22 6213, and 22 8300.
2. Division 22 sections added for ongoing design development of the BP4 Build-Out Package to support pricing for bid event BE3-23A.

CHANGES TO THE DRAWINGS

1. Plumbing series drawings previously issued in BP3 addendum 02 on January 12, 2026 for ongoing design development of the BP4 Build-Out Package are being reissued in their entirety to support pricing for bid event BE3-23A.

END OF ADDENDUM NUMBER FOUR

Attachments:

- Bidder RFI List with Responses
- Revised Bid Form Attachment 1
- Sections 22 0500, 22 0553, 22, 1005, 22 1116, 22 1119, 22 1123, 22 1123.13, 22 1300, 22 1329, 22 1400, 22 3400, 22 4000, 22 6200, 22 6213, 22 8300
- Drawing P001, P501, P502, P503, P504, P505, P506, P507, 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
84		Architectural	BE3-07A	The lower roof areas installation is specified as a hot asphalt roofing install prior to the decorative ballast pavers etc. Would the architect/owner be open to a cold applied roofing system installation from the same product manufacturer?	No longer receiving substitution requests, can be addressed in post bid scope review.	FAW	ADD-04
85		Architectural	BE3-09A	The MTLC-2 ceiling asks for an integrated LED light with it. Can you please confirm that the electrical contractor is to provide and install this light?	BE3-09A will need to include the integrated LED light, Electrical contractor will need to include hook up.	FAW	ADD-04
86		Architectural	BE3-07B, BE3-09A	Is the BE3-07B responsible for the prefinished 0.64 aluminum metal panel enclosures on the interior as shown on A441?	No, BE3-07B is NOT responsible for the prefinished 0.64 aluminum metal panels. BE3-09A is responsible for including these in their scope.	FAW	ADD-04
87		Architectural	BE3-09A	An issue with the MTLC-2 ceiling is the light & tile are only available in 2'x4' to lay into an acoustical grid. Looking at these on the drawings, I am not sure there is a full 2x4 panel anywhere. We can cut the metal tile, but the light cannot be cut. Please clarify.	The panels can be customized to suit the angled geometry using a torsion spring attachment system. Field trimming is needed/possible but the BOD system will be customized and prefabricated so that on site cutting is not necessary, including the lights. Basis of design: Arktura custom pattern vapor graphic perf adaptive with Axiom vector trim.	BSA	ADD-04
88			BE3-05A	Is supply and install of steel pipe bollards included in the BE3-05A bid package? Line item 14 in scope of work.	Supply only is to be included in the BE3-05A bid package, installation by others.	FAW	ADD-04
89			BE3-05A/BE3-04A	Is supply and install of loose lintels for masonry work a part of BE3-05A bid pacakge? Line item 15 in scope of work.	Supply only is to be included in the BE3-05A bid package, installation is to be by BE3-04A bid pacakge.	FAW	ADD-04
90			BE3-05A	Spec Section 051200.C.1 is asking for an additional allowance of 4 tons of structural steel. Similar to RFI #68, can an allowance in a $ amount be provided?	Yes, please include an allowance of $30,000 in base bid for BE3-05A to include the additional 4 tons of structural steel not shown.	FAW	ADD-04
91			BE3-08A	Will there be a tower crane or buckhoist available for use to stage the floors with our unitized CW? If a buckhoist, what size?	There will be a buck hoist provided by the CM for the project. It has not been selected yet but will be close to these dimensions (12'-9" deep x 8'-0 wide x 8'-0" tall). Tower crane is being supplied by the concrete bid package and usage of it would have to be coordinated and rented/paid for usage through that contractor.	FAW	ADD-04
92			BE3-07B/BE3-09A	Detail 3/A335, is the wire mesh and support angles to be included in the BE3-07B package?	Wire mesh is to be included in the BE3-07B package, framing is by BE3-09A	FAW	ADD-04
93			BE3-09A, BE3-09B, BE3-23A, BE3-26A, BE3-32A	Can we submit qualifications with bid proposal?	Only the bid packages listed can provide qualifications with their bid proposals: BE3-09A, BE3-09B, BE3-23A, BE3-26A, BE3-32A	FAW	ADD-04
94			BE3-04A, BE3-05A	It appears that TOW clips for Masonry walls are in both our scope and the steel scope. Do we need to carry them or not? Please advise.	BE3-05A will supply and install. BE3-04A needs to exclude.	FAW	ADD-04

BID FORM ATTACHMENT 1 – BID PACKAGE STANDARD BID FORM

1.1 PROJECT: 20250072 IU Launch Accelerator for Biosciences

1.2 FROM:

Company: _____

Address: _____

Contact: _____

Phone: _____

Email: _____

Date: _____

State License Number (if applicable): _____

1.3 Submitted through IU PLAN ROOM.

"[your company name] – Bid for IU Project_20250072 – IU Launch Accelerator for Biosciences - [Bid Package Number and Name]"

1.4 BASE BID

Total Bid price for all work, complete, in accordance with the Bidding Documents:

Bid Package Name and Number:

_____

Bid Amount (in words):

_____

Dollars: $ _____

1.5 ALTERNATES (CIRCLE ADD OR DEDUCT WHEN APPLICABLE)

1. Alternate #1: Payment and Performance Bond ADD: $_____

1.6 DIVERSITY PARTICIPATION

Value of diversity participation included in your base bid, in accordance with the Bidding Documents. Companies must be **certified** with State of Indiana to qualify, please visit: https://www.in.gov/idoa/mwbe/minority-and-womens-business-enterprises/participation-goals/

MBE $_____ _____%

WBE $_____ _____%

VBE $_____ _____%

1.7 ACKNOWLEDGEMENTS

A. Documents and correspondence shall be submitted as indicated within the Bid Documents.

B. Construction Manager Reserves the Right to reject any and all Bids at their sole discretion.

C. Proposals to remain valid for 90 days from receipt of bid.

D. Bidder has included all resources required to comply with the Project Schedule.

E. RECEIPT OF ADDENDA

Addendum No. _____ Dated _____
Addendum No. _____ Dated _____
Addendum No. _____ Dated _____
Addendum No. _____ Dated _____
Addendum No. _____ Dated _____

F. Information to be provided with Bid Proposal:

- Bid Form Attachment 2 – Combined Bid Form (if applicable)
- Bid Form Attachment 3 – Supplemental Information
- Bid Form Attachment 4 – Subcontractor Qualification Form
- Bid Form Attachment 5 – Form 96
- Bid Form Attachment 6 – Contractor Asbestos Certification

G. QUALIFICATIONS/CLARIFICATIONS

_____

_____

_____

_____

H. **The undersigned, do hereby declare that I/we have carefully examined the Site of the proposed Work, have thoroughly examined the Bid Documents, and do hereby agree to furnish and/or install, as specified in the bid package, all materials, transportation, equipment, labor, supervision, tools and all other items necessary to do all Work in strict accordance with the Bid Documents.**

Signed By: _____

(Member of Firm Authorized to Sign Bid)

Title: _____Date: _____

SECTION 00 0110
TABLE OF CONTENTS

THIS TABLE OF CONTENTS IS CUMULATIVE. SPECIFICATION SECTIONS AND REVISIONS ISSUED SINCE PREVIOUS CUMULATIVE WORK PACKAGE ARE INDICATED WITH BOLD FONT.

SPECIFICATIONS FOR THIS PROJECT ARE BEING BID IN SEPARATE BID PACKAGES BUT BEING ISSUED AS A CUMULATIVE WORK PACKAGE. REQUIREMENTS IN SPECIFICATION SECTIONS MAY BE REVISED AS DESIGN, PRODUCT, AND COORDINATION DECISIONS ARE MADE, AND TO INCLUDE REQUIREMENTS FOR SUBSEQUENT CUMULATIVE WORK PACKAGE REVISIONS THAT WILL BE REISSUED.

SPECIFICATION SECTIONS MAY CONTAIN REQUIREMENTS THAT DO NOT APPLY TO THE SCOPE OF WORK IN THE BID PACKAGES BEING SEPARATED AND ISSUED BY THE CONTRACTOR TO VARIOUS TRADES AND SUBCONTRACTORS, AS WELL AS CROSS REFERENCES TO SPECIFICATION SECTIONS THAT HAVE NOT YET BEEN ISSUED FOR CONSTRUCTION.

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING WITH THE ARCHITECT WHETHER A REVISION OF A SPECIFICATION SECTION HAS BEEN ISSUED AND IS CAUTIONED TO DO SO BEFORE PURCHASING PRODUCTS OR STARTING WORK DESCRIBED IN THE SECTION.

CONSTRUCTION CHANGES REQUIRED BECAUSE OF CONTRACTOR'S FAILURE TO USE CORRECT VERSION OF SPECIFICATIONS SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO OWNER.

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

01 2300	Alternates	12/15/2025	BP4 100% DD: Build-Out Package		
01 2500	Substitution Procedures	12/15/2025	BP3 CD: Core and Shell Package		
01 3000	Administrative Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 3329.02	Sustainable Design Reporting - LEED v4	12/15/2025	BP3 CD: Core and Shell Package		
01 3566.05	Project Sustainability Goal Credit Summary - LEED v4	12/15/2025	BP3 CD: Core and Shell Package		
01 3566.12	Sustainability Certification Project Procedures - LEED v4	12/15/2025	BP3 CD: Core and Shell Package		
01 4000	Quality Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 4219	Reference Standards	12/15/2025	BP3 CD: Core and Shell Package		
01 6000	Product Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 6116	Volatile Organic Compound (VOC) Content Restrictions	12/15/2025	BP3 CD: Core and Shell Package		
01 7000	Execution and Closeout Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 7419	Construction Waste Management and Disposal	12/15/2025	BP3 CD: Core and Shell Package		
01 7800	Closeout Submittals	12/15/2025	BP3 CD: Core and Shell Package		
01 7900	Demonstration and Training	12/15/2025	BP3 CD: Core and Shell Package		
01 8000	Airborne Contaminants Control	12/15/2025	BP3 CD: Core and Shell Package		
01 8001	Contractor Project Procedures	12/15/2025	BP3 CD: Core and Shell Package		
01 9100	Commissioning	12/15/2025	BP4 100% DD: Build-Out Package		
01 9151	Systems Manual	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 02 -- EXISTING CONDITIONS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision

02 0100	Maintenance of Existing Conditions	09/29/2025	BP1 CD: Site and Foundation Package		
02 4113	Selective Site Demolition	11/17/2025	BP2 CD: Early Equipment Package		

DIVISION 03 -- CONCRETE

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
03 1000	Concrete Formwork	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 2000	Concrete Reinforcement	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 3000	Cast-in-Place Concrete	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 4500	Precast Architectural Concrete	12/15/2025	BP3 CD: Core and Shell Package	12/15/2025	
03 5216	Lightweight Insulating Concrete	01/07/2026	BP3 CD: Addendum 01		
03 6000	Epoxy Grout	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 6001	Grouting	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 6200	Non Shrink Grouting	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2

DIVISION 04 -- MASONRY

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
04 2000	Unit Masonry	12/15/2025	BP3 CD: Core and Shell Package		
04 4313	Stone Masonry Veneer	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 05 -- METALS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
05 1200	Structural Steel Framing	12/15/2025	BP3 CD: Core and Shell Package		
05 3123	Steel Roof Decking	12/15/2025	BP3 CD: Core and Shell Package		
05 3600	Composite Metal Decking	12/15/2025	BP3 CD: Core and Shell Package		

05 4000	Cold-Formed Metal Framing	12/15/2025	BP3 CD: Core and Shell Package		
05 5000	Metal Fabrications	12/15/2025	BP3 CD: Core and Shell Package		
05 5100	Metal Stairs	12/15/2025	BP3 CD: Core and Shell Package		
05 5133	Metal Ladders	12/15/2025	BP3 CD: Core and Shell Package		
05 5213	Pipe and Tube Railings	12/15/2025	BP3 CD: Core and Shell Package		
05 7100	Decorative Metal Stairs	12/15/2025	BP3 CD: Core and Shell Package		
05 7300	Decorative Metal Railings	12/15/2025	BP4 100% DD: Build-Out Package		
05 7500	Decorative Formed Metal	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
06 1053	Miscellaneous Rough Carpentry	12/15/2025	BP3 CD: Core and Shell Package		
06 1600	Sheathing - USG	12/15/2025	BP3 CD: Core and Shell Package		
06 4100	Architectural Wood Casework	12/15/2025	BP4 100% DD: Build-Out Package		
06 6413	Translucent Resin Panel Fabrications	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
07 1113	Bituminous Dampproofing	09/29/2025	BP1 CD: Site and Foundation Package		
07 1300	Sheet Waterproofing	09/29/2025	BP1 CD: Site and Foundation Package		
07 1616	Crystalline Waterproofing	09/29/2025	BP1 CD: Site and Foundation Package		
07 2100	Thermal Insulation	12/15/2025	BP3 CD: Core and Shell Package		
07 2400	Exterior Insulation and Finish Systems	12/15/2025	BP3 CD: Core and Shell Package		
07 2700	Air Barriers	12/15/2025	BP3 CD: Core and Shell Package		

07 4113	Metal Roof Panels	12/15/2025	BP3 CD: Core and Shell Package		
07 4213	Metal Wall Panels	01/19/2026	BP3 CD: Addendum 03		
07 4213.19	Insulated Metal Wall Panels	12/15/2025	BP3 CD: Core and Shell Package		
07 4213.23	Metal Composite Material Wall Panels	12/15/2025	BP3 CD: Core and Shell Package	01/19/2026	2
07 5323	EPDM Thermoset Single-Ply Roofing - Carlisle	12/15/2025	BP3 CD: Core and Shell Package	01/19/2026	3
07 5556	Fluid- Applied Protected Membrane Roofing	12/15/2025	BP3 CD: Core and Shell Package		
07 6200	Sheet Metal Flashing and Trim	12/15/2025	BP3 CD: Core and Shell Package	01/19/2026	2
07 7100	Roof Specialties	12/15/2025	BP3 CD: Core and Shell Package		
07 7200	Roof Accessories	12/15/2025	BP3 CD: Core and Shell Package		
07 7600	Roof Pavers	12/15/2025	BP3 CD: Core and Shell Package		
07 8100	Applied Fire Protection	12/15/2025	BP3 CD: Core and Shell Package		
07 8400	Firestopping	12/15/2025	BP3 CD: Core and Shell Package		
07 8700	Smoke Containment Barriers	12/15/2025	BP4 100% DD: Build-Out Package		
07 9200	Joint Sealants	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 08 -- OPENINGS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
08 1113	Hollow Metal Doors and Frames	12/15/2025	BP3 CD: Core and Shell Package		
08 1116	Aluminum Doors and Frames	12/15/2025	BP3 CD: Core and Shell Package		
08 3100	Access Doors and Panels	12/15/2025	BP4 100% DD: Build-Out Package		
08 3323	Overhead Coiling Doors	12/15/2025	BP3 CD: Core and Shell Package	01/07/2026	2
08 3400	Special Function Doors	12/15/2025	BP4 100% DD: Build-Out Package		
08 4313	Aluminum-Framed Storefronts	12/15/2025	BP4 100% DD: Build-Out Package		

08 4413	Glazed Aluminum Curtain Walls	12/15/2025	BP3 CD: Core and Shell Package	01/19/2026	3
08 4435	Protective Framed Glazing Assemblies	12/15/2025	BP4 100% DD: Build-Out Package		
08 7100	Door Hardware	12/15/2025	BP4 100% DD: Build-Out Package		
08 8000	Glazing	12/15/2025	BP3 CD: Core and Shell Package	01/07/2026	2
08 8720	Architectural Glazing Film	12/15/2025	BP4 100% DD: Build-Out Package		
08 8813	Fire-Rated Glazing	12/15/2025	BP4 100% DD: Build-Out Package		
08 9100	Louvers	12/15/2025	BP3 CD: Core and Shell Package	01/07/2026	2

DIVISION 09 -- FINISHES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
09 2116	Gypsum Board Assemblies	12/15/2025	BP3 CD: Core and Shell Package	01/19/2026	2
09 3013	Ceramic Tiling	12/15/2025	BP4 100% DD: Build-Out Package		
09 5000	Acoustical Panels	12/15/2025	BP4 100% DD: Build-Out Package		
09 5100	Linear Acoustical Panel Ceilings	12/15/2025	BP4 100% DD: Build-Out Package		
09 5123	Acoustical Tile Ceilings	12/15/2025	BP4 100% DD: Build-Out Package		
09 5423	Metal Ceilings	12/15/2025	BP4 100% DD: Build-Out Package		
09 6513	Resilient Base and Accessories	12/15/2025	BP4 100% DD: Build-Out Package		
09 6516	Resilient Sheet Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6519	Resilient Tile Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6536	Static-Control Resilient Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6623	Resinous Matrix Terrazzo Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6723	Resinous Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6813	Tile Carpeting	12/15/2025	BP4 100% DD: Build-Out Package		
09 7200	Wall Coverings	12/15/2025	BP4 100% DD: Build-Out Package		

09 7713	Stretched-Fabric Wall Systems	12/15/2025	BP4 100% DD: Build-Out Package		
09 8433	Sound Absorbing Wall Units	12/15/2025	BP4 100% DD: Build-Out Package		
09 9113	Exterior Painting	12/15/2025	BP3 CD: Core and Shell Package	01/19/2026	2
09 9123	Interior Painting	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 10 -- SPECIALTIES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
10 1100	Visual Display Boards	12/15/2025	BP4 100% DD: Build-Out Package		
10 1419	Dimensional Letter Signage	12/15/2025	BP4 100% DD: Build-Out Package		
10 2113.13	Metal Toilet Compartments	12/15/2025	BP4 100% DD: Build-Out Package		
10 2213	Wire Mesh Partitions	12/15/2025	BP3 CD: Core and Shell Package		
10 2239	Folding Panel Partitions	12/15/2025	BP4 100% DD: Build-Out Package		
10 2600	Wall and Door Protection	12/15/2025	BP4 100% DD: Build-Out Package		
10 2800	Toilet, Bath, and Laundry Accessories	12/15/2025	BP4 100% DD: Build-Out Package		
10 4300	Emergency Aid Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
10 4400	Fire Protection Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
10 5113	Metal Locker	12/15/2025	BP4 100% DD: Build-Out Package		
10 5129	Phenolic Lockers	12/15/2025	BP4 100% DD: Build-Out Package		
10 5500	Postal Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
10 5617	Wall Mounted Standards and Shelving	12/15/2025	BP4 100% DD: Build-Out Package		
10 7343	Transportation Stop Shelters	09/29/2025	BP1 CD: Site and Foundation Package		
10 7500	Flagpoles	09/29/2025	BP1 CD: Site and Foundation Package		
10 8213	Exterior Grilles and Screens	12/15/2025	BP3 CD: Core and Shell Package		

10 8223	Interior Grilles and Screens	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 11 -- EQUIPMENT

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
11 3013	Residential Appliances	12/15/2025	BP4 100% DD: Build-Out Package		
11 5300	Miscellaneous Laboratory Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
11 5313	Laboratory Fume Hoods	12/15/2025	BP4 100% DD: Build-Out Package		
11 5317	Laboratory Glassware Washers	12/15/2025	BP4 100% DD: Build-Out Package		
11 5319	Laboratory Sterilizers with Electric Steam Generators	12/15/2025	BP4 100% DD: Build-Out Package		
11 8129	Facility Fall Protection	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 12 -- FURNISHINGS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
12 2413	Roller Window Shades	12/15/2025	BP4 100% DD: Build-Out Package		
12 3553	General Requirements for Laboratory Casework and Fume Hoods	12/15/2025	BP4 100% DD: Build-Out Package		
12 3553.03	Adaptable Laboratory Casework Systems	12/15/2025	BP4 100% DD: Build-Out Package		
12 3553.13	Metal Laboratory Casework	12/15/2025	BP4 100% DD: Build-Out Package		
12 3661	Simulated Stone Countertops	12/15/2025	BP4 100% DD: Build-Out Package		
12 9300	Site Furnishings	09/29/2025	BP1 CD: Site and Foundation Package	10/15/2025	2

DIVISION 13 -- SPECIAL CONSTRUCTION

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision

13 2100	Controlled Environmental Rooms	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 14 -- CONVEYING EQUIPMENT

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
14 2123	Machine Room-Less Electric Traction Passenger Elevators	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 21 -- FIRE SUPPRESSION

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
21 0800	Commissioning of Fire Suppression Systems	12/15/2025	BP4 100% DD: Build-Out Package		
21 1300	Fire Sprinkler and Standpipe Systems	12/15/2025	BP4 100% DD: Build-Out Package		
21 3000	Fire Pumps, Pump Controllers, and Other Appurtenances	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 22 -- PLUMBING

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
22 0500	**Common Work Results for Plumbing**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 0553	**Identification for Plumbing Piping and Equipment**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 0800	Commissioning of Plumbing Systems	12/15/2025	BP4 100% DD: Build-Out Package		
22 1005	**Plumbing Piping**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 1116	**Domestic Water Piping (Potable and Non-Potable)**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 1119	**Domestic Water Backflow Prevention**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 1123	**Domestic Water Pressure Booster Pump Systems**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		

