

08 NOVEMBER 2024

ADDENDUM NO. 1

Modifications described herein shall be incorporated into the Project Manual and the Drawings. All other Work described in the Project Manual and Drawings shall remain unchanged. Acknowledge receipt of this Addendum by inserting its number on the Bid Form. This Addendum is a part of the Contract Documents.

ATTACHMENTS

- A. Pre-Bid Meeting Notes
- B. SPECS INCLUDED
 - 00 01 10 – TOC
 - 00 21 13 – INSTRUCTIONS TO BIDDERS
 - 00 31 32 – GEOTECHNICAL DATA
 - 11 53 43 – LABORATORY SERVICE FITTINGS AND FIXTURES
 - 22 05 09 – EXCAVATION, BACKFILL, AND SURFACE RESTORATION
 - 22 05 53 – IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT
 - 22 11 19 – INTERIOR DOMESTIC WATER PIPING SPECIALTIES
 - 22 13 16 – INTERIOR DRAINAGE AND VENT SYSTEMS
- C. SHEETS INCLUDED
 - G120 - CODE SUMMARY REPORT
 - L020 – SITE DEMOLITION PLAN
 - L100 – SITE MATERIALS PLAN
 - L110 – LAYOUT PLAN
 - L150 – SITE DETAILS
 - L151 – SITE DETAILS
 - S102 - SECOND FLOOR FRAMING PLAN
 - S103 - THIRD FLOOR FRAMING PLAN
 - S104 - PENTHOUSE FLOOR AND LOW ROOF FRAMING PLAN
 - S321 - CONCRETE BEAM SCHEDULE
 - S322 - CONCRETE BEAM SCHEDULE
 - S323 - CONCRETE BEAM SCHEDULE
 - S324 - CONCRETE BEAM SCHEDULE
 - S325 - CONCRETE BEAM SCHEDULE
 - A122 - FLOOR PLAN – LEVEL 2
 - A470 - INTERIOR VESTIBULE & GLASS RAILING DETAILS
 - A512 - SOUTH STAIR DETAILS – STEEL PAN
 - QL002 - CIP SINK & FIXTURE SCHEDULES, CIP DETAILS
 - QL003 - SCHEDULES COLD ROOM DETAILS
 - M001 - MECHANICAL LEGEND, NOTES AND INDEX OF DRAWINGS
 - M121 - FIRST FLOOR MECHANICAL DUCTWORK PLAN
 - M124 - PENTHOUSE AND ROOF MECHANICAL DUCTWORK PLAN
 - M221 - FIRST FLOOR MECHANICAL PIPING PLAN
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 - M508 - MECHANICAL DETAILS
 - M601 - MECHANICAL SCHEDULES
 - M603 - MECHANICAL SCHEDULES

- M604 - MECHANICAL SCHEDULES
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- M703 - MECHANICAL CONTROL SCHEMATICS
- M704 - MECHANICAL CONTROL SCHEMATICS
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- P221 - FIRST FLOOR ABOVE FLOOR PLUMBING DRAINAGE PLAN
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- P223 - THIRD FLOOR PLUMBING DRAINAGER PLAN
- P401 - ENLARGED PLUMBING PLANS
- P503 - PLUMBING SANITARY VENT STACK
- P504 - PLUMBING SANITARY VENT STACK – RESTROOMS
- P505 - PLUMBING RISER DIAGRAMS – LAB GAS
- P506 - PLUMBING RISER DIAGRAMS – LAB GAS
- P601 - PLUMBING SCHEDULES
- FS120 - SELB PIPING PLAN
- FS121 - FIRST FLOOR FIRE SUPPRESSION PLAN
- FS122 - SECOND FLOOR FIRE SUPPRESSION PLAN
- FS501 - FIRE SUPPRESSION SCHEDULES AND DETAILS
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- E121 - FIRST FLOOR CONDUIT PLAN
- E123 - SECOND FLOOR CONDUIT PLAN
- E124 - PENTHOUSE AND ROOF FLOOR CONDUIT PLAN
- E221 - FIRST FLOOR ELECTRICAL POWER PLAN
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- T203 - OVERALL TECHNOLOGY PLAN – LEVEL 3
- T504 - TECHNOLOGY DETAILS
- T601 - TECHNOLOGY SCHEDULES

QUESTIONS / ANSWERS

QUESTION	ANSWER
Does there need to be fire damper on the duct work from FCU-4 feeding Elec. room 494?	Yes, on supply and return.
What are the two 1.25" hydronic lines feeding going out the North wall from NE Vest 199U?	Those lines are no longer required and will be removed in addendum.
What are the two 1" & .75" hydronic lines feeding going into Elev. Mach. room 194?	Hot water and chilled water to the fan coil.
What are the two 1" & .75" hydronic lines feeding going into the Laser Lab room 110A?	Hot water and chilled water to the fan coil.
What are the two Hydronic Lines feeding in the Cicrulation room 199 near column lines D between 3 & 4?	Those lines will be removed via addendum.
What Hydronic lines are feeding 2-08A?	Those lines will be added via addendum, extending from piping near S2-22.
What are the Hydronic drops feeding bewteen column lines D&C and 6&7?	Those lines are no longer required and will be removed in addendum.
In Men's and Women's restrooms there are two water closets shown in the handicap stall.	Water closets and lavatories were shifted in architectural model and will be moved in plumbing model to match in addendum 1.
Geotech report was not included in front ends	This will be included in Addendum 1
220507 2.2 A – Can Copper Press Joint fittings be added as an option?	Not allowed within IU standards.
221316 2.1 A & B—Can No Hub Cast Iron be added as an option for below and above-ground sanitary waste and vent.	No-hub is allowed above grade only, cast iron must be extra heavy.
221316 2.2 A & B - Can No Hub Cast Iron be added as an option for below and above-ground storm drainage piping.	No-hub is allowed above grade only, cast iron must be extra heavy.
221316 1.2 – 220509 Excavation Backfill & Surface Restoration specification is still not included in these specs.	We usually only include this on renovations including excavation specifically required for plumbing piping but the section can be added if there's a need.
Spec section 090561 indicates that this product is only needed if moisture content exceeds requirements. Please confirm that this is not needed under flooring ALL flooring regardless of mositure content.	Confirmed, the section is only applicable when the moisture content exceeds that of the manufacturer's requirements
The duct construction, sealing, and insulation schedule says exhaust duct systems are to be welded stainless, but the details call for galvanized duct to the hoods. Please clarify if all the exhaust is to be welded stainless or just the duct mains.	Exhaust shall be welded stainless
Is a full submittal required with bid submission for the AHU's	Full submittal is required
Should a neutralization tank be added to the acid waste system prior to connecting to the general sanitary waste system	IU standards are to not provide acid neutralization. Their campus standard is to manage what is put down drains and to use acid-resistant piping up to a point of significant dilution in the system.

Can the specifications for the existing generator be provided so plans for moving and testing unit can be determined?	This will be included in Addendum 2
Can the specifications for the owner provided Vista switch be provided?	This will be included in Addendum 2

SUBSTITUTION REQUESTS

Will be distributed in Addendum 2

CHANGES TO SPECIFICATIONS

- D. 00 21 13 INSTRUCTIONS TO BIDDERS
 - section has been re-issued in it's entirety with changes as indicated within.
- E. 00 31 32 GEOTECHNICAL DATA
 - Specification section is now included along with third party geotech report.
- F. 11 53 43 LABORATORY SERVICE FITTINGS AND FIXTURES
 - section has been updated to tempering system and thermostatic mixing valves from fixture types.
- G. 22 05 09 EXCAVATION, BACKFILL, AND SURFACE RESTORATION
 - specification added in response to RFI.
- H. 22 05 53 IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT
 - section updated to add table for pipe labeling and ceiling marking for valve locations.
- I. 22 11 19 INTERIOR DOMESTIC WATER PIPING SPECIALTIES
 - section updated to include interior hose bibbs.
- J. 22 13 16 INTERIOR DRAINAGE AND VENT SYSTEMS
 - section updated to include hubless piping for above grade installation.

CHANGES TO DRAWINGS

- K. G120 - CODE SUMMARY REPORT
 - Updated report to include approved variances
- L. L020 – SITE DEMOLITION PLAN
 - Pavement demolition modified around the existing generator to capture full scope of demolition.
 - Note added to area near construction staging entrance.
- M. L100 – SITE MATERIALS PLAN
 - Extents of new pavement clarified around generator and bollards.
 - Note added to area near construction staging entrance.
- N. L110 – LAYOUT PLAN
 - Additional dimensions were added around the generator and bollards.
 - Note added to area near construction staging entrance.
- O. L150 – SITE DETAILS
 - Detail 3 – Linework cleanup.
 - Detail 7 – Handrail mounting updated.
- P. L151 – SITE DETAILS
 - Details 2-5 – Reference to Skate Deterrent Notch added.
 - Detail 7 – Detail modified to clarify jointing around bollards.

- Detail 10 – Detail added for the skate deterrent notch.
- Q. S102 - SECOND FLOOR FRAMING PLAN
 - B202 through B204 widths changed along gridline 1, B205 and B206 widths changed to maintain pan spacing, north mechanical shaft opening dimensions changed, south mechanical shaft opening dimensions changed.
- R. S103 - THIRD FLOOR FRAMING PLAN
 - B302 through B304 widths changed along gridline 1, B305 and B306 widths changed to maintain pan spacing, north mechanical shaft opening dimensions changed, south mechanical shaft opening dimensions changed.
- S. S104 - PENTHOUSE FLOOR AND LOW ROOF FRAMING PLAN
 - north mechanical shaft opening dimensions changed, south mechanical shaft opening dimensions changed.
- T. S321 - CONCRETE BEAM SCHEDULE
 - beam dimensions changed for B201 through B206 and B220; beam reinforcement changed for B205, B206, B209, B210, B232, B233, B241, and B249.
- U. S322 - CONCRETE BEAM SCHEDULE
 - beam dimensions changed for B301 through B306; B274 removed; reinforcement changed for B269 through B271, B305, and B306.
- V. S323 - CONCRETE BEAM SCHEDULE
 - beam dimensions changed for B320; beam reinforcement changed for B322, B324, B335, B341, B349, B350, B351, B357, B364, and B365.
- W. S324 - CONCRETE BEAM SCHEDULE
 - beam dimensions changed for B431 and B432; beam reinforcement changed for B409 through B411, B414, B425, B431, B434, B439, and B440.
- X. S325 - CONCRETE BEAM SCHEDULE
 - beam reinforcement changed for B453 through B462.
- Y. A122 - FLOOR PLAN – LEVEL 2
 - Added note to patch and repair drywall in SELB building as required to route new sprinkler main from SELB to addition
- Z. A470 - GLASS GUARDRAIL & DRAFT CURTAIN AT FLOOR OPENING
 - detail 3 updated to include hanger wire, cantilever the bottom ceiling member, added blocking for lateral strength and added cold form framing. Detail 4 updated language for contractor to provide cold form framing if required to support the glass draft curtain, depending on final weight of the product selected.
- AA. A512 - SOUTH STAIR DETAILS - STEEL PAN
 - Updated contrasting stripe at all treads at south stair to be stainless steel inserts to be provided as a standard offering from the terrazzo/flooring manufacturer
- BB. QL002 - CIP, SINK, & FIXTURE SCHEDULES, CIP DETAILS
 - lab safety fixtures SS, EW, and EWA updated in schedule to remove thermostatic mixing valves.
- CC. QL003 - SCHEDULES, COLD ROOM DETAILS
 - detail 3 updated to show floor panel depth to say “refer to specifications”
- DD. M001- MECHANICAL LEGEND, NOTES AND INDEX OF DRAWINGS
 - Added general note.
- EE. M121- FIRST FLOOR MECHANICAL DUCTWORK PLAN
 - Added ceiling exhaust vent connection in material characterization. Add FFU to biofabrication rooms. Added linear air devices to computational research and cleaned up duct routing. Revised return duct routing across circulation. Showed exhaust valve E1-19 on ductwork plans. Relocated FCU-1 and FCU-2 and added air transfer openings for FCU-2 return. Revised IT room air distribution. Removed fire dampers from exhaust duct risers. Added stainless steel duct down stream of SH-2. Clarified balancing scope for vestibules. Add DDC panel locations.
- FF. M124 - PENTHOUSE AND ROOF MECHANICAL DUCTWORK PLAN

- Revised ERV-1A unit dimensions for split coils. Revised ERV-1B for bypass damper. Revised return ductwork and relief routing. Added DDC panel locations.
- GG. M221 - FIRST FLOOR MECHANICAL PIPING PLAN
 - Added steam piping to SH-2. Rerouted hot water and chilled water piping across circulation 199. Show occupancy integration with BAS.
- HH. M222 - SECOND FLOOR MECHANICAL PIPING PLAN
 - Rerouted hot water and chilled water piping across circulation 199. Show occupancy integration with BAS. Show BAS control panel.
- II. M223 - THIRD FLOOR MECHANICAL PIPING PLAN
 - Show occupancy integration with BAS. Show BAS control panel.
- JJ. M224 - PENTHOUSE AND ROOF MECHANICAL PIPING PLAN
 - Show BAS control panel and water sensors locations.
- KK. M508 - MECHANICAL DETAILS
 - Provided separate AHU-1A and 1B equipment information and relocated humidifier location in unit. Add filter to return air section. Provided separate ERV-1A and ERV-1B equipment information. Added split coils to both ERV and bypass damper to ERV-1B.
- LL. M601 - MECHANICAL SCHEDULES
 - Added notes, coil valve sizing, minimum outdoor air, and filter pressure drop to AHU schedule. Revised notes to energy recovery sections and added coil valve sizing. For clarity purposes the energy recovery was split into two lines to better represent the separate equipment. Remove extraneous piping.
- MM. M603 - MECHANICAL SCHEDULES
 - Added fan filters for biofabrication area. Revised note for flow meter and revised chilled water flowmeter size. Removed blank lines from flowmeter schedule for clarity.
- NN. M604 - MECHANICAL SCHEDULES
 - Revised duct construction and sealing schedule.
- OO. M702 - MECHANICAL CONTROL SCHEMATICS
 - Updated points and sensor locations.
- PP. M703 - MECHANICAL CONTROL SCHEMATICS
 - Added water to water heat recovery and updated points and sensor locations.
- QQ. M704 - MECHANICAL CONTROL SCHEMATICS
 - Added backdraft dampers at fans. Updates points, sensor locations, and sequences.
- RR. M705 - MECHANICAL CONTROL SCHEMATICS
 - Updated points and sensor locations. Added FFU scope.
- SS. M706 - MECHANICAL CONTROL SCHEMATICS
 - Revised fan coil valves to say 2-way. Added unit heater scope.
- TT. M707 - MECHANICAL CONTROL SCHEMATICS
 - Updated points and sensor locations. Added FFU scope.
- UU. M708 - MECHANICAL CONTROL SCHEMATICS
 - Updated points and sensor locations. Added coil connections for clarity.
- VV. M709 - MECHANICAL CONTROL SCHEMATICS
 - Updated points and sensor locations. Added bypass damper. Updated sequences.
- WW. P001 – PLUMBING LEGEND, NOTES, AND INDEX OF DRAWINGS
 - updated sheet index for added sanitary stack plan and renumber following sheets.
- XX. P121 - FIRST FLOOR ABOVE FLOOR PLUMBING SUPPLY PLAN
 - added lab gas manifolds, added wall hydrant coordination notes, added piping and gas symbol legends.
- YY. P122 - SECOND FLOOR PLUMBING SUPPLY PLAN
 - added services to glassware washer, added lab gas manifolds, added piping and gas symbol legends, relocated scullery sink supply from exterior wall.

- ZZ. P123 - THIRD FLOOR PLUMBING SUPPLY PLAN
 - added lab gas manifolds, added piping and gas symbol legends, rerouted south lab specialty gas supply from dedicated manifold location.
- AAA. P220 - FIRST FLOOR BELOW FLOOR PLUMBING DRAINAGE PLAN
 - updated sanitary main from 4" to 6", clarified venting, pipe routing and sizing.
- BBB. P221 - FIRST FLOOR ABOVE FLOOR PLUMBING DRAINAGE PLAN
 - relocated scullery sink drain from exterior wall, coordinated structural locations for southeast roof drain penetrations through beam, clarified venting, pipe routing and sizing.
- CCC. P222 - SECOND FLOOR PLUMBING DRAINAGE PLAN
 - relocated scullery sink drain from exterior wall, clarified venting, pipe routing and sizing.
- DDD. P223 - THIRD FLOOR PLUMBING DRAINAGE PLAN
 - clarified venting, pipe routing and sizing.
- EEE. P401 - ENLARGED PLUMBING PLANS
 - Added separate tag for water softening tank.
- FFF. P503 - PLUMBING SANITARY VENT STACK
 - clarified venting, pipe routing and sizing.
- GGG. P504 - PLUMBING SANITARY VENT STACK – RESTROOMS
 - Separated restroom stack from main stack for readability, clarified venting, pipe routing and sizing.
- HHH. P505 - PLUMBING RISER DIAGRAMS – LAB GAS
 - updated sheet reference.
- III. P506 - PLUMBING RISER DIAGRAMS – LAB GAS
 - updated sheet reference, rerouted third floor south lab specialty gas supply from dedicated manifold location.
- JJJ. P601 - PLUMBING SCHEDULES
 - added specialty gas manifolds, added water softening tank spec, added water box spec.
- KKK. FS120 - SELB PIPING PLAN
 - sheet updated to include fire suppression routing from SELB.
- LLL. FS121 - FIRST FLOOR FIRE SUPPRESSION PLAN
 - dry sprinkler piping updated to coordinate with ductwork.
- MMM. FS122 - SECOND FLOOR FIRE SUPPRESSION PLAN
 - updated sheet note 6.
- NNN. FS501 - FIRE SUPPRESSION SCHEDULES AND DETAILS
 - added details.
- OOO. E002 - ELECTRICAL SITE POWER PLAN
 - added 120V power and communications line to new VISTA switch, as directed by IU.
- PPP. E121 - FIRST FLOOR CONDUIT PLAN
 - added conduit run from panel not previously indicated. Added further definition about the generator distribution equipment and conduits. Added ductbank detail for clarity.
- QQQ. E123 - THIRD FLOOR CONDUIT PLAN
 - clarified notes
- RRR. E124 - PENTHOUSE AND ROOF FLOOR CONDUIT PLAN
 - clarified notes
- SSS. E221 - FIRST FLOOR ELECTRICAL POWER PLAN
 - added circuits for cabinet unit heaters, added circuits for fan coil units, added fan filter units and circuits, added circuit in security room, added generator distribution equipment.
- TTT. E222 - SECOND FLOOR ELECTRICAL POWER PLAN
 - added circuit for BAS system in electric room.
- UUU. E223 - THIRD FLOOR ELECTRICAL POWER PLAN
 - added circuit for BAS system in electric room.
- VVV. E224 - PENTHOUSE AND ROOF ELECTRICAL POWER PLAN

- added clarity about conduit penetrating wall to exhaust fans, added clarity to disconnect on HRWP units.
- WWW. E321 - FIRST FLOOR FIRE ALARM PLAN
 - revised devices and notes for clarity.
- XXX. E323 - THIRD FLOOR FIRE ALARM PLAN
 - revised devices and notes for clarity
- YYY. E501 - SINGLE LINE DIAGRAM – NORMAL POWER – NEW WORK
 - changed out breakers in 4NLDP1, changed out 2NL2 main breaker.
- ZZZ. E502 - SINGLE LINE DIAGRAM – EMERGENCY POWER – NEW WORK
 - clarify generator scope, clarify wire sizes.
- AAAA. E504 - GROUNDING PLAN
 - clarity on the connection location.
- BBBB. E506 - ELECTRICAL DIAGRAMS
 - clarified noting.
- CCCC. EL122 - LIGHTING PLAN LEVEL 2
 - Wet Lab 210 – Shifted (1) 2X2 light fixture to avoid conflict with ceiling interface panel.
 - Autoclave 214 – Shifted (2) 2X2 light fixtures to avoid autoclave equipment.
- DDDD. T121 - TECHNOLOGY PLAN – LEVEL 1
 - Revised cable tray and conduit requirements.
 - Mech & Water 197 - Relocated wireless access point to be wall mounted
 - Circulation 199 – Added video outlet location and data cabling.
 - Large Conference Room 100 – Added video outlet location and data cabling.
- EEEE. T122 - TECHNOLOGY PLAN – LEVEL 2
 - Revised cable tray and conduit requirements.
- FFFF. T123 - TECHNOLOGY PLAN – LEVEL 3
 - Revised conduit sleeves to EZ Path fire rated pathways.
- GGGG. T201 - OVERALL TECHNOLOGY PLAN – LEVEL 1
 - Revised pathways requirements.
- HHHH. T202 - OVERALL TECHNOLOGY PLAN – LEVEL 2
 - Revised pathways requirements.
- IIII. T203 - OVERALL TECHNOLOGY PLAN – LEVEL 3
 - Revised pathways requirements.
- JJJJ. T504 - TECHNOLOGY DETAILS
 - Revised telecom riser diagram.
- KKKK. T601 – TECHNOLOGY SCHEDULES
 - Revised technology schedules.

END OF ADDENDUM #1



JOINT VENTURE
PARTNERSHIP

Meeting Minutes

November 8, 2024

Subject: **Pre Bid Meeting**

Agenda

- Highlight XBE Goal
- Review project and instructions to bidders

Attendees

- (See Page 2)

Updates/Notes

- Contract 1.03 – no tower crane will be provided on site. Hoist capabilities are to be provided by contractor.
- Reach out to SSC project team for 2nd tier XBE contacts

Action Items

Action

- Create an account on IU Plan Room prior to bid submission date. ([IU Plan Room](#))
- Provide feedback on electronic bid submission process to SSC.
- Request specifications and maintenance data for existing generator to include in addendum 1.
- Request specifications for Vista switch to be provided by IU.

Owner

Bidders
Bidders
Chris Junken
Chris Junken

Reminders

- Bid RFI's are due to SSC on November 13th by 12:00pm
- Bids need to be submitted in IU Plan Room by **2:00pm, November 19th**
- Bids will be opened via Zoom
 - <https://iu.zoom.us/j/82623978895>
 - Meeting ID: 826 2397 8895
 - Join by phone: (312) 626-6799



**SHIEL
SEXTON**

Meeting Minutes

November 8, 2024

Page 2

Daniel Potash (arcDesign)
Jeremy Helm (Shiel-Harmon JV)
Nick Hawkins (Hawkins Flooring and Tile)
Jason Bishop (Quality Roofing)
John Benson (Quality Roofing)
Mallory Halcomb (HFI)
Steve Fields (Solid Platforms)
Cory Shipman (FSG Electric)
Eric Spangler (Indiana Excavating)
Taylor George (Weddle Bros.)
Eric Worley (Industrial Electrical)
Tim Fettig (Indiana University)
Brandon Puckett (Shiel-Harmon JV)
Garrett Mize (HEAPY)
Jake Thompson (DC Elevator)
Wade Huber (AA Huber)
Holly Huber (Barth Electric)

Attendees

John Cano (IEI)
Max Levin (McHugh)
Kevin Morley (McHugh)
Zack Schellinger (SSC)
Chris Junken (SSC)
Adrian Russell (SSC)
George Anderson (SSC)
Frank Duck (SSC)
Mark Riffey (FE Moran) (online)
Jay Joyce (online)
Evan Green (online)
Ben Cockrum (online)
Somsri Bond (online)
Daniel Anoskey (online)

DOCUMENT 00 31 32 - GEOTECHNICAL DATA – ADDENDUM #1 11/08/2024

1.1 GEOTECHNICAL DATA

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.
- B. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of borings or that strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.
- C. Soil-boring data for Project, obtained by **Patriot Engineering and Environmental, Inc** dated **August 2, 2024**, is available for viewing as appended to this Document.
- D. A geotechnical investigation report for Project, prepared by **Patriot Engineering and Environmental, Inc**, dated **August 2, 2024**, is available for viewing as appended to this Document.
 - 1. The Opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
 - 2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.
- E. Related Requirements:
 - 1. Document 00 21 13 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.

END OF SECTION

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**REVISED REPORT OF GEOTECHNICAL
ENGINEERING EXPLORATION**

**IUI LAB EXPANSION AND RENOVATION
W. NEW YORK STREET & N. BLACKFORD STREET
INDIANAPOLIS, INDIANA**

PREPARED FOR:

**arcDESIGN, P.C.
201 NORTH DELAWARE STREET, SUITE B
INDIANAPOLIS, INDIANA 46204**

**Patriot Engineering and Environmental, Inc.
6150 East 75th Street
Indianapolis, Indiana 46250**

August 2, 2024



August 2, 2024

Mr. Daniel Potash
arcDesign, P.C.
201 North Delaware Street, Suite B
Indianapolis, Indiana 46204

Re: Revised Report of Geotechnical Engineering Exploration
Indiana University Indianapolis Lab Expansion and Renovation
West New York Street and North Blackford Street
Indianapolis, Indiana
Patriot Project No.: 24-0645-01G

Dear Daniel:

Attached is the report of our subsurface exploration for the above referenced project. This exploration was completed in general accordance with our Proposal No. P24-0886-01G dated April 12, 2024.

This report includes graphic logs of nine (9) soil borings drilled at the proposed project site. Also included in the report are the results of laboratory tests performed on samples obtained from the site, and geotechnical recommendations pertinent to the site development, foundation design, and construction.

We appreciate the opportunity to perform this geotechnical engineering exploration and are looking forward to working with you during the construction phase of the project. If you have any questions regarding this report or if we may be of any additional assistance regarding any geotechnical aspect of the project, please do not hesitate to contact our office.

Respectfully submitted,
Patriot Engineering and Environmental, Inc.