22 1123.13	**Natural Gas Piping and Accessories**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 1300	**Sanitary Waste and Vent Piping**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
~~**22 1316**~~	~~**Sanitary Waste and Vent Piping**~~	~~**09/29/2025**~~	~~**BP1 CD: Site and Foundation Package**~~		
22 1329	**Laboratory Waste and Vent Piping**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 1400	**Storm Drainage Piping and Accessories**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
~~**22 1413**~~	~~**Facility Storm Drainage Piping**~~	~~**09/29/2025**~~	~~**BP1 CD: Site and Foundation Package**~~		
22 3400	**Gas-Fired Domestic Water Heaters**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 4000	**Plumbing Fixtures**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 6200	**Laboratory Compressed Air Generation System**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 6213	**Laboratory Compressed Air Piping**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		
22 8300	**Laboratory High Purity Water Piping**	**01/26/2026**	**BP4 100% DD: Build-Out Package**		

DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
23 0500	Common Work Results for HVAC	12/15/2025	BP4 100% DD: Build-Out Package		
23 0513	Common Motor Requirements for HVAC Equipment	11/17/2025	BP2 CD: Early Equipment Package		
23 0517	Sleeves and Sleeve Seals for HVAC Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 0519	Meters and Gauges for HVAC Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 0523	General-Duty Valves for HVAC Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 0529	Hangers and Supports for HVAC Piping and Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
23 0548	Vibration and Noise Control for HVAC, Piping, and Equipment	12/15/2025	BP4 100% DD: Build-Out Package		

23 0553	Identification for HVAC Piping and Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
23 0593	Testing, Adjusting, and Balancing for HVAC	12/15/2025	BP4 100% DD: Build-Out Package		
23 0595	Certification of Fume Hoods and Filter Testing	12/15/2025	BP4 100% DD: Build-Out Package		
23 0713	Duct Insulation	12/15/2025	BP4 100% DD: Build-Out Package		
23 0716	HVAC Equipment Insulation	12/15/2025	BP4 100% DD: Build-Out Package		
23 0719	HVAC Piping Insulation	12/15/2025	BP4 100% DD: Build-Out Package		
23 0800	Commissioning of HVAC Systems	12/15/2025	BP4 100% DD: Build-Out Package		
23 0906	Control Installation Contract	12/15/2025	BP4 100% DD: Build-Out Package		
23 2113	Hydronic Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 2114	Hydronic Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
23 2123	Hydronic Pumps	12/15/2025	BP4 100% DD: Build-Out Package		
23 2500	HVAC Water Treatment	12/15/2025	BP4 100% DD: Build-Out Package		
23 2501	Glycol Water Treatment	12/15/2025	BP4 100% DD: Build-Out Package		
23 3100	HVAC Ducts and Casings	12/15/2025	BP4 100% DD: Build-Out Package		
23 3300	Air Duct Accessories	12/15/2025	BP4 100% DD: Build-Out Package		
23 3319	Duct Silencers	12/15/2025	BP4 100% DD: Build-Out Package		
23 3420	Induced Dilution Exhaust Fans	12/15/2025	BP4 100% DD: Build-Out Package		
23 3439	High-Volume, Low-Speed Propeller Fans	12/15/2025	BP4 100% DD: Build-Out Package		
23 3600	Air Terminal Units	12/15/2025	BP4 100% DD: Build-Out Package		
23 3700	Air Outlets and Inlets	12/15/2025	BP4 100% DD: Build-Out Package		
23 5100	Breechings, Chimneys, and Stacks	12/15/2025	BP3 CD: Core and Shell Package		
23 5216	Condensing Boilers	12/15/2025	BP4 100% DD: Build-Out Package		

23 5700	Heat Exchangers for HVAC	12/15/2025	BP4 100% DD: Build-Out Package		
23 6416	Centrifugal Water Chillers	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
23 6514	Induced-Draft Cooling Towers	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
23 7200	Air-to-Air Energy Recovery Equipment	11/17/2025	BP2 CD: Early Equipment Package		
23 7213	Custom Air Handling Units	11/17/2025	BP2 CD: Early Equipment Package		
23 8200	Miscellaneous Heating and Cooling Units	12/15/2025	BP4 100% DD: Build-Out Package		
23 8214	Chilled Beams	12/15/2025	BP4 100% DD: Build-Out Package		
23 8216	Air Coils	12/15/2025	BP4 100% DD: Build-Out Package		
23 8241	Water-to-Water Heat Pumps	12/15/2025	BP4 100% DD: Build-Out Package		
23 8413.29	Self-Contained Humidifiers	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 25 -- INTEGRATED AUTOMATION (NOT USED)

DIVISION 26 -- ELECTRICAL

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
26 0513	Medium-Voltage Cables	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 0519	Low-Voltage Electrical Power Conductors and Cables	12/15/2025	BP4 100% DD: Build-Out Package		
26 0526	Grounding and Bonding for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0529	Hangers and Supports for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0533.13	Conduit for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0533.16	Boxes for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0533.23	Surface Raceways for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0536	Cable Trays for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		

26 0543	Electrical Underground Ducts, Ductbanks, and Manholes	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 0548	Vibration and Seismic Controls for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0553	Identification for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0573	Power System Studies	12/15/2025	BP4 100% DD: Build-Out Package		
26 0800	Commissioning of Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0923	Lighting Control Devices	12/15/2025	BP4 100% DD: Build-Out Package		
26 1116	Secondary Unit Substations	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 2200	Low-Voltage Transformers	12/15/2025	BP4 100% DD: Build-Out Package		
26 2413	Switchboards	12/15/2025	BP4 100% DD: Build-Out Package		
26 2416	Panelboards	12/15/2025	BP4 100% DD: Build-Out Package		
26 2726	Wiring Devices	12/15/2025	BP4 100% DD: Build-Out Package		
26 2813	Fuses	12/15/2025	BP4 100% DD: Build-Out Package		
26 2816.13	Enclosed Circuit Breakers	12/15/2025	BP4 100% DD: Build-Out Package		
26 2816.16	Enclosed Switches	12/15/2025	BP4 100% DD: Build-Out Package		
26 2913	Enclosed Controllers	12/15/2025	BP4 100% DD: Build-Out Package		
26 2923	Variable-Frequency Motor Controllers	12/15/2025	BP4 100% DD: Build-Out Package		
26 3213	Engine Generators	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 3600	Transfer Switches	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 3633	Connection Cabinets for Portable Generators and Load Banks	12/15/2025	BP4 100% DD: Build-Out Package		
26 4100	Facility Lightning Protection	12/15/2025	BP4 100% DD: Build-Out Package		
26 4300	Surge Protective Devices	12/15/2025	BP4 100% DD: Build-Out Package		

26 5100	Interior Lighting	12/15/2025	BP4 100% DD: Build-Out Package		
26 5600	Exterior Lighting	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 27 -- COMMUNICATIONS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
27 0100	Operation and Maintenance	12/15/2025	BP4 100% DD: Build-Out Package		
27 0200	References	12/15/2025	BP4 100% DD: Build-Out Package		
27 0300	Definitions	12/15/2025	BP4 100% DD: Build-Out Package		
27 0410	Quality Assurance	12/15/2025	BP4 100% DD: Build-Out Package		
27 0420	Submittals	12/15/2025	BP4 100% DD: Build-Out Package		
27 0430	Delivery, Storage and Handling	12/15/2025	BP4 100% DD: Build-Out Package		
27 0440	Sequencing and Scheduling	12/15/2025	BP4 100% DD: Build-Out Package		
27 0450	General Installation	12/15/2025	BP4 100% DD: Build-Out Package		
27 0460	Testing and Documentation	12/15/2025	BP4 100% DD: Build-Out Package		
27 0470	Record Drawings	12/15/2025	BP4 100% DD: Build-Out Package		
27 0480	Warranty	12/15/2025	BP4 100% DD: Build-Out Package		
27 0500	Common Work Results	12/15/2025	BP4 100% DD: Build-Out Package		
27 0526	Grounding and Bonding	12/15/2025	BP4 100% DD: Build-Out Package		
27 0528	Pathways	12/15/2025	BP4 100% DD: Build-Out Package		
27 0529	Hangers and Supports	12/15/2025	BP4 100% DD: Build-Out Package		
27 0533	Conduits and Backboxes	12/15/2025	BP4 100% DD: Build-Out Package		
27 0536	Cable Trays	12/15/2025	BP4 100% DD: Build-Out Package		
27 0539	Surface Raceways	12/15/2025	BP4 100% DD: Build-Out Package		
27 0543	Underground Duct Systems and Raceways	12/15/2025	BP4 100% DD: Build-Out Package		

27 0600	Schedules for Communications	12/15/2025	BP4 100% DD: Build-Out Package		
27 1100	Equipment Room Fittings	12/15/2025	BP4 100% DD: Build-Out Package		
27 1113	Entrance Protection	12/15/2025	BP4 100% DD: Build-Out Package		
27 1116	Cabinets, Racks, Frames and Enclosures	12/15/2025	BP4 100% DD: Build-Out Package		
27 1119	Termination Blocks and Patch Panels	12/15/2025	BP4 100% DD: Build-Out Package		
27 1123	Cable Management and Ladder Rack	12/15/2025	BP4 100% DD: Build-Out Package		
27 1136	Equipment Rack Layouts	12/15/2025	BP4 100% DD: Build-Out Package		
27 1146	Equipment Room Layout	12/15/2025	BP4 100% DD: Build-Out Package		
27 1200	Transmission Media	12/15/2025	BP4 100% DD: Build-Out Package		
27 1313	Copper Backbone Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1323	Optical Fiber Backbone Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1333	Backbone Coax	12/15/2025	BP4 100% DD: Build-Out Package		
27 1500	Horizontal Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1513	Horizontal Copper Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1516	Voice Communications Horizontal Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1519	Data Communications Copper Horizontal Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1533	Horizontal Coaxial Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1543	Faceplates and Connectors	12/15/2025	BP4 100% DD: Build-Out Package		
27 4000	Audio-Video Communications	12/15/2025	BP4 100% DD: Build-Out Package		
27 9999	Appendix: Design Guide	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
28 0413	Common Submittal Requirements for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0513	Conductors and Cables for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0526	Grounding and Bonding for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0528	Pathways for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0544	Sleeves and Sleeve Seals for Electronic Safety and Security Pathways and Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
28 1300	Access Control	12/15/2025	BP4 100% DD: Build-Out Package		
28 2300	Video Surveillance	12/15/2025	BP4 100% DD: Build-Out Package		
28 3111	Digital, Addressable Fire-Alarm System	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 31 -- EARTHWORK

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
31 1100	Site Clearing	09/29/2025	BP1 CD: Site and Foundation Package		
31 2000	Earthwork	11/17/2025	BP2 CD: Early Equipment Package		
31 2323	Flowable Fill	09/29/2025	BP1 CD: Site and Foundation Package		
31 2330	CU Structural Soil	09/29/2025	BP1 CD: Site and Foundation Package		
31 2500	Erosion Control	09/29/2025	BP1 CD: Site and Foundation Package		
31 3116	Termite Control	09/29/2025	BP1 CD: Site and Foundation Package		
31 6000	Rammed Aggregate Pier	09/29/2025	BP1 CD: Site and Foundation Package		

DIVISION 32 -- EXTERIOR IMPROVEMENTS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
32 1216	Asphalt Paving	09/29/2025	BP1 CD: Site and Foundation Package		
32 1300	Site Concrete	09/29/2025	BP1 CD: Site and Foundation Package		
32 1723	Pavement Marking	09/29/2025	BP1 CD: Site and Foundation Package		
32 8000	Irrigation System (Design-Build)	09/29/2025	BP1 CD: Site and Foundation Package		
32 9200	Seeding	09/29/2025	BP1 CD: Site and Foundation Package		
32 9223	Sodding	11/26/2025	ASI 003		
32 9300	Planting	09/29/2025	BP1 CD: Site and Foundation Package		
32 9443	Tree Grate	09/29/2025	BP1 CD: Site and Foundation Package		
32 9450	Pavement Support System	09/29/2025	BP1 CD: Site and Foundation Package		

DIVISION 33 -- UTILITIES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
33 0500	Common Work Results for Utilities	11/17/2025	BP2 CD: Early Equipment Package		
33 1000	Site Water Distribution	09/29/2025	BP1 CD: Site and Foundation Package		
33 3000	Sanitary Sewers	11/17/2025	BP2 CD: Early Equipment Package		
33 4000	Storm Drainage	09/29/2025	BP1 CD: Site and Foundation Package		
33 4600	Subdrainage	09/29/2025	BP1 CD: Site and Foundation Package		

END OF SECTION 00 0110

SECTION 22 60 00 – GAS AND VACUUM SYSTEMS FOR LABORATORY FACILITIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Pipe, tube, and fittings.

B. Valves.

C. Regulators and flowmeters.

1.2 ABBREVIATIONS AND ACRONYMS

A. CGA: Compressed Gas Association.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide lab gas and vacuum equipment and piping systems that comply with the following NFPA 99, "Health Care Facilities Code" level categories:

B. Level 1: For entire facility systems in which failure of equipment or system is likely to cause major injury or death of patients, staff or visitors.

C. Level 2: For entire facility systems in which failure of equipment or systems is likely to cause minor injury to patients, staff or visitors.

D. Level 3: For entire facility systems in which failure of equipment or systems is likely to cause injury to patients, staff or visitors.

1.4 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's literature and data sheets for each product. Include capacities, configurations, dimensions, finishes, weights, service condition requirements, and installed features.

C. Shop Drawings: Provide for products listed below. Indicate general assembly of components, mounting and installation details, unit dimensions, required clearances, construction details, field piping connection details, and electrical characteristics and connection requirements.

1. Manifolds: Include dimensioned plans and elevations showing manifold, header assemblies, and cylinder arrangements.
2. Outlets: Include elevation drawings showing arrangements of lab outlet wall assemblies.

D. Independent Inspection, Testing, and Verification Agency Reports: Documentation of inspection, testing, and verification results showing system compliance with NFPA 99.

E. Manufacturer's Instructions: Provide for products listed below. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

1. Manifolds.

F. Installer's qualifications statement.

G. Inspector's qualification statement.

H. Testing and verification company's qualification statement.

I. Operation and Maintenance Data: For each product, provide manufacturers installation, operating, testing, and maintenance instructions.

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

K. Project Record Documents: Complete set of floor plans showing actual installed locations of components, equipment, tanks, cylinders, piping, and valving. See Section 01 78 00 for additional requirements.

L. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Service Kits: Provide first-year service kit for each air compressor and vacuum pump.

1.5 QUALITY ASSURANCE

A. Laboratory Gas Systems: Select products and execute work in compliance with NFPA 55.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.
   1. Brazing: Qualified in accordance with ASME BPVC-IX or AWS B2.2/B2.2M.

D. Inspector Qualifications: Company specializing in performing testing of type specified in this section, with minimum five years of documented experience.

E. Testing and Verification Qualifications: Company specializing in performing testing of type specified in this section, with minimum five years of documented experience.

F. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept material on-site in factory containers and packing. Inspect for damage.

B. Protect from damage and contamination by maintaining factory packaging and caps in place until installation.

1.7 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for equipment furnished. Complete forms in Owner's name and register with manufacturer.

C. Installer Warranty: Provide 2-year warranty for systems installed commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with installer.

PART 2 PRODUCTS

2.01 PERFORMANCE CRITERIA

A. Laboratory:
   1. Laboratory Air: 50 to 55 psig operating pressure.
   2. Laboratory Nitrogen: 160 to 185 psig operating pressure.
   3. Laboratory Helium: 160 to 185 psig operating pressure.

2.02 PIPE, TUBE, AND FITTINGS

A. Laboratory Gases:
   1. General Requirements:
      a. Piping cleaned by manufacturer with pipe ends and tube ends factory capped or plugged by manufacturer prior to shipping and kept sealed until time of installation.
   2. Copper Pipe:
      a. ASTM B819, seamless, drawn, Type L.
         1) For nitrogen and laboratory air systems with operating pressures in excess of 185 psig and with pipe sizes NPS 3 and larger, use Type K.
      b. ASTM B280, seamless, drawn, Type ACR.
      c. Brazed Fittings and Joints:
         1) Fittings: Wrought copper, ASME B16.22 or ASME B16.50.
         2) Joints: Brazed, AWS A5.8M/A5.8, copper-phosphorus or copper-phosphorus-silver brazing filler.

2.03 VALVES

A. Manufacturers:
   1. Amico Corporation.
   2. BeaconMedaes.
   3. Jomar Valve.
   4. Milwaukee Valve.
   5. Nibco.
   6. Pattons Lab.

B. General Requirements for Valves for Lab Gas Systems:
   1. Manufacturer cleaned in accordance with CGA G-4.1.
   2. Sealed, bagged, and labeled prior to shipping in accordance with CGA G-4.1 and kept bagged and sealed until the time of installation.

C. Ball Valves:
   1. Three-piece, bronze body, MSS SP-110, double-seal, with quarter-turn handle and replaceable neoprene or teflon seat and stem seals, 600 psi cold working pressure.
   2. Ball Valves for Lab Gas Systems: Provide manufacturer-installed ASTM B819 Type K copper extensions with threaded purge ports on upstream and downstream sides of valve.

D. Check Valves:
   1. Brass or bronze body, three piece, spring loaded, in-line removable and serviceable, 300 psi cold working pressure.
   2. Check Valves for Lab Gas Systems: Provide manufacturer-installed ASTM B819 Type K copper extensions with threaded purge ports on upstream and downstream sides of valve.

E. Pressure Relief Valves:
   1. Brass, bronze, or stainless steel body, direct-acting spring relief; select valve seats appropriate to gas system type; select relief settings to suit system components and operating pressures.

F. Automatic Drain Valves:
   1. Description: Corrosion-resistant metal body and internal parts, 200-psig minimum working- pressure rating, and capable of automatic discharge of collected condensate.

G. Pressure Regulators:
   1. Description: Bronze body and trim; spring-loaded, diaphragm-operated, relieving type; manual pressure-setting adjustment; rated for 250-psig minimum inlet pressure; and capable of controlling delivered air pressure within 0.5 psig for each 10-psig inlet pressure.

2.04 REGULATORS AND FLOWMETERS

A. General Requirements for Pressure Regulators and Flowmeters for Lab and Laboratory Gas Systems:
   1. Manufacturer cleaned in accordance with CGA G-4.1.
   2. Sealed, bagged, and labeled prior to shipping in accordance with CGA G-4.1 and kept bagged and sealed until the time of installation.

B. Single Stage Gas Pressure Regulators:
   1. Spring loaded, diaphragm type with manual pressure-adjustment knob.
   2. Body: Brass.
   3. Gas purity: General purpose, unless indicated otherwise.
   4. Application: Cylinder regulator.
   5. Delivery-Pressure Range: Select to suit gas being regulated.
      a. Helium: 0 to 50 psig.
      b. Nitrogen: 0 to 200 psig.

2.05 Delivery Pressure Gauge: Dual scale, 2-inch diameter. TEST GAS

A. Description: Oil-free dry nitrogen NF complying with NFPA 99, for purging and testing of piping.

PART 3 EXECUTION

3.01 INSTALLATION

A. General
   1. Refer to all project specifications outside of division 22 sections for additional requirements not listed.
   2. Install lab gas systems in accordance with NFPA 99, CGA, and/or any other Federal, State, or Local codes and ordinanaces covering these installations.
   3. All piping, fittings, valves, and other devices shall be recieved on the job site cleaned, sealed, and marked for oxygen service. On-site cleaning is prohibited.
   4. Tools used for cutting or reaming shall be kept free from oil or grease.
   5. Install products and equipment in accordance with manufacturer's instructions.

6. Install equipment accoding to NFPA 55 and NFPA 99.
7. Brazed joints shall be made using a brazing compound containing silver alloys having a melting point of 1000°F or higher. Piping shall be purged with nitrogen during brazing to prevent the formation of copper oxide particles. The outside of the pipe and fittings shall be cleaned by washing with hot water after assembly.
8. Clean equipment, accessories, and components that have not been cleaned for oxygen service and sealed or that are furnished unsuitable for lab applications according to CGA G-4.1.

B. Pipe, Tube, and Fittings:
1. Install piping parallel and perpendicular to walls. Install without springing or forcing.
2. Provide pipe sleeves where pipes and tubing pass through walls, floors, roofs, and partitions. Extend 2 inches above finished floors.
3. Make changes in size with reducing fittings.
4. Make changes in direction or required turns or offsets with fittings.
5. Cut pipe and tubing accurately and squarely.
6. Ream pipe and tube ends. Remove burrs.
7. Remove scale and dirt from outside of piping before assembly.
8. Braze joints in pipe and tubing in accordance with AWS B2.2/B2.2M. Continuously purge piping with oil-free, dry nitrogen during brazing.
9. Install thermometers and pressure gauges per NFPA 99 requirements.
10. Install piping concealed from view and protected from physical contact by building occupants except in equipment rooms and service areas.
11. Install piping in equipment room and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless otherwise indicated.
12. Install piping adjacent to equipment to allow service and maintenance.
13. Install branch connections to mains at or above centerline of horizontal mains.
14. Install piping to permit valve servicing and access.
15. Install piping free from sags and bends.
16. After installation of piping, but before installation of the outlets, purge lab gas piping using oil-free dry nitrogen.
17. Lab gas piping shall not be installed in kitchens, electrical rooms, elevator shafts, and areas with open flames.
18. Join new systems to existing system according to manufacturer procedures when shape memory metal couplings or axially swaged fittings are utilized.
19. Protect piping and fitting from damage.
20. Retain sealing plugs in tubing until installation. Remove sealing plugs of sections being joined during installation and brazing process.

C. Pipe Hangers and Supports:
1. Install in accordance with MSS SP-58.
2. Support horizontal piping within 12 inches of each fitting.
3. Rod diameter may be reduced one size for double rod hangers with 3/8 inch minimum rods.
4. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

a. NPS 'lb to °/: 72 inches with 3/8 inches rod.
b. NPS 1 to 1-1/2: 96 inches with 3/8 inches rod.
c. NPS 2 to 6: 10 feet with 'lb inch rod.

5. Install supports for vertical copper tubing every 10 feet.
6. System routed in wall or on pipe rack shall be securely tightened with anti-vibration steel clamp with thermoplastic elastomer by use of channel mount cushion clamp. Tape of any kind shall not be used.
7. All vertical pipe system drops to zone valves, outlets and equipment shall be securely anchored and supported at the top, bottom and mid-span of the wall cavity. Pipe support brackets shall be anchored to the wall cavity studs on both sides.

D. Piping Identification:
1. Install labeling on pipe at intervals of not more than 20 feet and at least once in each room and each story traversed by pipeline.
2. Apply pipe labeling during the installation process and not after installation is complete. Unlabeled systems shall be removed and replaced.
a. At intervals of not more than every 20’.
b. At least once in or above every room.
c. On both sides of walls or partitions penetrated by the piping.
d. At least once in every story height traversed by risers.
3. Captions and Color-Coding: Use the following or similar lab gas captions and color-coding for lab gas piping products where required by NFPA 99 “Health Care Facilities Code”:
a. Oxygen: White letters on green background or green letters on white background.
b. Lab air: Black letters on yellow background.
c. Instrument air: White letters on red background.
d. Nitrous oxide: White letters on blue background.
e. Nitrogen: White letters on black background.
f. Carbon dioxide: Black or white letters on gray background.
g. Lab vacuum: Black letters on white background.
h. WAGD: White letters on purple background.
i. Label lab gas systems operating at other-than-standard pressure with system operating pressure.
4. Locate pipe labels as follows:
5. Lab gas piping shall not be painted.

E. Underground Piping:
1. After pressure testing, evenly backfill entire trenhc width by handplacing backfill material and hand tamping in compacted layer.
2. Encase buried piping in PVC pipe.
a. PVC pipe to be provided with weep holes spaced every 8'.
b. Terminated pipe encasement a minimum of 6" above floor level or grade and sealed water tight between carrier pipe and system.
3. Install buried piping below frost depth or below minimum of 36 inches of cover, whichever is deeper.

4. Excavate and backfill pipe trenches. Provide utility warning and identification tape above buried lines at depth of 8 to 12 inches below finish grade.
5. Install continuous detectable underground warning tapes during backfilling of trenches for exterior underground lab gas piping. Locate tapes below finished grade, directly over piping.

F. Valves:
1. Install isolation valves at connections to equipment.
2. Install zone valves in valve boxes.
   a. Install valve boxes recessed in wall and anchored to substrate. Single boxes to be used for multiple valves that serve same area or function.
   b. Install zone valves and gauges in valve boxes. Rotate valves to angle that prevents closure of cover when valve is in closed position.
      1) Pressure system valves: Install pressure gauge downstream from valve.
      2) Suction system valves: Install vacuum gauge upstream from valve.
      3) Install labels on zones for rooms served within the zone valve box and on removable cover.
   C. Install sensors for lab gas systems within zone valve box unless otherwise indicated on plan.
3. Except where indicated or in flush wall mounted cabinets, install manual shut off valves with stem vertical and accessible for operation and maintenance.
4. Install check valves to maintain correct direction of fluid flow to and from lab gas specialties and equipment.
5. Install pressure safety and vacuum relief valves where recommended by specialty manufacturers.
6. Install emergency lab gas connections with pressure relief valve and full-size discharge piping to outside, with check valve downstream from pressure relief valve and with ball valve and check valve in supply main from bulk oxygen storage tank.
7. Install pressure regulators in piping to reduce pressure.

G Manifolds:
1. Install relief valves between final pressure regulator and soure valve.
2. Install relief valve piping to building exterior and sized at least full size of the relief valve outlet.
3. Extend relief valve vent piping to exterior of building and a a minimum of 6 feet above pedestrian areas. Turn down discharge piping and provide a screen over outlet.
4.

H. Outlets:
1. Install lab gas service connections, of types indicated, in walls.
   a. Attach roughing-in assembly to substrate.
   b. Attach finishing assembly to roughing-in assembly.
2. Install lab gas service connections, of types indicated, in lab gas service units.
3. Lab gas outlets to be installed in non-rated walls.
4. Make final connections to booms and pedestals according to manufacturer

requirements.

5. Protect outlets from damage and debris until final cover plates are installed.

I. Compressors and Vacuum Pumps:
   1. Vibration and Noise Isolation: See Section 22 05 48.
   2. Install compressors and vacuum pumps on concrete housekeeping pad.
      a. Maintain manufacturer's recommended clearances.
      b. Arrange units so controls and devices that require service are accessible.
      c. Place and secure anchorage devices.
      d. Anchor equipment to substrate.
   3. Install isolation valves at connections to equipment.
   4. Isolate systems including receivers, dryers, and filters until after completion and approval of purity tests for compressed air system. Tie-in at flange or union joint.
   5. Install flexible pipe connectors at each connection to lab air and vacuum equipment.
   6. Install vacuum exhaust and air intake with termination at exterior of building with elbow turned down and screen on end of elbow.
   7. Install the following devices on lab air equipment:
      a. Thermometer, pressure gauges, and safety valves on each reciever.
      b. Pressure regulators installed downstream of compressors, dryers, and filter assemblies.
      C.

J. Alarm system:
   1. Install lab gas alarm system components in locations required by and according to NFPA 99 and manufacturer's written instructions.
   2. Install lab gas alarm panels where indicated.
   3. Install lab gas local alarm panels at source equipment.
   4. All wiring and metal conduit required to interconnect and operate the complete lab gas alarm system specified herein shall be included in the mechanical contract.
   5. Control wiring shall be installed in accordance with an electrical wiring diagram prepared and furnished by the supplier of the lab gas outlets who shall be solely responsible for its accuracy and completeness.
   6. All lab gas alarm wiring shall be installed in EMT conduit and included in the mechanical contract.
   7. Lab gas alarm panels to be installed in non-rated walls.

3.02 FIELD QUALITY CONTROL

G. See Section 01 40 00 - Quality Requirements for additional requirements.

H. Testing agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

I. Installer performed tests:
   1. Perform the following tests in accordance with procedures in NFPA 99.
      a. Initial blow down.

b. Initial pressure test.
c. Cross connection test.
d. Piping purge test.
e. Standing pressure test for positive pressure lab gas systems.
f. Standing pressure tests for vacuum systems.

2. Prepare written reports documenting testing procedures and results. maintain records of all reports on site and submit with O&Ms.

J. System verification/certification tests:
1. Upon completion of installer performed tests, perform the following in accordance with procedures in NFPA 99.
a. Standing pressure test.
b. Cross connection test.
c. Individual system pressurization.
d. Valve test.
e. Alarm test.
f. Piping purge test.
g. Piping particulate test.
h. Piping purity test.
i. Final tie-in test.
j. Operation pressure test.
k. Lab gas concentration test.
l. Lab air purity test.
m. Labeling veriication.
n. Source equipment verification.
1) Manifolds.
2) Lab air compressor system.
3) Lab-surgical vacuum system.

2. Prepare written reports documenting testing procedures and results. Maintain records of all reports on site, submit completed verification reports as they are completed, and submit with O&Ms.

K. Lab Gas Systems: Inspect, test and verify systems and equipment in accordance with NFPA 99. Submit documentation of inspection, testing, and verification results.

L. Protect cleaned piping before and during installation.

M. Joints shall be brazed within 8hrs of being assembled.

N. After erection of pipe and tubing but prior to installation of service outlet valves, blow systems clear of free moisture and foreign matter with nitrogen gas.

O. Check each station outlet of every piping system to determine test gas is dispensed only from outlet of system under investigation. Measure pressure with gauge attached to specific adaptor. Do not use universal adaptors.

P. Disconnect test gas and connect proper gas to each system. Purge entire system to remove test gas. Check with analyzer suitable for gas installed.

3.03 CLOSEOUT ACTIVITIES

Q. See Section 01 78 00 - Closeout Submittals for closeout submittals.

R. See Section 01 79 00 - Demonstration and Training for additional requirements.

S. Train operating personnel in operation and maintenance of the following:
   1. Air compressors.
   2. Vacuum pumps.
   3. Alarm systems.

T. Provide services of manufacturer's field representative to conduct training.

END OF SECTION

SECTION 22 05 53 – IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 – GENERAL

1.1 SUMMARY

A. Provide pipe and equipment identification and valve tagging/schedules for all plumbing systems.

1.2 REFERENCES

A. ANSI/ASME A13.1 – Scheme for the Identification of Piping Systems (IU standard requires labeling per A13.1).

PART 2 – PRODUCTS

2.1 PIPE MARKERS

A. Provide pre-printed, color-coded pipe markers with system name and direction of flow.

B. Provide additional hazard legends for laboratory special waste and non-potable water outlets.

2.2 VALVE TAGS

A. Provide engraved or stamped valve tags with unique ID numbers; provide corresponding valve schedule in closeout documents.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install markers at least every 25 feet in corridors and 50 feet in mechanical spaces, and at each penetration, valve, tee, and equipment connection.

B. Orient so readable from normal approach.

END OF SECTION 22 05 53

SECTION 22 11 16 – DOMESTIC WATER PIPING (POTABLE AND NON-POTABLE)

PART 1 – GENERAL

1.1 SUMMARY

A. Provide domestic cold and hot water distribution piping systems as shown.

B. Provide separate potable and non-potable systems where indicated; provide signage at non-potable outlets.

1.2 PERFORMANCE REQUIREMENTS

A. Maintain pressure at plumbing fixtures between 40 and 80 psig via booster pumps and/or pressure reducing valves.

B. Domestic hot water generation: Where available, utilize Citizens Energy Group (CEG) steam for IUPUI/IU Indianapolis; where steam is not available or approved by Owner, provide instantaneous/condensing gas-fired water heaters per Section 22 34 00.

C. Provide DHW supply temperature of 140°F; provide mixing valves to deliver 110°F to lavatories and showers; evaluate specialty equipment temperatures.

PART 2 – PRODUCTS

2.1 DOMESTIC WATER PIPE AND FITTINGS

A. NPS 2-1/2 inches and smaller:

1. Pipe: Type L hard drawn copper, ASTM B88.

2. Joints: Lead-free solder, ASTM B32. Press-fit joints, grooved joints, and tee-drills are not allowed.

3. Fittings: Cast bronze ANSI B16.18; wrought copper ANSI B16.22.

B. NPS 3 inches and larger:

1. Pipe: Type L hard drawn copper, ASTM B88; or stainless steel minimum Schedule 10.

2. Joints: Copper brazed, AWS A5.8; stainless steel welded or flanged.

3. Press-fit joints, grooved joints, and tee-drills are not allowed.

C. Chrome plate finish any bare pipe subject to chemical exposure.

2.2 VALVES

A. Domestic water isolation valves:

1. Ball valves: Bronze body, full port, stainless steel ball and stem, quarter turn.

2. Butterfly valves: Ductile iron body, lug type, stainless steel disc and stem.

3. Gate valves shall not be used unless preapproved by IU Engineering Services.

B. Provide shutoff valves at each fixture and equipment connection, at each branch takeoff from mains, at base of each riser, and at each battery of fixtures.

2.3 WATER HAMMER ARRESTORS

A. Provide bellows type water hammer arrestors with stainless steel body and bellows.

B. Provide at flush valves, quick-closing valves, and other potential locations per PDI WH-201.

C. Provide access panels at inaccessible locations.

2.4 HOSE BIBBS

A. Provide loose key hose bibbs in equipment rooms, public restrooms, and roofs for cleaning/maintenance.

B. Exterior hydrants and hose bibbs: frost proof, integral vacuum breaker type with recessed corrosion resistant valve box and trim; tamper resistant in public areas.

2.5 INSTALLATION NOTES (ANTI-STAGNATION)

A. Do not install arrangements that allow water to stagnate.

B. Valves installed for future connections shall not extend more than 24 inches from an active main.

C. Provide accessible check valves in individual hot and cold supplies serving mixing valve type faucets or assemblies having hose connections that are not equipped with integral check stops.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Pressurized piping shall not be located under or in building slab.

B. Install a shutoff valve immediately upstream of each strainer.

C. Insulation: Insulate all domestic water piping per energy code; where exposed/visible, use fiberglass insulation with PVC jacket; elsewhere use ASJ.

3.2 TESTING AND DISINFECTION

A. Hydrostatic test at 150% of operating pressure for minimum 2 hours.

B. Flush and disinfect potable systems; submit test results.

END OF SECTION 22 11 16

SECTION 22 11 19 – DOMESTIC WATER BACKFLOW PREVENTION

PART 1 – GENERAL

1.1 SUMMARY

A. Provide reduced-pressure-principle backflow preventers (RPZ) on building domestic water service, non-potable systems, irrigation, and make-up water lines where required by code and IU standards.

1.2 REQUIREMENTS

A. By-passes are not allowed.

B. Provide reduced pressure type in cold-water building supply main; provide two (2) in parallel.

C. Provide RPZ on make-up water lines for chilled water, heating water, cooling tower water, and where required by code; provide metering for all make-up water lines.

D. Incorporate brass strainer for each backflow device; provide inlet strainer with isolation valves; assemblies shall include test cocks and relief valve between two positive seating check valves.

E. Coordinate arrangement with IU Engineering Services and comply with local water utility requirements.

PART 2 – PRODUCTS

2.1 RPZ ASSEMBLIES

A. Reduced pressure principle assemblies: ASSE 1013, lead-free.

B. Accessories:

1. Valves: Ball with threaded ends NPS 2 and smaller; OS&Y gate with flanged ends NPS 2-1/2 and larger.

2. Air-gap fitting: match backflow connection; extend air-gap drain full size to floor drain.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Provide service clearances and access for testing and maintenance.

B. Extend relief discharge/air-gap drains full size to floor drain; do not reduce.

3.2 TESTING

A. Test and certify assemblies at startup and as required by AHJ/Owner.

END OF SECTION 22 11 19

SECTION 22 11 23 – DOMESTIC WATER PRESSURE BOOSTER PUMP SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. Provide packaged, skid-mounted, variable-speed triplex booster pump system serving building potable and non-potable cold water distribution as indicated.

1.2 PERFORMANCE REQUIREMENTS

A. Maintain fixture pressures 40–80 psig; provide redundancy such that one pump may be out of service and system maintains required pressure/flow.

B. Controls: Monitor outlet pressure and provide common failure alarm to IU BMS.

C. Provide manual by-pass arrangement as required by IU standards.

D. Provide expansion tank if frequent demand is expected.

PART 2 – PRODUCTS

2.1 PUMP PACKAGE

A. Packaged booster system with three (3) vertical multistage pumps, stainless steel wetted components, each with VFD and check valve.

B. Controller with lead/lag alternation, soft start, minimum run-time, and data display (flow, inlet/outlet pressure, alarms).

C. Provide suction and discharge isolation valves, pressure gauges/transducers, and relief valve.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Coordinate electrical power, controls, and BAS integration.

B. Provide vibration isolation where required.

C. Provide factory startup and commissioning reports.

END OF SECTION 22 11 23

SECTION 22 11 23.13 – NATURAL GAS PIPING AND ACCESSORIES

PART 1 – GENERAL

1.1 SUMMARY

A. Provide natural gas piping systems serving plumbing and mechanical equipment.

B. Coordinate meter location with utility company and IU.

1.2 PERFORMANCE REQUIREMENTS

A. Delivery pressure: 2 psig.

B. Regulate to 7–14 inches w.c. at equipment.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

A. Schedule 40 black steel pipe, ASTM A53.

B. Joints:

1. Welded for mains.
2. Threaded for branch piping in labs.

2.2 VALVES

A. Full-port ball valves, threaded or flanged.

2.3 REGULATORS

A. Line pressure regulators where required.

B. Vent regulators per code.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install per Indiana Fuel Gas Code.

B. Test piping at 1.5 times operating pressure.

C. Label piping per Section 22 05 53.

SECTION 22 13 00 – SANITARY WASTE AND VENT PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. Provide gravity sanitary waste and vent piping systems for all plumbing fixtures and equipment.

B. Coordinate building sewer exits with site utilities (anticipated to the west).

1.2 PERFORMANCE REQUIREMENTS

A. Slopes:

1. Sanitary mains and branches: minimum 1/8 inch per foot unless code requires steeper.

2. Branch piping connected to low-flow fixtures: minimum 1/4 inch per foot to nearest sanitary main.

B. Cleanouts:

1. Provide at base of each stack.

2. Provide on horizontal runs at intervals not exceeding 50 feet per IU standard.

3. Provide wall cleanouts in lieu of floor cleanouts wherever practical; coordinate locations with architecture.

1.3 SUBMITTALS

A. Product data for pipe, fittings, couplings, cleanouts, and supports.

B. Test reports including dye testing where required to verify sanitary is not connected to storm.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

A. Underground sanitary and storm (NPS 15 and smaller): Extra Heavy (XH) cast iron, ASTM A888; bell and spigot hub connections.

B. Interior sanitary:

1. Cast iron: Extra Heavy (XH) cast iron, ASTM A888; bell and spigot hub connections with stainless steel clamps, FM 1680 Class 1, ASTM C1540.

2. Copper (where permitted/appropriate by design, typically NPS 3 and smaller): Type M, ASTM B88 with lead-free soldered joints and copper fittings.

2.2 COUPLINGS

A. Non-shielded flexible couplings are not permitted.

2.3 CLEANOUTS

A. Provide brass recessed cleanout fittings in floors with brass cover with three hold-down screws; plug recessed with slot in head.

B. Provide brass cleanouts in walls with protruding square head and brass cover with three screws.

C. Lubricate cleanout plugs with anti-seize lubricant prior to installation; remove/re-lubricate/reinstall prior to final completion.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Do not use double sanitary tee fittings; use wye with 1/8 bends.

B. Use appropriate branches/bends/long-sweep bends; do not change direction of flow more than 90 degrees.

C. Do not reduce drainage pipe size in direction of flow.

D. Drain and vent piping below slab shall be no less than NPS 3 inches.

E. Use test tees for testing waste/vent systems; do not separate and cap ends for testing.

3.2 TESTING

A. Test sanitary drains for 1 hour at 10 feet of head (minimum), unless stricter requirements apply.

B. Dye test waste lines installed for new construction or new connections to verify waste will not enter storm system.

END OF SECTION 22 13 00

SECTION 22 13 29 – LABORATORY WASTE AND VENT PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. Provide laboratory/special (acid) waste and vent piping from laboratory fixtures to designated dilution point and connection to sanitary system as indicated.

B. Disposal of spent chemicals to drainage system is prohibited; comply with IU chemical disposal plan as provided by Owner.

1.2 MATERIAL SELECTION (PROJECT + IU STANDARD)

A. General: Provide chemically resistant drainage materials suitable for the waste stream and required locations.

B. Air plenums: Use Schedule 40 flame retardant PVDF (FR-PVDF) conforming to ASTM F1673 for pipe located within air plenums per IU standard.

C. Non-plenum interior and below-slab: Provide Schedule 40 polypropylene acid waste piping system (as indicated in project narrative) with manufacturer-listed electrofusion or fuse-seal joints, except where PVDF is required for plenum routing.

PART 2 – PRODUCTS

2.1 PIPING AND JOINTS

A. FR-PVDF (air plenums):

1. Pipe: Schedule 40 FR-PVDF, ASTM F1673.

2. Fittings: Socket fusion.

B. Polypropylene / PVDF joint method sizing (IU standard):

1. NPS 2 inches and smaller: mechanical joints.

2. NPS 2-1/2 inches and larger: fused seal joints.

C. Provide compatible transition fittings/couplings where changing materials or joining methods.

2.2 SUMPS AND EJECTORS

A. Pumping of Acid Waste drainage is not allowed.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Provide slope minimum 1/8 inch per foot unless stricter required.

B. Provide cleanouts as required by code and IU standards; coordinate wall cleanouts where possible.

C. Fusion/mechanical jointing shall be performed by manufacturer-trained installers and documented.

END OF SECTION 22 13 29

SECTION 22 14 00 – STORM DRAINAGE PIPING AND ACCESSORIES

PART 1 – GENERAL

1.1 SUMMARY

A. Provide storm drainage piping from roof drains and area drains to site system.

B. Design rainfall: 4 inches/hour, 100-year storm.

1.2 SYSTEM DESCRIPTION

A. Primary and overflow roof drains combined into single interior downspouts below roof.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

A. Below slab: Service-weight hub-and-spigot cast iron with neoprene gaskets.

B. Above grade: No-hub cast iron with heavy-duty couplings.

2.2 DRAINS

A. Roof drains: Cast iron body with flashing collar.

B. Area/areaway drains: Cast iron with ductile iron grates.

C. Trench drains: Polymer concrete with ductile iron grates.

2.3 ACCESSORIES

A. CISPI no-hub restraints on vertical risers.

B. Insulation on horizontal storm piping under roof.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Slope horizontal piping minimum 1/8 inch per foot.

B. Test storm piping with water test.

C. Coordinate penetrations and flashings.

SECTION 22 34 00 – GAS-FIRED DOMESTIC WATER HEATERS

PART 1 – GENERAL

1.1 SUMMARY

A. Provide condensing, gas-fired domestic water heaters serving potable and non-potable hot water systems where steam is not available or where approved by Owner/IU Engineering Services.

1.2 PERFORMANCE REQUIREMENTS

A. Domestic hot water systems shall be designed for 140°F supply temperature and shall include mixing valves to deliver 110°F to lavatories and showers (IU standard).