Ben Lauletta, P.E.
Senior Project Engineer



Tim Tyler, PhD, P.E.
Senior Project Engineer



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APPENDICES

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REPORT OF GEOTECHNICAL ENGINEERING EXPLORATION

**Indiana University Indianapolis Lab Expansion and Renovation
West New York Street and North Blackford Street
Indianapolis, Indiana
Patriot Project No.: 24-0645-01G**

1.0 INTRODUCTION

1.1 General

Indiana University along with arcDesign, P.C. and American Structurepointe, Inc. is planning the construction of an addition to the existing SEL building on the campus of Indiana University Indianapolis. The results of our geotechnical engineering exploration for the project are presented in this report.

1.2 Purpose and Scope

The purpose of this exploration is to determine the general near surface and subsurface conditions within the project area and to develop the geotechnical engineering recommendations necessary for design and construction of the proposed building addition. This was achieved by drilling nine (9) soil borings and by conducting laboratory tests on samples taken from the borings. This report contains the results of our findings, an engineering interpretation of these results with respect to the available project information, and recommendations to aid in the design and construction of the proposed development.

2.0 PROJECT INFORMATION

The proposed project includes the construction of an addition to the existing SEL building. We understand that the addition will be a three (3)-story structure of slab-on-grade construction. We understand that the proposed structure will have maximum column loads of 950 kips, maximum wall loads of 3 kips per foot, and a maximum slab load of 150 pounds per square feet. We also understand that the project will be constructed at or near the existing grade and will not include more than 2 feet of grade raised fill.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

The proposed addition is planned for the lot south of the existing SEL building. The site is currently an empty lot covered with grass. The site is bounded by West New York Street on the South and North Blackford Street on the east. The elevation at the project site was about 704 feet based on information from Google Earth.

3.2 General Subsurface Conditions

Our interpretation of the subsurface conditions is based upon nine (9) soil borings. The soil borings were drilled at the approximate locations shown on the Boring Location Map (Figure No. 2) in Appendix "A". All depths discussed below refer to depths below the existing ground surface. Based on the results of the soil borings completed at the site, the following subsurface profile is presented. A description of each general soil unit has been identified and is described below:

Topsoil – The soil borings were performed in an area covered with topsoil, a surficial layer of material that is a blend of silts, sands, and clays, with varying amounts of organic matter. The topsoil layer was approximately 9 to 12 inches thick in the borings.

Fill or Possible Fill

Fill or possible fill material was encountered in the soil borings to depths between 6 to 13.5 feet below the existing ground surface. This fill material consisted of sand or clay with varying amounts of concrete, crushed stone, coal, brick, glass, slag, cinders, metal, rubber, and/or wood. Standard Penetration Test N-values (blow counts) in this material varied from 6 to 29 blows per foot (bpf). Please refer to Table 1 for a summary of the fill material encountered in the soil borings.

Table 1: Summary of Fill Material

Soil Boring Location	Description	Depth Below Existing Ground Surface (feet)	Elevation at Extent (feet)
B-1	Sandy Clay Fill (crushed stone), Silty Clay, Clayey Sand Possible Fill	6.75	697.25
B-2	Sandy Clay Fill (slag, coal, brick, glass, cinders)	8.5	695.5

B-3	Sandy Clay Fill (slag, brick, glass), Clayey Sand Possible Fill	6.75	697.25
B-4	Sandy Clay Fill (rubber, concrete, slag) Sandy Clay Possible Fill (organics)	6	698
B-5	Sandy Clay, Sand, Clayey Sand Fill (slag, brick, glass, cinders, coal)	13.5	690.5
B-6	Clayey Sand Fill, Silty Clay Possible Fill	6	698
B-7	Silty Clay, Clayey Sand Possible Fill (organic matter)	6	698
B-8	Silty Clay, Sand Fill (concrete, brick, cinders, metal)	8.5	695.5
B-9	Sandy Clay Fill (brick, slag), Silty Clay, Clayey Sand Possible Fill	8.5	695.5

Sand or Silty Sand (SP-SM/SM)

In general below the surficial layer and fill/possible fill material, the site is underlain by brown to gray, slightly moist to saturated, medium dense to very dense, sand that extends to the termination of the soil borings at 40 to 60 feet below the existing ground surface. Standard Penetration Test N-values (blow counts) in this material varied from 11 to more than 50 blows per foot (bpf).

The soil conditions described above are general, and some variations in the descriptions should be expected; for more specific information, please refer to the boring logs presented in Appendix “A”. It should be noted that the dashed stratification lines shown on the soil boring logs indicate approximate transitions between soil types. In-situ stratification changes could occur gradually or at different depths.

3.3 Groundwater Conditions

The term groundwater pertains to any water that percolates through the soil found on site. This includes any overland flow that permeates through a given depth of soil, perched water, and water that occurs below the “water table”, a zone that remains saturated and water-bearing year-round.

Groundwater was observed during drilling in all the soil borings performed at the site at depths between 23.5 to 28.5 feet below the existing ground surface. Immediately after the borings were completed and the augers were removed from the boreholes, groundwater was observed at depths between 9 to 15 feet below the existing ground surface

Table 2: Summary of Groundwater Depths

Soil Boring Location	Groundwater Depth Below Existing Ground Surface During Drilling (feet)	Groundwater Elevation During Drilling (feet)	Groundwater Depth Below Existing Ground Surface After Drilling (feet)	Groundwater Elevation After Drilling (feet)
B-1	28.5	675.5	15	689
B-2	28	676	10	694
B-3	28.5	675.5	10	694
B-4	28.5	675.5	13	691
B-5	28.5	675.5	10	694
B-6	23.5	680.5	13	691
B-7	28.5	675.5	9	695
B-8	28.5	675.5	12	692
B-9	28.5	675.5	10	694

4.0 DESIGN RECOMMENDATIONS

4.1 Basis

Our recommendations are based on the project information provided to us, our experience with similar projects and data presented in this report, which include soil borings, laboratory testing. Subsurface variations that may not be indicated by a dispersive exploratory boring program can exist on any site. If such variations or unexpected conditions are encountered during construction, or if the project information is incorrect or changed, we should be informed in writing immediately to allow us to determine if our recommendations may be affected. *Patriot* cannot be responsible if changes are made to the project after submittal of this report and we are not notified.

4.2 Foundations

We understand that the proposed building addition will be a three (3)-story structure of slab-on-grade construction. We understand that the proposed structure will have maximum column loads of 950 kips, maximum wall loads of 3 kips per foot, and a maximum slab load of 150 pounds per square feet. We also understand that vibration caused by construction activities is a concern.

As indicated previously, fills and weaker soils were encountered up to 13.5 feet below existing grade at the site. Therefore, conventional shallow spread footings are not being considered for support of the proposed building addition, and three (3) suitable alternatives are summarized below.

Rigid Inclusion System

A rigid inclusion ground improvement system (such as Controlled Modulus Columns (CMC) or similar system) can be used to support the project structures. Alternatively, other proprietary systems, such as a Geopier Grouted Impact Pier System™ (installed using displacement methods), could also be considered to support the proposed structure at this site. If an intermediate foundation system is used to support the structure, the system should be terminated in the dense to very dense sands at 30 to 40 feet below the existing ground surface.

Controlled Modulus Columns (CMC's) are constructed using reverse flight augers to drill the columns, while minimizing spoils and laterally displacing soils. The columns are then filled with grout through the hollow core of the drilling tool during extraction. The columns are typically designed to be 10 to 18 inches in diameter. After installation of the CMC's, a compacted load crushed stone transfer platform is constructed over the CMC's to transmit loads to the composite CMC/soil matrix. The rigid inclusion/CMC system allows for the use of a shallow spread footing foundation using conventional construction methods with the footings constructed directly on the load transfer layer. In addition to resistance of compression loads, it is possible the CMC's can be designed to include additional reinforcement at select locations to resist shear/uplift loads as necessary.

The contractor should retain the responsibility for the final column and transfer layer design. In addition, the bearing capacity of the system and estimated settlement should be determined by the contractor, along with warranting the performance of the footings supported by CMC system.

Based on past experience with similar projects in the immediate vicinity of the project site, it may be possible to design the CMC Rigid Inclusion system for an allowable soil bearing pressure of 6,000 to 8,000 pounds per square foot (psf) for the design of the spread footing foundations. However, depending on the selected rigid inclusion system, depth and spacing, the bearing capacity could vary.

Deep Foundations – Auger-Cast Piles (ACP)

Another low vibration alternative would be utilizing a deep foundation option such as auger-cast piles (ACP). Table 3 presents estimated allowable pile capacities for a single pile under static loading conditions for 18-inch and 24-inch diameter piles.

Table 3: Estimated Auger-Cast Pile Capacities for Compression and Uplift

Auger-Cast Pile Diameter (inches)	Estimated Pile Length (feet)*	Est. Allowable Pile Compression Capacity (kips)**	Est. Allowable Pile Uplift Capacity (kips)**
16	40	150	40
18	40	175	45
16	50	165	50
18	50	195	70

Notes: * Deeper penetration may be needed to achieve the desired capacity. Pile depths are based on the assumption that the pile cap/slab thickness will be 4 feet. It is possible that some of the piles may encounter auger refusal or drilling difficulties due to potential cobbles and large gravel zones or hard clays and the capacity of these shorter piles needs to be revised based on the actual length during construction if this condition is encountered.
 **To be verified by pile load tests.

Pile capacities for additional diameters and depth could be provided upon request. This analysis assumes and the piles will bear or extend into the very dense sands encountered in the borings and a typical pile length of 40 to 50 feet. After the preliminary pile layout and loading are complete, it is requested that *Patriot* review the pile layout to insure that the pile group capacity is adequate. The efficiency of a pile group should be taken into account in calculating the capacity of a pile group.

Based on our current soil borings and past experience in the project vicinity, the auger cast pile contractor may encounter obstructions due to hard clays, large gravels zones, and/or potential cobbles and boulders. Therefore, the contractor should be prepared with proper equipment, including a rig with a rated torque of at least 50,000 foot-pounds, to aid in drilling past obstructions to the extent practical. Contractual provisions should be made to manage abandoned, short and added piles due to the expected obstructions.

Any contract criteria with regards to termination of production piles due to slow drilling or auger refusal should be discussed and modified to accommodate slow drilling through the dense sands and gravel to the required elevations.

The estimated pile design capacities are based on the following criteria.

- Auger-cast piles should not be battered.
- The center-to-center spacing of the piles will be generally a minimum of 3 pile diameters in order to avoid reducing the allowable adhesion/friction around the perimeter of each pile.
- A minimum of three piles per pile cap will be required unless the piles are linked with grade beams or a structural slab. Grade beams can be used to connect two piles.
- All production piles will include, as a minimum, a full-length number 11 grade 60 steel reinforcing bar, placed and centered within the pile to provide continuous pile load transfer throughout the entire length of the pile. Supplementary reinforcement within the top of the piles for shear, bending movement, or torque capacity, should be provided as necessary for structural reinforcement.
- The approximate pile tip settlement under design loads is estimated to be less than 1-inch total and ½ inch differential.
- A safety factor of 2.5 used in determining the allowable design capacities of the pile.
- The design, construction, and installation of the piles will be in accordance with the 2014 Indiana Building Code (based on 2012 International Building Code).

An experienced specialty contractor whose qualifications in regard to experience in work of this type and scope, suitability of equipment, competent personnel, and reputation shall perform installation of auger-cast piles. Furthermore, it is imperative that the pile contractor examines the areas and conditions under which piles are to be installed and notify the Owner's representative in writing of conditions detrimental to the proper and timely completion of the work.

A *Patriot* representative should observe pile installation and provide field documentation of the installed piles. In general, the pile installation should follow good construction practices and the minimum requirements of the Indiana Building Code. The project construction plans and specifications should consider, at a minimum, the following:

- 1) The pile grout should have a minimum design compressive strength of 5,000 pounds per square inch (psi) at 28 days. The grout shall be pumped with sufficient pressure as the auger is withdrawn, to fill the hole, prevent wall collapse, and cause lateral penetration of the grout into soft or porous zones of the surrounding soil. Sufficient grout shall be injected to ensure a continuous column of grout of no less than the diameter specified. A sufficient head of grout above the injection point shall be maintained in the hole around the auger at all times during the withdrawal of the auger.
- 2) In addition, we recommend that the auger cast pile contractor utilize the latest instrumentation that permits monitoring accurately, grout pressure and grout volume pumped at every foot depth of pile.
- 3) Full-length reinforcing should be placed within the hollow-stem of the auger prior to initiating the grouting procedure rather than installing the full-length reinforcement immediately following grouting. Installation of the full-length reinforcing within the hollow-stem does assure that the reinforcing extends to the tip of the pile. The procedure also eliminates the potential of soil/grout contamination, which may otherwise develop by installing the longitudinal steel with spacer into the pile after the grout is placed.
- 4) It is recommended that the reinforcing cage within the upper portion of the pile, as may be required, be placed using an eye-hole template or other methods as a guide over the full-length center bar to properly control the cage alignment during installation. Alternately, it is recommended that the bottom of the longitudinal reinforcing bars be turned in at the bottom if the eyehole template system is not utilized.

Indicator & Piles Load Tests

Prior to the installation of the production piles and the load tests, we recommend that the selected contractor install some (4 to 6) indicator piles across the site to evaluate the capacity of the rig to drill and satisfactorily construct piles to the design depths, and to characterize the variability of the subsurface conditions at the site.

At least two (2) of these indicator piles should be grouted and load tested as described below. Some of the indicator piles could be used as reaction piles for the pile load tests.

The compression and uplift capacities of the auger-cast piles must be verified by performing static field load tests on minimum of two (2) piles in accordance with applicable ASTM D-1143 and ASTM D-3689 or using Osterberg Load tests under the direct supervision of the project geotechnical engineer. Alternatively, a representative number of the piles can be dynamically load tested. In addition, if lateral capacities are critical, we recommend at least one (1) lateral load test in accordance with ASTM D-3966.

The test piles must be installed and tested from the production level (i.e., as applicable, the test site must be excavated to the levels corresponding to the production pile level). The indicator piles and pile load tests are necessary to provide evidence that the Contractor can produce an auger cast pile which can safely support the design loads at the project site and to satisfy the Indiana Building Code. The same contractor installing the load test piles must also install the production piles utilizing the same equipment (auger, grout pump, drive system, etc.) and installation methods.

As further confirmation of pile integrity and capacity, a representative number of all piles drilled as selected by the geotechnical representative could be integrity tested by either the sonic echo or the impulse response technique correlated with the static and/or dynamic load tests performed.

For the standard axial compression and tension load tests, a calibrated hydraulic jack with a load cell should be used as close interpretation of the pile load test data will be necessary to assign appropriate capacities for “short” piles. We recommend a load sequence that is taken to twice the design load, unloaded, and reloaded to three times the design load or failure. The pile load tests should include multiple ways of measuring settlement of the test pile, including minimum three dial gages on the test pile and a dial gage on each reaction pile to verify that the reaction piles are not moving excessively. The test piles should be instrumented with a series of strain gages placed on sister bars at multiple depths with telltales for calculating and assigning pile capacities for short piles. A *Patriot* representative should monitor the load tests and analyze the test data to determine the allowable pile capacity. The allowable capacity of the auger-cast piles may possibly be increased if the results of the pile load test indicate a significantly higher allowable capacity.

If the *Patriot* geotechnical engineer determines that a higher capacity is justified after reviewing the pile load test results, it may be feasible to re-design the foundations using the higher capacity or shallow tip elevation. However, it should also be noted that a pile load test may indicate a lower capacity or deeper tip elevation.

Rammed Aggregate Pier System™

We understand that the project team is also considering the use Geopier Rammed Aggregate Piers™ for the support of the building addition. A properly installed Geopier Rammed Aggregate Piers™ (open hole with compacted crushed stone layers) may be used for the support of the proposed building addition. The design team should consult with Geopier regarding the tolerable construction vibration limit.

The Geopier Foundation System not only allows for the use of a shallow spread footing foundation using conventional construction methods, but also allows for some improvement of the soils within the project area due to the construction methods involved in placing the Geopiers.

Rammed Aggregate Piers are constructed by drilling 24 to 30 inch diameter holes within the shallow foundation footprint, and then compacting the holes with crushed stone to form a dense aggregate pier. The footings are then constructed directly on the Geopier reinforced subgrade using conventional construction methods. The Geopier Foundation Company retains the responsibility for the final pier designs and can estimate settlements, along with warranting the performance of the footings supported by Geopier elements.

Patriot recommends that the Geopiers should be installed and adequately extended into the dense to very desne sands encountered on the order of 30 to 40 feet below the existing ground surface. Additionally, we recommend that *Patriot* be retained to observe the installation process. Although the Geopier Foundation Company warrants the performance of their work, it is their standard practice to have quality assurance during installation of the Geopiers.

Based on our past experience with similar projects, it is estimated that by reinforcing the sand layers with Geopier foundation elements, an allowable soil bearing pressure on the order of 6,000 to 8,000 pounds per square foot (psf) could be utilized for the design of the spread footing foundations. ***However, the actual allowable bearing capacity can only be determined by the Geopier Foundation Company and our estimates should only be considered as a guide for preliminary design.***

In using the above net allowable soil bearing pressures, the weight of the foundation and backfill over the foundation need not be considered. Hence, only loads applied at or above the minimum finished grade adjacent to the footing need to be used for dimensioning the foundations. Each new foundation should be positioned so it does not induce significant pressure on adjacent foundations; otherwise the stress overlap must be considered in the design.

All exterior foundations and foundations in unheated areas should be located at a depth of at least 30 inches below final exterior grade for frost protection. However, interior foundations in heated areas can bear at depths of approximately 24 inches below the finished floor. We recommend that wall (strip) footings be at least 18 inches wide and column footings be at least 24 inches wide for bearing capacity considerations.

Foundation Drainage

Positive drainage of surface water, including downspout discharge, should be maintained away from structure foundations to avoid wetting and weakening of the foundation soils both during construction and after construction is complete. Regarding perimeter drains refer to section 1805.4.2 of the 2021 International Building Code.

4.3 Floor Slabs

Due to the depth of the existing urban fill encountered in the soil borings, mass excavation and replacement of the fills below the proposed floor slab areas likely would not be the most economical approach. For the slab-on-grade areas, we recommend undercutting the existing ground surface to a minimum depth of 2 feet below the base of the final subgrade due to variable nature of existing fill encountered at the site. Following the removal of any unsuitable materials such as topsoil, organics and non-compactable fills, the undercut area should be proofrolled using **a heavy vibratory drum roller to identify the weaker or soft zones** and backfilled with approved granular materials. Minimum 12 inches of INDOT No. 53 crushed stone should be used under floor slabs as a base course layer. The granular fill and the base course are expected to help distribute loads and equalize moisture conditions beneath the slab. The structural fill should be placed and properly compacted in accordance with the structural fill and fill placement control recommendations that are discussed in this report. Note that this approach can be incorporated into the load transfer platform if rigid inclusions are used.

We recommend that all floor slabs be designed as "floating", that is, fully ground supported and not structurally connected to walls or foundations. This is to reduce the potential of cracking and displacement of the floor slabs because of differential movements between the slab and the foundation. Although the movements are estimated to be within industry accepted limits for the structure, such movements could be detrimental to the slabs if they were rigidly connected to the foundations. Additionally, we recommend that all slabs should be liberally jointed and designed with the appropriate reinforcement for the anticipated loading conditions.

The building floor slabs should be supported on a minimum 6-inch-thick well-compacted granular base course (i.e. Indiana Department of Transportation (INDOT) No. 53 crushed stone) bearing on a suitably prepared subgrade (Refer to Section 6.0 "Construction Considerations"). The granular base course is expected to help distribute loads and equalize moisture conditions beneath the slab.

Provided that the recommendations above for floor slab design and construction are followed, a modulus of subgrade reaction, "K₃₀" value of 100 pounds per cubic inch (pci), is recommended for the design of ground supported floor slabs. It should be noted that the "K₃₀" modulus is based on a 30-inch diameter plate load empirical relationship.

4.4 Lateral Load Resistance

The following lateral load resistance combinations can be used to resist the lateral loads if auger cast piles are used for the project:

1. Lateral capacity of the pile as presented in Table 4. Please note that these lateral capacity values are based on a free head condition.

Table 4: Estimated Auger-Cast Pile Lateral Capacities

Auger-Cast Pile Diameter (inches)	Minimum Pile Tip Elevation Range (Feet)*	Est. Allowable Pile Lateral Capacity	
		For An Allowable Pile Head Deflection of ¼ inches	For An Allowable Pile Head Deflection of ½ inches
16	651 to 661	9 kips	16 kips
18	651 to 661	11 kips	20 kips

Notes: * Tip elevations are based on the proposed building slab at approximately 706 feet and an assumed pile cap and slab thickness of 5 feet (Assumed top of pile at 701 feet).

- The shear resistance against base sliding can be computed by multiplying the minimum normal force on the base of the footing/pile caps times a coefficient of friction of 0.3.
- If additional lateral capacities are required, the capacities available from slab-on-grade friction, passive soil resistance against grade beams and pile caps and side friction along end walls also can be used.
- We recommend that the designer sum all of the available lateral resistance forces and divide the total by a minimum factor of safety of 1.5.

4.5 Lateral Earth Pressures (Retaining Walls)

For the design of retaining walls or below grade walls, the magnitude of the lateral earth pressure on the walls is dependent on the method of backfill placement behind the walls, the type of backfill soil, drainage provisions and whether or not the wall is permitted to yield during and/or after placement of the backfill. When a retaining wall is held rigidly against horizontal movement, the lateral pressure against the wall is greater than the "active" earth pressure that is typically used in the design of free-standing retaining walls. Therefore, rigid walls should be designed for higher "at-rest" pressures (using an at-rest lateral earth pressure coefficient, K_o), while yielding walls can be designed for active pressures (using an active lateral earth pressure coefficient, K_a).

The retaining or below grade walls proposed for the project are expected to be rigid walls. ***It should be noted that the on-site clayey soils are not suitable for use as backfill immediately against the walls.*** Therefore, provided ***a clean well-graded granular material is used for backfill***, a total soil unit weight (γ_t) of 125 pounds per cubic foot (pcf), an at-rest lateral earth pressure coefficient (K_o) of 0.45, an active lateral earth pressure coefficient (K_a) of 0.30, and a passive lateral earth pressure coefficient (K_p) of 3.4 can be used for calculating the lateral earth pressures.

An equivalent fluid active pressure of 38 psf per foot of wall height is recommended for design purposes in conditions where the top of the wall is allowed to yield during backfilling. However, if the top of the wall will be fixed, an equivalent fluid at-rest pressure of 57 psf per foot of wall height is recommended for design purposes. This equivalent fluid pressure would increase linearly from zero (0) psf at the ground surface, to a maximum at the base of the wall.

When calculating passive earth pressure, the upper 3 feet of soil should be neglected due to the potential for frost disturbance or otherwise insufficiently compacted soil to appropriately generate the specified passive pressure. Additionally for design purposes, it should be recognized that in order for passive earth pressures to be fully developed, the wall must move laterally about 0.04H (where “H” equals the wall height). ***In most cases, passive earth pressures behind walls should not be considered in design.***

If hydrostatic pressure due to water build-up against the retaining or dock walls is anticipated, the equivalent fluid pressure method will be changed for the soil. Rather, the lateral earth pressure should be computed using a total soil unit weight of 125 pcf above the highest anticipated water level, and a buoyant soil unit weight of 63 pcf below the highest anticipated water level. The earth pressure coefficient indicated above should be used above and below the water level to compute the lateral earth pressure. The hydrostatic pressure should be computed using the highest anticipated water level. The lateral earth pressure and hydrostatic pressure should be added to obtain the total lateral pressure on the wall.

Furthermore, in conjunction with and as a direct result of the lateral earth pressures defined above, the shear resistance against base sliding can be computed by multiplying the minimum normal force on the base of the footing times a coefficient of friction (μ) of 0.3. We recommend that for evaluation of sliding stability that a minimum factor of safety (F_s) of 1.5 is utilized for design purposes. Additionally for design, the toe pressure for the retaining or below grade wall footings should not exceed the maximum allowable bearing pressure provided in Section 4.2 “Foundations”.

Table. 5
Summary of Lateral Earth Design Pressures for Retaining Walls

SOIL UNIT WEIGHT (γ_t)	AT-REST COEFFICIENT (K_o)	ACTIVE COEFFICIENT (K_a)	PASSIVE COEFFICIENT (K_p)	COEFFICIENT OF FRICTION (μ)	MINIMUM FACTOR OF SAFETY (F_s)
125 pcf	0.45	0.30	3.4	0.3	1.5

4.6 Seismic Considerations

For structural design purposes, we recommend using a **Site Classification of “C”** as defined by the 2014 Indiana Building Code (modified 2012 International Building Code). Furthermore, along with using a Site Classification of “C”, we recommend the use of the spectral response acceleration coefficients as follows:

0.2 second period: $S_s = 0.159$ g (Soil Factor = 1.2)

1.0 second period: $S_1 = 0.086$ g (Soil Factor = 1.7)

The design spectral response acceleration coefficients as follows:

$S_{Ds} = 0.127$ g

$S_{D1} = 0.097$ g

Other earthquake resistant design parameters should be applied consistent with the minimum requirements of the Indiana Building Code.

4.7 Subsurface Utilities

For installation of subsurface utilities (i.e. water lines, storm-sewer lines, sanitary-sewer lines, underground storage tanks, etc.) the soil conditions encountered in our borings should be readily excavated using conventional earthwork equipment.

We recommend that any unsuitable material encountered at the invert elevation of the subsurface utilities be undercut a minimum of 2 feet and replaced with compacted structural fill. Excavations for pipes will encounter layers of sands. If open cuts are not possible, sliding trench boxes in combination with steel plates and/or braced sheeting may be necessary to support the sides of the trenches and protect workers installing the pipes. All excavations must be properly supported or sloped to ensure the safety of workers, and the trenches should be wide enough to facilitate proper pipe bedding material placement. Once the final excavation depths are safely reached, and before installing the pipe, proper bedding must be placed.

Proper bedding materials should be placed in uniform layers not greater than 6 inches in loose thickness and should be placed evenly on each side of the installed pipe. Compaction of the bedding materials should be performed in general accordance with pipe manufacturer recommendations and the contract specifications. Depending on seasonal conditions and the invert elevations of the proposed subsurface utilities, localized and sporadic groundwater infiltration should be expected to be encountered in the subsurface utility excavations (Refer to Section 5.6 "Groundwater Considerations").

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

All areas that will support foundations, floors, pavements or newly placed structural fill must be properly prepared. All loose surficial soil or "topsoil" and other unsuitable materials must be removed. Unsuitable materials include frozen soil, relatively soft material, relatively wet soils, deleterious material, or soils that exhibit a high organic content.

Prior to construction of floor slabs, pavements or the placement of new structural fill, the exposed subgrade must be evaluated by a Patriot representative, which will include proofrolling of the subgrade. Proofrolling should consist of repeated passes of a loaded, pneumatic-tired vehicle such as a tandem-axle dump-truck or scraper.

The proof rolling operations should be observed by a *Patriot* representative, and the proofrolling vehicle should be loaded as directed by *Patriot*. Any area found to rut, pump, or deflect excessively should be compacted in-place or, if necessary, undercut and replaced with structural fill, compacted as specified in Section 6.3 “*Structural Fill and Fill Placement Control*”.

Care must be exercised during grading and fill placement operations. ***The combination of heavy construction equipment traffic and excess surface moisture can cause pumping and deterioration of the near surface soils. The severity of this potential problem depends to a great extent on the weather conditions prevailing during construction and is more prevalent during periods of decreased drying time, such as spring, fall and winter.***

The contractor must exercise discretion when selecting equipment sizes and make a concerted effort to control construction traffic and surface water while the subgrade soils are exposed. We recommend that heavy construction equipment (i.e. dump trucks, scrapers, etc....) be rerouted away from the building and pavement areas. If such problems do arise, the operations in the affected area should be halted and the *Patriot* representative contacted to evaluate the condition.

5.2 Foundation Excavations

Upon completion of the foundation excavations and prior to the placement of reinforcing steel, a *Patriot* representative should observe the exposed subgrade to confirm that a bearing surface similar to the material encountered in the soil borings and of adequate strength is present at the founding depth. Any localized soft soil zones encountered at the bearing elevations should be further excavated until adequate support soils are encountered. The excavation should be backfilled with compacted and tested structural fill as defined below, or the footing can be placed at the excavated depth. Structural fill used as backfill beneath footings should be limited to lean concrete, well-graded sand and gravel, or crushed stone placed and compacted in accordance with Section 6.3 “*Structural Fill and Fill Placement Control*”.

If it is necessary to support spread footings on structural fill, the fill pad must extend laterally a minimum distance beyond the edge of the footing. The minimum structural pad width would correspond with a point at which an imaginary line extending downward from the outside edge of the footing at a 1H:2V (horizontal: vertical) slope intersects the surface of the natural soils.

For example, if the depth to the bottom of excavation is 4 feet below the bottom of the foundation, the excavation would need to extend laterally beyond the edge of the footing at least 2 feet, as shown in Illustration "A" found at the conclusion of this report.

Excavation slopes should be maintained within all requirements set-forth by the Occupational Safety and Health Standards (OSHA), but specifically Section 1926 Subpart "P" – "Excavations". We recommend that any surcharge fill or heavy equipment be kept at least 5 feet away from the edge of the excavation. A trench safety plan was beyond the scope of our services for this project.

In addition, excavations that occur near existing in-use foundations should be carefully performed making a conscious effort not to undermine the support of the in-use foundations. If it is necessary to excavate soil adjacent to and below the bearing elevation of any in-use foundations, *Patriot* should be contacted to make further recommendations regarding these excavations. Please refer to Illustration "B" at the end of this report for further details.

Construction traffic on the exposed surface of the bearing soil will potentially cause some disturbance of the subgrade and consequently loss of bearing capacity. However, the degree of disturbance can be minimized by proper protection of the exposed surface.

5.3 Excavations of Existing Foundations/ Underground Utilities

We recommend that an attempt be made to obtain drawings of all past or existing underground structures onsite. We also recommend that these documents including this report be made available to the project contractors. Buried foundations and slabs may prove to be obstructions for the proposed construction at the project site.

We also recommend that existing foundations, pavements, utilities, and backfill be excavated at least 2 feet beyond the proposed structures construction and underground utility limits. Backfill required to reach the design subgrade should be performed in accordance with Section 6.3 "Structural Fill and Fill Placement Control".

No structural elements of the proposed project should be placed over old foundations or slabs, which can create “hard spots” or over vacated utility lines or “voids”, unless structurally designed to handle the hard and soft spots. In addition, if basement walls are encountered, we recommend cutting these 2 feet below proposed subgrade and backfilling with structural fill as specified above.

It should also be noted that the sandy soils encountered in some of the borings should be expected to be free-flowing and tend to readily cave and/or slough into excavations; therefore, over-excavation, benching and/or shoring may be required to maintain the side slopes within isolated portions of excavations.

5.4 Structural Fill and Fill Placement Control

Structural fill, defined as any fill which will support structural loads, should be clean and free of organic material, debris, deleterious materials and frozen soils. Samples of the proposed fill materials should be tested prior to initiating the earthwork and backfilling operations to determine the classification, the natural and optimum moisture contents and maximum dry density and overall suitability as a structural fill. ***Structural fill should have a liquid limit less than 40 and a plasticity index less than 20. The fill material encountered at the project site is not suitable for use a structural fill.***

All structural fill beneath floor slabs, adjacent to foundations and over foundations, should be compacted to at least 95 percent (%) of its Standard Proctor (ASTM D-698) maximum dry density value and within 2% of the optimum moisture content. This minimum compaction requirement should be increased to 100 percent (%) of the maximum Standard Proctor dry density for fill supporting footings, provided these are designed as outlined Section 5.0 “*Design Recommendations*”.

Structural fill supporting, around and over utilities should be compacted to at least 95 percent (%) of its Standard Proctor (ASTM D-698) maximum dry density value and within 2% of the optimum moisture content for utilities underlying structural areas (i.e. buildings, pavements, sidewalks, etc....). However, the minimum compaction requirement can be reduced for backfill around and over the utilities to 90 percent (%) of the maximum Standard Proctor dry density where utilities underlie greenbelt areas (i.e. grassy lawns, landscaping, etc....). It is recommended that a clean well-graded granular material in accordance with the manufacturer’s recommendations be utilized as the bedding material, as well as the backfill material around and over the utility lines.

To achieve the recommended compaction of structural fill, we suggest that the fill be placed and compacted in layers not exceeding 8 inches in loose thickness (the loose lift thickness should be reduced to 6 inches when utilizing small hand compactors) and within the range of 2 percentage (%) points below or above the optimum moisture content value. All fill placement should be monitored by a *Patriot* representative.

Each lift should be tested for proper compaction at a frequency of at least one (1) test every 2,500 square feet (ft²) per lift for the building areas, at least one (1) test every 10,000 square feet (ft²) per lift for the parking and roadway areas, and at a frequency of at least one (1) test for every 50 lineal feet of utility installation.

5.5 Groundwater Considerations

Groundwater was observed during our field activities at depths between about 9 and 28.5 feet below the existing ground surface, which is expected to be below the anticipated foundation excavation depths. Groundwater inflow into shallow excavations **above** the groundwater table is expected to be adequately controlled by conventional methods such as gravity drainage and/or pumping from sumps. More significant inflow can be expected in deeper excavations **below** the groundwater table requiring more aggressive dewatering techniques, such as well or wellpoint systems. For groundwater to have minimal effects on the construction, foundation excavations should be constructed and poured in the same day, if possible.

6.0 EXPLORATIONAL PROCEDURES

6.1 Field Work

A total of nine (9) soil borings were drilled, sampled, and tested at the project site at the approximate locations shown on the Boring Location Map (Figure No. 2) in Appendix "A".

The borings were advanced using 3¼ inch inside diameter hollow-stem augers. Samples were recovered in the undisturbed material below the bottom of the augers using the standard drive sample technique in accordance with ASTM D 1586-74. A 2 inch outside diameter by 1³/₈ inch inside diameter split-spoon sampler was driven a total of 18 inches with the number of blows of a 140-pound hammer falling 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the N-value (or blow-count). Split-spoon samples were recovered at 2.5 feet intervals, beginning at a depth of 1 foot below the existing surface grade, extending to a depth of 10 feet, and at 5 feet intervals thereafter to the termination of the boring.

Water levels were monitored at each borehole location during drilling and upon completion of the boring. The boreholes were backfilled with auger cuttings prior to demobilization for safety considerations.

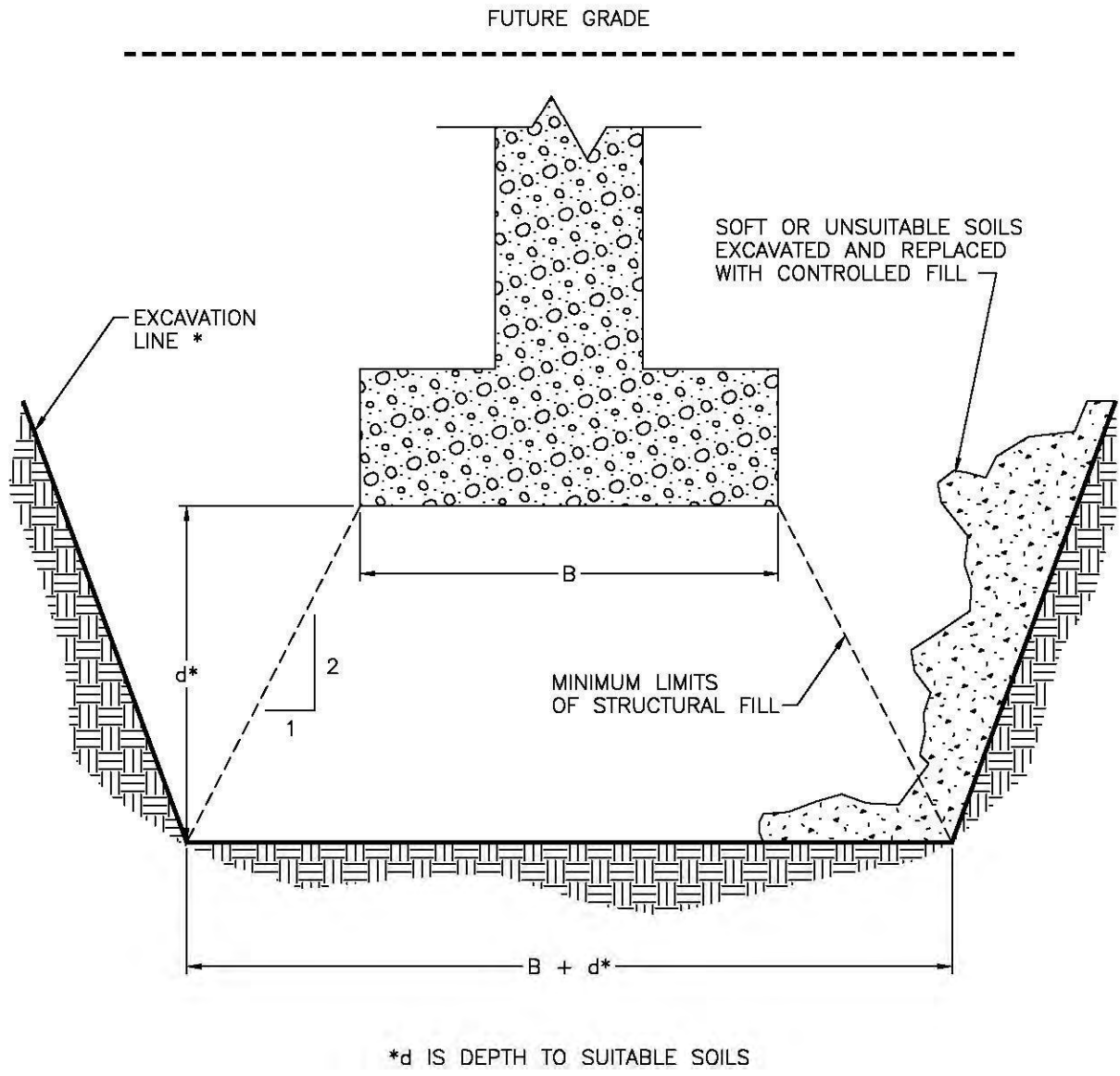
Upon completion of the boring program, all the samples retrieved during drilling were returned to *Patriot's* soil testing laboratory where they were visually examined and classified. A laboratory-generated log of each boring was prepared based upon the driller's field log, laboratory test results, and our visual examination. Test boring logs and a description of the classification system are included in Appendix "A" in this report. Indicated on each log are the primary strata encountered, the depth of each stratum change, the depth of each sample, the Standard Penetration Test results, groundwater conditions, and selected laboratory test data. The laboratory logs were prepared for each boring giving the appropriate sample data and the textural description and classification.

6.2 Laboratory Testing

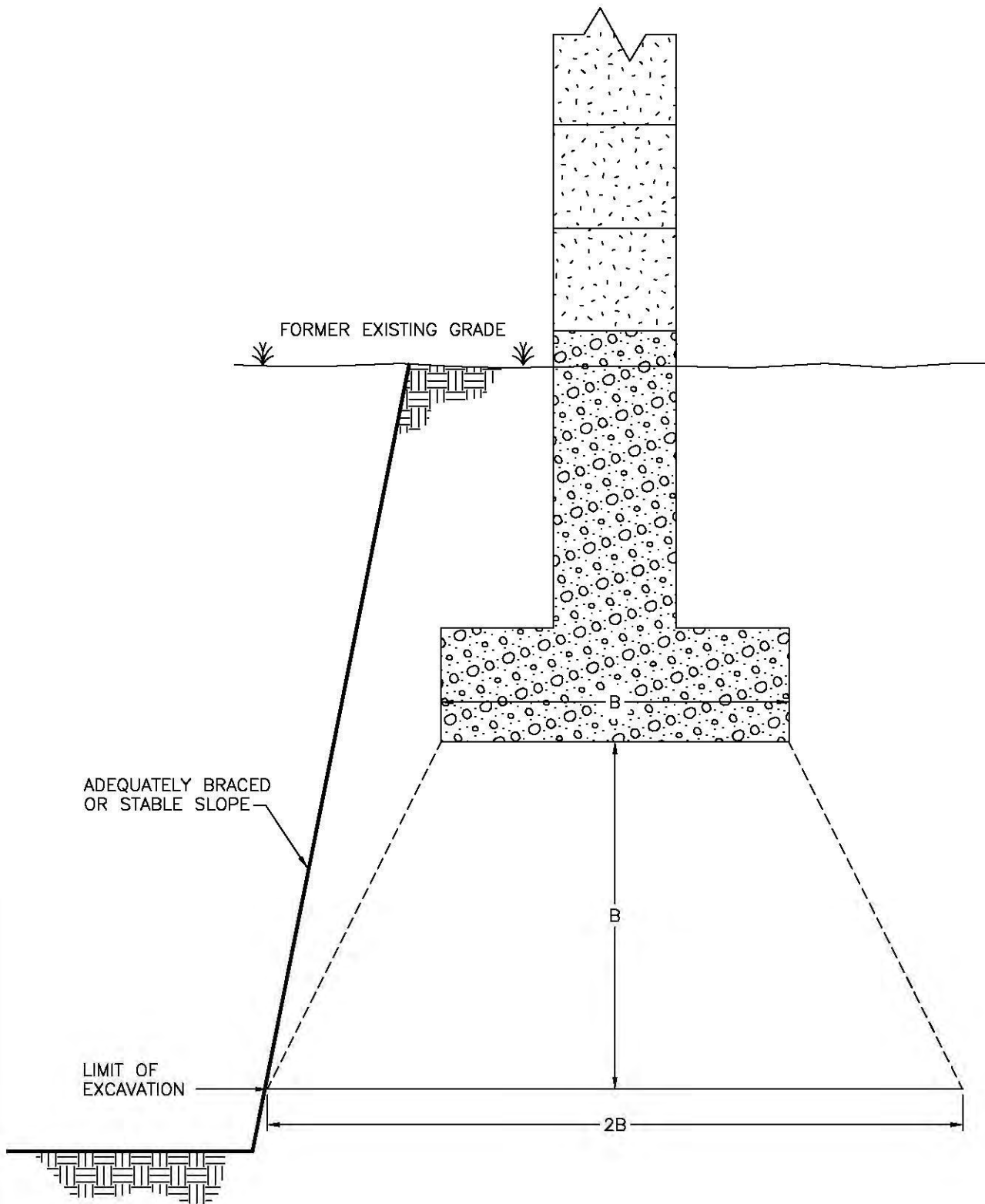
Representative samples recovered in the borings were selected for testing in the laboratory to evaluate their physical properties and engineering characteristics. Laboratory analysis included visual classifications, natural moisture content determinations (ASTM D 2216), and an estimate of the cohesive soil strength utilizing a hand penetrometer (q_p) were obtained. The results of laboratory tests are summarized in Section 4.2 "*General Subsurface Conditions*". Soil descriptions on the boring logs are in accordance with the Unified Soil Classification System (USCS).

7.0 ILLUSTRATIONS

See Illustrations "A" & "B" on the following pages. These illustrations are presented to further visually clarify the construction considerations presented in Section 5.2.



* IN COMPLIANCE WITH OSHA STANDARDS



Excavation Near Existing
In Use Foundations
ILLUSTRATION B



**PATRIOT ENGINEERING
and Environmental, Inc.**

*Engineering Value for Project Success
Consulting Environmental, Geotechnical
and Materials Engineers*

job. no.:

figure:

APPENDIX A

SITE VICINITY MAP (FIGURE NO. 1)

BORING LOCATION MAP (FIGURE NO. 2)

BORING LOGS

BORING LOG KEY

**UNIFIED SOIL CLASSIFICATION SYSTEM
(USCS)**

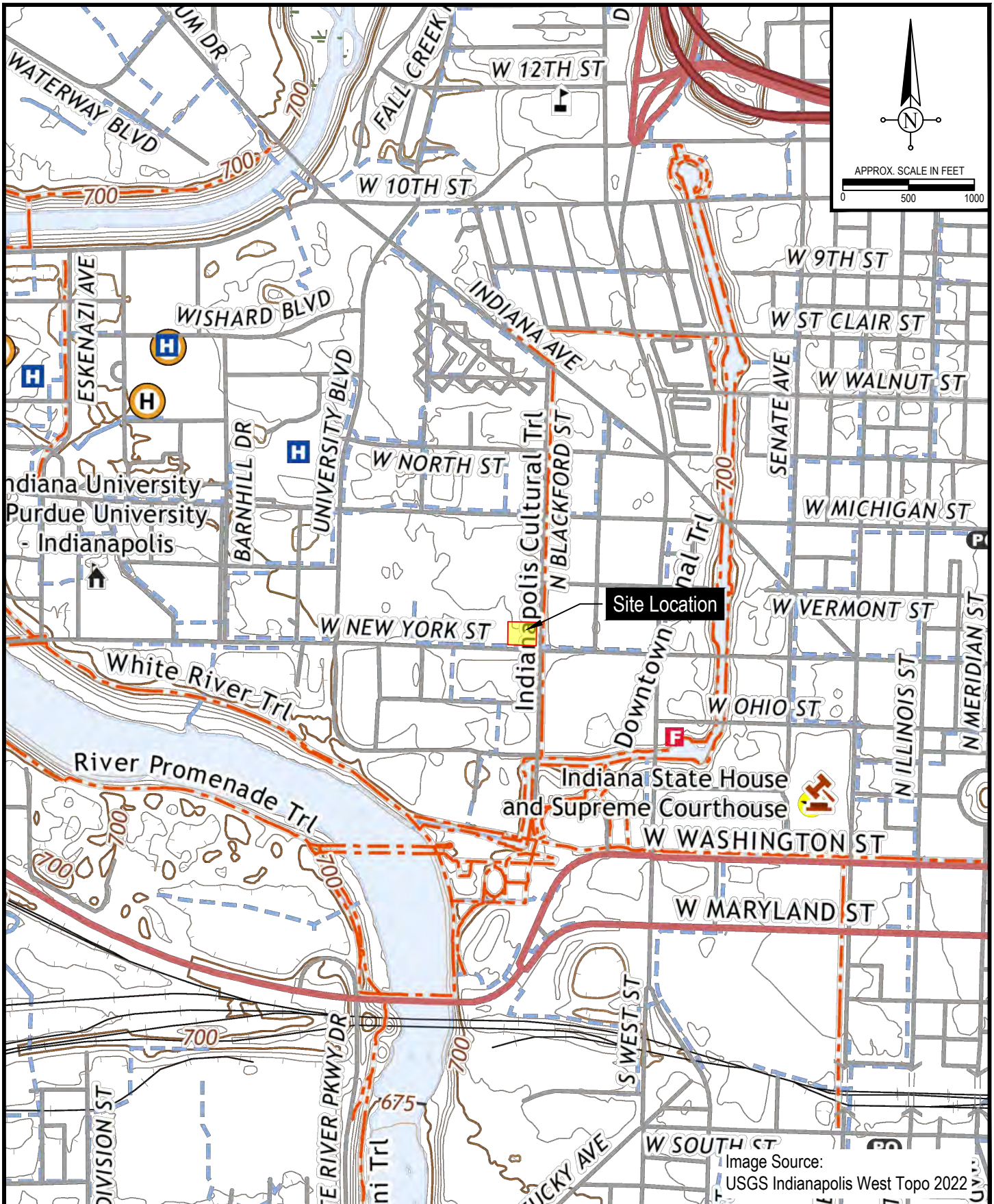


Image Source:
USGS Indianapolis West Topo 2022



Patriot Engineering &
Environmental, Inc.

IUI Lab Expansion and Renovation
W. New York Street and
N. Blackford Street
Indianapolis, Indiana

Project Number: 24-0645-01
Date: June 3, 2024

Drawn By: T. Humphreys
Approved: B. Lauletta
DWG: 24-0645-01_geo

Figure 1

Site Vicinity Map



LEGEND

- PATRIOT Soil Boring
- B-1 Soil Boring ID



Patriot Engineering & Environmental, Inc.

NOTES:

1. Boring locations were staked by PATRIOT. All locations are shown as approximate.
2. All locations were determined in the field with references to existing landmarks.
3. Image Source: Google Earth
4. Scale as shown.

IUI Lab Expansion and Renovation
 W. New York Street and
 N. Blackford Street
 Indianapolis, Indiana

	Drawn By: T. Humphreys
Project Number: 24-0645-01	Approved: B. Lauletta
Date: June 3, 2024	DWG: 24-0645-01_geo

Figure 2

Soil Boring Location Map

IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/14/2024
Drilling Method : HSA

Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'19.97"N
Longitude : 86°10'15.05"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels					REMARKS	
					▼ During Drilling - 28.5 feet	▽ After Completion - 15 feet	◆ After 24 Hours - N/A	Samples	Rec %		SPT Results
DESCRIPTION											
0					TOPSOIL (12")						
			CL		1	100	16/9/14	4.7	12		
5	700		CL		2	100	6/7/8	1.9	19		
			SC		3	100	4/9/9				
10	695				4	100	6/7/9				
15	690	▽	SP-SM		5	100	14/15/19				
20	685				6	89	28/32/41			Cobbles were encountered at 20 feet during drilling.	
25	680		SP-SM		7	100	28/32/39				
30	675	▼	SP-SM		8	100	23/34/31				
35	670				9	100	17/19/25				
40	665		SP-SM		10	100	26/31/29			Boring caved to 38 feet upon auger removal.	
45	660				11	100	30/14/19				
50	655		SP-SM		12	100	22/22/30				
55	650				13	100	18/19/21				
60	645				14	100	14/22/21				
			Boring terminated at 60 feet.								
65	640										



LOG OF BORING B-2

IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/14/2024
Drilling Method : HSA

Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'19.95"N
Longitude : 86°10'14.21"W

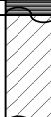




Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
Water Levels											
▼ During Drilling - 28 feet											
▽ After Completion - 10 feet											
◆ After 24 Hours - N/A											
0	704				TOPSOIL (11")						
			CL		Brown, moist, stiff, SANDY CLAY with trace gravel, trace slag, trace coal, trace brick, trace glass, and trace cinders (FILL)	1	100	3/4/5	3.1	19	
5			CL		Brown, moist, very stiff, SANDY CLAY with little gravel (FILL)	2	100	3/4/6		24	
			CL		Brown, moist, very stiff, SANDY CLAY with little gravel (FILL)	3	100	5/9/10	2.6	18	
10	695	▽			Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	4	100	6/9/12			
			SP-SM			5	100	14/14/25			
15	690										
			SP-SM		Brown, slightly moist, dense to very dense, fine to medium grained, SAND with trace silt and trace to little gravel	6	100	18/25/27			
20	685										
			SP-SM			7	100	22/21/25			
25	680										
		▼									
30	675				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	8	100	16/23/27			
			SP-SM			9	100	16/16/18			
35	670										
			SP-SM			10	100	17/18/21			
40	665										
Boring terminated at 40 feet.											
45	660										
50	655										
55	650										
60	645										
65	640										

Boring caved to 22 feet upon auger removal.

IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/14/2024
Drilling Method : HSA

Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'19.88"N
Longitude : 86°10'13.45"W






Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels					REMARKS
					▼ During Drilling - 28.5 feet	▽ After Completion - 10 feet	◆ After 24 Hours - N/A	Samples	Rec %	
DESCRIPTION										
0					TOPSOIL (9")					
			CL			1	100	4/3/7		20
5	700		SC			2	100	6/5/5		16
						3	100	8/6/7		
10	695	▽				4	100	10/11/12		
			SP-SM			5	100	16/17/21		
15	690					6	100	21/17/19		
20	685					7	100	19/19/30		
25	680					8	100	19/18/31		
30	675	▼	SP-SM			9	100	18/19/20		
35	670		SP-SM			10	100	25/22/17		
40	665				Boring terminated at 40 feet.					
45	660									
50	655									
55	650									
60	645									
65	640									

Boring caved to 20 feet upon auger removal.

IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/13/2024
Drilling Method : HSA

Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'19.29"N
Longitude : 86°10'13.43"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels					REMARKS
					▼ During Drilling - 28.5 feet	▽ After Completion - 13 feet	◆ After 24 Hours - N/A	Samples	Rec %	
DESCRIPTION										
0					TOPSOIL (11")					
			CL		Brown, slightly moist, stiff, SANDY CLAY with trace gravel, trace rubber, trace slag, and trace concrete (FILL)	1	100	3/4/7		15
5	700		CL		Brown, moist, stiff, SANDY CLAY with trace organics (POSSIBLE FILL)	2	100	4/5/5		17
					Brown, slightly moist, medium dense, fine to medium grained, SAND with trace silt and trace to little gravel	3	100	8/9/7		
10	695					4	100	10/12/18		
		▽	SP-SM			5	100	11/11/12		
15	690					6	100	22/32/24		
			SP-SM		Brown, slightly moist, very dense, fine to medium grained, SAND with trace silt and trace to little gravel	7	100	17/35/31		
20	685					8	100	18/19/12		
		▼	SP-SM		Brown, saturated, dense to very dense, fine to medium grained, SAND with trace silt and trace to little gravel	9	17	18/31/34		
25	680					10	100	16/22/25		
30	675					Boring terminated at 40 feet.				
35	670									
40	665									
45	660									
50	655									
55	650									
60	645									
65	640									

Boring caved to 26 feet upon auger removal.



IUI Lab Expansion and Renovation
West New York Street and
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Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/13/2024
Drilling Method : HSA

Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'19.29"N
Longitude : 86°10'14.22"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels			Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					▼ During Drilling - 28.5 feet	▽ After Completion - 10 feet	◆ After 24 Hours - N/A						
DESCRIPTION													
0					TOPSOIL (9")								
			CL		Brown, slightly moist, very stiff, SANDY CLAY with trace gravel, trace slag, and little brick (FILL)	1	100	8/10/19				14	
5	700		SP-SM		Gray, slightly moist, medium dense, SAND and concrete with trace silt, trace gravel, trace brick, trace glass, trace cinders, trace coal, and trace slag (FILL)	2	100	4/9/9					
			SP-SM		Gray, slightly moist, medium dense, SAND and concrete with trace silt, trace gravel, trace brick, trace glass, trace cinders, trace coal, and trace slag (FILL)	3	11	4/6/7					
10	695	▽	SC		Brown, slightly moist, loose, CLAYEY SAND with trace gravel (FILL)	4	100	4/4/4					
			SC		Brown, slightly moist, loose, CLAYEY SAND with trace gravel (FILL)								
15	690				Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	5	100	10/11/13					
			SP-SM		Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	6	100	18/19/27					
20	685				Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	7	100	28/22/27					
			SP-SM		Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel								
25	680				Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	8	100	16/12/20					
			SP-SM		Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel								
30	675	▼			Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	9	22	10/7/14					
			SP-SM		Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel								
35	670				Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	10	100	10/19/21					
			SP-SM		Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel								
40	665		Boring terminated at 40 feet.										
45	660												
50	655												
55	650												
60	645												
65	640												

Boring caved to 24 feet upon auger removal.



IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/15/2024
Drilling Method : HSA






Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'19.30"N
Longitude : 86°10'15.01"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels			Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					▼ During Drilling - 23.5 feet	▽ After Completion - 13 feet	◆ After 24 Hours - N/A						
								DESCRIPTION					
0	704				TOPSOIL (11")								
			SC		Brown, slightly moist, medium dense, CLAYEY SAND with trace gravel (FILL)			1	100	4/4/8			
5			CL		Brown, moist, stiff, SILTY CLAY with little sand (POSSIBLE FILL)			2	100	4/4/7	1.8	22	
					Brown, slightly moist, medium dense, fine to medium grained, SAND with trace silt and trace to little gravel			3	100	6/10/12			
10	695							4	100	8/9/13			
		▽	SP-SM					5	100	9/12/14			
15	690							6	0	11/16/13			Sample No. 6: Two attempts were made to obtain a splitspoon sample. Classification is based on field observations.
20	685							7	100	16/19/14			Boring caved to 22 feet upon auger removal.
		▼			Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel			8	100	18/19/12			
25	680							9	100	21/25/19			
			SP-SM					10	100	24/14/22			
30	675												
35	670												
40	665												
Boring terminated at 40 feet.													
45	660												
50	655												
55	650												
60	645												
65	640												

IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/14/2024
Drilling Method : HSA











Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'18.67"N
Longitude : 86°10'15.02"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels					REMARKS					
					▼ During Drilling - 28.5 feet	▽ After Completion - 9 feet	◆ After 24 Hours - N/A	Samples	Rec %		SPT Results	qp tsf	w %		
DESCRIPTION															
0	704				TOPSOIL (10")										
			CL		Brown, moist, stiff, SILTY CLAY with little sand and trace organic matter (POSSIBLE FILL)					1	100	4/5/7		20	
5			SC		Brown, slightly moist, loose to medium dense, CLAYEY SAND with trace gravel (POSSIBLE FILL)					2	100	3/4/6			
					Brown, slightly moist, loose to medium dense, CLAYEY SAND with trace gravel (POSSIBLE FILL)					3	100	3/3/9			
10	695	▽			Brown, slightly moist, medium dense, fine to medium grained, SAND with trace silt and trace to little gravel					4	100	6/4/7			
15	690									5	100	6/7/10			
20	685		SP-SM							6	100	8/14/11			Boring caved to 18 feet upon auger removal.
25	680									7	100	18/13/13			
30	675	▼			Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel					8	100	10/17/17			
35	670		SP-SM							9	100	9/18/19			
40	665		SP-SM		Gray, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel					10	100	14/16/18			
45	660				Boring terminated at 40 feet.										
50	655														
55	650														
60	645														
65	640														

IUI Lab Expansion and Renovation
West North York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/15/2024
Drilling Method : HSA















Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'18.65"N
Longitude : 86°10'14.22"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels			Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					▼ During Drilling - 28.5 feet	▽ After Completion - 12 feet	◆ After 24 Hours - N/A						
DESCRIPTION													
0					TOPSOIL (12")								
	704		CL		Brown, slightly moist, medium stiff, SANDY CLAY with trace gravel and trace brick (FILL)			1	17	5/3/3		10	
5			SP-SM		Brown, slightly moist, medium dense, fine to medium grained, SAND with trace silt, trace gravel, trace concrete, trace brick, and trace cinders (FILL)			2	100	3/3/10			
	695		SP-SM		Brown, slightly moist, medium dense, fine to medium grained, SAND with trace silt, trace gravel, and trace metal (FILL)			3	100	5/7/8			
10		▽			Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel			4	100	7/8/14			
15	690		SP-SM		Brown, slightly moist, very dense, fine to medium grained, SAND with trace silt and trace to little gravel			5	100	14/12/20			
20	685				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel			6	100	14/20/18			Boring caved to 20 feet upon auger removal.
25	680		SP-SM		Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel			7	100	21/28/25			
30	675	▼			Gray, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel			8	100	14/21/28			
35	670		SP-SM		Gray, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel			9	100	18/19/24			
40	665		SP-SM		Boring terminated at 40 feet.			10	100	14/18/25			
45	660												
50	655												
55	650												
60	645												
65	640												

IUI Lab Expansion and Renovation
West New York Street and
North Blackford Street
Indianapolis, Indiana

Client Name : arcDesign, PC
Project Number : 24-0645-01G
Logged By : S. Lauletta
Start Date : 05/13/2024
Drilling Method : HSA

Driller : M. Walker
Sampling : Splitspoon
Approx. Elevation : +/- 704 feet
Latitude : 39°46'18.63"N
Longitude : 86°10'13.43"W

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels					REMARKS
					▼ During Drilling - 28.5 feet	▽ After Completion - 10 feet	◆ After 24 Hours - N/A	Samples	Rec %	
DESCRIPTION										
0					TOPSOIL (10")					
			CL		Brown, slightly moist, stiff, SANDY CLAY with trace gravel, trace brick, and trace slag (FILL)	1	100	4/5/7	3.3	15
5	700		CL		Brown, moist, stiff, SILTY CLAY with little sand (POSSIBLE FILL)	2	100	4/6/7	2.7	19
			SC		Brown, slightly moist, loose, CLAYEY SAND with little gravel (POSSIBLE FILL)	3	100	5/4/6		
10	695	▽			Brown, slightly moist, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	4	100	8/7/7		
15	690				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	5	100	12/16/20		
20	685		SP-SM		Gray, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	6	100	10/16/22		
25	680				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	7	100	21/28/22		
30	675	▼			Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	8	100	12/21/26		
35	670				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	9	100	14/19/16		
40	665		SP-SM		Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	10	100	18/19/23		
45	660				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	11	100	15/15/20		
50	655				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	12	100	20/19/24		
55	650		SP-SM		Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	13	100	16/19/28		
60	645				Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	14	100	29/24/18		
Boring terminated at 60 feet.										
65	640									

Boring caved to 24 feet upon auger removal.

BORING LOG KEY

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

NON-COHESIVE SOILS (Silt, Sand, Gravel, and Combinations)

Density	Field Identification (SPT Blows/ft)	Grain Size Terminology		
		<u>Soil Fraction</u>	<u>Particle Size</u>	<u>US Standard Sieve Size</u>
Very Loose	0 - 4	Boulders	> 12 inches	> 12 inches
Loose	5 - 10	Cobbles	3 - 12 inches	3 - 12 inches
Medium Dense	11 - 30	Gravel: Coarse	¾ - 3 inches	¾ - 3 inches
Dense	31 - 50	Small	4.76 mm - ¾ inch	No. 4 - ¾ inches
Very Dense	> 51	Sand: Coarse	2.00 - 4.76 mm	No. 10 - No. 4
		Medium	0.42 - 2.00 mm	No. 40 - No. 10
		Fine	0.074 - 0.42 mm	No. 200 - No. 40
		Silt	0.005 - 0.074 mm	< No. 200
		Clay	< 0.005 mm	< No. 200

RELATIVE PROPORTIONS FOR SOILS

<u>Descriptive Term</u>	<u>Percent</u>
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

COHESIVE SOILS (Clay, Silt and Combinations)

<u>Consistency</u>	<u>Unconfined Compressive Strength (tons/ft²)</u>	<u>Field Identification (SPT Blows/ft)</u>
Very Soft	Less than 0.25	0 - 2
Soft	0.25 - < 0.5	3 - 4
Medium Stiff	0.5 - < 1.0	5 - 8
Stiff	1.0 - < 2.0	9 - 15
Very Stiff	2.0 - < 4.0	16 - 30
Hard	Over 4.0	> 30

Classification: Provided on Boring Logs are made by visual inspection.

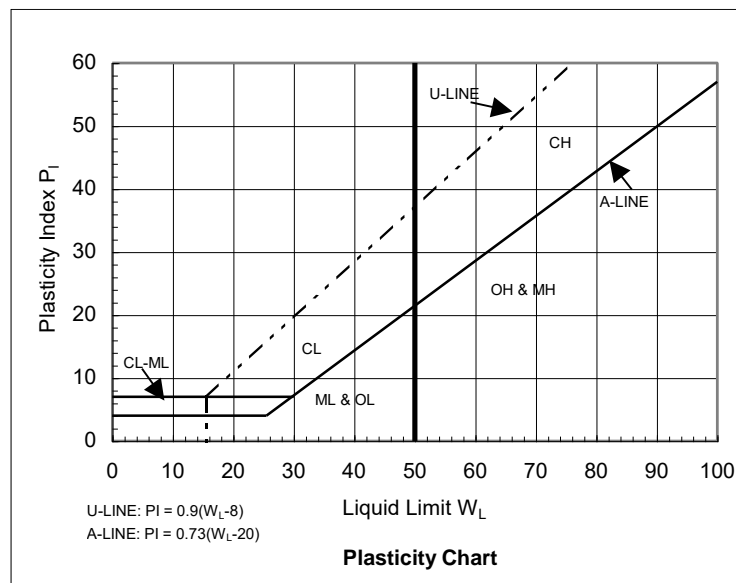
Standard Penetration Test: Driving a 2 inch outer-diameter (O.D.) by 1½ inch inner-diameter (I.D.) split-spoon sampler a total of 18 inches into undisturbed soil with the number of blows of a 140 pound hammer free-falling a distance of 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the "N"-value (or blow-count).

Strata Changes: In the column "Descriptions" on the Boring Logs the horizontal lines represent strata changes. A solid line (——) represents an observed change, a dashed line (- - - -) represents an estimated change.

Groundwater: Observations were made at the times indicated on the Boring Logs. Fluctuations in the groundwater level should be expected over time due to variations in rainfall and other environmental or physical factors. *Groundwater symbols:* (▼)-observed groundwater level and/or elevation during drilling; (▽)-observed groundwater level and/or elevation upon completion of boring.

Unified Soil Classification System (USCS)

Major Divisions		Group Symbol	Typical Names	Classification Criteria for Coarse-Grained Soils			
Coarse-grained soils (more than half of material is larger than No. 200)	Gravels (more than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u \geq 4$ $1 \leq C_c \leq 3$	$C_u = \frac{D_{60}}{D_{10}}$	$C_c = \frac{D_{30}^2}{D_{10} D_{60}}$
		Gravels with fines (appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below A line or $P_l < 4$		
		GC	Clayey gravels, gravel-sand-clay mixtures				
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW ($C_u < 4$ or $1 > C_c > 3$)			
	Sands (more than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u \geq 6$ $1 \leq C_c \leq 3$	$C_u = \frac{D_{60}}{D_{10}}$	$C_c = \frac{(D_{30})^2}{D_{10} D_{60}}$
		Sands with fines (appreciable amount of fines)	SM	Silty sands, sand-silt mixtures	Atterberg limits below A line or $P_l < 4$		
SC		Clayey sands, sand-clay mixtures	Limits plotting in hatched zone with $4 \leq P_l \leq 7$ are borderline cases requiring use of dual symbols				
SP		Poorly graded sands, gravelly sands, little or no fines				Not meeting all gradation requirements for SW ($C_u < 6$ or $1 > C_c > 3$)	
Fine-grained soils (more than half of material is smaller than No. 200)	Silt and clays (liquid limit <50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	<ol style="list-style-type: none"> Determine percentages of sand and gravel from grain size curve. Depending on percentages of fines (fraction smaller than 200 sieve size), coarse-grained soils are classified as follows: Less than 5% - GW, GP, SW, SP More than 12% - GM, GC, SM, SC 5-12% - Borderline cases requiring dual symbols 			
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays				
		OL	Organic silts and organic silty clays of low plasticity				
	Silt and clays (liquid limit >50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts				
		CH	Inorganic clays or high plasticity, fat clays				
		OH	Organic clays of medium to high plasticity, organic silts				
	Highly organic soils	PT	Peat and other highly organic soils				



APPENDIX B

SEISMIC SITE CLASS EVALUATION

⚠ This is a beta release of the new ATC Hazards by Location website. Please [contact us](#) with feedback.

📄 The ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

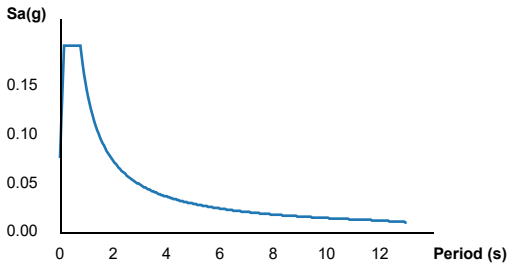
ATC Hazards by Location

Search Information

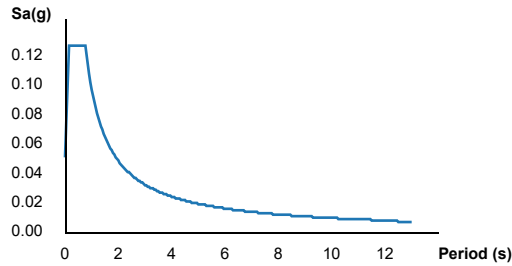
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 Elevation: 703 ft
 Timestamp: 2024-06-07T17:07:47.498Z
 Hazard Type: Seismic
 Reference Document: IBC-2015
 Risk Category: III
 Site Class: C



MCE_R Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.159	MCE _R ground motion (period=0.2s)
S_1	0.086	MCE _R ground motion (period=1.0s)
S_{MS}	0.191	Site-modified spectral acceleration value
S_{M1}	0.146	Site-modified spectral acceleration value
S_{DS}	0.127	Numeric seismic design value at 0.2s SA
S_{D1}	0.097	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	B	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	1.7	Site amplification factor at 1.0s
CR_S	0.909	Coefficient of risk (0.2s)
CR_1	0.865	Coefficient of risk (1.0s)
PGA	0.073	MCE _G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.088	Site modified peak ground acceleration
T_L	12	Long-period transition period (s)
$SsRT$	0.159	Probabilistic risk-targeted ground motion (0.2s)
$SsUH$	0.175	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
$S1RT$	0.086	Probabilistic risk-targeted ground motion (1.0s)
$S1UH$	0.099	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
$S1D$	0.6	Factored deterministic acceleration value (1.0s)

PGAd	0.6	Factored deterministic acceleration value (PGA)
------	-----	---

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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APPENDIX C

GENERAL QUALIFICATIONS

**STANDARD CLAUSE FOR UNANTICIPATED
SUBSURFACE CONDITIONS**

GENERAL QUALIFICATIONS
of Patriot Engineering's Geotechnical Engineering Investigation

This report has been prepared at the request of our client for his use on this project. Our professional services have been performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report or on the test borings logs regarding vegetation types, odors or staining of soils, or other unusual conditions observed are strictly for the information of our client and the owner.

This report may not contain sufficient information for purposes of other parties or other uses. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field and laboratory data presented in this report. Should there be any significant differences in structural arrangement, loading or location of the structure, our analysis should be reviewed.

The recommendations provided herein were developed from the information obtained in the test borings, which depict subsurface conditions only at specific locations. The analysis, conclusions, and recommendations contained in our report are based on site conditions as they existed at the time of our exploration. Subsurface conditions at other locations may differ from those occurring at the specific drill sites. The nature and extent of variations between borings may not become evident until the time of construction. If, after performing on-site observations during construction and noting the characteristics of any variation, substantially different subsurface conditions from those encountered during our explorations are observed or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We urge that Patriot be retained to review those portions of the plans and specifications that pertain to earthwork and foundations to determine whether they are consistent with our recommendations. In addition, we are available to observe construction, particularly the compaction of structural backfill and preparation of the foundations, and such other field observations as may be necessary.

In order to fairly consider changed or unexpected conditions that might arise during construction, we recommend the following verbiage (Standard Clause for Unanticipated Subsurface Conditions) be included in the project contract.

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

"The owner has had a subsurface exploration performed by a soils consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the exploration. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions as described in that report. It is recognized that a subsurface exploration may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface exploration and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

At any time during construction operations that the contractor encounters conditions that are different than those anticipated by the soils consultant's report, he shall immediately (within 24 hours) bring this fact to the owner's attention. If the owner's representative on the construction site observes subsurface conditions which are different than those anticipated by the consultant's report, he shall immediately (within 24 hours) bring this fact to the contractor's attention. Once a fact of unanticipated conditions has been brought to the attention of either the owner or the contractor, and the consultant has concurred, immediate negotiations will be undertaken between the owner and the contractor to arrive at a change in contract price for additional work or reduction in work because of the unanticipated conditions. The contract agrees that the following unit prices would apply for additional or reduced work under the contract. For changed conditions for which unit prices are not provided, the additional work shall be paid for on a time and materials basis."

Another example of a changed conditions clause can be found in paper No. 4035 by Robert F. Borg, published in ASCE Construction Division Journal, No. CO2, September 1964, page 37.

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08 41 28 - INTERIOR ALL GLASS ENTRANCES	10/25/2024
08 44 23 - STRUCTURAL SEALANT GLAZED CURTAIN WALLS	10/25/2024
08 71 00 - DOOR HARDWARE	10/25/2024
08 80 00 - GLAZING	10/25/2024
08 91 19 - FIXED LOUVERS	10/25/2024

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09 05 61 - MOISTURE VAPOR EMISSION CONTROL	10/25/2024
09 21 00 - GYPSUM BOARD ASSEMBLIES	10/25/2024
09 30 00 - TILING	10/25/2024
09 51 00 - ACOUSTICAL PANEL CEILINGS	10/25/2024
09 65 00 - RESILIENT FLOORING AND ACCESSORIES	10/25/2024
09 66 23 - RESINOUS MATRIX TERRAZZO FLOORING	10/25/2024
09 68 10 - CARPETING	10/25/2024
09 72 00 - WALL COVERINGS	10/25/2024
09 77 23 - FABRIC-WRAPPED PANELS	10/25/2024
09 91 00 - PAINTING	10/25/2024
09 96 11 - HIGH-PERFORMANCE COATINGS	10/25/2024

DIVISION 10 — SPECIALTIES

10 14 00 - PANEL SIGNAGE	10/25/2024
10 21 13 - TOILET COMPARTMENTS	10/25/2024
10 26 00 - WALL AND DOOR PROTECTION	10/25/2024
10 28 00 - TOILET, BATH, AND LAUNDRY ACCESSORIES	10/25/2024
10 28 19 - TUB AND SHOWER ENCLOSURES	10/25/2024
10 44 13 - FIRE PROTECTION CABINETS	10/25/2024
10 44 16 - FIRE EXTINGUISHERS	10/25/2024

DIVISION 11 — EQUIPMENT

11 24 23 - FALL ARREST SYSTEM	10/25/2024
11 53 00 - LABORATORY EQUIPMENT	10/25/2024
11 53 13 - FUME HOODS AND EXHAUST DEVICES	10/25/2024
11 53 19 - LABORATORY STERILIZERS	10/25/2024
11 53 33 - LASER SAFETY EQUIPMENT	10/25/2024
11 53 43 - LABORATORY SERVICE FITTINGS AND FIXTURES.....	ADD #1 11/08/2024

DIVISION 12 — FURNISHINGS

12 24 13 - ROLLER WINDOW SHADES	10/25/2024
12 35 53 - LABORATORY CASEWORK AND OTHER FURNISHINGS	10/25/2024
12 78 00 - BANQUETTE SEATING	10/25/2024

DIVISION 13 — SPECIAL CONSTRUCTION

13 21 14 - CONTROLLED ENVIRONMENTAL ROOMS	10/25/2024
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DIVISION 14 — CONVEYING EQUIPMENT

14 24 00 - HYDRAULIC ELEVATOR..... 10/25/2024

DIVISION 21 – FIRE SUPPRESSION

21 05 01 - BASIC FIRE SUPPRESSION REQUIREMENTS 10/25/2024
21 05 02 - AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES 10/25/2024
21 05 02 A - ELECTRONIC FILES – HEAPY RELEASE FORM TO CONTRACTORS 10/25/2024
21 05 04 - BASIC FIRE SUPPRESSION MATERIALS AND METHODS 10/25/2024
21 05 05 - FIRESTOPPING 10/25/2024
21 05 07 - PIPING MATERIALS AND METHODS FOR FIRE SUPPRESSION 10/25/2024
21 05 13 - ELECTRICAL REQUIREMENTS FOR FIRE SUPPRESSION EQUIPMENT 10/25/2024
21 05 19 - GAUGES FOR FIRE SUPPRESSION PIPING 10/25/2024
21 05 29 - HANGERS AND SUPPORTS FOR FIRE SUPPRESSION PIPING 10/25/2024
21 05 53 - IDENTIFICATION OF FIRE SUPPRESSION PIPING AND EQUIPMENT 10/25/2024

21 13 12 - FIRE SUPPRESSION PIPING 10/25/2024
21 13 13 A - FIRE SUPPRESSION SPRINKLER SYSTEM 10/25/2024
21 13 14 - FIRE SUPPRESSION STANDPIPE SYSTEM 10/25/2024
21 13 15 - FIRE SUPPRESSION EQUIPMENT 10/25/2024

DIVISION 22 – PLUMBING

22 05 01 - BASIC PLUMBING REQUIREMENTS 10/25/2024
22 05 02 - AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES 10/25/2024
22 05 02 A - ELECTRONIC FILES – HEAPY RELEASE FORM TO CONTRACTORS 10/25/2024
22 05 04 - BASIC PLUMBING MATERIALS AND METHODS 10/25/2024
22 05 07 - PIPING MATERIALS AND METHODS 10/25/2024
22 05 13 - ELECTRICAL REQUIREMENTS FOR PLUMBING EQUIPMENT 10/25/2024
22 05 19 - METERS AND GAUGES FOR PLUMBING PIPING 10/25/2024
22 05 23 - GENERAL DUTY VALVES FOR PLUMBING PIPING 10/25/2024
22 05 29 - HANGERS AND SUPPORTS FOR PLUMBING PIPING 10/25/2024
22 05 30 - BASES AND SUPPORTS FOR PLUMBING EQUIPMENT 10/25/2024
22 05 49 - VIBRATION CONTROL FOR PLUMBING 10/25/2024
22 05 53 - IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT **ADD #1 11/08/2024**