B. Provide modular staging for low and high demand as indicated in project narrative.

C. Provide condensate neutralization and code-compliant venting.

PART 2 – PRODUCTS

2.1 WATER HEATERS

A. Fully condensing, modulating, sealed combustion type.

B. Stainless steel heat exchanger; minimum 10:1 turndown (or better).

C. Provide controls capable of BAS interface (Modbus/BACnet gateway as required by project).

D. Provide manufacturer-certified startup.

2.2 ACCESSORIES

A. Venting: Positive pressure condensing vent system listed for appliance; coordinate routing and terminations.

B. Condensate: Neutralizer kit and indirect waste to receptor.

C. Recirculation: Provide ECM wet-rotor variable speed recirculation pumps and thermostatic balancing valves where indicated.

PART 3 – EXECUTION

3.1 INSTALLATION AND STARTUP

A. Verify gas pressure and provide regulators as required; avoid routing high pressure gas (>2 psi) inside building.

B. Provide combustion air, venting, and condensate per manufacturer and code.

C. Startup, combustion tuning, and Owner training by manufacturer.

END OF SECTION 22 34 00

SECTION 22 40 00 – PLUMBING FIXTURES

PART 1 – GENERAL

1.1 SUMMARY

A. Provide plumbing fixtures complete with trim, carriers, and accessories.

B. Fixtures shall comply with IU Engineering Services Plumbing Standards and project narrative.

1.2 PERFORMANCE REQUIREMENTS

A. Water efficiency per LEED indoor water use reduction.

B. ADA compliance per ICC A117.1 and 2010 ADA Standards.

PART 2 – PRODUCTS

2.1 WATER CLOSETS

A. Wall-hung vitreous china, siphon jet.

B. 1.28 gpf with hard-wired electronic flush valves.

2.2 URINALS

A. Wall-hung vitreous china.

B. 0.125 gpf with hard-wired electronic flush valves.

2.3 LAVATORIES

A. Integral solid surface countertop basins.

B. Electronic sensor-operated faucets, 0.5 gpm, with ASSE 1070 mixing valves.

2.4 SINKS

A. Stainless steel counter insert.

B. Manual two-handle faucets, 1.0 gpm.

2.5 SPECIALTY FIXTURES

A. Emergency showers and eyewashes per ANSI Z358.1.

B. Electric water coolers, filtered, bottle filling, high-low type.

C. Mop basins with hose-end faucet and vacuum breaker.

D. Wall hydrants: non-freeze, recessed, lockable.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Set fixtures plumb and level.

B. Provide ADA insulation on exposed traps.

C. Adjust sensors and verify flows.

SECTION 22 62 00 – LABORATORY COMPRESSED AIR GENERATION SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Provide central compressed air system including compressors, dryers, receiver, filtration, pressure reduction, and controls as indicated.

1.2 PERFORMANCE REQUIREMENTS

A. Provide two (2) oil-free compressor packages for redundancy, each sized for 100% of load (per project narrative).

B. Provide desiccant drying to ≤ -40°F pressure dew point and filtration to achieve ISO 8573-1 Class 1.2.1 (per project narrative).

C. Provide BAS alarm point for general trouble.

PART 2 – PRODUCTS

2.1 COMPRESSORS

A. Oil-free rotary-tooth compressors with VSD; integral controls and sequencing.

B. Capacity: approximately 200 cfm at 125 psig each (verify during design).

2.2 DRYERS, FILTERS, RECEIVER

A. Desiccant dryers: duplex for redundancy; sized for peak flow.

B. Coalescing and particulate filters: redundant arrangement; performance as indicated.

C. Receiver: vertical 400 gallon, epoxy coated; provide relief valve, gauge, and accessories.

PART 3 – EXECUTION

3.1 STARTUP AND COMMISSIONING

A. Provide factory start-up, training, and performance test including dew point verification and representative outlet quality testing.

END OF SECTION 22 62 00

SECTION 22 62 13 – LABORATORY COMPRESSED AIR PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. Provide compressed air distribution piping and appurtenances from central compressed air plant to laboratory outlets and equipment.

1.2 PERFORMANCE REQUIREMENTS

A. Design pressure: 100 psig distribution unless otherwise indicated; provide point-of-use regulators as required.

B. Provide ISO 8573-1 Class 1.2.1 air quality at points of use (as stated in project narrative).

PART 2 – PRODUCTS

2.1 PIPING

A. Copper tubing:

1. 125 psig and less: Type L copper tubing with soldered joints.

2. 126 psig and greater: Type K copper tubing with brazed joints.

3. Copper shall be cleaned and capped; ASTM B280.

B. Joints: Brazed AWS A5.8, BCuP-5 for Type K where required.

C. Fittings: Wrought copper ANSI B16.22, cleaned and bagged.

2.2 VALVES

A. Isolation valves (NPS 3 and smaller): Full port, 3-piece, bronze body, stainless steel ball and stem, oxygen cleaned and bagged.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Provide proper supports; provide drip legs/condensate management as required.

B. Pressure test per Section 22 05 00 and IU standard hydrostatic requirements.

END OF SECTION 22 62 13

SECTION 22 83 00 – LABORATORY PURIFIED / HIGH PURITY WATER PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. Provide purified water distribution loop piping from central purified water system to points of use.

B. Provide looped mains to minimize dead legs (IU standard for RO/distilled piping).

1.2 MATERIAL REQUIREMENTS

A. Provide Schedule 80 virgin polypropylene piping.

B. Fittings/Joints: Fuse seal; use manufacturer's recommended fusion method (project basis includes infrared butt fusion where applicable).

C. Valves: Same material and manufacturer as piping.

D. Provide self-closing valves and faucets at outlets.

PART 2 – PRODUCTS

2.1 PIPING

A. Schedule 80 virgin polypropylene; translucent/unpigmented where required for visual inspection and purity assurance.

B. Provide loop configuration; avoid dead legs; future branches limited per IU anti-stagnation practices.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Fusion joining by trained personnel; record fusion parameters.

B. Flush/recirculate per system supplier; verify resistivity/conductivity at loop and representative outlets as required by Owner.

END OF SECTION 22 83 00

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	EFFICENCY	RD	ROOF DRAIN
EJ	EXPANSION JOINT	RO	REVERSE OSMOSIS WATER
ELEC	ELECTRICAL	RPM	REVOLUTIONS PER MINUTE
ELEV	ELEVATION	RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
EP	ELEVATOR PIT		
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

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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
4	01/19/2026	BP3-CD: ADDENDUM 03
3	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
2	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE
1	09/29/2025	BP3-100% DD: CORE AND SHELL PACKAGE

PLUMBING SYMBOLS AND ABBREVIATIONS

DATE — REF: SHEET INDEX

BSA PROJECT NO. — 00360481

P001

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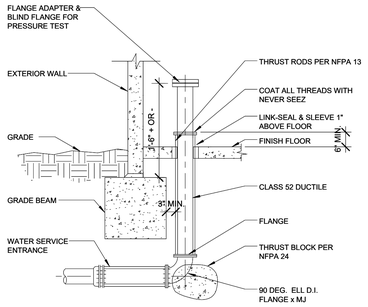
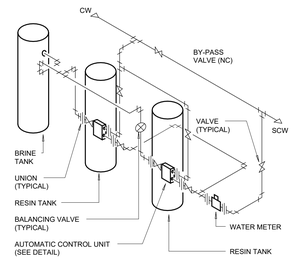
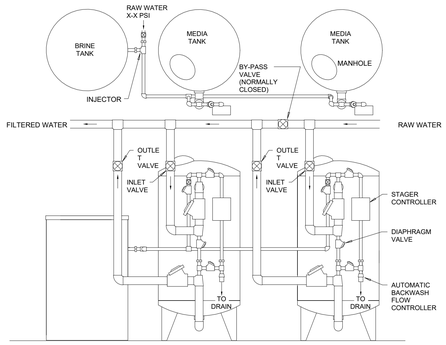
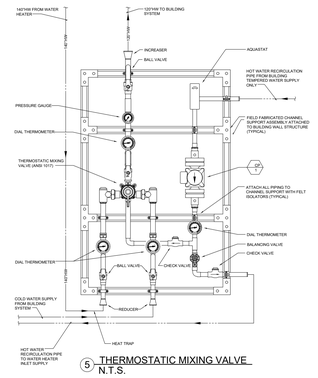


2 WATER SERVICE
N.T.S.

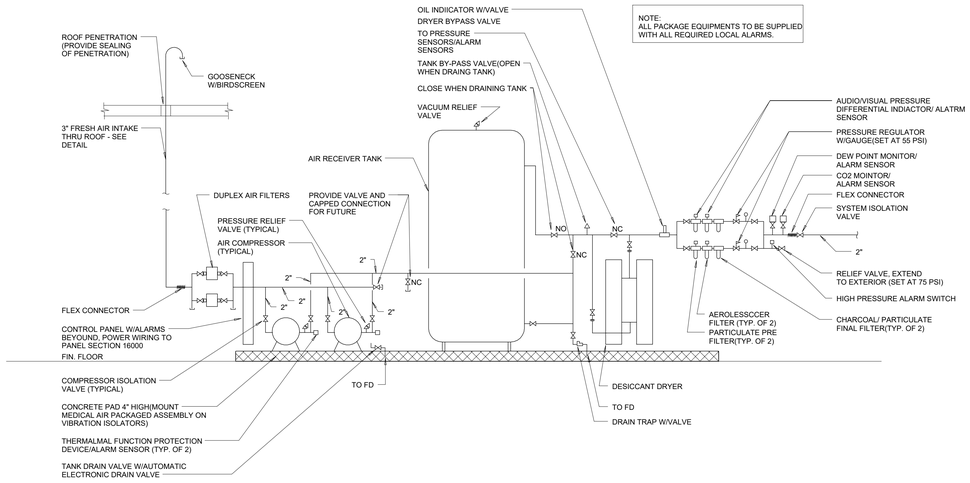


3 WATER SOFTENER
N.T.S.



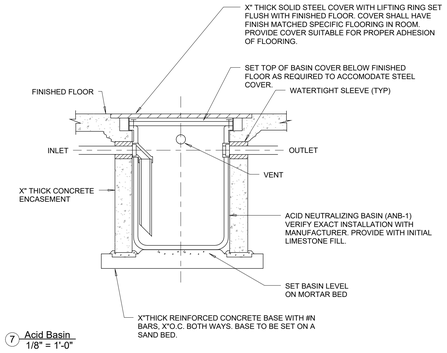


5 THERMOSTATIC MIXING VALVE
N.T.S.

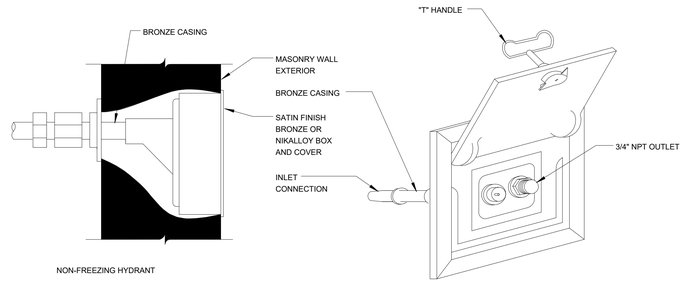


NOTE:
ALL PACKAGE EQUIPMENTS TO BE SUPPLIED WITH ALL REQUIRED LOCAL ALARMS.

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



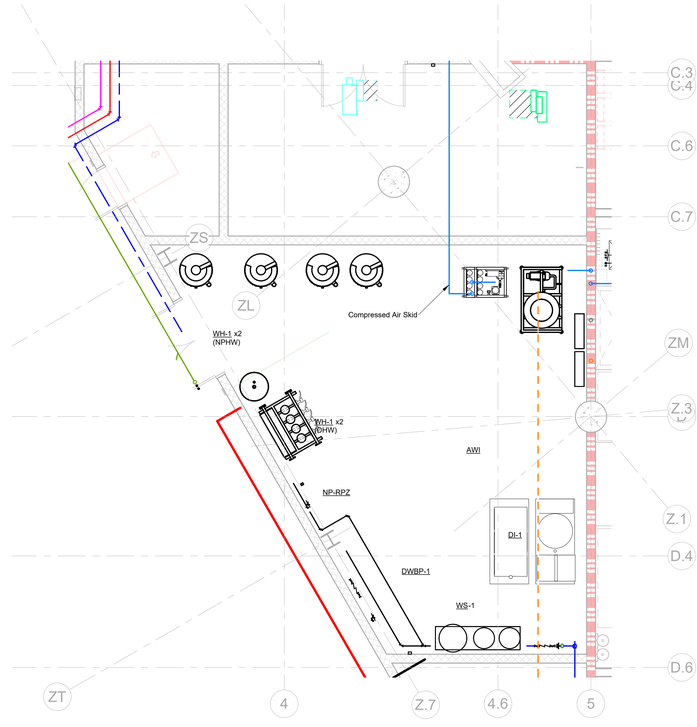
7 Acid Basin
1/8" = 1'-0"



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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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-100% CORE AND SHELL PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
4	01/19/2026	BP3-CD: ADDENDUM 03
3	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
2	09/29/2025	BP4-50% DD: BUILD OUT PACKAGE
1	09/29/2025	BP3-100% DD: CORE AND SHELL PACKAGE

PLUMBING DETAILS 1

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360401

P501

1/23/2026 1:15:54 PM
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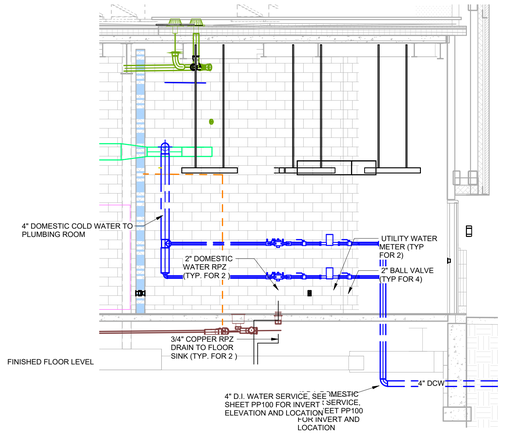
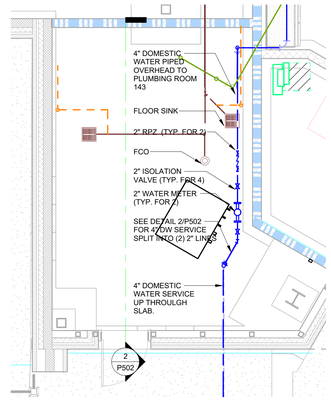
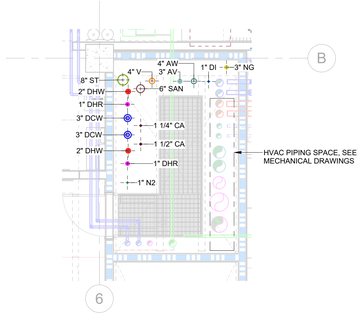


2 INCOMING DOMESTIC WATER SERVICE
1/4" = 1'-0"



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



3 PIPING SHAFT RISER DETAIL - LEVEL 3
1/4" = 1'-0"

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LAUNCH ACCELERATOR FOR BIOSCIENCES

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
4	01/19/2026	BP3-CD: ADDENDUM 03
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 2

DATE
BSA PROJECT NO. 00360481

REF: SHEET INDEX

P502

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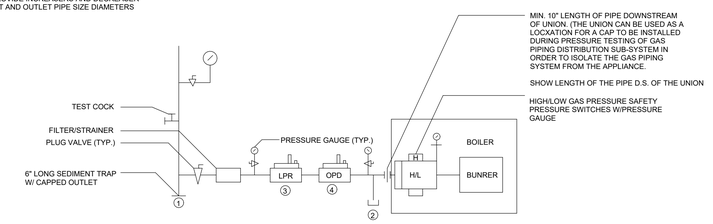
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ULAB_R24.rvt

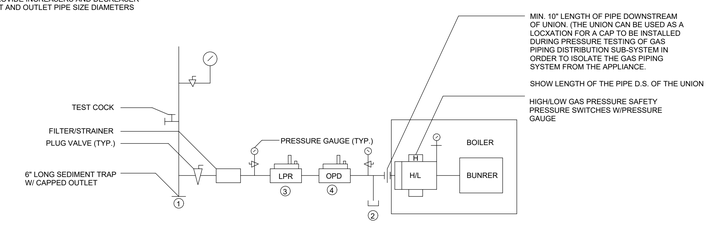
NOTE:
1. PRESSURE GAUGES CAN BE USED DURING PIPE PRESSURE TESTING TO ESTABLISH TEST PRESSURE
2. PRESSURE GAUGES CAN BE USED DURING NORMAL OPERATION TO TROUBLESHOOT AND CHECK FILTER.
3. CONTRACTOR TO PROVIDE INCREASERS AND DECREASER THAT MATCH THE INLET AND OUTLET PIPE SIZE DIAMETERS OF THE LPR AND OPD.



1. F/I PER NFPA54-2024 (NOT REQUIRED BY NFPA54-2024
2. F/I PER NFPA54-2024 (REQUIRED BY NFPA54-2024; PARA. 7.6.3 & 9.6.8)
3. LPR=LINE PRESSURE REGULATOR (REQUIRED BY NFPA54-2024; PARA 5.7)
4. OPD=OVERPRESSURE PROTECTION DEVICE REQUIRED BY NFPA54-2024; PARA 5.8 WHERE GAS PRESSURE D.S OF THE SERVICE REGULATOR (CEG) > 2 PSIG FOR APPLIANCES DESIGNED TO OPERATE AT A GAS PRESSURE OF 14" W.C. OR LESS

1 CONNECTION DETAIL FOR HHW BOILER HB-1, HB-2, & HB-3
N.T.S.

NOTE:
1. PRESSURE GAUGES CAN BE USED DURING PIPE PRESSURE TESTING TO ESTABLISH TEST PRESSURE
2. PRESSURE GAUGES CAN BE USED DURING NORMAL OPERATION TO TROUBLESHOOT AND CHECK FILTER.
3. CONTRACTOR TO PROVIDE INCREASERS AND DECREASER THAT MATCH THE INLET AND OUTLET PIPE SIZE DIAMETERS OF THE LPR AND OPD.



1. F/I PER NFPA54-2024 (NOT REQUIRED BY NFPA54-2024
2. F/I PER NFPA54-2024 (REQUIRED BY NFPA54-2024; PARA. 7.6.3 & 9.6.8)
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4. OPD=OVERPRESSURE PROTECTION DEVICE REQUIRED BY NFPA54-2024; PARA 5.8 WHERE GAS PRESSURE D.S OF THE SERVICE REGULATOR (CEG) > 2 PSIG FOR APPLIANCES DESIGNED TO OPERATE AT A GAS PRESSURE OF 14" W.C. OR LESS

2 DHW HEATERS DHW-1A, 1B, 2A, & 2B
N.T.S.

1. CONTRACTOR IS TO REVIEW EACH OF THESE DETAILS WITH THE MANUFACTURER OF THE APPLIANCE AND THE CONTRACTOR WHO IS RESPONSIBLE FOR FURNISHING AND INSTALLING THAT APPLIANCE.
2. CONTRACTOR IS TO CONFIRM THAT THE DETAIL MATCHES THE APPLIANCE MANUFACTURERS' REQUIREMENTS (INCLUDING ADDRESSING ANY TRIM THAT MIGHT BE FURNISHED BY THE APPLIANCE MANUFACTURER THAT NEEDS TO BE INSTALLED BY A CONTRACTOR). IF A CHANGE NEEDS TO BE MADE, ADJUST THE PROVISION OF THE DETAIL ACCORDINGLY.
3. CONTRACTOR IS TO INCLUDE THE GAS TRAIN DETAILS SHOWN ON THIS DRAWING, ADJUSTED AS DESCRIBED DIRECTLY ABOVE, IF REQUIRED, IN THEIR SUBMITTALS TO TURNER CONSTRUCTION CO. (I.E. ALL DETAILS ARE TO BE INCLUDED IN SUBMITTALS WHETHER THEY NEEDED TO BE ADJUSTED OR NOT).
4. CONTRACTOR IS TO PROVIDE UNIONS (AND TEMPORARY CAPS) IN THE GAS PIPING DISTRIBUTION WHERE REQUIRED, IN ORDER TO ACCOMMODATE HOW THE CONTRACTOR WILL EXECUTE THE PRESSURE TESTING OF THE GAS PIPING NETWORK WITH NITROGEN.
5. CONTRACTOR IS TO PROVIDE UNIONS (AND TEMPORARY CAPS) IN THE GAS PIPING DISTRIBUTION WHERE REQUIRED, IN ORDER TO ACCOMMODATE HOW THE CONTRACTOR WILL EXECUTE THE PURGING OF THE NITROGEN USED FOR PRESSURE TESTING WITH NATURAL GAS (PURGE MUST BE DISCHARGED TO THE OUTDOORS). CONTRACTOR IS TO CONSIDER IF EACH CIRCUIT, OR EVERY CIRCUIT, NEEDS TO BE PURGED.