22 07 19 - PLUMBING PIPING INSULATION 10/25/2024

22 08 00 – PLUMBING COMMISSIONING REQUIREMENTS 10/25/2024

22 05 09 – EXCAVATION, BACKFILL AND SURFACE RESTORATION..... ADD #1 11/08/2024

22 11 16 - INTERIOR DOMESTIC WATER PIPING 10/25/2024
22 11 19 - INTERIOR DOMESTIC WATER PIPING SPECIALTIES **ADD #1 11/08/2024**
22 11 23 A - WATER PRESSURE BOOSTER PUMPING SYSTEM – VARIABLE SPEED 10/25/2024

22 13 16 - INTERIOR DRAINAGE AND VENT SYSTEMS **ADD #1 11/08/2024**
22 13 19 - DRAINAGE SYSTEMS SPECIALTIES 10/25/2024

22 31 16 - COMMERCIAL DOMESTIC WATER SOFTENERS 10/25/2024
22 32 28 B - PURE WATER SYSTEM - PRE-PACKAGED 10/25/2024
22 33 00 D - DOMESTIC WATER HEATERS SEMI-INSTANTANEOUS 10/25/2024
22 42 00 - PLUMBING FIXTURES 10/25/2024

22 62 19 - MEDICAL LABORATORY GAS AND VACUUM SYSTEMS (NON-FLAMMABLE) 10/25/2024

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23 05 02 - AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES	10/25/2024
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23 05 04 – BASIC HVAC MATERIALS AND METHODS	10/25/2024
23 05 07 - PIPING MATERIALS AND METHODS	10/25/2024
23 05 13 - ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT	10/25/2024
23 05 14 - ADJUSTABLE FREQUENCY MOTOR CONTROLLER	10/25/2024
23 05 19 - GAUGES AND MAKE UP METERS FOR HVAC PIPING	10/25/2024
23 05 21 - FLOW AND ENERGY METERS	10/25/2024
23 05 23 - GENERAL DUTY VALVES FOR HVAC PIPING	10/25/2024
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23 05 31 - HVAC EQUIPMENT DRIVES	10/25/2024
23 05 49 - VIBRATION CONTROL FOR HVAC	10/25/2024
23 05 50 - FLEXIBLE HVAC PIPE CONNECTORS	10/25/2024
23 05 53 - IDENTIFICATION OF HVAC PIPING AND EQUIPMENT	10/25/2024
23 05 93 - TESTING, ADJUSTING AND BALANCING FOR HVAC.....	10/25/2024
23 07 13 - DUCT INSULATION	10/25/2024
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23 09 00 – HVAC INSTRUMENTATION AND CONTROLS.....	10/25/2024
23 21 13 - HYDRONIC PIPING	10/25/2024
23 21 14 - EXPANSION TANKS	10/25/2024
23 21 17 - GLYCOL SOLUTION SYSTEMS	10/25/2024
23 21 23 - HYDRONIC PUMPS	10/25/2024
23 22 13 - STEAM AND CONDENSATE PIPING SYSTEM	10/25/2024
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23 25 00 - WATER TREATMENT SYSTEMS.....	10/25/2024
23 31 13 - HVAC DUCTWORK	10/25/2024
23 31 19 - AIR PLENUM CASINGS	10/25/2024
23 33 00 - AIR DUCT ACCESSORIES	10/25/2024
23 35 00 - SPECIAL EXHAUST SYSTEMS	10/25/2024
23 36 16 A - AIR TERMINAL UNITS	10/25/2024
23 36 24 - AIRFLOW CONTROL VALVES	10/25/2024
23 37 00 - AIR OUTLETS AND INLETS	10/25/2024
23 41 00 - AIR FILTERS	10/25/2024

23 41 33 - FAN FILTER CEILING MODULES	10/25/2024
23 57 00 - HEAT EXCHANGERS	10/25/2024
23 73 23 - CUSTOM AIR HANDLING UNITS	10/25/2024
23 82 16 - DUCT HEATING COILS	10/25/2024
23 82 19 - FAN-COIL UNITS	10/25/2024
23 82 39 - UNIT HEATERS	10/25/2024
23 84 13 - HUMIDIFIERS – DIRECT BUILDING STEAM TYPE	10/25/2024
23 84 15 - HUMIDIFIERS – STEAM DISPERSION DEVICES & ACCESSORIES	10/25/2024

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26 05 02 - AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES	10/25/2024
26 05 02 A - ELECTRONIC FILES - HEAPY RELEASE FORM TO CONTRACTORS	10/25/2024
26 05 04 - BASIC ELECTRICAL MATERIALS AND METHODS	10/25/2024
26 05 05 - FIRESTOPPING	10/25/2024
26 05 09 - EXCAVATION, BACKFILL AND SURFACE RESTORATION	10/25/2024
26 05 13 - MEDIUM-VOLTAGE CABLES - SHIELDED JACKETED POWER CABLE	10/25/2024
26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS - COPPER	10/25/2024
26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS	10/25/2024
26 05 33 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS	10/25/2024
26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS	10/25/2024
26 05 65 - SPECIFIC WIRING APPLICATIONS	10/25/2024
26 05 73 - OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY	10/25/2024
26 08 00 – ELECTRICAL COMMISSIONING REQUIREMENTS.....	10/25/2024
26 09 23 – LIGHTING CONTROL DEVICES.....	10/25/2024
26 13 19 – MEDIUM-VOLTAGE VACUUM INTERRUPTER SWITCHGEAR	10/25/2024
26 22 13 - DISTRIBUTION TRANSFORMERS - STANDARD TYPE	10/25/2024
26 24 16 - PANELBOARDS	10/25/2024
26 27 26 - WIRING DEVICES AND COVERPLATES	10/25/2024
26 27 39 - ELEVATOR POWER MODULE AND WIRING	10/25/2024
26 28 16 - DISCONNECT SWITCHES	10/25/2024
26 29 13 - MOTOR CONTROLLERS	10/25/2024
26 32 13 - DIESEL ENGING DRIVEN GENERATOR SETS WALK IN WEATHERPROOF HOUSING	10/25/2024
26 36 23 - AUTOMATIC TRANSFER SWITCHES - ASCO SERIES 7000	10/25/2024
26 41 00 - FACILITY LIGHTNING PROTECTION SYSTEM - FOR BUILDING ADDITION	10/25/2024
26 43 13 - SURGE PROTECTION DEVICES (SPD'S) FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS	10/25/2024
26 51 00 – INTERIOR LIGHTING.....	10/25/2024
26 52 13 – EMERGENCY AND EXIT LIGHTING	10/25/2024
26 56 19 – EXTERIOR LIGHTING.....	10/25/2024

DIVISION 27 – COMMUNICATIONS

27 00 00 – COMMUNICATIONS 10/25/2024

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

283100 – FIRE DETECTION AND ALARM (ADDRESSABLE)..... 10/25/2024

DIVISION 31 – EARTHWORK

31 10 00 – SITE DEMOLITION..... 10/25/2024
31 11 00 – SITE CLEARING..... 10/25/2024
31 20 00 – EARTH MOVING 10/25/2024
31 23 17 – TRENCHING..... 10/25/2024
31 23 19 – DEWATERING..... 10/25/2024
31 23 24 – FLOWABLE FILL 10/25/2024
31 25 13 – EROSION CONTROLS 10/25/2024
31 66 13 – AGGREGATE PIERS 10/25/2024

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32 05 13 – SOIL MATERIALS 10/25/2024
32 05 16 – AGGREGATE MATERIALS..... 10/25/2024
32 11 23 – GRANULAR BASE..... 10/25/2024
32 13 13 – CONCRETE PAVING 10/25/2024
32 13 73 – PAVEMENT JOINT SEALANTS 10/25/2024
32 14 13.16 - PAVING SLABS ON PEDESTALS 10/25/2024
32 15 40 – AGGREGATE SURFACING 10/25/2024
32 33 00 – SITE FURNISHINGS 10/25/2024
32 84 00 – IRRIGATION 10/25/2024
32 91 13 – TOPSOIL PREPARATION..... 10/25/2024
32 91 14 – BIOSOILS 10/25/2024
32 92 00 – TURF AND GRASSES 10/25/2024
32 93 00 – PLANTING 10/25/2024

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SECTIONS **ISSUE DATE**

DIVISION 33 – UTILITIES

33 00 00.30 - CEG 2024 SANITARY STANDARDS MANUAL..... 10/25/2024
33 00 00.30 - CEG 2024 WATER STANDARDS MANUAL..... 10/25/2024
33 05 14 – PRECAST CONCRETE STRUCTURES 10/25/2024
33 41 00 – STORM DRAINAGE PIPING 10/25/2024

SECTION 002113 - INSTRUCTIONS TO BIDDERS

1.1 INSTRUCTIONS TO BIDDERS

- A. Reference INSTRUCTIONS TO BIDDERS document attached.

END OF DOCUMENT 002113



**SHIEL
SEXTON**



HARMON
CONSTRUCTION, INC.

Indiana University Indianapolis
Science Laboratory Building

Instruction to Bidders

Indiana University Indianapolis
Science Laboratory Building
Instruction to Bidders

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Attached Documents:

- Attachment 01 – TRADE SPECIFIC WORK SCOPES – (updated in Addendum 1)
- Attachment 02 – TRADE SPECIFIC BID FORM(s) - (updated in Addendum 1)
- Attachment 03 – ALTERNATES FORM
- Attachment 04 – FORM 96 – CONTRACTORS BID FOR PUBLIC WORK
- Attachment 05 – CONTRACTOR ASBESTOS CERTIFICATION
- Attachment 06 – ASBESTOS PROTOCOL FOR CONTRACTORS
- Attachment 07 – XBE PARTICIPATION PLAN
- Attachment 08 – LOGISTICS PLAN
- Attachment 09 – PROJECT SCHEDULE
- Attachment 10 – CONTRACT DOCUMENT LOG - (added in Addendum 1)
- Attachment 11 – SAMPLE SHIEL SEXTON SUBCONTRACT AGREEMENT
- Attachment 12 – BIM EXECUTION PLAN

Associated Separate Documents:

- None

Project Information

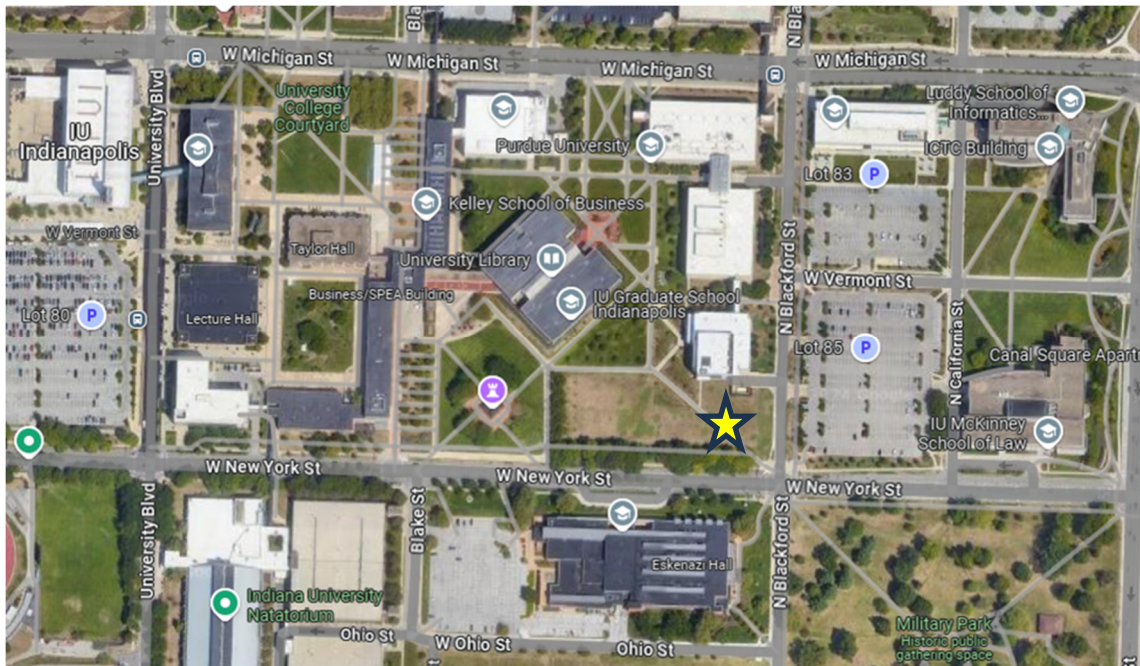
Name and Brief Summary:

- IU Indianapolis Science Laboratory Building
 - Construction of a new 50,000 sf multidisciplinary research facility. Project consists of 3 story concrete frame with structural steel penthouse. Metal and stone panel façade with large sections of curtainwall. Terrazzo and polished concrete floors through main corridors with structural glass railing creating an atrium space. A full complement of MEP systems support lab spaces throughout the floors to include fume hoods, RO systems, lab casework, and cold rooms.

Address:

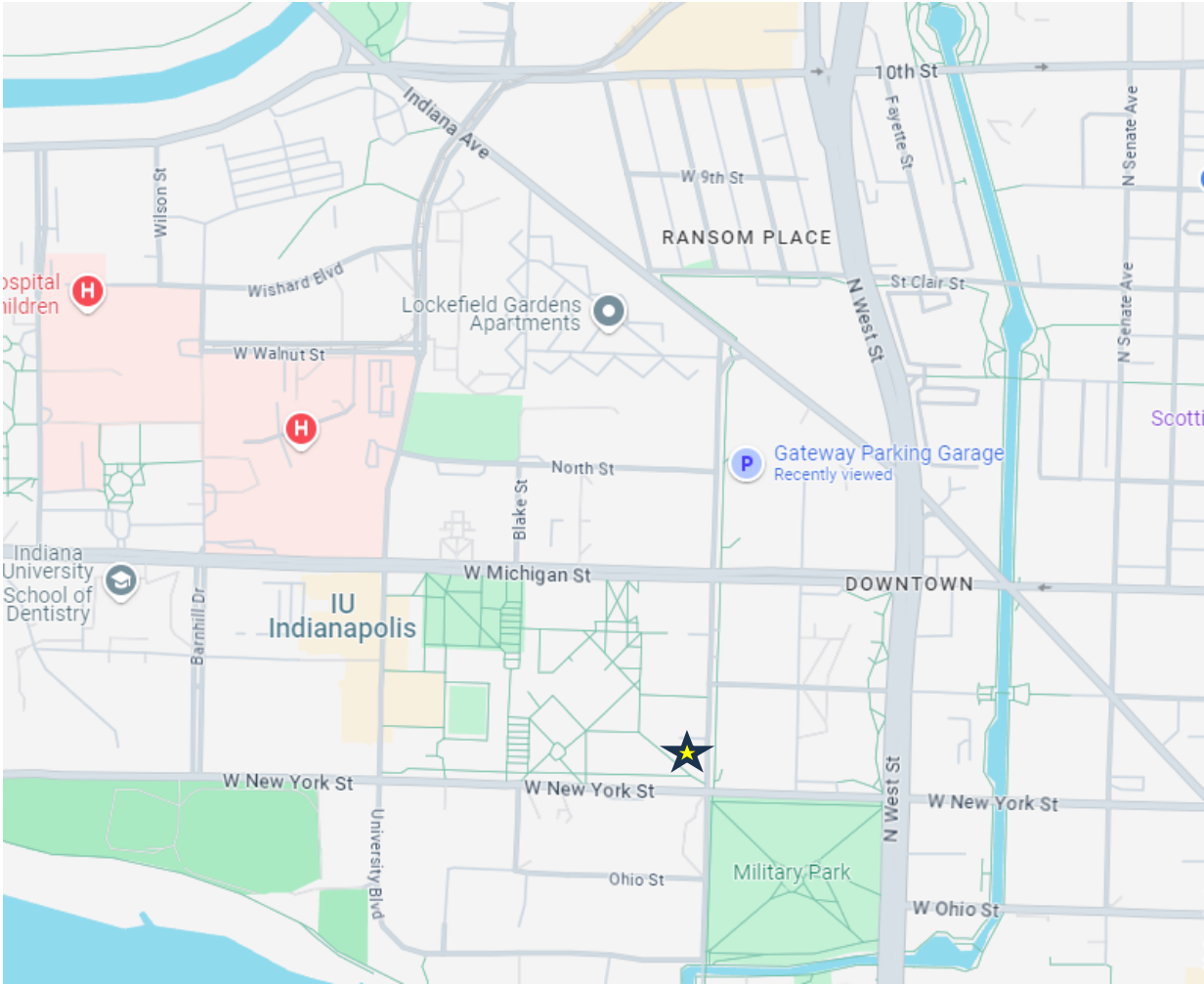
310 N. Blackford St., Indianapolis, IN 46202

Vicinity Map



Indiana University Indianapolis
Science Laboratory Building
Instruction to Bidders

Thoroughfare Map



Bid Information/Important Dates

Designer:

Architect – arcDESIGN

Design Architect - HOK

Structural Engineer – JPS Consulting Engineers

Structural Engineer – American Structurepoint

MEP Engineer – Heapy Engineering

Civil Engineer – VS Engineering

Landscape Architect – Context Design

Technology Consultant – KBSO Consulting

Construction Manager as Constructor:

Harmon Shiel Sexton Indy Science JV

Bid Manager – Chris Junken | cjunken@shielsexton.com | (317) 557-2915

Bid Schedule:

- **Pre-Bid/XBE Outreach Meeting: Thursday, November 7, 2024 @ 2:00pm**
 - Location: 902 N. Capitol Ave., Indianapolis, IN 46204
 - Shiel Sexton main office
- **Site Walk: Thursday, November 7, 2024 @ 4:30pm**
 - Location: 310 N. Blackford St., Indianapolis, IN 46202
 - Recommended parking would be at the Gateway Parking Garage at 525 N. Blackford St. Indianapolis, IN. Project site will be two blocks directly south on Blackford, on the west side of the street. Attendees should gather at the project site at the designated time.
- **Questions Due: Wednesday, November 13, 2024 @ Noon**
- **Bids Due: Tuesday, November 19, 2024 @ 2:00pm**

How/Where to Submit your Bid:

- Bids will be received via electronic submission on www.iuplanroom.com. Bidders must be registered and signed into the planroom in order to submit a bid. Owner and Construction Manager will consider bids prepared in compliance with the Instructions to Bidders issued by Construction Manager, and delivered as follows:

Indiana University Indianapolis
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- o Bid Date: Tuesday, November 19th, 2024
- o Bid Time: 2:00 pm local time. (EST)
- o Location: Electronic bids will be submitted at www.iuplanroom.com
- o Bid Opening: Bids will be opened via Zoom: <https://iu.zoom.us/j/82623978895>
 - Meeting ID: 826 2397 8895
 - Join by telephone: 312-626-6799

Bid Questions:

Bid questions should be sent to cjunken@shielsextion.com

Work Previously Bid

The following work scope was previously bid. Reference those bid scopes to understand what was purchased to understand how it relates to the scope of work you are bidding.

- Work outlined on Project Schedule as “Renovations” is not part of this bid package.

Key Bid Requirements

- 1) Schedule: All bids shall include sufficient supervision and manpower to meet or improve upon the construction schedule. Bidders should note the schedule may require subcontractors to perform work in different areas of the building concurrently. Bidders shall assume reasonable adjustments to the schedule and be able to respond accordingly.
 - a. Bidders shall review and understand the timing of their respective work scope in relation to the calendar year. Base bid shall include reasonable and customary weather delays as could be ascertained from local weather stations for what is normal for the project location.
- 2) Substitutes/Alternates/Value Engineering: This project DOES allow the submission of substitutes, voluntary alternates, and value engineering to be included with the bid.
 - a. Base bid proposals MUST be made based on the specified products and/or manufactures included in the contract documents. Shall the bidder want to identify a substitution of a material of equal substance and function from those specified in the contract documents; this may be noted as an attachment to the Bid Form as a Voluntary Alternate. All voluntary alternates shall be stated as an ADJUSTED value from the base bid proposal to include all necessary changes to incorporate the alternate.
- 3) Taxes: This project is TAX EXEMPT. Shiel Sexton will provide this certificate.
- 4) Performance & Payment Bonds: Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.
- 5) Vendor Registration: Subcontractors will be required to complete Shiel Sexton Registration process post bid/pre award to verify safety, insurance, and financing.
- 6) XBE Requirements: This project DOES have established XBE requirements.
 - a. Harmon Shiel Sexton has made commitments to Indiana University for significant overall participation. Bidders are also strongly encouraged to make significant commitments and will be required to demonstrate a good faith effort during the bid process.
 - b. Overall project total should meet or exceed 20% XBE participation.

Provided by Owner/Harmon Shiel Sexton JV

This list is provided for your reference and understanding of those items provided by the Owner and Harmon Shiel Sexton. Bidder shall assume if it is not listed below it shall be included in the cost of their bid or bidder shall submit a question to clarify.

The following items are provided by the Owner for this project:

1. State Plan Release, Indianapolis Improvement Location Permit, and any required utility connection fees, storm water observation fees, and any site-related regulatory costs. All trade permits are the responsibility of that contractor requiring the permit.

The following items are provided by Shiel Sexton for this project:

1. Portable toilets
2. Dumpsters – Except as indicated in major demolition scopes and concrete washout
3. Third party testing – Exceptions are listed in Trade Scopes document
4. Construction utility consumption

Project/Owner Specific Requirements

- 1) This project will be a 100% tobacco free site unless otherwise noted. If tobacco is allowed, Shiel Sexton will designate a specific smoking area for the project.
 - Additionally no smoking “substitute” (including vaping) is allowed within the building.
- 2) No food or drinks will be allowed within the building except for drinking water. A designated lunch area will be provided as the project progresses.
- 3) No Subcontractor signs or advertising shall be allowed on the jobsite.
- 4) Contractors shall cooperate and follow all builders risk requirements. Including but not limited to site security protocols, hot work requirements, temporary bracing / shoring while under construction, and all CM safety programs. All contractors on site are responsible to secure all tools, equipment, and material on site after hours and when not in use. Failure to secure materials, tools, or equipment properly after hours may result in no coverage in the result of a claim. The site will be fully fenced and locked after hours until such time as the owner approves removal and the building is secure and locked. Any and all after-hours access shall be coordinated and approved by the construction manager. Construction manager and/or the owner reserve the right to full, recorded, site surveillance.

Project Management

- 1) Shiel Sexton utilizes Lean Management Principles and philosophies to manage projects and provide a collaborative and respectful work environment with all subcontractors. This includes the following management practices to help everyone maintain better relationships, project workflow, and productivity to deliver a quality project.
 - a. Visual Communication such as large planning boards, Takt plans, clear signage, and etc.. is utilized in the trailer and on site to assure everyone on the project understands the construction plan and how to work on this project.
 - b. Daily Huddles are mandatory for all foreman/superintendents on site. These are very short and concise meetings to review the daily work plan and promote good communication and collaboration among all subcontractors. These meetings are 15-20 minutes daily and will eliminate confusion and one-off conversations throughout the day so your team can focus on production work.
 - c. 2-week work plans. We focus on short term scheduling to assure all subcontractors are working to the plan and providing the correct manpower count to achieve your commitments to complete work.
 - d. Pull planning will be utilized to find the most efficient path of construction for specific work milestones and or building areas. This is a simple tool to engage your foreman (the last planners) in coordinating the details of building the project. It is a requirement for the superintendent/foreman that will manage the work to attend these meetings. It is also essential that you make the assignment and allow time for your superintendent/foreman to plan and understand their work prior to the pull sessions. We will provide all tools and training to those attending these sessions. These will occur as needed, but typically only once every 8-12 weeks.
 - e. Takt planning will be utilized to schedule and manage high production work such as unit rough-ins and finishes. This is a planning tool that focuses on rhythm and flow of the work. We will put a high degree of effort into the development of good workflow so you can maintain a steady crew size and know the path of construction.
 - f. CPM Scheduling is still utilized throughout the course of the project to assure we all remain on task to deliver the project by the contractual deadlines.
 - g. Fanatic roadblock removal. We utilize a large roadblock removal board to keep these items front and center and fanatically work to remove these roadblocks so you can remain productive on site.
 - h. Product tracking boards are utilized to identify the most pressing long lead materials.
 - i. Material delivery boards will be posted in the trailer to allow your team to identify upcoming deliveries on a weekly basis.

- 2) Shiel Sexton will maintain a zero-tolerance policy on the following items for this project:
 - a. Safety
 - b. Quality
 - c. Daily Clean-up
 - d. Organization
 - e. Material Deliveries

We respect you and the workers you bring to this jobsite and part of the respect is providing you a clean, safe, and organized environment to perform productive, high quality, work where everyone goes home safely every day. We don't achieve this on our own and rely on you and your workers to arrive on site focused and ready to work with an understanding of the construction path as well as treating the project site with respect.