3 GENERAL NOTES
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
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 3

DATE
BSA PROJECT NO. 00360481

P503

1/22/2026 3:16:59 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-BJLAB_R24.rvt

KEY NOTES:

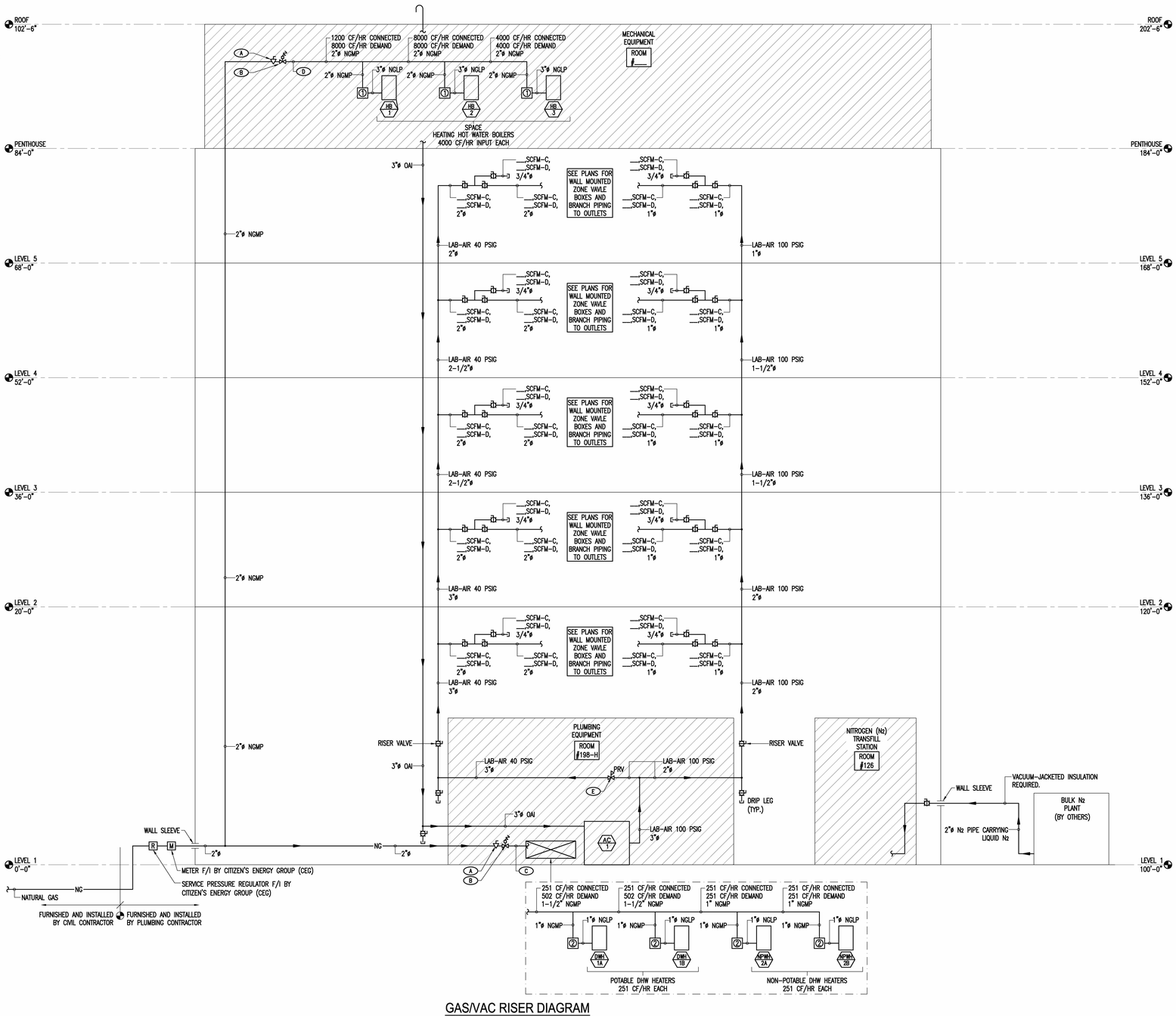
(A) (NATURAL GAS): PROVIDE A MANUAL OPERATED SHUTOFF VALVE THAT CAN BE CLOSED DURING NORMAL OPERATION AND IN CASE OF EMERGENCY; THIS VALVE SHALL BE LOCATED IN CONSPICUOUS LOCATION NEAR THE EXIT; THIS VALVE SHALL BE TAGGED "NATURAL GAS SHUTOFF VAVLE CLOSE IN EMERGENCY".

(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).

(C) NATURAL GAS SUPPLY TO DOMESTIC HOT WATER HEATERS.

(D) NATURAL GAS SUPPLY TO HEATING HOT WATER BOILERS.

(E) PRESSURE REDUCING VALVE USED TO DROP 100 PSIG TO 40 PSIG. (100 PSIG SERVES OSC'S AND PLUS SOME EQUIPMENT WHILE THE 40 PSIG SERVES FUME HOODS).



GAS/VAC RISER DIAGRAM

N.T.S.

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LAUNCH ACCELERATOR FOR BIOSCIENCES

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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 NATURAL AND LAB GAS RISER DIAGRAM

DATE
BSA PROJECT NO. 00360481

REF: SHEET INDEX

P504

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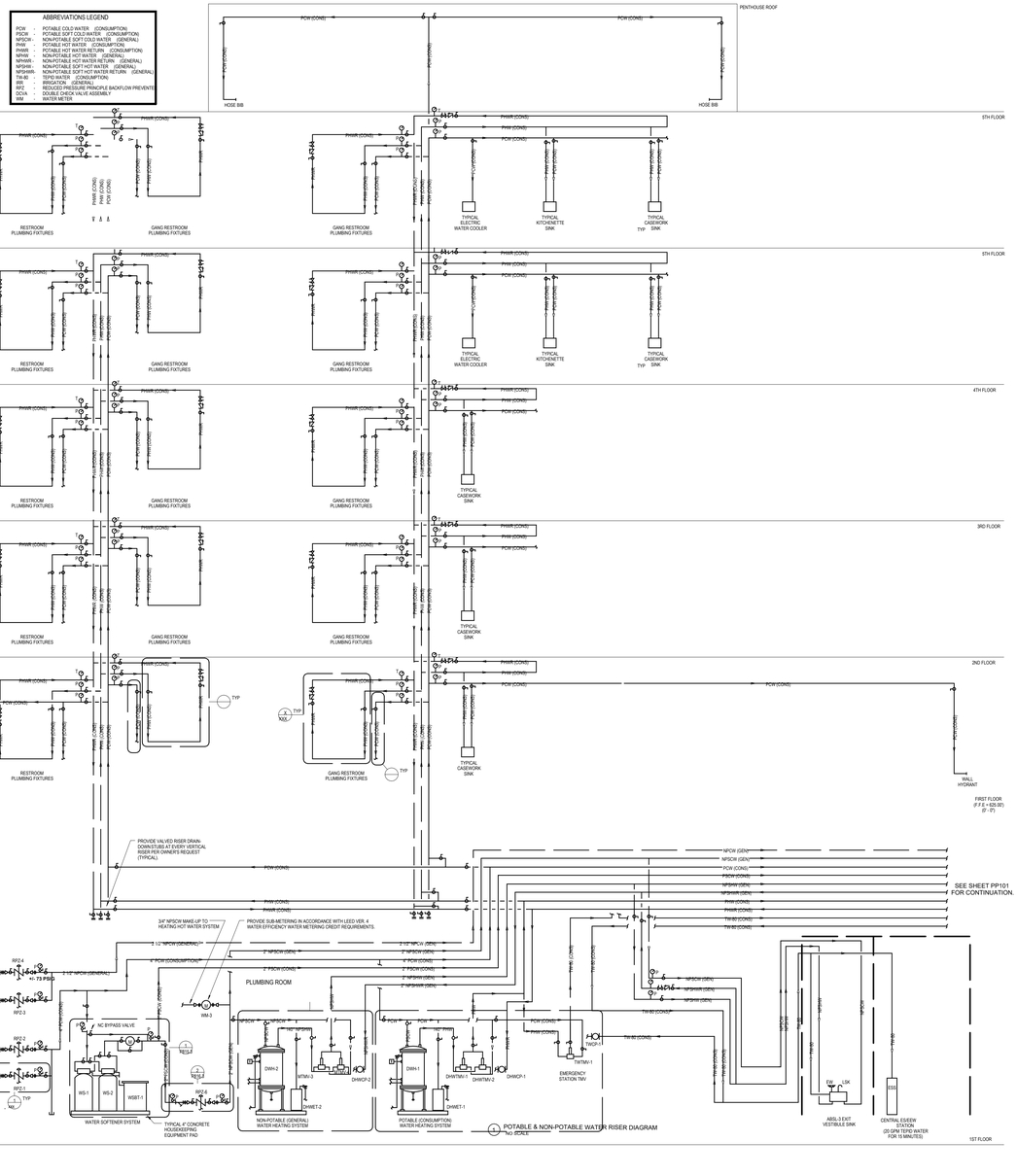

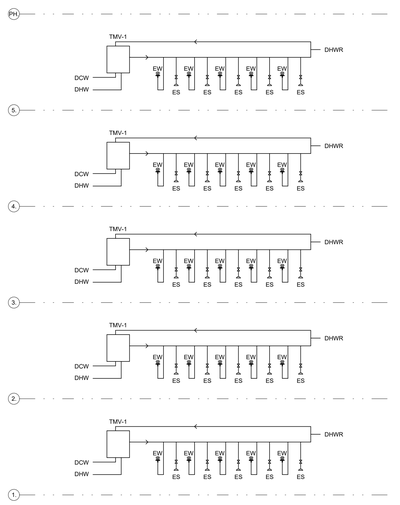

1 TEPID WATER RISER DIAGRAM
1 1/2" = 1'-0"

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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE

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

PLUMBING WATER PIPING RISER DIAGRAM

DATE REF: SHEET INDEX

BSA PROJECT NO. 00360481

P505

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Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM_20250072-ASLAB_R24.rvt

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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

P506

1/2/2026 3:17:05 PM
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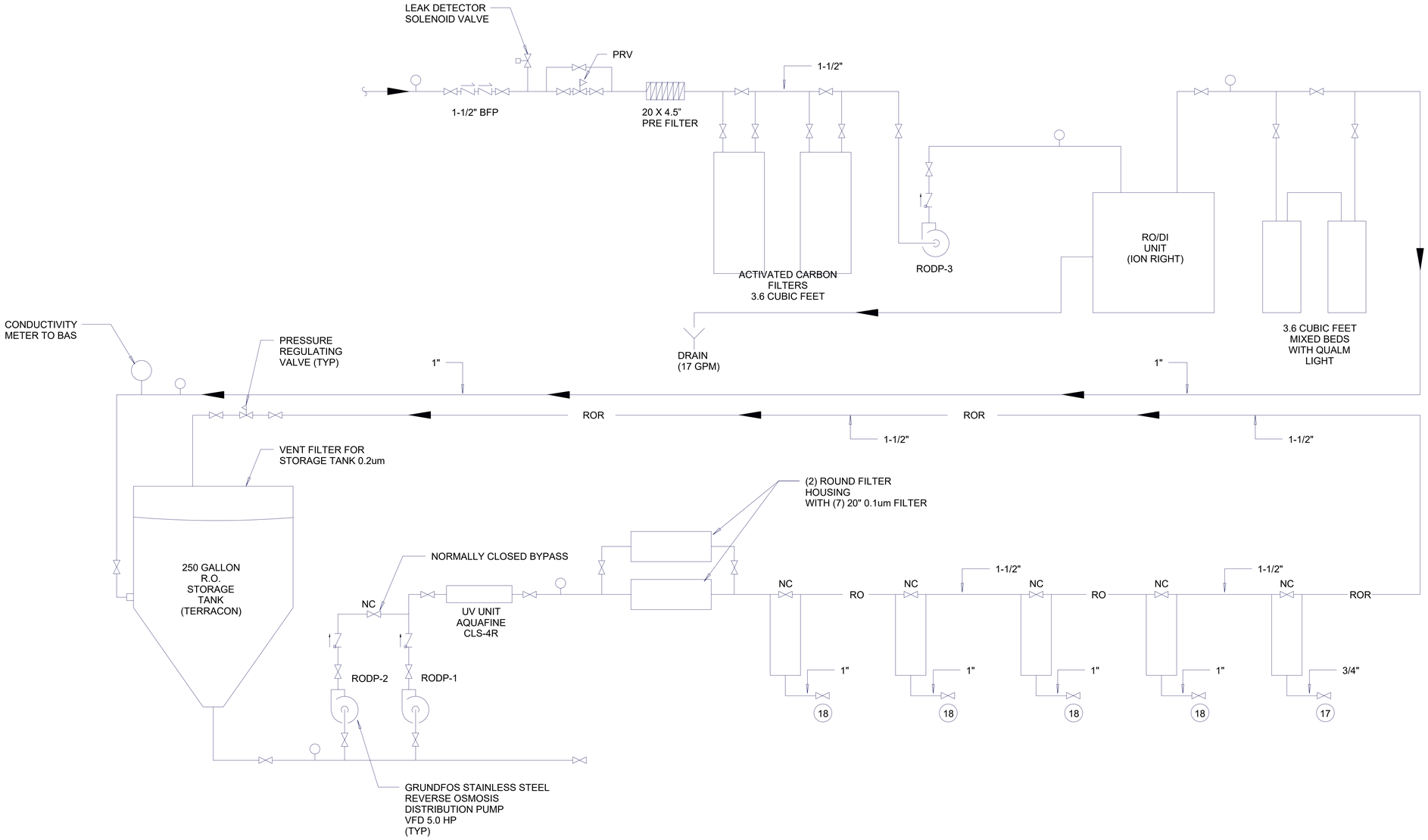

1 RO WATER
3/16" = 1'-0"

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LAUNCH ACCELERATOR FOR BIOSCIENCES

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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

P507

12/2/2025 3:17:56 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ARJAB_R24.rvt

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE TYPE	ADA	FIXTURE MANUFACTURER	FIXTURE MODEL	FAUCET OR FLUSH VALVE MANUFACTURER	FAUCET OR FLUSH VALVE MODEL	FAUCET OR FLUSH VALVE FLOWRATE	P-TRAP MANUFACTURER	P-TRAP MODEL	DRAIN MANUFACTURER	DRAIN MODEL	SUPPLIES AND STOPS MANUFACTURER	SUPPLIES AND STOPS MODEL	SEAT MANUFACTURER	SEAT MODEL	ROUGH-IN SAN [IN]	ROUGH-IN VENT [IN]	ROUGH-IN DCW [IN]	ROUGH-IN DHW [IN]	CARRIER MANUFACTURER	CARRIER MODEL	MOUNTING	NOTE	TAG
EWC	ELECTRIC WATER COOLER - BILEVEL WITH BOTTLE FILLER	YES	ELKAY	LVRCGRNTL8WSK	--	--	1.1 GPM	2" PVC P-TRAP		--	--	MCGUIRE	H2165CC	--	--	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	PW2125WCPRO	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	PW2125WCPRO	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	QSGR-81000 SS	SLOAN	(1) ETF-420	1.5 GPM	MCGUIRE	PW2125WCPRO	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-GN8BVBE7-317XK	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	T9342GBM25	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	TET6GB32#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	TET6GB32#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: 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 PW2125WCPRO.
5 - INCLUDE NIDEL 8A 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 MATERIAL	COMBUSTION AIR INTAKE SIZE	EXHAUST MATERIAL	EXHAUST SIZE	DCW INLET [IN]	DHW OUTLET [IN]	GAS INLET [IN]	GAS PRESSURE [IN-WC]	ELECTRICAL VOLTAGE	ELECTRICAL PHASE	ELECTRICAL AMPERAGE	DETAIL	NOTE
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 SIZE [IN]	STRAINER/COVER FINISH	OPTIONS		DETAIL	NOTE
FCO	ZURN	ZB1400	VARIES	CAST IRON	VARIES	BRONZE	NL	--	--	ROUND COVER
FD-4	ZURN	ZN415	SANITARY	CAST IRON	VARIES	NICKEL BRONZE	NL	--	--	ROUND STRAINER, PROVIDE "PRO SEAL" TRAP GUARD
FD-2	ZURN	ZN415	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 FLOW (scfm)	SYSTEM DEMAND w/o SAFETY FACTOR PRESSURE (psig)	SYSTEM DEMAND w/ 25% SAFETY FACTOR and 10% PURGE FLOW (scfm)	SYSTEM DEMAND w/ 25% SAFETY FACTOR and 10% PURGE PRESSURE (psig)	INSTALLED EQUIPMENT CAPACITY FLOW (scfm)	INSTALLED EQUIPMENT CAPACITY PRESSURE (psig)	INSTALLED EQUIPMENT CAPACITY (for each of three (3) modules) FLOW (scfm)	INSTALLED EQUIPMENT CAPACITY (for each of three (3) modules) PRESSURE (psig)	REDUNDANCY DUTY	REDUNDANCY STANDBY	FIRM EQUIPMENT CAPACITY (two (2) modules operating) FLOW (scfm)	FIRM EQUIPMENT CAPACITY (two (2) modules operating) PRESSURE (psig)	MOTOR DATA: NUMBER of MOTORS (per whole system) (#)	ABSORBED POWER (per each compressor) (bhp)	RATED POWER (per each motor) (mhp)	ROTATIONAL SPEED (rpm)	VOLTAGE (volts)	PHASE (#)	FREQ (Hz)	CURRENT DRAW (per each motor) (amps)	CURRENT DRAW (per whole system) (amps)	ALTERNATE POWER SYSTEM (yes or no)	ALTERNATE POWER SYSTEM (branch)	VARIABLE SPEED DRIVE (VSD) (per whole system) (yes or no)	VARIABLE SPEED DRIVE (VSD) (per whole system) (#)	SYSTEM OPERATION (continuous or intermittent)	TANK CAPACITY (gal)	EQUIPMENT DIMENSIONS LENGTH (inches)	EQUIPMENT DIMENSIONS WIDTH (inches)	EQUIPMENT DIMENSIONS HEIGHT (inches)	HOUSEKEEPING PAD DIMENSIONS LENGTH (inches)	HOUSEKEEPING PAD DIMENSIONS WIDTH (inches)	HOUSEKEEPING PAD DIMENSIONS HEIGHT (inches)	WEIGHT SHIPPING (lbs)	WEIGHT OPERATING (lbs)	VIBRATION ISOLATION TYPE (#)	VIBRATION ISOLATION MIN. STATIC DEFLECTION (inches)	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL NUMBER	KEYED REMARKS
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

53.7

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 1

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

P601

1/23/2026 3:17:07 PM
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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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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 REF: SHEET INDEX

BSA PROJECT NO. 00360481

P602

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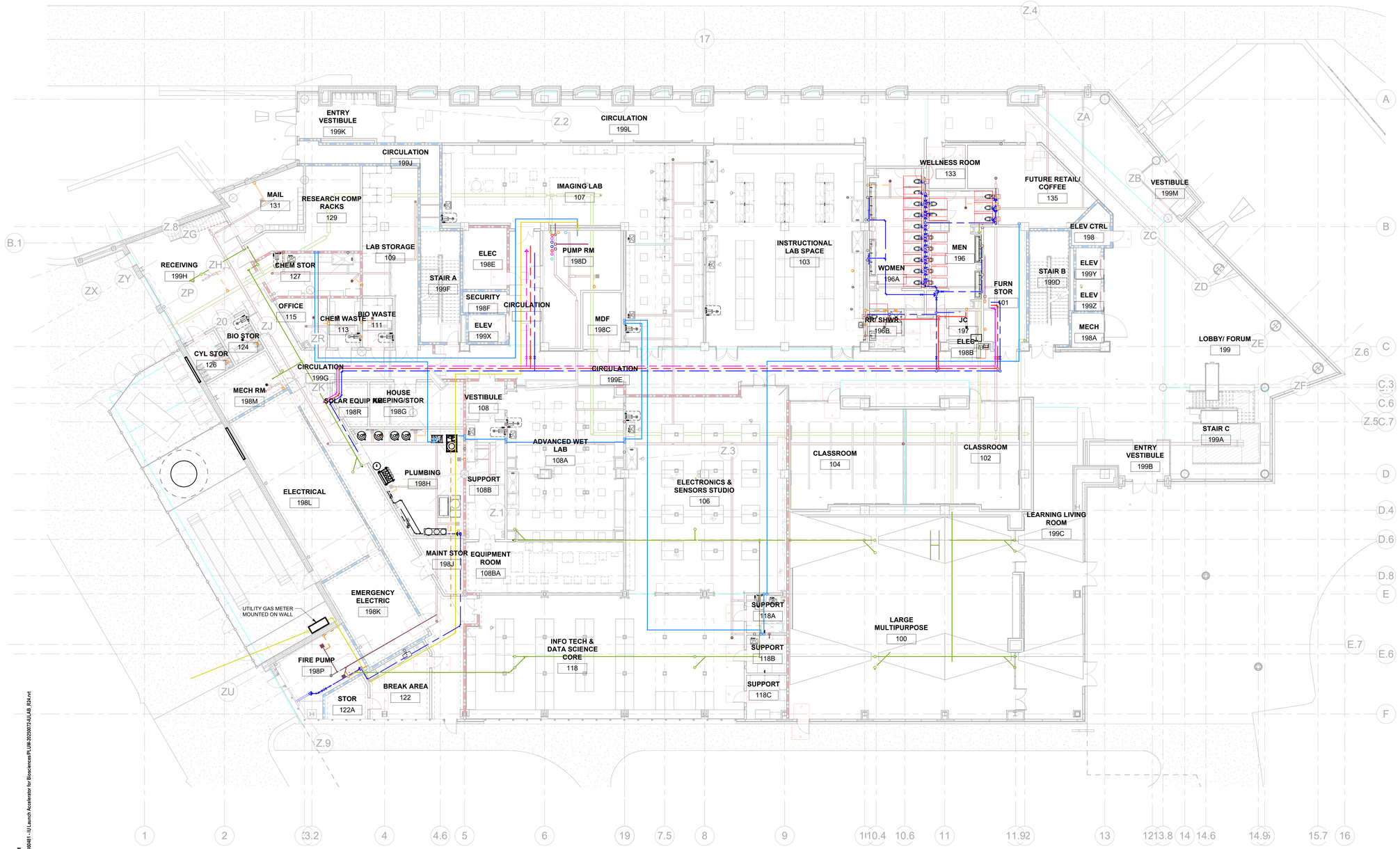
PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER
7	