We take the enforcement of zero tolerance items seriously and our response to infractions will depend upon the severity of the infraction. We will treat everyone fairly and consistently and all violations will be tracked. Some examples of enforcement:

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- a. Major violations that put anyone's life in danger and/or could have killed someone will result in immediate removal from the site and they will not be allowed to return.
 - b. Minor violations will result in the worker being asked to leave for the day and take time to focus, re-train, and or better plan their work, their manager will be notified, and they will be allowed return to work the following day after attending project orientation again.
 1. A second violation by the same person will result in removal from the site and they will not be allowed to return to this project.
 - c. Un-scheduled/Un-planned deliveries will be turned away.
 - d. Deliveries arriving without anyone from your company on site to take delivery, inventory, and off load the delivery will be turned away to return at a time you can be on site to manage the delivery.
 - e. Failure to maintain daily clean-up will result in stopping all of your work so your workers can perform clean up and organization of your work areas.
 - f. Failure to provide quality installations will result in stopping work to re-evaluate your work plan and come up with a new work plan that meets the requirements of a quality installation.
- 3) Lower Tier Subcontracts: It is understood each Subcontractor may require the use of a Lower Tier Subcontractor to complete their assigned work scope. Shiel Sexton requires the Prime Subcontractor to provide full time and on site management and coordination of all lower tier subcontractors within the Prime Subcontract. It is not acceptable for a lower tier Subcontractor to work on site without direct supervision from the Prime Subcontractor. The cost of this field supervision shall be included in the cost of work. Failure to provide this supervision for the duration of work completed by a lower tier Subcontractor may result in Shiel Sexton stopping work and/or providing a Shiel Sexton Superintendent to manage this lower tier Subcontractor. You will be provided written notice of failure to coordinate and manage lower tier subcontractors and will be given 48 hours to correct the situation. Shiel Sexton will provide full time coordination and supervision of the lower tier Subcontractor if the situation is not corrected at a cost of \$100/Hour to be backcharged to the Prime Subcontractor that is failing to provide adequate management of lower tier Subcontractors.
- 4) Shiel Sexton utilizes Procore for all project documentation and management such as drawings, specifications, submittals, RFI's, daily reports, and etc... Procore shall serve as the single source of all record documents, changes, RFI's, Submittals, Meeting minutes and etc... Each Subcontractor is required to have access and provide access to field and office personnel managing the construction of the work which includes providing them with current hardware and internet/cellular data to efficiently utilize Procore.

Hard copies of documents will not be provided. Should you need hard copies for your field workers it is your responsibility to provide hard copies as well as maintain current copies on site to assure you are working with the most current information including all changes by RFI's, Submittals, and etc..

- 5) All documents requiring subcontractor signature (Change Orders, Contracts, ect) will be sent and will need to be signed electronically via DocuSign. This is a web based service and will be at no additional cost to the subcontractor.
- 6) Shiel Sexton manages Time and Material (T&M) & Not-to-Exceed (NTE) change orders as follows:
- a. Shiel Sexton may direct your company, in writing, to complete work on a T&M basis. This direction shall only be provided by the Project Superintendent and/or Project Manager.
 - b. Shiel Sexton may request a Not-to-exceed amount for each T&M change. This amount is the Subcontractor's guaranteed maximum price to complete the work. Shiel Sexton's Project Manager and/or Project Superintendent

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shall be notified in writing if the NTE value will be exceeded. Subcontractor must provide an updated NTE value and obtain written approval prior to commencing work over the original agreed upon NTE value. Failure to notify Shiel Sexton in advance will result in non-payment of any amounts over the originally agreed upon amount.

- c. T & M work sheets shall be turned in the day the work is completed and shall clearly describe the work performed and identify all labor, material, and equipment utilized. The T&M sheet must be signed by the Project Superintendent and/or Project Manager within 24 hours of the work being completed to be valid.
 - d. Invoices for T&M work without a signed T&M work sheet as backup will not be paid.
 - e. The start of T&M is allowed only after the subcontractor has demonstrated they have pre-planned the work to ensure all material, manpower and supervision is on site and ready to complete the work.
 - f. If Time & Material work is intended to become a backcharge to another trade/subcontractor for trade damage, the T&M ticket shall be accompanied with adequate backup to support the backcharge, including before and after photos that support the other trades involvement.
 - g. Backcharge work shall be agreed by all parties (Shiel Sexton, Company being backcharged, and Company doing the work) in writing prior to commencement of the work. This includes agreement to the NTE pricing and/or the plan to complete the work and the labor and equipment rates that will be utilized.
 - h. Shiel Sexton does not accept T&M sheets accumulated over the course of the project and presented at the end of your work. Changes shall be discussed and accepted or declined as the work commences. It is each Subcontractor's responsibility to manage work on site and be aware of any/all extra work being performed/requested to avoid accumulation of unauthorized extra work.
- 7) Testing: Shiel Sexton and/or the Owner will provide third-party testing as defined in the section above labeled "Provided by Owner/Shiel Sexton". All other third-party testing shall be included by the Subcontractor assigned to the specification.
- a. Subcontractor shall notify Shiel Sexton and the testing agency a minimum of 48 hours prior to the required test.
 - b. Should the initial test fail, all costs of subsequent tests required to obtain a passing score shall be paid by the Subcontractor.
 - c. Failure to notify Shiel Sexton and the testing agency prior to covering work that requires inspection will require the subcontractor to remove such material (and other affected material) that should have been tested and replace such material at their own expense. Subcontractor shall continue to remove and replace such material until all required testing can be performed and a passing result is achieved.
- 8) Inspections: This Subcontractor will include calling for, coordinating and attending all State, City or County Building Department inspections with all affected related trades and notify Shiel Sexton of pending inspections and their results post inspection.
- 9) Permitting and Fees: Include all permitting and regulatory fees specific to your trade. Each subcontractor shall participate in permitting process as needed and pull any permits required to be pulled by the subcontractor. Bid shall include the cost of permits required for the subcontractor. ONLY those permits listed in the section above labeled "Provided by Owner/Shiel Sexton" are provided for you.

Contract Requirements

- 1) Sample Subcontract: Contractor shall review and understand the Shiel Sexton Subcontract provided as an attachment to this document.
 - a. Changes requested to the Subcontract shall be included with your bid/proposal. Failure to submit proposed changes is an indication of your acceptance of the contract as written.
 - b. Should your company have a standard modification to the Shiel Sexton agreement it shall be provided with your bid/proposal.

- 2) Owner – Contractor Agreement: A copy of the Owner-Contractor Agreement is included for all bidders to review and familiarize themselves with the terms and applicable requirements that are material to their scope of work.

Quality Requirements

Job Specific Quality Plan: Prior to starting work, each Subcontractor shall provide the following documents to Shiel Sexton (SSC). It is critical that these documents are furnished promptly so that the start of your work is not delayed.

- 1) Job Specific Quality Plan (JSQP) (See the following for detail).

Contractual requirements of this project require each Subcontractor and their Sub-subcontractors to provide SSC a copy of a written Job Specific Quality Plan (JSQP). This plan must provide responses to the following 12 points. Subcontractors are responsible for ensuring that their Sub-subcontractors each submit a plan individually to SSC.

- a) Does your company have a written quality program? If so, please provide a copy.
- b) Please describe the methods that will be used to ensure that all Subcontract Documents, Specifications and Drawings are met on this project?
- c) The name & contact information of the person who is responsible for the day-to-day implementation of this plan and what role this person will play during the project? This person must be on site daily.
- d) The name & contact info of the person who is corporately (at your office) responsible for quality?
- e) Please identify how you will control construction and quality documents and who is responsible?
- f) Quality inspections shall be completed per the contract documents and as defined during the DFOW Meeting (see below). Name the person or persons that will perform the inspections. Please also include the documentation methods for these inspections (i.e. forms, distribution, etc.). Copy SSC on all inspections weekly at a minimum.
- g) Please describe any unique quality obstacles your organization foresees on this Project. i.e. material storage, complexity, familiarity with a new products or methods, constructability, new supplier or subcontractor, working environment, lighting needs, layout, control lines, etc.
- h) Please attach copies of all certifications (if required) as described in the specifications (i.e. welding certifications.). Note as "N/A" if not required.
- i) Please list (if required per Subcontract) the testing agencies you intend to use, credentials, contact information, and how the results will be reported to Shiel Sexton. Note as "N/A" if not required.
- j) Deviation reporting (quality accidents or mistakes). Please communicate how your company will communicate all Subcontractor's deviations from plans and specifications to Shiel Sexton. Shiel Sexton expects a timely report for all such instances.
- k) Detail how your company will communicate the quality plan to the field forces.

Quality Meetings: All subcontractors awarded work will need to partake in the following (4) meetings. In parenthesis are the subcontractor's team members that must be in attendance.

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- 1) Buyout Meeting (Contract Signer, Job Project Manager, Estimator)
- 2) Pre-Mobilization Meeting (Contract Signer, Project Manager, Superintendent)
- 3) Pre-Install Meeting (Superintendent, Foreman, Manufacturers rep (if required), 2nd Tier Subs or Foreman)
- 4) Definable Features of Work Meeting (Superintendent, Foreman, Manufacturers rep (required), 2nd Tier Subs, Project Manager)

Definable Features of Work (DFOW): Shiel Sexton will monitor the quality of work daily, but an emphasis will be put on specific definable features of work that will be reviewed in detail prior to the start of and during construction.

This will involve a detailed meeting (DFOW Meeting) separate from the pre-construction meeting that requires the product manufacturers and your company's superintendent/project manager to be in attendance. Any subcontractor with work integral to or attached to one of the items below will be required to attend the DFOW meeting. All details will be reviewed and agreements made for any changes to the contract documents. This meeting will occur at least 3-4 weeks prior to the start of work to allow for any changes to be made. Shop drawings will need to be approved prior to this meeting.

A separate field pre-installation meeting will be held on site just prior to the start of work. This meeting will require the attendance of the assigned project foreman/superintendent that will be on site for the work. This meeting will summarize the meeting above and cover site logistics, safety, work hours, and etc...

Execution of Work Requirements

- 1) **Standard Jobsite Hours:** The standard working hours for this project is eight (8) hours per day, Monday through Friday with Saturday as a make-up day unless specifically noted otherwise in your work scope and/or the project schedule. Starting/stopping times will be coordinated throughout the year by the Project Superintendent.
 - a. Each time a subcontractor desires to work during non-standard hours, they must notify Shiel Sexton twenty-four (24) hours in advance and shall not work non-standard hours unless given specific written permission by the Project Manager OR Project Superintendent.

- 2) **Premium Time Work:** Any subcontractor requesting premium time work must have written approval from Shiel Sexton (48) hours prior to starting work. Shiel Sexton must have personnel on-site while work is being completed. Shiel Sexton's hourly rate as stated in the Owner Agreement for the additional personnel required for premium time coverage may be requested to be reimbursed by the subcontractor requesting the premium time work.

- 3) **Cost of Supervision:** In the event after hours, Overtime, Saturday, or Sunday work is required due to the failure of the Subcontractor to maintain the project schedule the Subcontractor shall reimburse the Owner for the cost of Shiel Sexton supervision per the hourly rates established in the Owner Agreement with Shiel Sexton. This clause does not apply if Shiel Sexton specifically requests work be performed outside the normal operating hours.

- 4) **Progress Meetings:** Subcontractors shall have representation at all required project meetings, including weekly jobsite meetings. Subcontractor representative shall be empowered to make decisions regarding financial and schedule coordination. Failure to attend these meetings does not relieve you from the requirement to understand the current project status and requirements for your company. A fee of \$1,000 per missed meeting may be back-charged to your company if attendance continues to be an issue and it is affecting your company's ability to collaborate and effectively manage and construct your work in a coordinated manner with other trades.

- 5) **Schedule:**
 - a. Time is of the essence. Submittal of a bid is evidence the required qualified manpower, skilled field supervision, materials and equipment are available for this Subcontractor to execute and complete the work in accordance with the project schedule.

 - b. The Subcontractor shall work with and provide Shiel Sexton with a listing of activities, crew day durations and activity costs to supplement the current construction schedule. Included in the listing of activities, but not limited to, shall be shop drawings, submittals, fabrication, delivery time, order placement and any other activity which will assure completion of the work within the specified time. Shiel Sexton will then update the construction schedule from the information supplied. The final construction schedule will show updated start/finish dates for each activity of the entire project with the final completion date for the project to remain the same or become earlier than the original schedule.
 1. The Subcontractor's schedule of values and first payment will not be reviewed or considered until this initial submission of schedule input and the schedule of submittals is submitted and reviewed by Shiel Sexton.

 - c. During the progress of work, Shiel Sexton will update the master schedule in coordination with information obtained from your weekly work plans and on-site communication and coordination with your last planners. An updated master schedule will be issued bi-weekly via Procore. It is your responsibility to seek out and review this updated schedule and respond within 5 days if you disagree with any new information.

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- d. The Subcontractor shall coordinate his work with and cooperate with all other subcontractors so as to facilitate the general progress of the work. As a material consideration of this award, the subcontractor guarantees to staff the project sufficiently to keep pace with the ongoing construction.
- 6) **Weekly Work Planning:** Contractors shall submit a 2 week look-ahead schedule weekly to the Shiel Sexton Superintendent and shall participate in daily huddles and completion of the 2-week planning board.
- 7) **Hot Work:** All hot work must be approved by Shiel Sexton. Requirements of the fire watch will be set based upon each individual request.
- 8) **Punch Lists:** Subcontractors shall complete in a timely manner all issued action item lists or “rolling” punch lists. Subcontractors shall add dedicated tradesmen to the site to complete such work within the timeframes stated by Shiel Sexton. The typical turnaround time for a punch list item shall be three (3) days unless agreed upon otherwise in writing or as noted on the punch list. Failure to complete the punch list in a timely fashion will result in a written 48- hour notice of non-compliance followed by Shiel Sexton completing the work on the Contractor’s behalf and at the Contractor’s expense.
- 9) **Clean-up:** Subcontractor will be responsible for moving their own trash/debris DAILY to the dumpsters provided by Shiel Sexton. All subcontractors are responsible for clean-up of debris resulting from the Subcontractor’s work on a daily basis in order to keep the project clean, orderly and hazard free.
- 10) **Delivery Timing:** All deliveries shall be made during normal hours of the project; scheduled and coordinated with Shiel Sexton’s on-site supervision prior to delivery.
- 11) **Material Storage:** Due to the location of this project site there will not be sufficient space for storage on site beyond the material buffer needed to maintain work progress. All excess materials shall be planned to be stored off site for just-in-time delivery to maintain your material buffer on site. Should there be a time when arrangements can be made for onsite storage facilities or offices, subcontractors shall make arrangement for the location of job offices and storage yards with the Shiel Sexton Superintendent. The Subcontractor will be responsible for erection, dismantling, and maintenance, of their facilities. All yard fencing and material storage facilities which the Subcontractor deems necessary for the protection of his offices, equipment and material shall be provided at the Subcontractor’s expense.
- 12) **Project Offices:** Due to site constraints a contractor project office location will need to be requested from the Project Superintendent for feasibility. Not all requests will be approved due to space limitations. All costs associated with a project office shall be borne by each Subcontractor including connection/disconnection and etc...
- 13) **Protection of Work:** All Subcontractors are responsible for protecting personnel, property, and the work of other trades in carrying out their own work. Subcontractors who damage the work of other trades shall bear the cost for replacement and / or repair of the damaged work.

Subcontractors are required to assess each work area for damage by other trades prior to starting work in that area. Starting work in the area indicates your company’s acceptance of the conditions in that area and that it was turned over to you in good condition without prior damage and acceptable to begin work. Should damage be observed it shall be documented in writing and via photos and the Project Superintendent shall be notified immediately to assess the damage.

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Additional care must be taken when using manlifts or scissor lifts in areas where damage could occur to ensure no damage is done.

The Subcontractor is responsible for ensuring work completed by other trades in your immediate work area are protected and kept in good condition until the completion of your work in this area. Notify the Project Superintendent of any damage done by your workers.

The Subcontractor shall be responsible for the protection of the existing or adjacent landscape, utilities, and structures from defacement or damage by construction equipment, vehicles or employees. The Subcontractor shall accept, as a condition of their Subcontract, the responsibility for preventing operation of equipment beyond the limits of the project for any reason. The Subcontractor shall be responsible for repair, at their own expense, any damage to the site or adjacent structures, landscape, or utilities by their operations or employees. If the specific cause of damage cannot be identified, costs for repairs shall be uniformly distributed to all Subcontractors working in the area during the time of the incident.

- 14) **Existing Conditions:** The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work. Before construction, verify the location and points of connection of utility services.

The Subcontractor is obligated and required to thoroughly understand the project conditions, including existing conditions in and around the project site prior to starting work.

If at any time hazardous materials are identified or suspected, then immediate notification should be sent to Shiel Sexton. Subcontractor should not attempt to remove or abate any hazardous materials.

- 15) **Existing Utilities/Utility Locates:** The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Location and protection of existing and/or previously installed utilities will be the responsibility of each subcontractor. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services. This includes all public and private utilities without exception. Subcontractors shall make all calls to 811 for their own work and require the same of any sub-subcontractors.

- 16) **Geotechnical Conditions:** See Geotechnical Report included in the bid package for information concerning subsurface exploration. Any information or interpretation gained from this report is to be used at the risk of the Subcontractor. Shiel Sexton is not responsible for the contents of the Geotechnical report. No additional financial compensation will be awarded for the removal of rock or unsuitable soil that was indicated by the soils report.

- 17) **Acceptance of Conditions:** Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations in writing and via photos.
- a. **Written Report:** Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

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- i. Description of the work.
 - ii. List of detrimental conditions, including substrates.
 - iii. List of unacceptable installation tolerances.
 - iv. Recommended corrections
 - b. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - c. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - d. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - e. Proceed with installation only after unsatisfactory conditions have been corrected.
 - f. Proceeding with the Work indicates acceptance of surfaces and conditions.
- 18) **General Installation Instructions:** Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
- a. Make vertical work plumb and make horizontal work level.
 - b. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement. Where conditions do not allow for maintenance access or required clearances Shiel Sexton shall be notified immediately and given the opportunity to review the situation with the Owner to determine the best possible installation. Additional compensation will not be granted for the reinstallation of a component requiring maintenance access when Shiel Sexton is not given the opportunity to coordinate with the Owner and the Owner requests the item be relocated.
 - c. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - d. Maintain minimum headroom clearance of 8 feet above finished floor/work surface (2.4 m) in spaces without a suspended ceiling.
 - e. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
 - f. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
 - g. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
 - h. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
 - i. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - j. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect of Record in writing. Subcontractor will not be reimbursed where assumptions of mounting heights are made.
 - k. Allow for building movement, including thermal expansion and contraction.
 - l. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated but are required, submit a written plan for the joints for approval by the Architect or Record. Fit exposed connections together to form hairline joints. Subcontractor will not be reimbursed for re-work where assumptions of joint layouts are made.
 - m. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- 19) **Clarifications After Award:** Any question or problems involving the contract specifications or drawings should be brought to Shiel Sexton's attention immediately and followed up in writing, with a date specified by which you need an answer so as not to delay the construction schedule. Written questions will be forwarded to the Architect of Record for response. If a meeting is necessary to resolve any of these questions, Shiel Sexton will arrange a conference

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between the Architect Consultants, Subcontractor's representative and Shiel Sexton. This procedure is mandatory in order for all parties concerned to have a full understanding of the disposition of questions raised. Direct contact with the Architect or Owner is not allowed. Any changes in the scope of your work must be approved in writing by Shiel Sexton.

- a. RFI's shall be written clearly and concisely to fully explain the issue and provide a suggested solution. Subcontractor shall include sketches, photos, specification sections, and/or drawing sheets required to fully explain the issue. Subcontractor shall also clearly state if the RFI will have cost or schedule impact (Should these spaces be left blank or not included it is understood the RFI does not have cost and/or schedule impact to the Subcontractor).

- 20) **Harmonious Work Clause:** The Subcontractor acknowledges its understanding that Shiel Sexton and other Subcontractors may employ personnel who are not represented by labor union(s) to perform work on the jobs described and identified in the Subcontract Agreement. Shiel Sexton has no right or control over the Subcontractor's personnel or its labor relationship policies nor any right to direct work of the Subcontractor's personnel and Shiel Sexton does not seek such right of control. The Subcontractor shall notify in writing, and assign its employees, visitors, and suppliers to such gates or entrances as may be established for and used by Shiel Sexton and in accordance with such conditions and at such times as may be imposed by Shiel Sexton. Strict compliance with Shiel Sexton's gate usage procedures shall be required by the Subcontractor who shall be responsible for such gate usage by its employees, visitors, suppliers, and sub-subcontractors (and their material supplies).
- 21) **Telephone, E-mail, and Internet Service:** Each Subcontractor will be responsible for providing their own telephone and internet service for performing the work under their respective Subcontract. Shiel Sexton will not provide temporary utilities to project trailers.

The Subcontractor's assigned foreman/superintendent is required to have a cell phone, individual e-mail, and access to the internet so they can effectively be involved in electronic project communication and have access to all online project information.

- 22) **Cutting & Patching, Backfill:** All Subcontractors shall perform cutting, patching, excavation, backfill, offsite disposal and compaction as required to complete the work within the scope of their respective Subcontracts. All trench backfill must be performed in engineered lifts in accordance with compaction requirements as detailed in the Contract Documents. Water consolidation is not an acceptable method of compaction.

All cutting, patching, and backfill shall be done per the requirements of the Authority having Jurisdiction and/or as stated in the project specifications. The greater quantity/greater quality (more expensive) method shall be utilized and included in the base bid.

- 23) **Noise Control:** Comply and abide by local requirements for noise control and/or as directed by Shiel Sexton.
- 24) **Weekly Toolbox Talks:** Subcontractors are required to complete weekly Toolbox Talks with their workers. These shall be submitted to the Shiel Sexton Superintendent weekly.
- 25) **Daily Reports:** All subcontractors are required to submit a Subcontractor Daily Report for each day that work is performed on the project via electronic PDF format. This subcontractor will be required to fill out and turn in a daily report form every day detailing the activities for that day. This can be your own form or Shiel Sexton can provide one.

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This daily report form MUST be filled out completely and diligently by means of indicating material quantities installed/placed, materials and deliveries received, a detailed list of manpower by trade and classification on site and a thorough written description of the activities for each day any work is performed, regardless of magnitude and any delays or interruptions whatsoever. Shiel Sexton may withhold or the whole or part of any application for payment for failure or refusal of the subcontractor to turn in daily reports on a daily basis. Your foreman/Superintendent may be removed from the project if they continually fail to submit daily reports.

- 26) **Removal of Safety Cable:** Removal and disposal of perimeter safety cables and other protective covers or systems shall be by the subcontractor whose work requires their removal to complete their work. Replace as necessary throughout the course of the work to maintain safe working conditions.
- 27) **Vehicles:** Each subcontractor is required to clean tires on their vehicles prior to entering public roads. Street sweeping/cleaning for materials/debris tracked onto public roads is included.
- 28) **Scissor Lifts:** Understand the use of scissor lifts will be at the discretion of Shiel Sexton supervision. Damage to wall and ceiling framing, floor systems and underground utilities will be charged to all subcontractors using lifts in the area. Once certain finishes are complete in the area Shiel Sexton may choose to no longer allow Scissor Lifts. NOTE – the floor slabs may or may not allow for all scissor lifts. If this is a concern please confirm the proposed lift weight prior to the bid via a Bid Question. No additional costs will be considered after bid time if a lift is deemed too heavy.



**JOINT VENTURE
PARTNERSHIP**

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Attachment – 01

Trade Specific Work Scopes

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Work Scopes

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Definitions

- 1) **General Requirements:** The following "General Requirements" provides instructions to define and clarify common work elements that every subcontractor shall include.
- 2) **Specific Requirements:** The following "Specific Requirements" provide instructions to define and/or clarify the work scope each subcontractor is to include in their specific bid category. Note however, the absence of any specific reference in this document to work shown in, or required by, the Contract Documents, shall not be used as a basis for excluding said work.
- 3) **All Inclusive Work Scope:** All subcontractors are required to review all contract documents to assure they are bidding a complete work scope. It is not acceptable to claim additional cost for items missed during the bid that may not be indicated in what is considered a "typical location". Bidder is responsible for all work indicated to be covered in their respective work scope regardless of the drawing or specification section on/in which it is included.
- 4) **PROVIDE:** The word "provide" when used in these inclusions, specific requirements or instructions, general items, acknowledgements and/or clarifications is intended to be inclusive to furnish, fabricate, deliver, receive, unload, store, install, hoist, erect, prepare substrate, protect, start-up, test, clean, etc. such that the material and/or system is complete and operational and in its permanent location ready to be accepted and used by the Owner unless specifically identified otherwise.
- 5) **Furnish:** Items specifically indicated with this word are to be provided to the project site or another mutually agreed upon delivery location such as a storage warehouse of the installation subcontractor's shop. Installation is not included.
- 6) **Install:** Items specifically indicated with this word are provided to you by Shiel Sexton, the Owner, or another Subcontractor or vendor for installation by your company. This includes unloading the delivery, handling it to its designated storage and installation location(s), inventory of the delivered materials to confirm all quantities are correct, and installation of the product such that it is complete and operational.

General Requirements of ALL trades

The following requirements apply to all contractors without exception.

- 1) **Site Considerations:** Coordination of work will provide as little disruption as possible to neighboring properties. Site Logistics plans shall be reviewed, understood, and incorporated into the cost of the work. Activities that cause excessive vibration must be coordinated and scheduled with the SSC team two weeks prior to that work starting. During the task's duration, the work may need to be stopped if the excessive vibration causes a disruption to the adjacent building's activities.
- 2) **Engineering/Layout:** Provide all associated engineering, layout and surveying as required for a comprehensive scope of work per the Contract Documents. All layout shall be by each Subcontractor for their own work. Vertical and horizontal control will be established by the Concrete contractor.
- 3) **Parking:** Shiel Sexton will not provide on-site parking for trades. Subcontractors are responsible for providing parking for their workers. Public parking garages are available near the job site. An on campus public shuttle service is available for this project's use. Schedules and monthly pass information are available online at <https://parking.indianapolis.iu.edu/index.html> . Trade parking will be limited to deliveries, worker drop-off and pickup, and site visitors.
- 4) **Permits and Fees:** Include all permit and regulatory fees specific to your trade. Each subcontractor shall participate in the permitting process as needed and pull any permits required to be pulled by the subcontractor. Bid includes the permit cost required for the subcontractor not listed below.
- 5) **Spoils haul off:** All spoils not utilized for backfill shall be hauled off site. The subcontractor that excavates the soil shall be responsible for the haul off, unless noted otherwise.
- 6) **Backfill:** The Subcontractor that excavates the soil shall be responsible for backfill and compaction, unless noted otherwise. Compaction shall be done per the requirements of the contract documents. Compaction that requires vibration may need to be coordinated with the adjacent building's activities. Pre-planning with the Shiel Sexton team will be required before compaction tasks commence.
- 7) **Traffic Control:** Provide all on and offsite traffic control as may be required for this scope of work. All deliveries and/or trucks that impact traffic flow shall require traffic control. Extended lane closures or blocking are not permitted during deliveries. Stage delivery trucks to limit traffic disruptions.
- 8) **Hoisting/Material Movement:** All hoisting and material movement is the sole responsibility of each subcontractor unless specifically identified otherwise in the specific work scopes. All equipment necessary for this work shall be provided by the subcontractor. Shiel Sexton does not provide any equipment for this project. Only certified operators will be allowed to work on this site. Operator's certifications will need to be provided to the Shiel Sexton team prior to beginning work. Stage materials in a manner which does not block other trades from accessing their scheduled tasks. Move materials as needed to provide a clear path.
- 9) **Cranes:** Shiel Sexton is not providing any crane services for this project. All hoisting requiring the use of a crane shall be included by each Subcontractor. Provide a plan for all critical lifting tasks five working days prior to the scheduled lift

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date. This plan would be provided by the crane company and would include the operator's certifications, crane inspections, and load calculations.

- 10) **Street Cleaning:** Protect public and private roads / walkways from dirt and debris during this scope of work. If streets or walkways are soiled by this contractor, they will be required to be cleaned immediately. Furthermore, all local environmental requirements, codes, etc. shall be observed when hauling materials.
- 11) **Safety / PPE:** Include all personal protective equipment and stand-by fire extinguishers necessary to perform this scope of work. Maintain barricades and signage necessary for each scope of work. Coordinate **fall protection** with the building leading edge conditions. If barriers need to be removed to install new work, then the contractor is responsible for making it safe. **Toolbox talks** will need to be completed and turned into the Shiel Sexton team on a weekly basis. **Hot work permits** will need to be filled out each day, and for each area that hot work needs to occur.
- 12) **Dewatering:** Include all dewatering required to complete each scope of work separately. Each Subcontractor will be responsible for maintaining their excavations after a rain event. Drain water to areas specified on the local SWPPP plan. General dewatering for ground water is not anticipated.
- 13) **Existing Utilities:** Each subcontractor is responsible for locating, on an ongoing basis, all existing public and private utilities prior to performing their work. This includes hiring an independent utility locating service as deemed necessary. This subcontractor shall provide all protection as necessary of existing utilities and work. Damage caused by this subcontractor to existing work shall be remedied at this subcontractor's expense.
- 14) **Schedule & Mobilizations:** All subcontractors shall anticipate multiple mobilizations for this work. Multiple crews shall be provided where activities are stacked on the project schedule. It is the subcontractor's responsibility to bid the project with the manpower/crews necessary to meet the durations in the bid schedule. Overtime shall be included as necessary to meet bid schedule.
- 15) **Safety:** Comply with all OSHA and Shiel Sexton requirements applicable to subcontractor's work scope.
- 16) **Regulatory Documentation:** Contractor shall be aware of and provide all regulatory documentation, submittals, drawings, testing, etc. required by the authorities having jurisdiction for their work scope. Coordinate and document all testing and commissioning with the Shiel Sexton team.
- 17) **Task Lighting:** Electrical subcontractor will provide general lighting. Each subcontractor shall provide task lighting as needed for their work scope.
- 18) **Equipment:** Include all equipment necessary to complete your work scope. Shiel Sexton does not provide any equipment for this project.
- 19) **Scaffolds/Work platforms:** Include all scaffolding and/or work platforms necessary to complete your work scope. Shiel Sexton is not providing scaffolds, ladders, work platforms, hoisting, lifts, or any other equipment for the project. The subcontractor is responsible for all equipment necessary to complete their work scope.

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- 20) Housekeeping:** Provide DAILY organization of materials and equipment, waste cleanup, and recycling for each scope of work. Trash and debris will be disposed of in containers provided by each subcontractor. No trash will hit the ground. Any contractor not providing the required clean-up shall be given 24-hour notice to complete it. After 24 hours Shiel Sexton will provide clean up at the contractor's expense. If daily cleanup and organization is not performed then work will be stopped until the condition is made satisfactory.
- 21) Material Storage / Handling:** All materials must be stored on pallets or wheeled carts so that they can be moved when needed. Materials will be stored in assigned lay-down areas assigned by the general contractor. Include all necessary costs associated with material handling and movement as required by the project workflow.
- 22) Allowances:** Allowance dollars, if applicable, are included in the base bid amount and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope or unforeseen.
- 23) Daily Reports:** Provide a formal daily report in Procore for each day of work that is performed on the project. This report would include but would not be limited to, a description of work activities, list of manpower by trade classification, and deliveries received.
- 24) Site Orientation:** All workers, including vendors, will need to attend the Shiel Sexton site specific orientation before they are allowed on site. A completion sticker will be provided and will need to be worn on all workers' hard hats.
- 25) PROCORE:** Trade foremen will be given limited access to Procore and will need to have an iPad or similar device to access the drawings and the daily report module.

Warranty Requirements of ALL Trades

- 1) Warranties shall be a minimum of 1 year workmanship and manufacturers standard warranties for all equipment:
 - a. All warranties shall start at the substantial completion of the entire project.
- 2) Owner will take over all MEP systems and Owner warranties shall begin at Substantial Completion.
- 3) Provide special or extended warranties as outlined in project documents.

BC 1.01 - EARTHWORK & UTILITIES

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
021000 – SITE PREPARATION
024119.1 – SELECTIVE STRUCTURE DEMOLITION – SITE
311000 – SITE DEMOLITION
311100 – SITE CLEARING
312000 – EARTH MOVING
312317 – TRENCHING
312319 – DEWATERING
312324 – FLOWABLE FILL
312513 – EROSION CONTROLS
320513 – SOIL MATERIALS
320516 – AGGREGATE MATERIALS
330000.30 – CEG 2024 SANITARY STANDARDS MANUAL
330000.30 – CEG 2024 WATER STANDARDS MANUAL
330514 – PRECAST CONCRETE STRUCTURES
334100 – STORM DRAINAGE PIPING

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

1) Temporary Facilities and Controls:

- 1) Provide all erosion control measures, maintenance, and removal as required for the duration of the project and as indicated for post construction. This includes, but is not limited to, erosion fence, blanket, inlet protection, filter strips, silt sock, street sweeping etc.
 - i. Stable construction entry from public roadway to construction area is required. Contractor to maintain entry via cleaning or additional stone to prevent mud and debris from entering roadway. Entry to be removed in its entirety at project completion and brought to subgrade in preparation for finishes. Reference Site Logistics Plan for new concrete apron work required of this contract.
 - ii. Maintenance and document recording and upkeep of required SWPPP reporting procedures.
- 2) Execution of CMc dig permits prior to commencing excavation activities.
- 3) Temporary tree and plant protection as well as any temporary seeding necessary.

2) Site Demolition:

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- 1) Provide all site demolition including the proper disposal of, but not limited to, hardscapes, landscaping, utilities, underground structures, furnishings, light poles, sidewalks, curbs, bollards, signs, and any required permitting or dumpsters for such demolition. Backfill to subgrade after demo is complete, protect and maintain existing storm inlets.
 - i. Includes all demolition required for installation of underground detention and structures.
 - 2) Includes salvage of light poles after make safe by electrical contractor.
 - 3) Utilities called for removal to include cutting, capping, grout and proper disposal.
 - 4) Cleanly sawcut and demo existing sidewalks, pavements (concrete & asphalt), and curbs where shown to be removed, and where new work will be installed.
 - 5) Selective building demolition is by General Trades contractor. Existing screenwall and foundation demolition is by the Concrete contractor.
- 3) **Earthwork:**
- 1) Rough and final grading. Include all required cuts and fills as necessary. Import/export of excess/shortage of spoils is included. This includes rough/final grading for all concrete pavements, sidewalks, curbs, pads, asphalt pavements.
 - 2) Stripped topsoil shall be stockpiled onsite. Any imported/exported top soils to achieve planned grades shall be included.
 - 3) Placement/grading or removal of excess spoils from sitework and site utilities. Any imported/exported soils to achieve planned grades shall be included.
 - 4) Provide soil improvements for pad construction. Include lime for building footprint to ensure suitable building pad.
- 4) **Utilities:**
- 1) Provide complete storm sewer system including, but not limited to, piping, inlets, structures, castings, risers, underground detention systems, water quality structures, lines, laterals, compacted granular backfill, grouting, and any other necessary components or accessories for a complete and functional system. Modifications and tie ins to the existing system are included.
 - i. Cleaning of newly installed water quality structures at project completion is included.
 - 2) Provide complete water service including, but not limited to domestic water, sleeves, valves, and necessary components for a complete and functional system.
 - 3) Provide a complete sanitary sewer system as indicated to 5' outside of building.
 - 4) Existing structures that are tied into will require the rehabilitation of that structure to current standards. Refer to CEG standards.
 - 5) Testing and inspection per local AHJ requirements.
 - 6) Underground detention will be scheduled to be installed late in the project. Provide any temporary measures or tie-ins necessary to maintain a functional storm system.
 - 7) Provide necessary maintenance of traffic or temporary conditions for utility work outside of project boundaries. Includes permits, barriers, traffic control and any other means to complete the work.
 - i. **This contract to include MOT as outlined on C607.**
 - 8) Steam will be brought to the project by CEG. This contract is to provide insulation covering this line as detailed on sheet L100, note M01 and detail 11/L150.
- 5) **Site Logistics:**

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- 1) Provide construction entries as indicated. Include curb cutting and apron work shown on logistics plan attachment.
 - i. Includes removal and brought back to subgrade in preparation for finishes.
- 2) Provide all temporary construction fencing and gates as indicated on the site logistics plan and contract drawings and maintenance of them throughout the life of the project. Refer to IU CPF Division 015529 for requirements. Includes privacy fabric as outlined.
- 3) Provide all fencing required for work outside of areas where construction fencing is indicated on the site logistics plan.
- 4) Provide stone for all laydown areas as indicated on the site logistics plan. Include the removal and decompaction of area and returned to subgrade for finishes upon project completion.
- 6) **Dewatering:**
 - 1) Provide all temporary de-watering required to complete this scope of work including, pumps, temporary ditches, temporary drainage piping, etc... All temporary de-watering must be in compliance with IDEM/local regulatory standards.
- 7) **Superintendent:** Provide full-time on-site superintendent for the duration of this work scope. Superintendent shall engage in the project at least three (3) weeks prior to the start of this work scope. Engagement includes schedule input, planning and coordinating work, and attending project meetings at a minimum. We do not anticipate this person on site full time during this time, but certainly starting to engage in the project as noted.
- 8) **Rigging and Hoisting:** Provide all hoisting and rigging as required to perform this scope of work, with properly trained and licensed operators as required.
- 9) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 10) **Allowances:** Bidder should include the following allowances in bid sum.

a. Laydown Area Stone Maintenance	\$20,000
b. Fencing Adjustments	\$20,000

Exclusions:

- 1) None.

BC 1.02 – RAMMED AGGREGATE PIERS

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
316613 – AGGREGATE PIERS

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 2) **Aggregate Piers:** Provide a complete aggregate pier scope of work. Includes engineering and installation as outlined in project documents.
 - a. Includes utility locates, layout, and testing associated with the work.
 - b. Includes all spoils removal generated from this work.
 - c. Furnish, install, monitor, report and later remove when complete seismic monitoring system for SELB (building to the north). Required for duration of this scope of work.
- 3) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 4) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. None

Exclusions:

- 1) None

BC 1.03 – CONCRETE, MASONRY & STEEL

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
033000 – CAST-IN-PLACE CONCRETE
033300 – ARCHITECTURAL CONCRETE
036000 - GROUTING
044000 – EXTERIOR DIMENSION STONEMWORK
051200 – STRUCTURAL STEEL
053100 – STEEL DECKING
055000 – METAL FABRICATIONS
055113 – METAL PAN STAIRS
055213 – PIPE AND TUBE RAILINGS
057313 – GLAZED DECORATIVE METAL RAILINGS
071326 – SELF-ADHERING SHEET WATERPROOFING
071616 – CRYSTALLINE WATERPROOFING
072100 – THERMAL INSULATION (PARTIAL)
076200 – SHEET METAL FLASHING AND TRIM
112423 – FALL ARREST SYSTEM

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Concrete - General Scope:**
 - a. Provide all layout, forming, placing, finishing and curing of all building concrete, including but not limited to lean fill, foundations, footings, piers, columns, stoops, pits, walls, screen walls, curbs, slab on grade, depressed slabs and thickened slabs. Includes the furnishing and installation of all concrete accessories, including vapor barriers, rigid insulation, dowels, reinforcement, non-shrink grout, moisture-retaining covers, sealers, evaporation retardant, finishing additives, bonding compounds, water stop, epoxy adhesive and vapor retarders when required.
 - b. **Waterproofing Scope:** Provide a complete waterproofing system, including all sheet and drain panel waterproofing materials, flashings, water stops, drain boards, expansion joints, sealants, foundation drainage weeps, etc. applied to concrete as indicated in the project documents.
 - i. Includes crystalline waterproofing of pits as indicated.

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- c. **Handrails:** Provide all perimeter and interior opening fall-protection railing at each elevated level. Provide loading corral at the SW corner of the building at each elevated level for material loading.
 - i. Installation, maintenance and removal will be by this contract. Fall protection shall meet OSHA requirements at completion of installation. Layout should be coordinated with trades to not interfere with exterior enclosure. Rails and corrals are to be maintained until removal is requested by Construction Manager.
- d. **Washout Dumpsters:** Provide wash-out dumpsters for this work scope for the duration of this work.
- e. **Rigging and Hoisting:** Provide all hoisting and rigging as required to perform this scope of work, with properly trained and licensed operators as required. Include all applicable engineering and concrete foundation if tower crane is to be provided.
- f. **Structural Excavation:** Provide all necessary structural excavation and corresponding haul-off of spoils. No spoils are to be left on site unless intended for re-use.
- g. **Backfill and Aggregate:** Compacted backfill and under-slab aggregate fill. All backfill inside and outside the building footprint of each level is included in this scope of work, including backfill interior wall conditions.
- h. **Insulation:** Provide all rigid insulation at foundation conditions noted.
- i. **Reinforcing:** Provide all reinforcing steel as required for this scope of work. Includes all reinforcing steel embedded in the concrete for masonry.
- j. **Embedded Items:** Receive, unload, store, protect, layout, and install all miscellaneous embedded steel, sleeves, rough carpentry straps/anchors/rods and anchor bolts that will be provided by others. This contractor shall coordinate the installation of all embeds including but not limited to all anchor bolts, base plates, and others as required.
- k. **Base Plates:** Provide all dry packing and grout under base plates.
- l. **Mechanical and Housekeeping Pads:** Provide all concrete work for mechanical, plumbing and electrical equipment as shown in the Architectural, Structural, Mechanical, Plumbing, and Electrical drawings.
- m. **FF and FL Requirements:** Ensure work shall be in conformance with the floor flatness (FF) and floor levelness (FL) requirement as indicated in the Contract Documents. If these specifications are not met, the subcontractor will be liable for floor preparation as required or will be liable to replace the slab to meet specifications.
- n. **Inspections:** Call for and to coordinate all necessary inspections prior to concrete placement. This Subcontractor shall be required to maintain a current log showing as a minimum all concrete placements by date and specific locations, and also showing the approvals of inspector and other key trades. The exact format of this log shall be submitted to Shiel Sexton prior to start-up.
- o. **Expansion Joints:** Furnish and install the expansion joints as indicated in the Contract Documents. Protection of joints until completely cured is incorporated in this scope of work.
- p. **Saw Cutting & Selective Demo:** Provide all saw cutting and selective demo as required and in the durations as allowed by the contract documents.
 - i. Includes work at existing dock area, reference 3/S201 and A101. Should include demolition of any existing foundations, screenwalls, and slabs as indicated.
 - ii. Includes any shoring/underpinning of this area to allow for building foundation work to be completed.
- q. **Stairs:** Include all concrete pan stair and landing infills. Includes underneath protection and cleanup of concrete slurry leaks.

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- r. **Temporary Stairs:** Provide a temporary scaffold stair assembly in a location coordinated with the Construction Manager for all trades use to access elevated floors. Temporary stair should be left in place until permanent stair can be installed for use by other trades.
 - s. **Sleeves:** Coordinate with MEP trades on any required sleeves through concrete as indicated in the documents.
 - t. **Superintendent:** Provide full time on site superintendent for the duration of this work scope. Superintendent shall engage in the project at least three (3) weeks prior to the start of this work scope. Engagement includes schedule input, planning and coordinating work, and attending project meetings at a minimum. We do not anticipate this person on site full time during this time, but certainly starting to engage in the project as noted.
- 2) **Masonry - General Scope:** Provide all required masonry for the building. Includes, but not limited to CMU, limestone, granite, mortar and grout, reinforcing steel, insulation, masonry joint reinforcement, ties and anchors, embedded flashing, bond beams, mortar nets, channel slots, cellular weeps, vents, miscellaneous masonry accessories, and appurtenances for a complete installation.
- a. **Insulation:** Includes all insulation indicated at masonry walls.
 - b. **Miscellaneous Steel:** Include layout and installation of all miscellaneous steel that are required to be embedded in masonry, including but not limited to, anchor bolts, steel plate, top of wall support, corner guards, and sleeves.
 - c. **Door Frames:** Provide grouting of door frames within masonry walls.
 - d. **Block outs:** Provide all block outs as required for other trades.
 - e. **Flashing:** Provide all flashing embedded in masonry. This includes through-wall flashing, membrane flashing, stainless steel flashing, stainless steel drip edges, etc.
 - f. **Wall anchors:** Provide all braces, anchors and angles.
 - g. **Coordination:** Provide coordination with all affected trades including waterproofing subcontractors.
 - h. **Sealants and Joint Fillers:** All sealant integral to or enclosed within the masonry system shall be included by this subcontractor.
 - i. **Rigging and Hoisting:** Provide all hoisting and rigging as required to perform its own scope of work.
 - j. **Cleaning:** Include all cleaning of masonry as the work is completed and the mortar is thoroughly set and cured. Coordinate final clean with Shiel Sexton.
- 3) **Structural and Misc. Steel – General Scope:** Provide all labor, material, equipment, and supervision necessary to provide a complete installation per project bid documents.
- a. Provide structural steel assembly, including all fabrication, installation, erection, hoisting, priming, and detailing as required.
 - b. Provide all steel, joists, beams, columns, decking, connector framing, lintels, angles, plates, sills, bent plates, pour stop, roof tie off anchors, anchors, pit grates, embeds, clips, fastening, welding, etc. for a complete structural steel package.
 - i. Includes guide rails, hoist beams, ladders, sills, pit grates and other necessary metal as indicated.
 - ii. Include a complete fall arrest system as indicated.
 - iii. Coordination will be required with the owner provided 3rd party testing agent for all required inspections.
 - c. Provide a dedicated crane for your use of unloading, erecting, etc.
 - i. Includes all permitting required for the crane.
 - ii. Includes necessary stone pad for crane and its removal.

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- d. Furnish bearing plates/embeds, inserts, top of wall anchors and lintels at concrete and masonry elements as indicated.
 - e. Furnish all anchor bolts as required.
 - f. Provide all standard tube and decorative railings to include a complete glazed rail system as indicated in the documents. Glazing is to be included for rail system in this package.
 - g. Provide all ladders and metal pan stairs as indicated in the documents.
 - h. Provide all generators required by this contract to perform welding operations.
 - i. Provide all surveying, field measuring, and details layout as required by this contract.
- 4) **Control:** Provide vertical and horizontal control for each building level for use by all trades.
- 5) **Schedule:** Bidder shall pay close attention to bid schedule. Bidder shall thoroughly review and understand delivery dates indicated in the project schedule. Shop drawings shall be provided to ensure on time delivery of this work scope.
- 6) **Shop Drawings:** Bidder is responsible for all certified and stamped shop drawings. Provide duration for complete shop drawings to be submitted to the EOR for review.
- 7) **Site Logistics:** Refer to site logistics for the project. With limited site laydown areas all material deliveries are to be planned as just in time deliveries. At this time no dedicated onsite parking will be available, bidders are to include any parking costs that may be incurred.
- 8) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 9) **Allowances:** Bidder should include the following allowances in bid sum.
- | | |
|------------------------------|----------|
| a. Loading Dock Coordination | \$20,000 |
| b. Handrail Adjustments | \$10,000 |
| c. Miscellaneous Steel | \$10,000 |

Exclusions:

- 1) None.

BC 1.04 – GLASS & GLAZING

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
079200 – JOINT SEALANTS
081116 – ALUMINUM FLUSH DOORS
081216 – ALUMINUM DOORS AND FRAMES
084113 – ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
084128 – INTERIOR GLASS ENTRANCES
084423 – STRUCTURAL SEALANT GLAZED CURTAIN WALLS
087100 – DOOR HARDWARE
088000 – GLAZING

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Complete system:** Provide all interior and exterior aluminum storefront and curtainwall systems complete with anchors, inserts, fasteners, brackets, slip anchors, concealed flashings, panel core material, glass, spandrel glass, mullion extensions, film, gaskets, caulking, weather stripping and associated hardware per the contract drawings. This package includes ALL interior and exterior glazing. This includes, but not limited to, all glass in the interior hollow metal framed, door vision panels and draft curtains.
 - a. Glazing for glazed decorative rail system is by others.
- 2) **Glass Stops:** Install glass stops and moldings provided by the door and hardware subcontractor for the hollow metal frames. This subcontractor is responsible for accounting for all fasteners and molding pieces prior to installation.
- 3) **Doors and Hardware:** Furnish and install all aluminum doors and hardware for all aluminum framed systems.
 - a. **Hardware Prep:** Ensure proper cutouts, backing plates and preparation for finish hardware installation in each door and frame.
 - b. **Electronic Hardware:** Provide all pathways, door and frame prep, and electric power transfers necessary for installation of access control systems and wiring for electronic hardware. Coordinate installation with low-voltage contractors.

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- 4) **Caulking:** Provide all caulking integral to the aluminum framed systems including the final caulking for the exterior of all frames. Finish caulking on interior of aluminum framed systems shall be provided by the caulking subcontractor.
- 5) **Wood Blocking:** Wood blocking shall be provided by the General Trades subcontractor where indicated in the contract documents.
- 6) **Engineering:** Provide all engineering as required in accordance with the specifications.
- 7) **Field Engineering and Layout:** Provide all engineering and layout required in accordance with the Contract Documents.
- 8) **Air and water barrier:** Provide all coordination and work necessary to tie into the building air and water vapor barrier system.
- 9) **Field Measurements:** Take all field dimensions of openings early enough to allow windows and storefronts to be fabricated and installed to meet the project schedule. If the schedule does not allow sufficient time for this to occur, this Subcontractor shall notify Shiel Sexton immediately to review options for obtaining rough opening sizes. Check actual openings by accurate field measurement before fabrication. Costs incurred for re-fabrication of components due to inaccurate field measurement is the responsibility of this subcontractor.
- 10) **Temporary Protection:** Protect systems from damage during construction. This subcontractor will be responsible for the removal and replacement of any materials chipped, cracked, abraded or damaged during construction due to inadequate protection.
- 11) **Final Clean:** Clean all surfaces of installed work prior to final inspection of this bid category. This includes removal of all factory stickers and associated residue.
- 12) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 13) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. None

Exclusions:

- 1) None.

BC 1.05 – ROOFING

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
075423 – THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING
076200 – SHEET METAL FLASHING AND TRIM
077100 – ROOF SPECIALTIES
077200 – ROOF ACCESSORIES
079200 – JOINT SEALANTS
321413.16 – PAVING SLABS ON PEDESTALS

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Roofing:** Provide all roofing systems. Includes, but is not limited to all materials as specified, including TPO, copings, curbs, sleeves, primer, sheet metal flashing and trim, insulation, tapered insulation, slip sheets, cap sheets, cants, cover board, vapor barriers, walk pads, hoisting, reglets, counterflashings, and flashing around all roof penetrations as indicated in the Contract Documents.
 - a. **Top of Parapet Condition:** Reference detail 5/A362 as a typical. The roofers wall insulation is shown turning horizontal and running across the top of the parapet and held in place with a z girt. This condition is to be included at all locations indicated.
- 2) **Pedestal Pavers:**
 - a. Provide all pedestal pavers as indicated in project documents. Reference sheet A321 for details.
- 3) **Wood blocking:** Wood blocking shown on the contract documents shall be provided by the General Trades subcontractor. Wood blocking required beyond what is shown, but known to be necessary or typical, shall be included by this subcontractor. This subcontractor shall be involved in blocking coordination and accept installation of blocking.
- 4) **Caulking/Sealants:** Provide all caulking/sealants for the roof system including sealant to dissimilar materials from the roofing system.
- 5) **Lift and Fall Protection:** Provide all lift equipment and fall protection as may be required to complete this scope of work. A warning line system should be installed, maintained and removed at completion for all roof areas receiving work.