1 GAS PIPING PLAN - LEVEL 1
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 1

DATE
BSA PROJECT NO. 00360481

REF: SHEET INDEX

PG101

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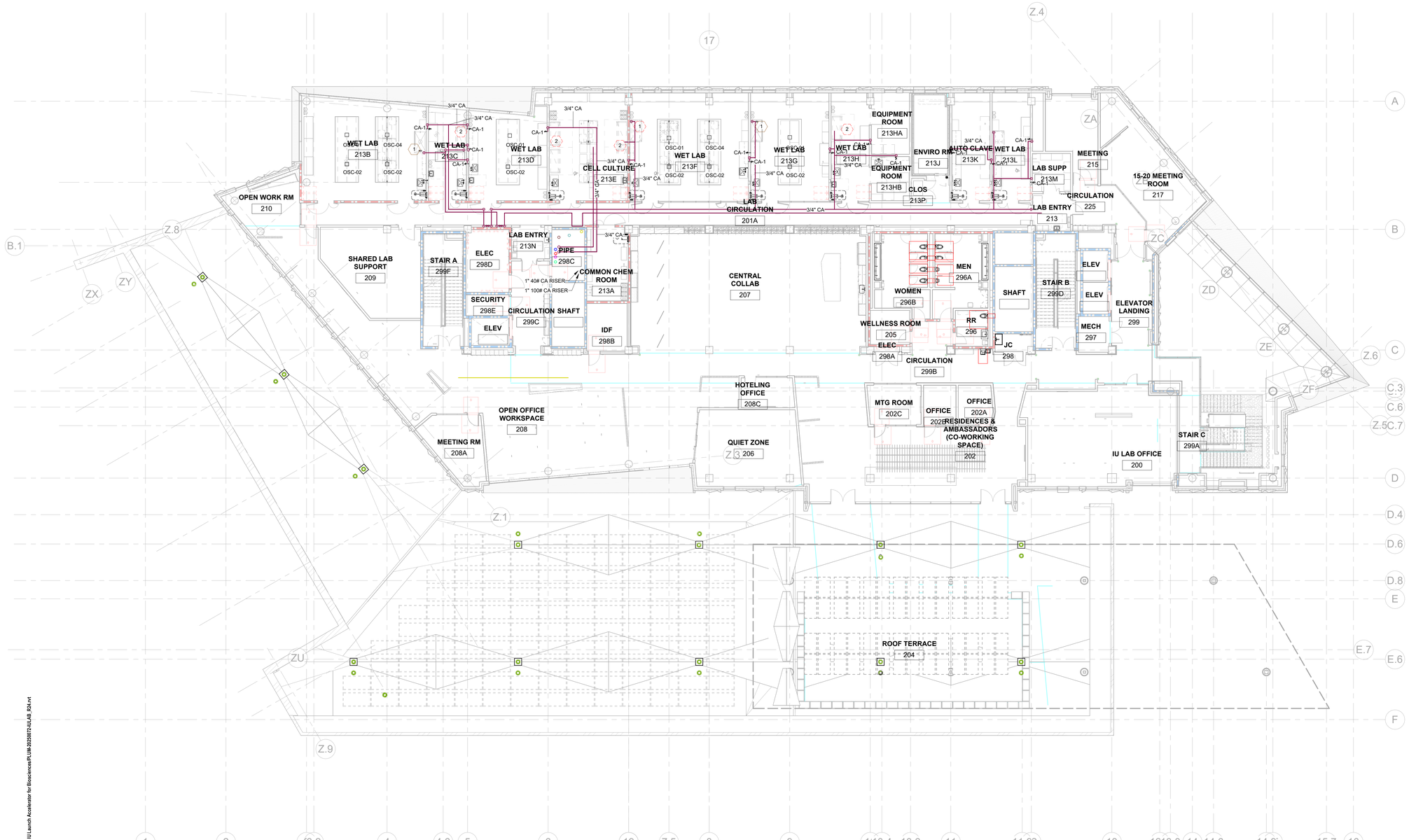
LAB GAS KEYNOTES	
NUMBER	KEYNOTE
1	1/2" CA TO FUME HOOD PIPING.
2	1/2" CA STUB WITH VALVE AND CAP FOR FUTURE.



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

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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 2

DATE
BSA PROJECT NO. 00360481

REF: SHEET INDEX

PG102

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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
7	

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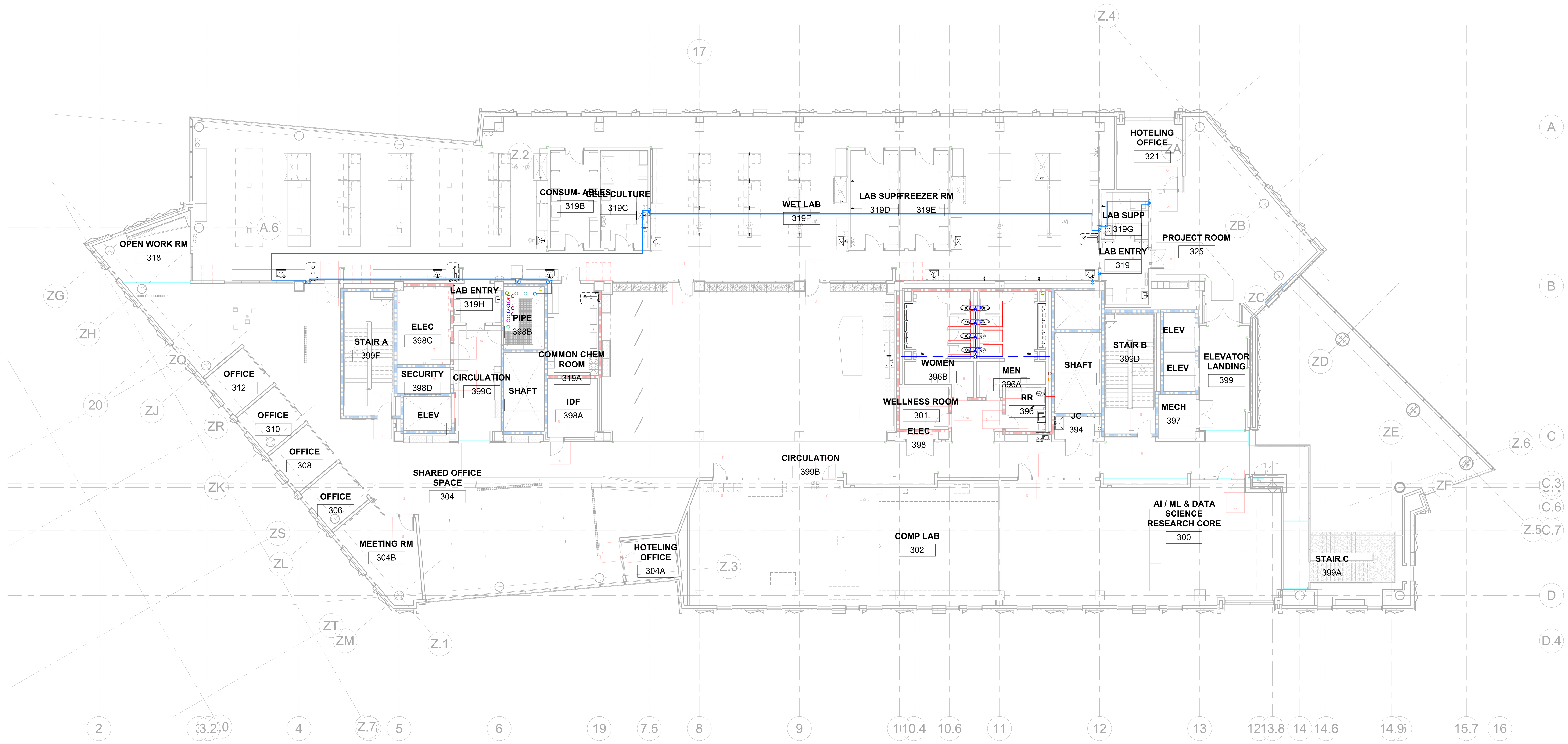


1 GAS PIPING PLAN - LEVEL 3
3/32" = 1'-0"

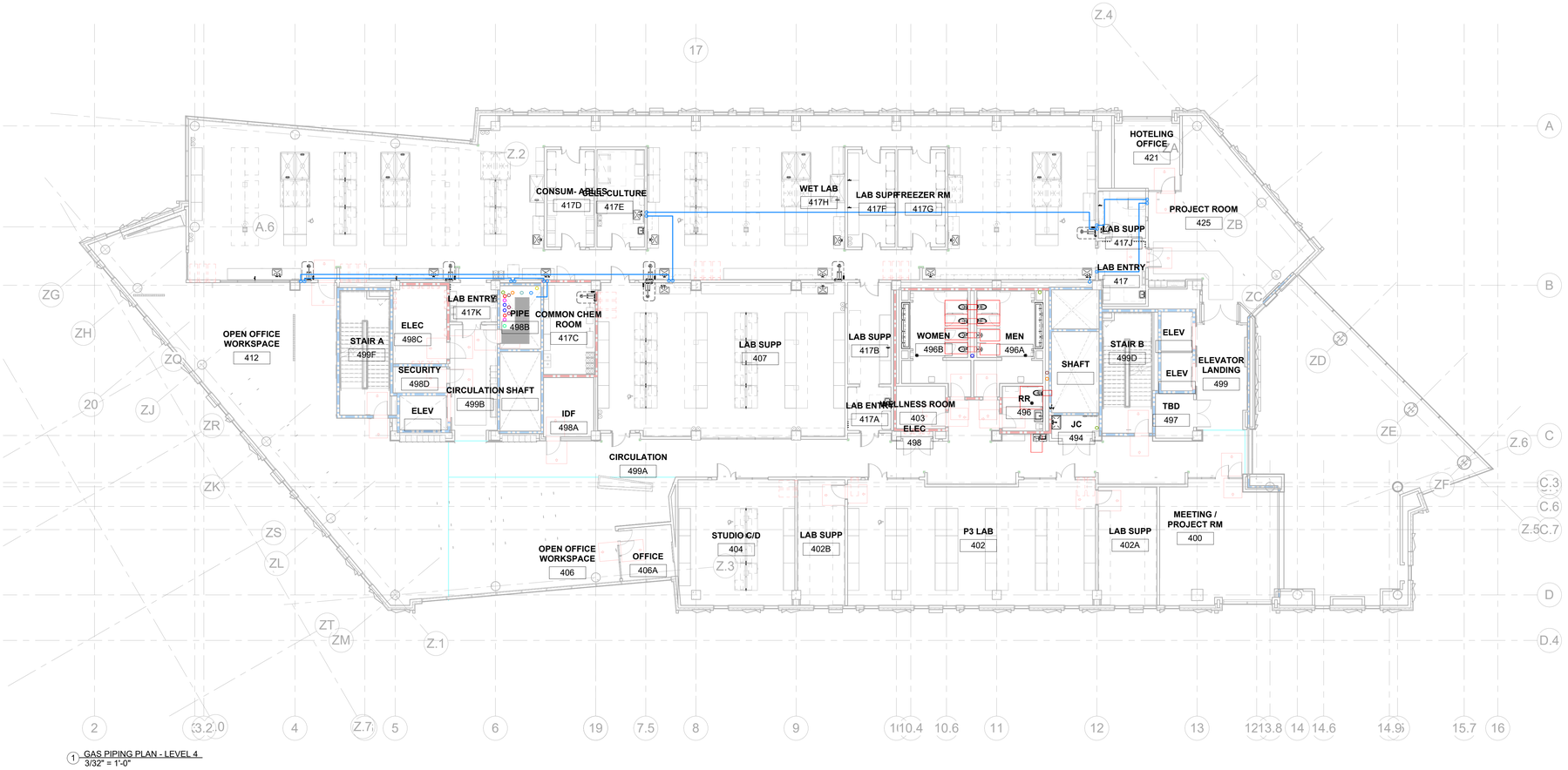
ISSUED / REVISIONS SCHEDULE

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

GAS PIPING PLAN - LEVEL 3

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

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
7	



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

GAS PIPING PLAN - LEVEL 4

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PG104

1/23/2026 3:16:41 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.
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
7	

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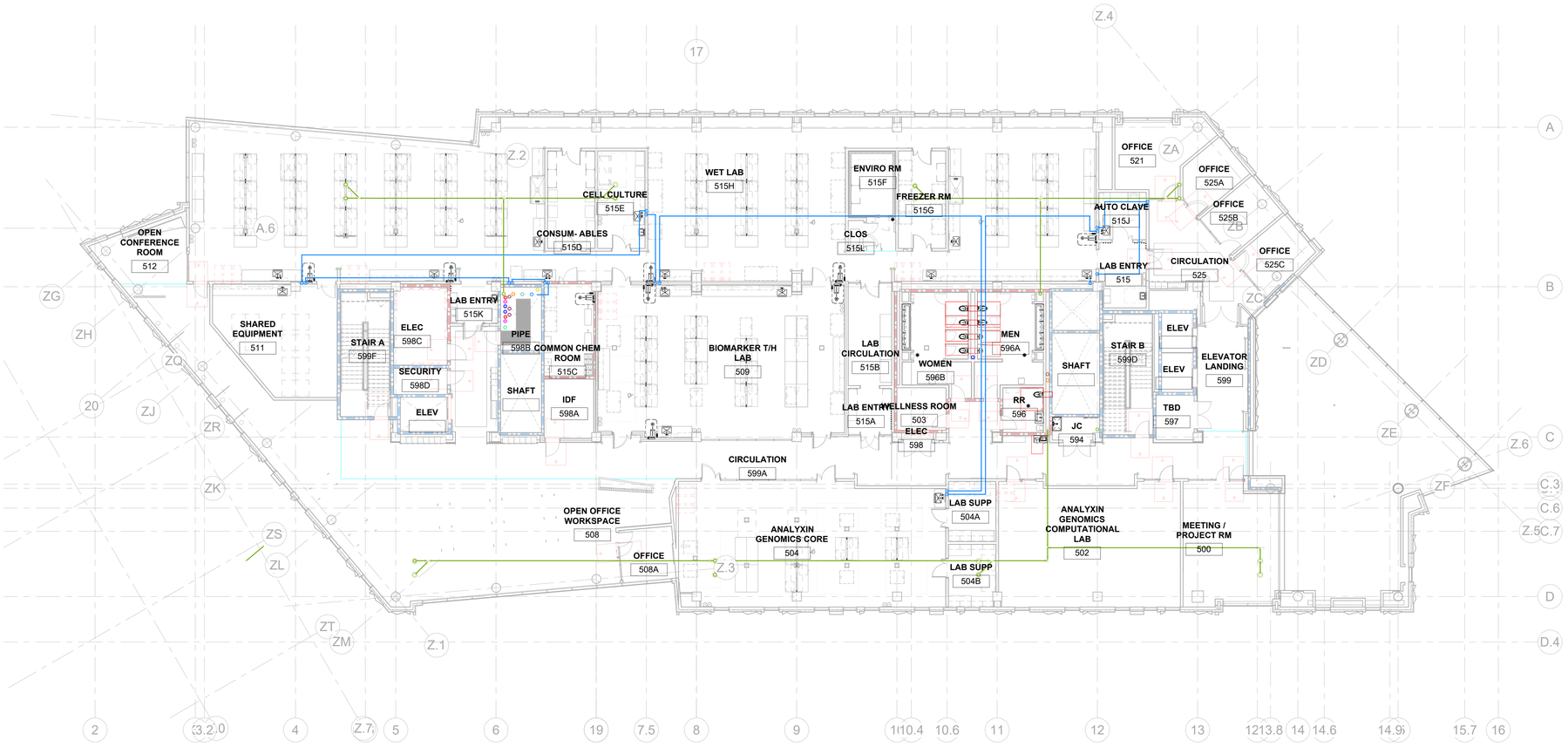
CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE



1 GAS PIPING PLAN - LEVEL 5
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

GAS PIPING PLAN - LEVEL 5

DATE	REF: SHEET INDEX
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PG105

1/23/2026 3:16:49 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,
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
7	

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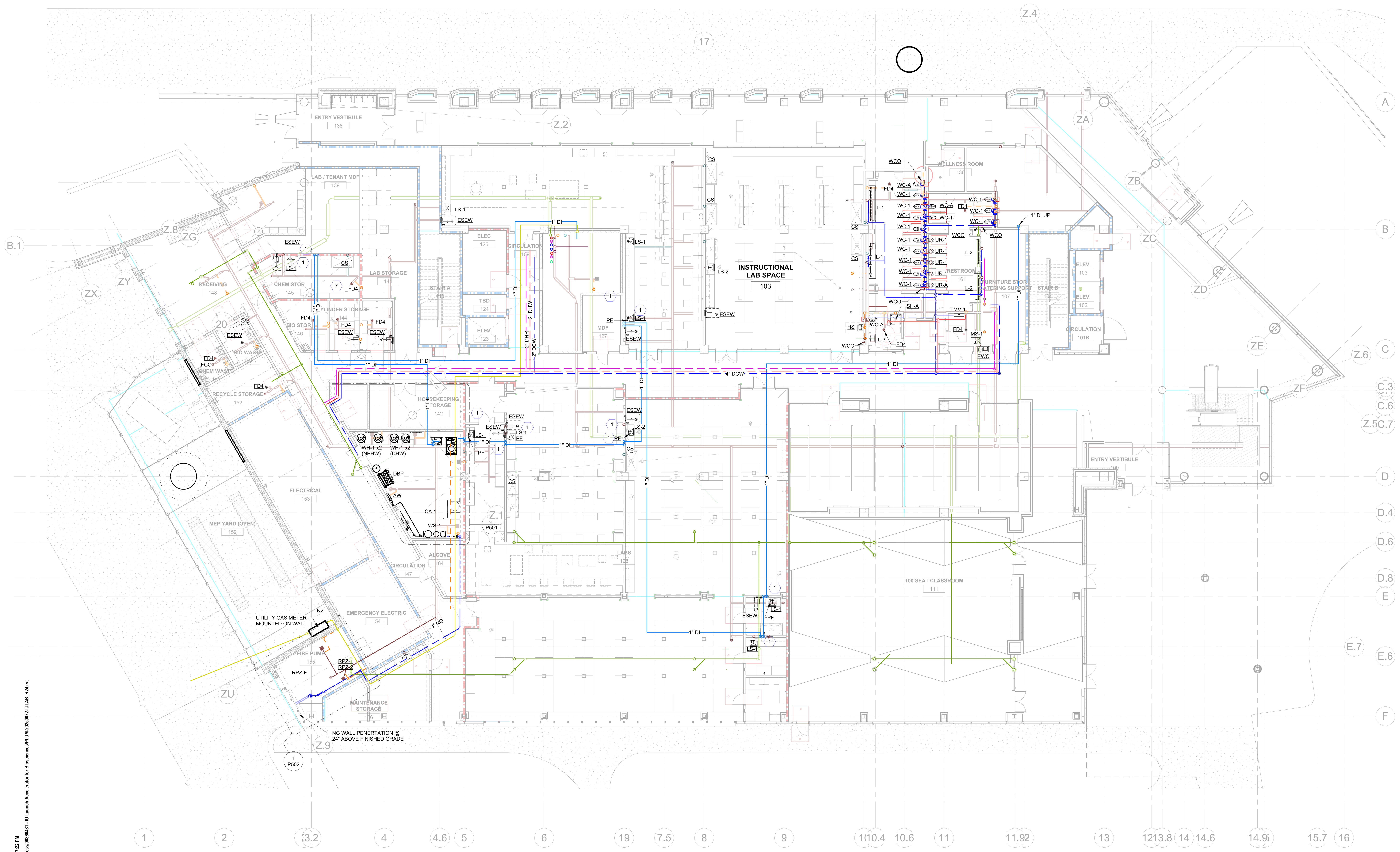
CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE



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

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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 1

DATE — REF: SHEET INDEX

BSA PROJECT NO. — 00360481

PP101

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
7	

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
Carmel, IN 46032
ph 317.819.7878 fx 317.819.7288

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DETROIT, MI 48226
313.983.3600
smithgroup.com

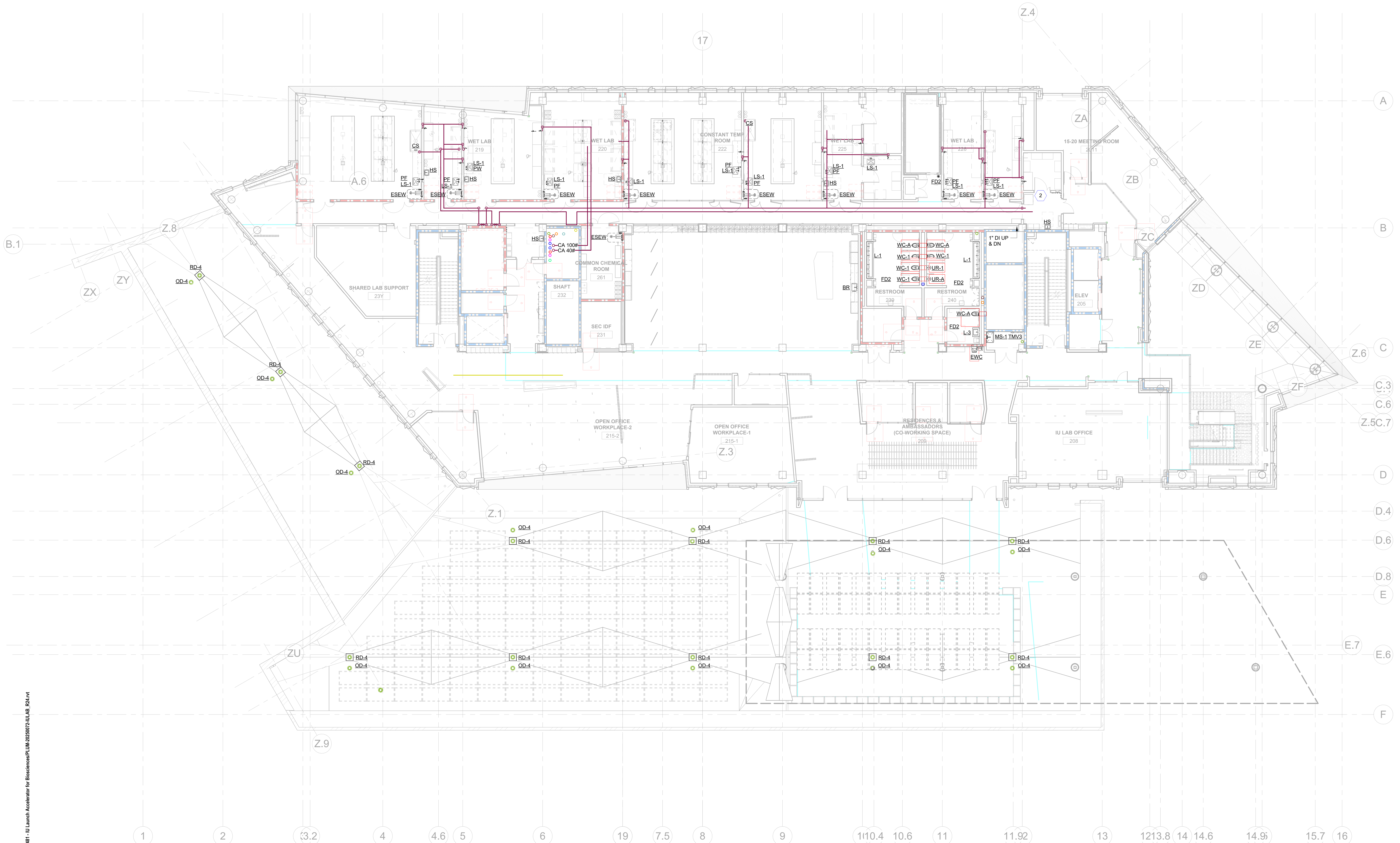
LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

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

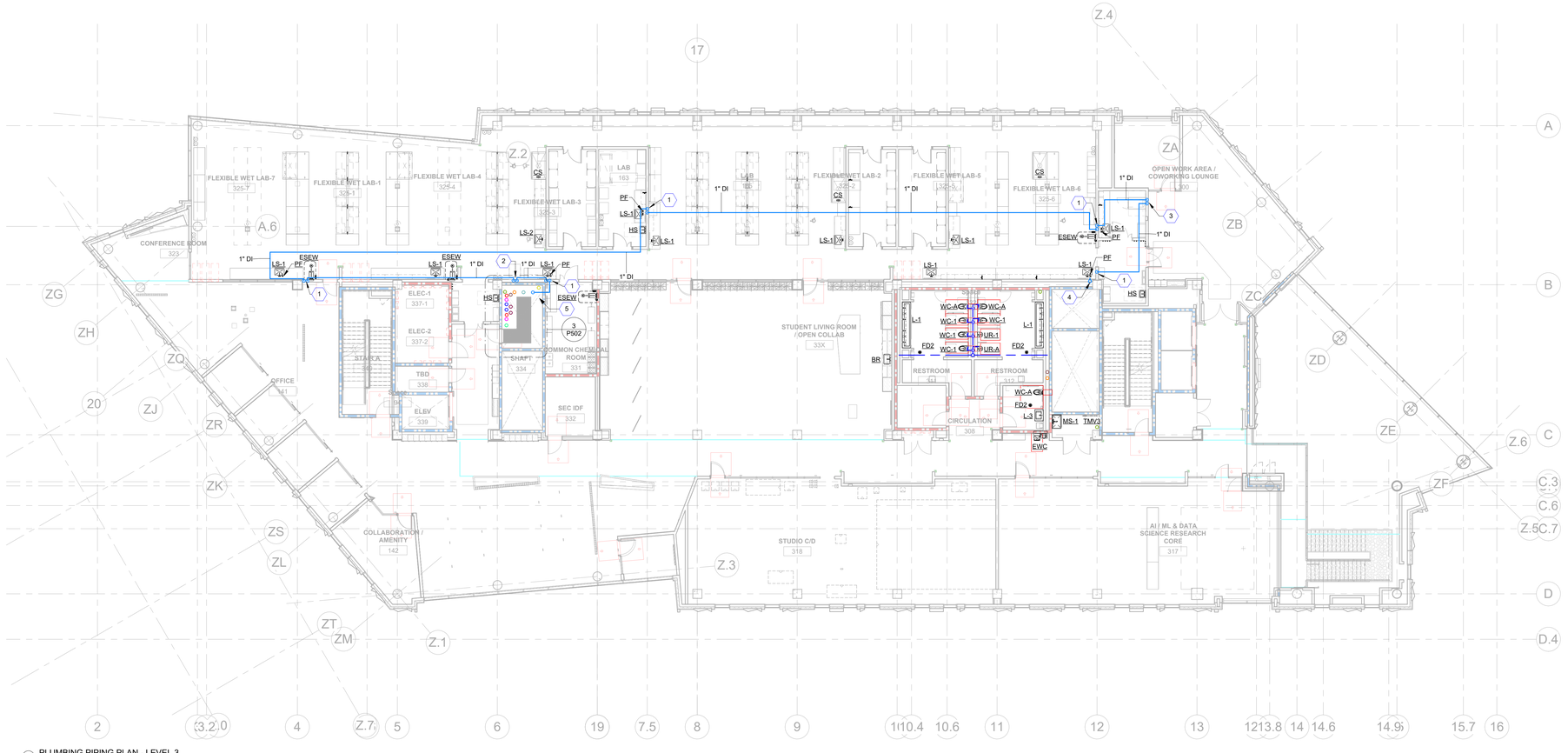
PLUMBING PIPING PLAN - LEVEL 2

DATE REF: SHEET INDEX

BSA PROJECT NO. 00360481

PP102

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
7	



1 PLUMBING 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

PLUMBING PIPING PLAN - LEVEL 3

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP103

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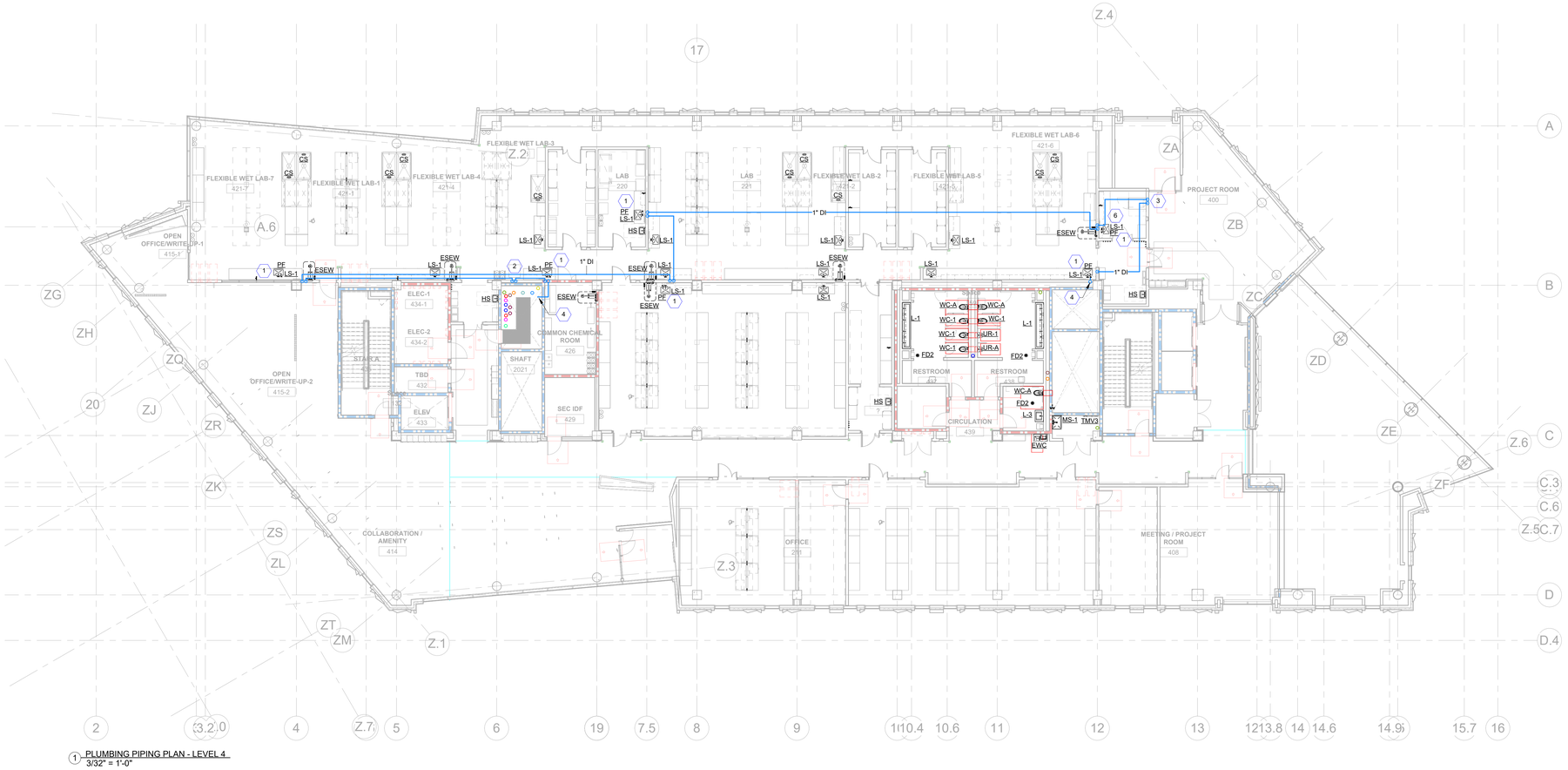
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PUM-20250072-BULAB_R24.rvt

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
7	



1 PLUMBING PIPING PLAN - LEVEL 4
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 4

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PP104

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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

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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
7	

1 PLUMBING PIPING PLAN - LEVEL 5
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 PIPING PLAN - LEVEL 5

DATE REF: SHEET INDEX
BSA PROJECT NO. 00360481

PP105

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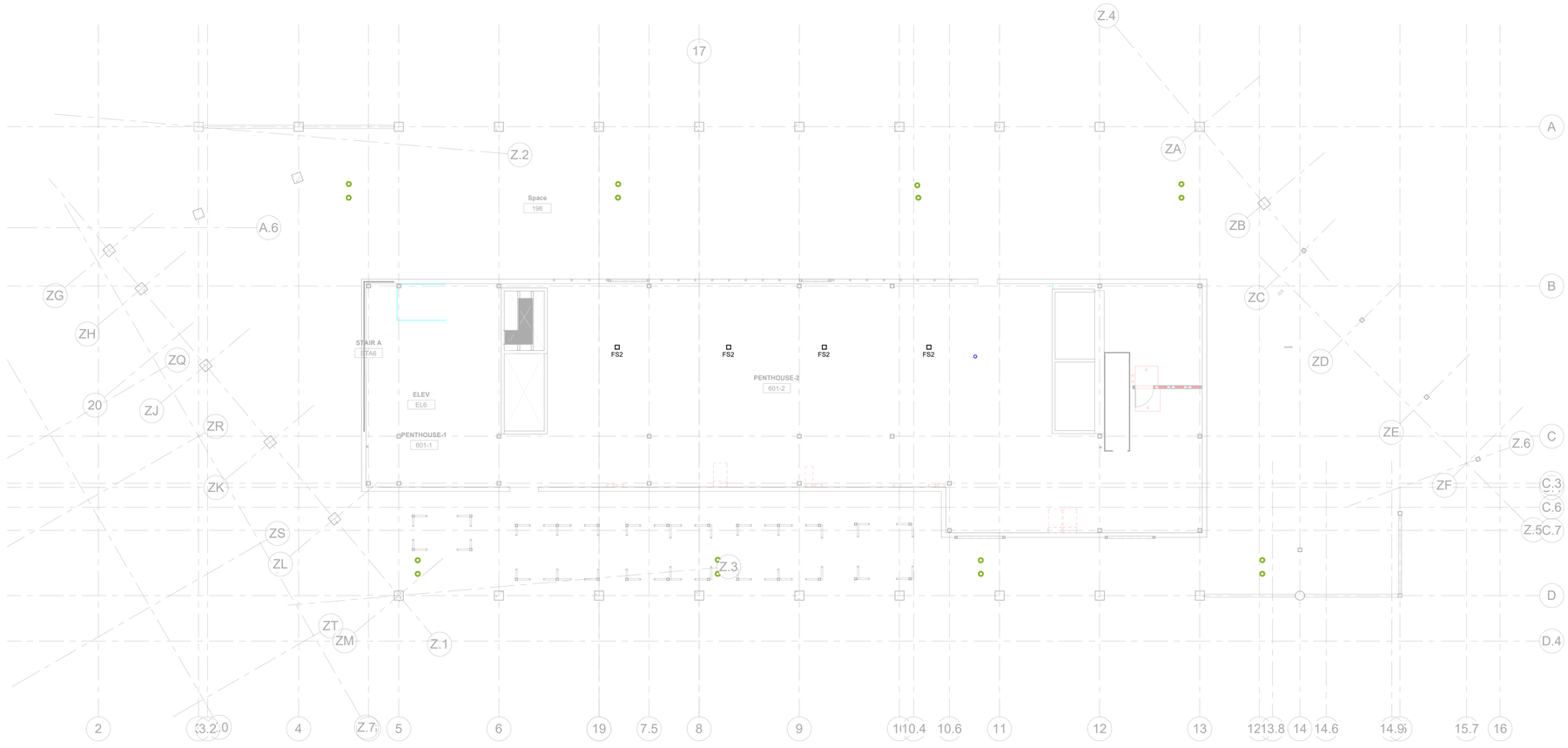
PLUMBING PIPING KEYNOTES	
NUMBER	KEYNOTE
1	3/4" PW DN TO DECK MOUNTED PF.
2	3/4" PW DN TO ICE MAKER.
3	3/ 4" PW DN TO STERILIZER SUPPLY.
4	1" PW UP & DN.
5	1" PURE WATER DOWN.
6	PIPE PURE WATER TO DECK MOUNT FAUCET AND UNDERCOUNTER GLASSWARE WASHER
7	



1 PLUMBING PIPING PLAN - PENTHOUSE
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

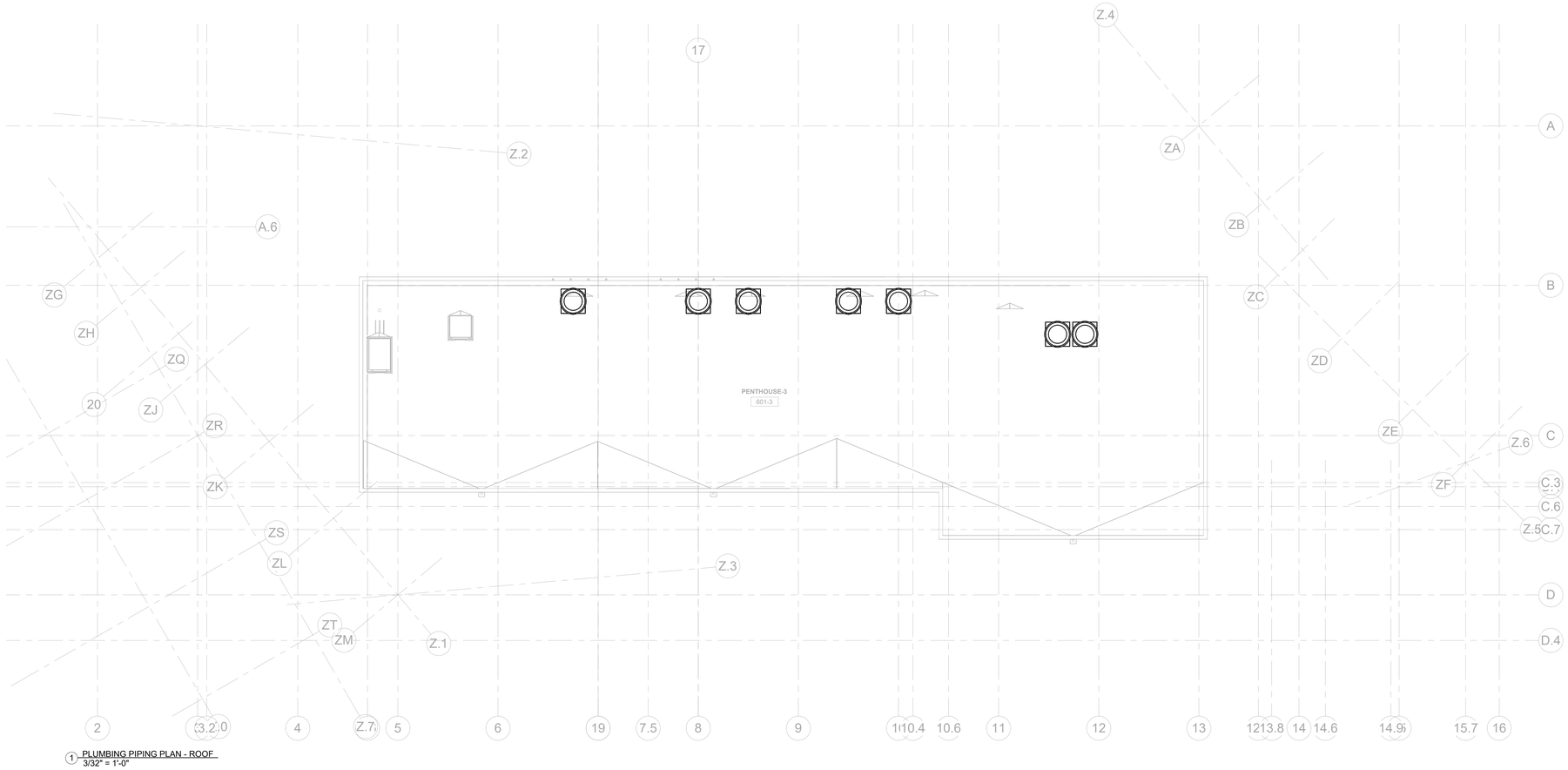
PLUMBING PIPING PLAN - PENTHOUSE

DATE REF: SHEET INDEX
BSA PROJECT NO. 00360481

PP106

12/2/2025 1:17:19 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250972-ABJAB_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
7	



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

1/23/2026 3:17:58 PM
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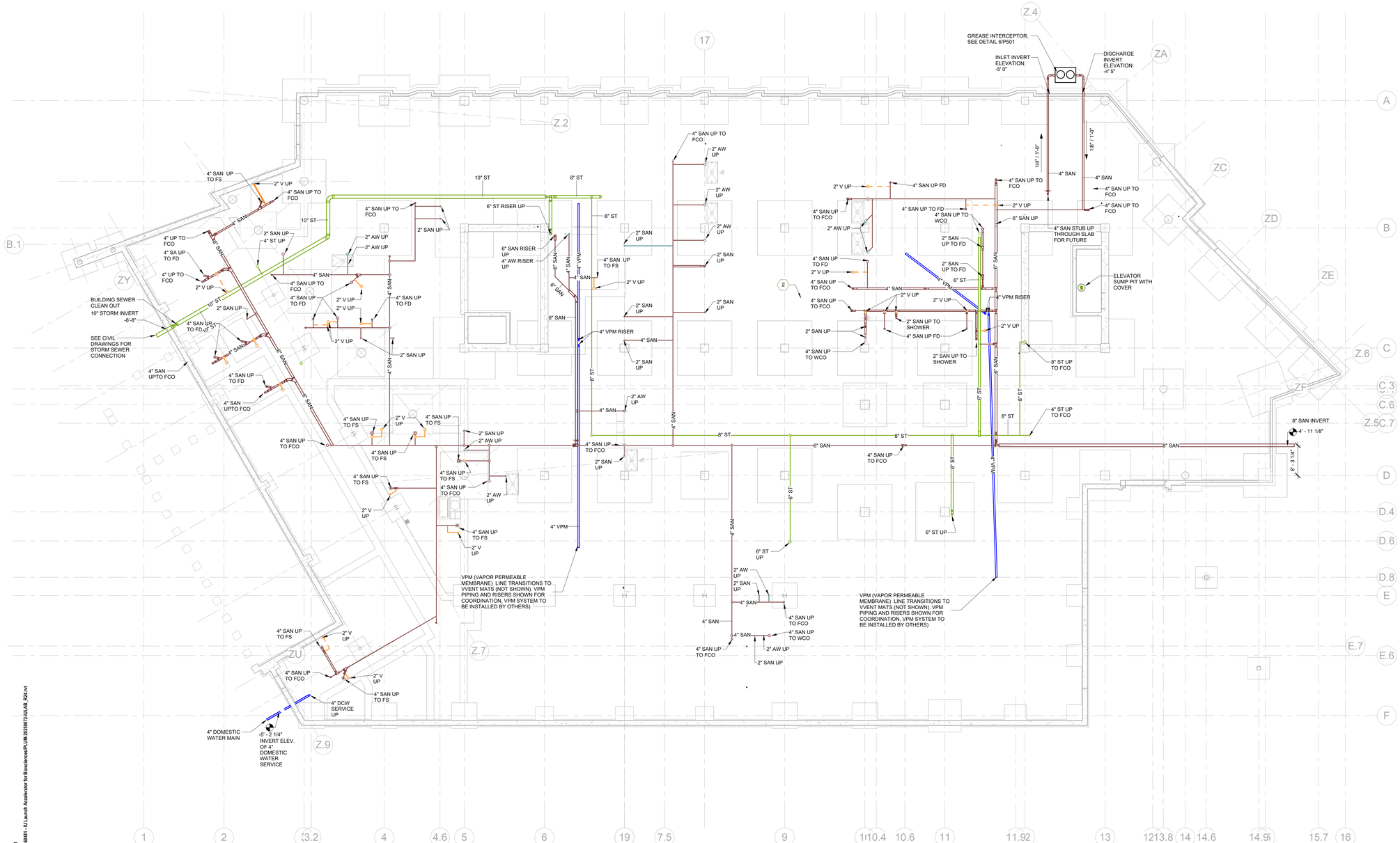

1 PLUMBING VENT AND WASTE - UNDERGROUND
3/32" = 1'-0"

1/2/2026 1:18:01 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-ALAB_R24.rvt

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CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
6	01/19/2026	BP3-CD: ADDENDUM 03
5	01/12/2026	BP3-CD: ADDENDUM 02
4	12/15/2025	BP4-100% DD: BUILD-OUT PACKAGE
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

PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK

BSA LifeStructures
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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

1/23/2026 3:16:16 PM
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PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
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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 2
3/32" = 1'-0"

PLUMBING WASTE & VENT PLAN - LEVEL 2

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW102

1/21/2026 3:15:37 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-BUILAB_R24.rvt

PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
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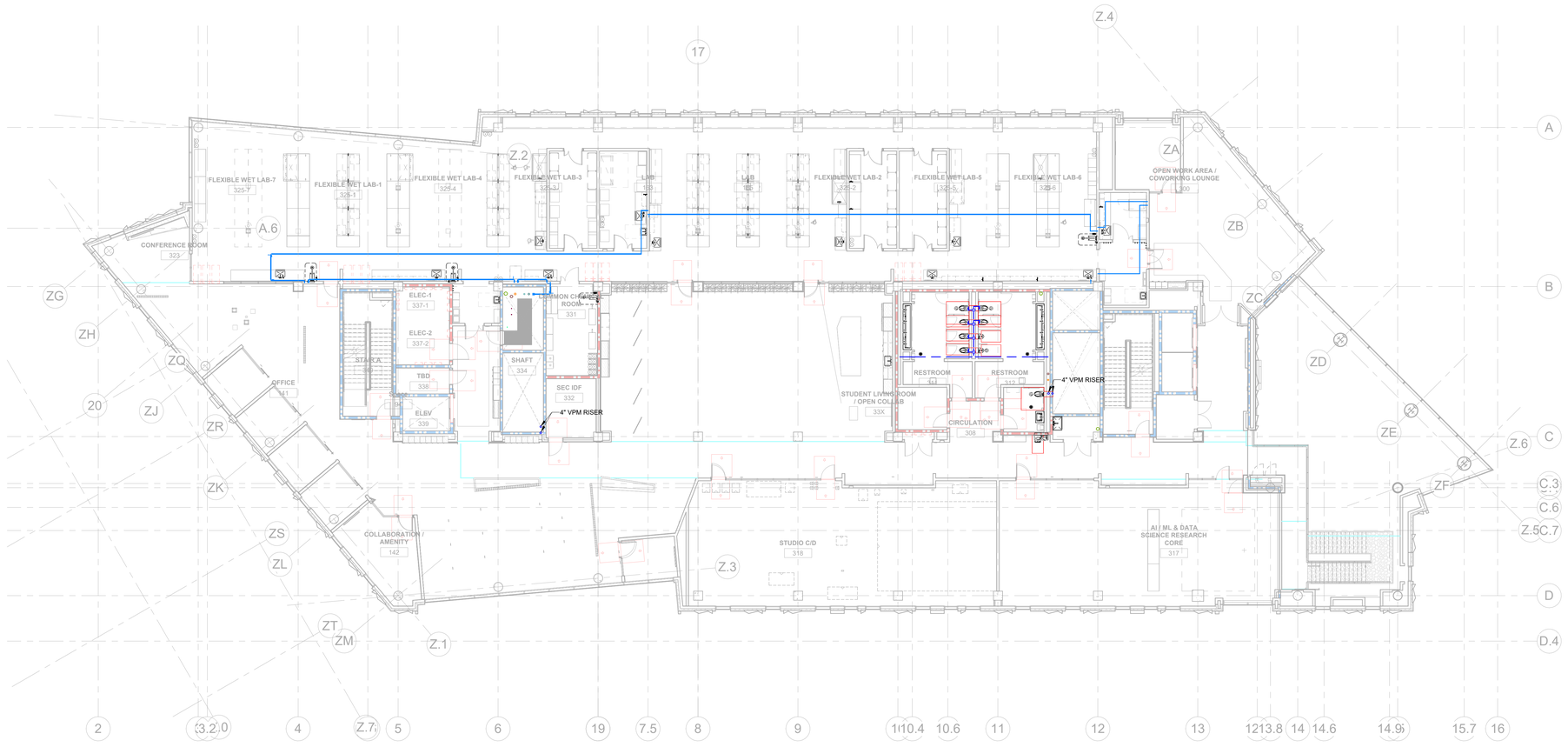
INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE



1 PLUMBING VENT AND WASTE PLAN - LEVEL 3
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

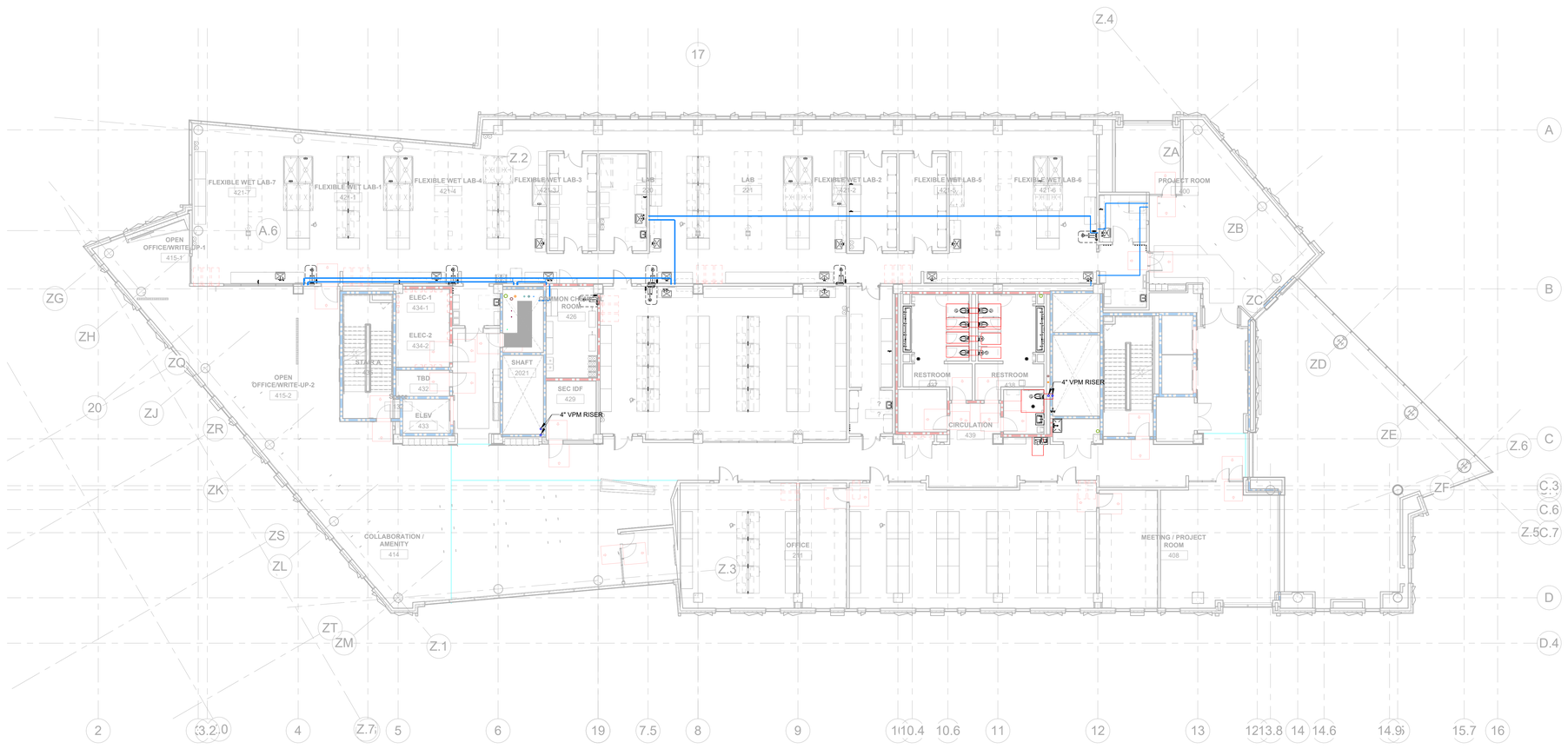
PLUMBING WASTE & VENT PLAN - LEVEL 3

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW103

1/23/2026 3:16:24 PM
Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/PLUM-20250072-BUILD_R24.rvt

PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK



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

BSA LifeStructures
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LAUNCH ACCELERATOR FOR BIOSCIENCES

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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 4

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW104

1/23/2026 3:16:41 PM
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PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK

BSA LifeStructures
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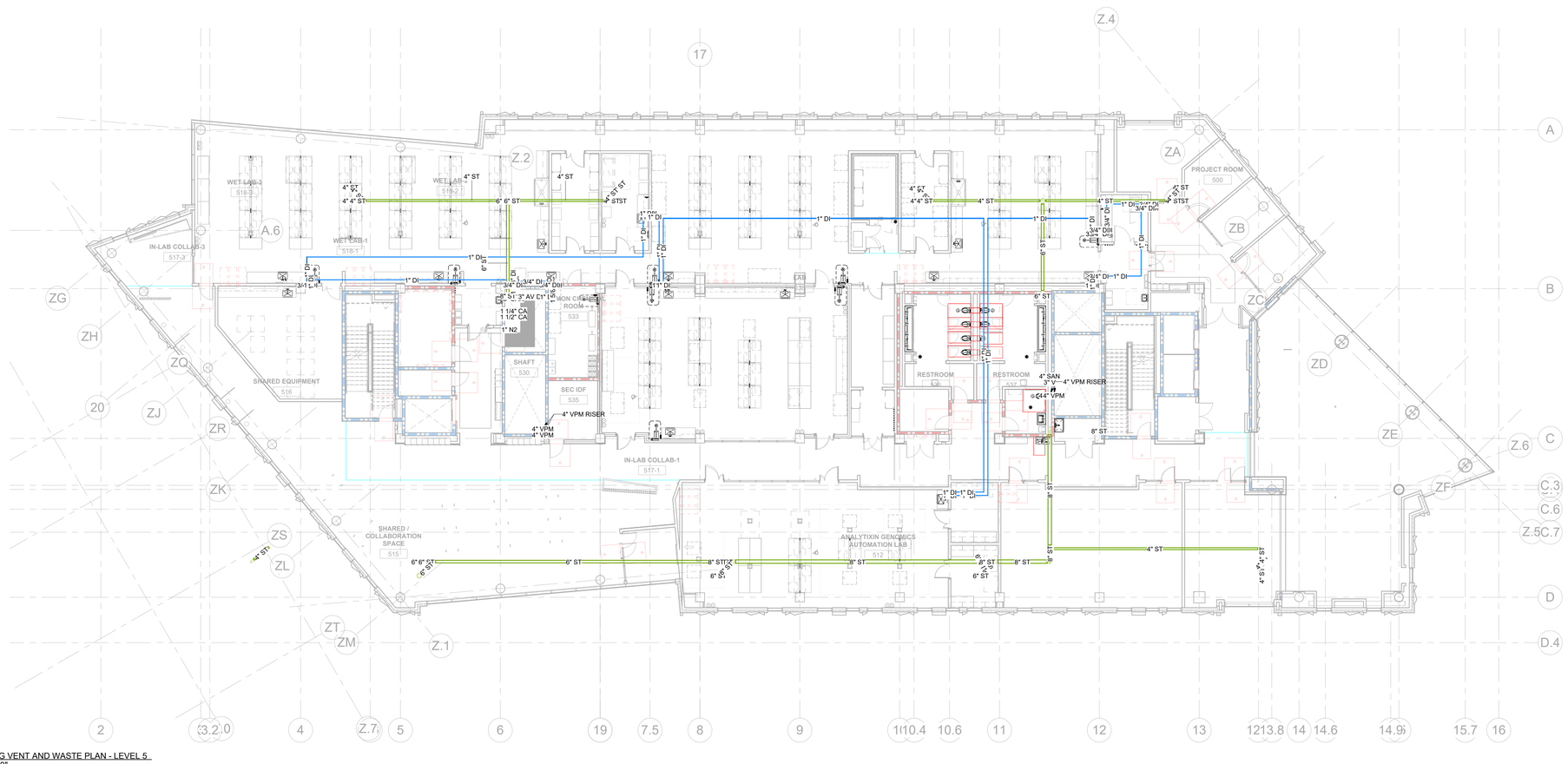
CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE



1 PLUMBING VENT AND WASTE PLAN - LEVEL 5
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 WASTE & VENT PLAN - LEVEL 5

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW105

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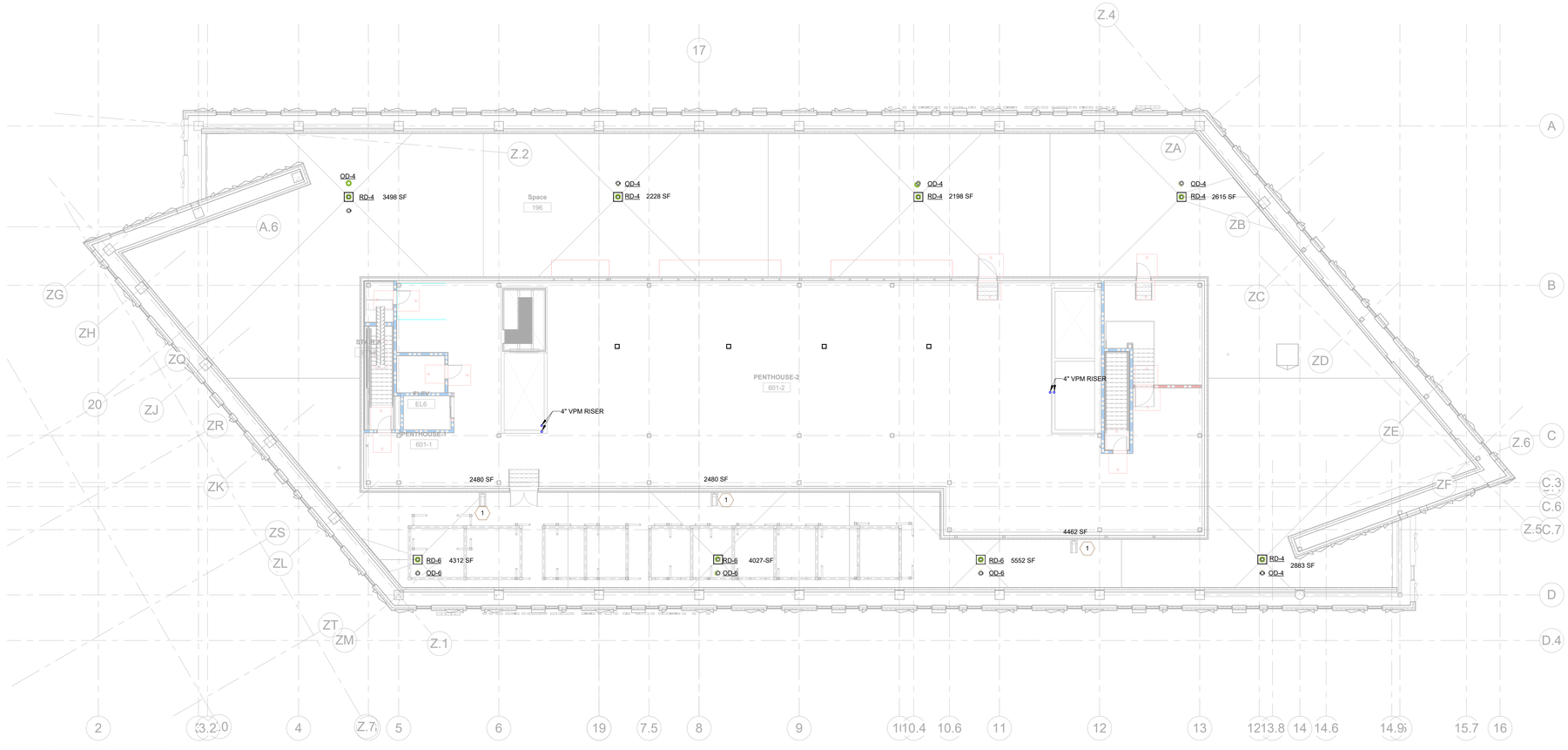
PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK



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

1/2/2026 3:16:51 PM
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BSA

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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

PLUMBING VENT KEYNOTES	
NUMBER	KEYNOTE
1	4" UP TO FLOOR DRAIN/FLOOR SINK

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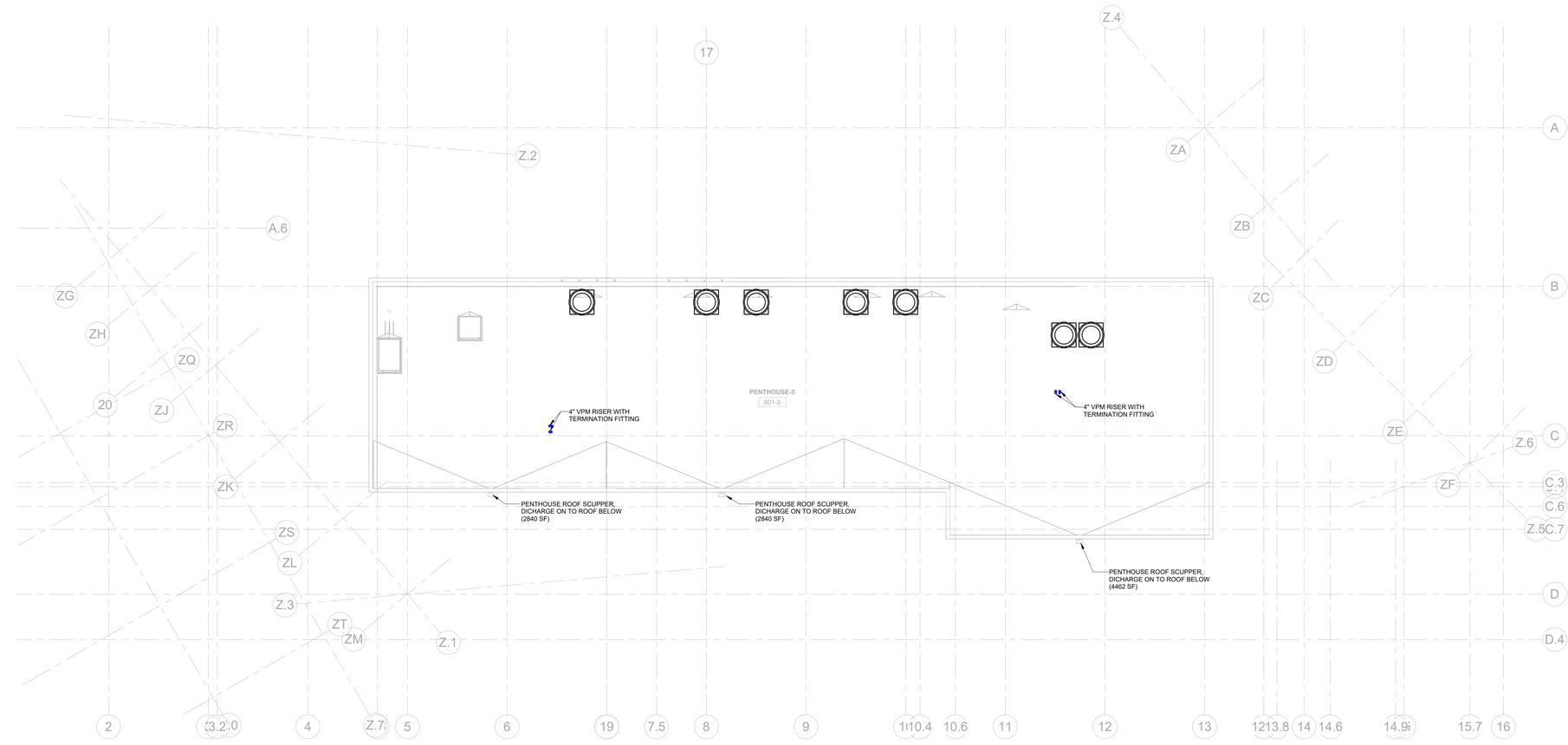
CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP4-100% DD: BUILD-OUT PACKAGE



1 PLUMBING VENT AND WASTE PLAN - ROOF
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 WASTE & VENT PLAN - ROOF

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

PW107

1/2/2026 3:16:53 PM
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