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- a. Warning line shall not be removed until work by all trades has been completed and removal is directed by Construction Manager.
- 6) **Meetings and Inspections:** Attend all pre-roofing meetings and post-roofing inspections as scheduled by Shiel Sexton along with subcontractor's material representative.
- 7) **Substrate:** This Subcontractor and his roofing material representative must inspect and accept that substrate prior to commencing roof work. This Subcontractor must notify Shiel Sexton verbally and in writing if surfaces are not acceptable and shall not proceed with the work until surfaces are installed as required.
- 8) **Protection:** Protect finished surfaces from damage caused by this subcontractor's work. Any damage resulting from this subcontractor's work shall be remedied at this subcontractor's expense.
- 9) **Insulation:** Provide all insulation associated with the roof system. Include all tapered insulation and saddles, crickets, tapered edge strips, or any other insulation where indicated to slope to drain or as necessary for proper drainage.
- 10) **Water Tight System:** Assume all responsibility for the integrity of and water-tightness of the complete roofing system which includes all details used at all sleeves, pipes, curbs, walls, depressions, box-outs and transitions of his waterproofing system.
- 11) **Accessories:** Provide continuous fibrous cant strips, coping caps, reglets, and all flashing and counter flashing with sealant. Furnish and install all sheet metal flashing, pre-coated coping/flashing, gutter, metal gravel stops, metal coping as indicated in the documents.
- 12) **Penetrations:** Cutting, flashing, and membrane patching for all roof penetrations, including vents, drains, HVAC curbs, and electrical curbs.
- 13) **Expansion Joints:** Provide all expansion joints indicated and/or required by the manufacturer in the roofing system.
- 14) **Drains:** Prevent roofing materials from entering and clogging drains.
- 15) **Final Inspection:** Arrange for roofing system manufacturer's final inspection upon completion.
- 22) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 23) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. None

Exclusions:

- 1) None.

BC 1.06 – METAL & STONE PANELS

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
044200 – EXTERIOR STONE CLADDING
072100 – THERMAL INSULATION (PARTIAL)
074216 – METAL PLATE WALL PANELS
076200 – SHEET METAL FLASHING AND TRIM (PARTIAL)

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Metal Panels:** Provide all metal plate wall panels indicated per the project bid documents. Includes components required for a complete metal panel system assembly including column cover, trim, copings, fascia, soffit, shrouds, mullions, sills, corner units, clips, flashings, furring, sealants, shims, thermally broken transfers, gaskets, fillers, closure strips/panels and similar items.
 - a. Includes insulation and substructure framing system directly behind metal panel system.
- 2) **Stone Panels:** Provide all stone panels indicated per the project bid documents. Includes components required for a complete stone panel system assembly including trim, clips, flashings, furring, sealants, shims, thermally broken transfers, gaskets, fillers, closure strips and similar items.
 - a. Includes insulation and substructure framing system directly behind stone panel system.
- 3) **Substrate Verification:** Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by wall panel manufacturer. Verify that the enclosure specifications have been met and that the substrate is undamaged before installing the panel system.
- 4) **Miscellaneous Metal Framing:** Include miscellaneous metal framing/ z clips and sub girts necessary for the installation of this work scope. These items shall be included if known to be needed whether shown in the contract documents or not.
- 5) **Metal Flashing & Ice and Water Shield:** All related metal flashing and ice and water shield shall be included as noted.
- 6) **Caulking and Sealants:** Furnish and install all caulking, sealants and joint filler integral to/within this Subcontractor's work that is required for a fully warranted system.

- 7) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 8) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. Additional Ice and Water Shield \$7,500

Exclusions:

- 1) None.

BC 1.07 – FLOORING AND TILE

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
033543 – POLISHED CONCRETE FINISHING
071800 – TRAFFIC COATINGS
071905 – CONCRETE SEALER
079200 – JOINT SEALANTS
090561 – MOISTURE VAPOR EMISSION CONTROL
093000 – TILING
096500 – RESILIENT FLOORING AND ACCESSORIES
096810 - CARPETING

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Flooring:** Provide all flooring as indicated per the bid documents to include but not limited to carpet, walk off carpet, resilient, traffic coatings, polished & sealed concrete.
 - a. Terrazzo flooring and terrazzo base is by others.
- 2) **Base:** Provide all base and accessories as indicated per the bid documents.
- 3) **Tile:** Provide all tile systems – horizontal, and vertical. Includes all tile, underlayment, waterproofing membrane, grout, mortar, thin set, membranes, crack suppression membranes, edge strips, stainless steel edging and inserts, adhesives, fastening devices, appurtenances, and accessories for a complete installation.
- 4) **Floor & Wall Prep:** Provide all floor and wall prep for installation of new flooring and wall tile. Includes cleaning floors, crack suppression, filling concrete joints, and minor floor leveling.
- 5) **Accessories:** Provide all accessories to transition between dissimilar flooring types, fastening devices, adhesives, appurtenances, and accessories necessary for a complete installation.
- 6) **Testing:** Provide all testing required by the manufacturer of each product and/or per the specifications.
- 7) **Substrate:** Inspect and accept all surfaces prior to commencement of work. After acceptance of surface, this subcontractor shall provide all required preparation including, but not limited to, patching, filling, leveling and sanding and any floor prep work that would be considered “typical” for this trade. Fill or

level cracks holes and depressions 1/8" wide or wider and protrusions more than 1/32", unless more stringent requirements are required by manufacturer's written instructions.

- 8) **Acclimatization:** Provide curing/acclimatization as required by the specifications and manufacturer's instructions prior to installation.
- 9) **Caulking:** Provide all caulking and/or sealant integral to the flooring system. Provide all caulking integral to and within the floor systems required for a warranted system. All other caulking to dissimilar materials is provided by the caulking subcontractor.
- 10) **Temporary Protection:** Provide temporary protection after installation of finished work to protect against damage from other trades. Acceptable protection methods such as lauan plywood, and Skudo board are acceptable.
- 11) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 12) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. None

Exclusions:

- 1) None

BC 1.08 – PLUMBING

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
078413 – PENETRATION FIRESTOPPING
083113 – ACCESS DOORS AND FRAMES
102819 – TUB AND SHOWER ENCLOSURES
220501 – BASIC PLUMBING REQUIREMENTS
220502 – AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES
220502A – ELECTRONIC FILES – HEAPY RELEASE FORM TO CONTRACTORS
220504 – BASIC PLUMBING MATERIALS AND METHODS
220507 – PIPING MATERIALS AND METHODS
220513 – ELECTRICAL REQUIREMENTS FOR PLUMBING EQUIPMENT
220519 – METERS AND GAUGES FOR PLUMBING PIPING
220523 – GENERAL-DUTY VALVES FOR PLUMBING PIPING
220529 – HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
220530 – BASES AND SUPPORTS FOR PLUMBING EQUIPMENT
220549 – VIBRATION CONTROL FOR PLUMBING
220553 – IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT
220719 – PLUMBING PIPING INSULATION
220800 – PLUMBING COMMISSIONING REQUIREMENTS
221116 – DOMESTIC WATER PIPING
221119 – DOMESTIC WATER PIPING SPECIALTIES
221123A – WATER PRESSURE BOOSTER PUMPING SYSTEM – VARIABLE SPEED
221316 – INTERIOR DRAINAGE AND VENT SYSTEMS
221319 – DRAINAGE SYSTEMS SPECIALTIES
223116 – COMMERCIAL DOMESTIC WATER SOFTENERS
223228B – PURE WATER SYSTEM – PRE-PACKAGED
223300D – DOMESTIC WATER HEATERS SEMI-INSTANTANEOUS
224200 – PLUMBING FIXTURES
226219 – MEDICAL LABORATORY GAS AND VACUUM SYSTEMS

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Plumbing systems:** Provide all plumbing systems per plans and specifications including, but not limited to domestic water, condensate drainage, sanitary, and storm drainage systems. Includes all equipment, piping, insulation, valving, gauges, sleeves, labeling, supports, hangers, testing, inspections, permitting, appurtenances, and accessories for a complete and operable system.

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- a. Includes complete tub and shower enclosure spec section 102819.
- 2) **Connections:** Utility connections shall be as follows:
 - a. **Domestic water:** Turn water up into mechanical room as shown.
 - b. **Storm/roof drains:** Site utilities subcontractor will install storm drain lines to 5' outside the building footprint. This subcontractor shall include all work from this point into the building.
 - c. **Sanitary:** Site utilities subcontractor will install sanitary lines to 5' outside the building footprint. This subcontractor shall include all work from this point into the building.
 - d. **Lab Equipment:** Provide final connections to all lab equipment.
- 3) **Final Connections:** Provide final connections to both storm and sanitary lines.
- 4) **Fixtures:** Provide all plumbing fixtures. This includes all sinks, faucets, water fountains, lavatories, water closets, urinals, wall hydrants, eyewashes, etc. Includes all appurtenances and accessories for a complete installation.
- 5) **Equipment:** Provide all plumbing equipment for complete and operational systems. Includes all equipment listed on sheets P601, and as specified and/or indicated in contract documents.
- 6) **Layout and Coordination:** Include layout for rough openings in floor and wall surfaces provided by others.
- 7) **Roof Drains:** Provide all work related to the roof drains and overflow drains, including, but not limited to, splash blocks, roof jacks and bearing pans as required for a complete roof drain system.
- 8) **Plumbing Specialties:** Provide and install all required plumbing specialties. This includes, but is not limited to, all cleanouts, carriers, trap seals, backflow preventers (and certification), water hammer arrestors, water filters, mixing valves per plans and specifications.
- 9) **Insulation:** Furnish and install all insulation where required or as specified.
- 10) **Coring and Drilling:** All coring and drilling in floors and walls after installation shall be included in base bid.
- 11) **Access Panels:** Furnish, and provide layout for access panels as required for proper access through drywall ceilings and partitions for valves and other devices to the drywall subcontractor for their installation.
- 12) **Fire Stopping:** Provide all fire stopping for this scope of work by a certified contractor.
- 13) **Supports:** All structural and miscellaneous steel to support plumbing equipment and/or piping, except as shown on the structural drawings, is a part of this Subcontract Agreement. Provide all necessary wall cuts in a neat manner to allow patching by others. Provide layout information for masonry and concrete penetrations prior to installation of these structures for coordination purposes.
- 14) **Accessories:** Provide and install all necessary hangers, supports, bracing, anchors, curbs at penetrations, vibration isolation bases and springs, etc., per plans and specifications and in accordance with all seismic requirements, as well as engineer of record and jurisdiction having authority. Include all clips, hangers,

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supports, sleeves and other attachments prior to application of fireproofing materials. This Subcontractor shall bear the cost for repairing fireproofing damaged by its work force.

- 15) **Final Clean:** All equipment shall be thoroughly cleaned and made ready for final inspection. All labels shall be removed by this subcontractor and glue residue removed.
- 16) **Electrical:** Coordinate connection of equipment with electrical subcontractor.
- 17) **Floor penetrations protection:** Provide cover protection for all your floor penetrations and trenches, etc., greater than 2" in diameter as approved by OSHA and as directed by Shiel Sexton personnel.
- 18) **Labeling:** Provide all identification, stenciling, color coding, labeling, valve tags, decals and/or nameplates as required for this section.
- 19) **Inspections & Coordination:** Include calling for and coordinating all Building Department inspections and third party inspections with all affected related trades and notify all affected trades and Shiel Sexton of the results of all inspections in order to maintain the current schedule.
- 20) **Excavation:** Provide excavation, backfill and compaction pertaining to the plumbing trades. All cost incurred to meet Shiel Sexton safety requirements for excavation are by this subcontractor. Note requirements for excavation, backfill and spoils in the general requirements.
- 21) **3-D Coordination:** Coordinate with mechanical, fire protection, and electrical subcontractors to provide a fully coordinated 3-D layout of all piping, especially in areas with tight clearances. Shiel Sexton will lead the 3-D coordination process, and this contractor is required to provide a 3-D model of their work scope. Subcontractor shall be responsible to field verify all dimensions as required for coordination, proper installation and completion of their scope of work.
 - a. Provide coordination of plumbing lines installed in electrical and equipment rooms and especially above electrical panels. Any drip pans determined to be required under piping will be at the cost of this subcontractor.
- 22) **Protection:** Provide and maintain all necessary protection to underground plumbing during and after installation. Coordinate plumbing stub-ups with Shiel Sexton Superintendent as they relate to vapor barrier and concrete finishing. Block outs may be required and will be the responsibility of this subcontractor to provide, install and remove. Provide and maintain temporary protection of sleeves and inserts, pipe rough-ins, valves, equipment, fixtures, etc. to prevent damage and contamination.
- 23) **Testing and Balancing:** Provide all testing, adjusting and balancing work indicated by the Contract Documents for the systems installed by this subcontractor. The work consists of setting speed and volume (flow) adjusting facilities provided for systems, recording data, conducting tests, preparing and submitting reports and recommending modifications to work as required by the Contract Documents. Work scope includes, but is not limited to, testing and adjusting of Piping system and related equipment.
- 24) **Start-up:** Provide all labor and material to pre-check each device/component prior to the system/equipment start-up. This process is intended to positively demonstrate that each device,

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component or point will function properly when the start-up phase begins. Documentation recording these pre-start-up activities is the responsibility of this subcontractor.

- 25) **Scissor Lifts:** Understand the use of scissor lifts will be at the discretion of Shiel Sexton supervision. Damage to wall and ceiling framing, floor systems and underground utilities will be charged to all subcontractors using lifts in the area. Once certain finishes are complete in the area Shiel Sexton may choose to no longer allow Scissor Lifts.
- 26) **Electrical Requirements:** Mechanical and plumbing disciplines to provide a responsibility matrix or equipment list to the electrical contractor indicating all electrical requirements and the associated peripheral equipment requiring electrical terminations.
- 27) **Accessories:** Provide all thermometers, pressure gauges, test/balance ports, accessories, and appurtenances.
- 28) **Concrete:** Formed concrete work will be provided by concrete subcontractor as shown on the plans. All leveling and other required work for plumbing equipment will be by this Subcontractor. This Subcontractor shall provide and verify sizes and layouts of pads and shall furnish all embedded items including inertia block frames.
- 29) **Rigging and Hoisting:** Plans for rigging and hoisting of equipment and materials must be reviewed by Shiel Sexton. All craning, hoisting and equipment must be coordinated prior to execution. Subcontractor shall carry and maintain required rigging insurances, equipment inspections and certifications.
- 30) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 31) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. Temporary Services \$15,000

Exclusions:

- 1) None.

BC 1.09 – HVAC

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
078413 – PENETRATION FIRESTOPPING (PARTIAL)
083113 – ACCESS DOORS AND FRAMES (PARTIAL)
230501 – BASIC HVAC REQUIREMENTS
230502 – AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES
230502A – ELECTRONIC FILES – HEAPY RELEASE FORM TO CONTRACTORS
230504 – BASIC HVAC MATERIALS AND METHODS
230507 – PIPING MATERIALS AND METHODS
230513 – ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT
230514 – ADJUSTABLE FREQUENCY MOTOR CONTROLLER
230519 – GAUGES AND MAKE UP METERS FOR HVAC PIPING
230521 – FLOW AND ENERGY METERS
230523 – GENERAL DUTY VALVES FOR HVAC PIPING
230529 – HANGERS AND SUPPORTS FOR HVAC PIPING
230530 – BASES AND SUPPORTS FOR HVAC EQUIPMENT
230531 – HVAC EQUIPMENT DRIVES
230549 – VIBRATION CONTROL FOR HVAC
230550 – FLEXIBLE HVAC PIPE CONNECTIONS
230553 – IDENTIFICATION OF HVAC PIPING AND EQUIPMENT
230593 – TESTING, ADJUSTING AND BALANCING FOR HVAC
230713 – DUCT INSULATION
230716 – HVAC EQUIPMENT INSULATION
230719 – HVAC PIPE INSULATION
230800 – COMMISSIONING OF HVAC SYSTEMS
230900 – HVAC INSTRUMENTATION AND CONTROLS
232113 – HYDRONIC PIPING
232114 – EXPANSION TANKS
232117 – GLYCOL SOLUTION SYSTEMS
232123 – HYDRONIC PUMPS
232213 – STEAM AND CONDENSATE PIPING SYSTEM
232223 – STEAM CONDENSATE PUMPING UNITS
232500 – WATER TREATMENT SYSTEMS
233113 – HVAC DUCTWORK
233119 – AIR PLENUM CASINGS
233300 – AIR DUCT ACCESSORIES
233500 – SPECIAL EXHAUST SYSTEMS

233600 – AIR TERMINAL
233624 – AIRFLOW CONTROL VALVES
233700 – AIR OUTLETS AND INLETS
234100 – AIR FILTERS
234133 – FAN FILTER CEILING MODULES
235700 – HEAT EXCHANGERS
237323 – CUSTOM AIR HANDLING UNITS
238216 – DUCT HEATING COILS
238219 – FAN-COIL UNITS
238239 – UNIT HEATERS – CABINET/PROPELLER
238413 – HUMIDIFIERS – DIRECT BUILDING STEAM TYPE
238415 – HUMIDIFIERS – STEAM DISPERSION DEVICES & ACCESSORIES

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **HVAC systems:** Provide complete HVAC systems for the entire building as required by the contract documents including but not limited to air handling units, energy recovery, fan coils, separators, tanks, exchangers, fans, steam stations, hydronic pumps, radiant systems, humidifiers, flow meters, air control units per HVAC schedules on M601 thru M604.
 - a. **Mechanical Piping:** Provide all mechanical piping with all fittings, valves, etc. including cleaning and flushing of systems.
 - b. **Condensate Piping:** This subcontractor shall provide condensate piping from the HVAC equipment to the condensate riser location.
 - c. **HVAC devices:** Provide all dampers, diffusers, registers and grilles as indicated or required to include fire dampers, smoke dampers, fire/smoke dampers, automatic and manual volume dampers and control dampers.
 - d. **Ductwork:** Provide all duct work, including a complete supply, return and exhaust air distribution system, flashings, counter flashings, reglets, etc. Provide duct work type (rigid, flexible, etc.) as noted on the contract documents.
 - e. **Outside air:** Provide all outside air systems required by the contract documents.
 - f. **Building exhaust:** Provide all building exhaust systems required by the contract documents.
 - g. **Insulation:** Provide all insulation for piping, equipment and ductwork, as required by the contract documents.
 - h. **Lab Equipment:** Provide final connections to all lab equipment.
- 2) **Temperature controls/automation:** Provide building/temperature controls system as indicated and specified. Owner to furnish components that will be installed by this contract. Programming will be by Owners vendor.
- 3) **Temporary Conditioning:** Provide, install, maintain, and later remove all equipment necessary for temporary building heating from October 1, 2025 through May 31, 2026. Heating to consist of steam heaters and barrel fans placed on all floors from 1st floor to penthouse. Tie on to the permanent steam risers and provide extension cords, hoses, piping, fittings, thermostats, and humidistats to support the

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equipment. Coordinate with Indiana University Utilities and CEG for steam requirements. Provide temporary condensate pumps as required.

- a. Provide, install, maintain, and later remove all equipment necessary for temporary dehumidification from April 1, 2026 through project completion. Include necessary dehumidifiers with (25) gallons per day extraction capacity to achieve relative humidity between 25 and 55 percent in order to install finishes. Place on all floors from 1st floor to penthouse including extension cords and hoses to support the equipment. If cooling and dehumidification can be achieved with permanent units that is acceptable as well. All warranties should commence upon substantial completion.
- 4) **Coring and Drilling:** All coring and drilling in floors and walls shall be included in base bid.
 - 5) **Access Panels:** Furnish, and provide layout for access panels as required for proper access through drywall ceilings and partitions for valves and other devices to the drywall subcontractor for their installation.
 - 6) **Fire Stopping:** Provide all fire stopping for this scope of work by a certified contractor.
 - 7) **Accessories:** Provide and install all necessary hangers, supports, bracing, anchors, curbs at penetrations, vibration isolation bases and springs, etc., per plans and specifications and in accordance with all seismic requirements, as well as engineer of record and jurisdiction having authority. Include all clips, hangers, supports, sleeves and other attachments prior to application of fireproofing materials. This Subcontractor shall bear the cost for repairing fireproofing damaged by its work force.
 - 8) **Labeling:** Provide all identification, stenciling, color coding, labeling, valve tags, decals and/or nameplates as required for this section.
 - 9) **Inspections & Coordination:** Include calling for and coordinating all Building Department inspections and third party inspections with all affected related trades and notify all affected trades and Shiel Sexton of the results of all inspections in order to maintain the current schedule.
 - 10) **Scissor Lifts:** Understand the use of scissor lifts will be at the discretion of Shiel Sexton supervision. Damage to wall and ceiling framing, floor systems and underground utilities will be charged to all subcontractors using lifts in the area. Once certain finishes are complete in the area Shiel Sexton may choose to no longer allow Scissor Lifts.
 - 11) **Electrical Requirements:** Mechanical and plumbing disciplines to provide a responsibility matrix or equipment list to the electrical contractor indicating all electrical requirements and the associated peripheral equipment requiring electrical terminations.
 - 12) **Curbs and Bases:** Provide and install all necessary curbs at penetrations, vibration isolation bases and springs, etc. per plans and specifications and in accordance with all seismic requirements, as well as engineer of record and jurisdiction having authority.
 - 13) **Motors and Starters:** Provide all motor starters included as an integral part of the mechanical equipment and HVAC systems.

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- 14) **Concrete:** Formed concrete work will be provided by concrete subcontractor as shown on the plans. All leveling and other required work for mechanical equipment will be by this Subcontractor. This Subcontractor shall provide and verify sizes and layouts of pads and shall furnish all embedded items including inertia block frames.
- 15) **Final Clean:** All equipment shall be thoroughly cleaned and made ready for final inspection.
- 16) **Rigging and Hoisting:** Plans for rigging and hoisting of equipment and materials must be reviewed by Shiel Sexton. All craning, hoisting and equipment must be coordinated prior to execution. Subcontractor shall carry and maintain required rigging insurances, equipment inspections and certifications.
- 17) **Sealing:** This Subcontractor shall include all duct sealing and cleaning requirements as indicated in the specifications. This Subcontractor must also seal (shrink wrap) all duct ends immediately after fabrication. Duct ends shall remain sealed during storage and shipping activities. All duct ends shall be sealed daily during construction.
- a. Work should be performed in accordance with LEED IAQ guidelines.
- 18) **Cover Protection:** Provide cover protection for all floor penetrations and trenches, etc. greater than 2" in diameter as approved by OSHA and as directed by Shiel Sexton personnel.
- 19) **3-D Coordination:** Coordinate with plumbing, fire protection, and electrical subcontractors to provide a fully coordinated 3-D layout of all piping and ductwork, especially in areas with tight clearances. Shiel Sexton will lead the 3-D coordination process, and this contractor is required to provide a 3-D model of their work scope. Subcontractor shall be responsible to field verify all dimensions as required for coordination, proper installation and completion of their scope of work.
- 20) **Protection:** Provide and maintain all protection of property, personnel and the work of other subcontractors in carrying out this scope of work. This subcontractor shall take all reasonable precautions to protect this work from damage by other subcontractors. Damage caused by this subcontractor or this work forces shall be repaired and/or replaced at this subcontractor's expense.
- 21) **Testing and Balancing:** Provide all testing, adjusting and balancing required for work. Provide a preliminary and final balance of applicable mechanical systems per plans and specifications. System shall be balanced to the satisfaction of the Engineer of Record.
- 22) **Start-up/Commissioning:** Provide all labor and material to inspect each device/component prior to the system/equipment start-up. This start-up process is intended to positively demonstrate that each device, component or point will function properly when the start-up phase begins. Documentation recording these activities is the responsibility of this trade Subcontractor. Provide system start-up and functional performance tests as described in the plans and specifications.
- a. **Start-up Plan:** Provide Shiel Sexton with a written plan for start-up in advance. This plan shall include a list of each piece of equipment, indicating affected areas of operation; scheduled time/duration of tests and personnel required. Startup should be closely coordinated with schedule to allow for adequate TaB and commissioning. Equipment usage during construction

should be expected to include filter changes by this contract. At turnover a complete filter change out is required.

- b. **Start-up Personnel:** Provide an employee of your company as a full-time, on-site technician throughout the duration of the start-up process. This includes full participation of second tier contractors under this contract. Provide a full-time, dedicated technician for the duration of the start-up phase of this project. Close coordination with the Controls and the fire alarm subcontractors will be required.
- 23) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 24) **Allowances:** Bidder should include the following allowances in bid sum.
- a. Temporary Services \$10,000
 - b. Temperature Controls Coordination \$15,000

Exclusions:

- 1) None.

BC 1.10 – FIRE PROTECTION

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
078413 – PENETRATION FIRESTOPPING (PARTIAL)
083113 – ACCESS DOORS AND FRAMES (PARTIAL)
210501 – BASIC FIRE SUPPRESSION REQUIREMENTS
210502 – AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES
210502A – ELECTRONIC FILES – HEAVY RELEASE FORM TO CONTRACTORS
210504 – BASIC FIRE SUPPRESSION MATERIALS AND METHODS
210505 – FIRESTOPPING
210507 – PIPING MATERIALS AND METHODS FOR FIRE SUPPRESSION
210513 – ELECTRICAL REQUIREMENTS FOR FIRE SUPPRESSION PIPING
210519 – GAUGES FOR FIRE SUPPRESSION PIPING
210529 – HANGERS AND SUPPORTS FOR FIRE SUPPRESSION PIPING
210553 – IDENTIFICATION OF FIRE SUPPRESSION PIPING AND EQUIPMENT
211312 – FIRE SUPPRESSION PIPING
211313A – FIRE SUPPRESSION SPRINKLER SYSTEM
211314 – FIRE SUPPRESSION STANDPIPE SYSTEM
211315 – FIRE SUPPRESSION EQUIPMENT

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Fire Protection System:** Provide a fully functional and complete fire protection system for the entire building, including wet systems, dry systems, FDC, standpipes, etc.
- 2) **Drawings and Calculations:** Provide a complete set of fire sprinkler system drawings and calculations by a licensed engineer to be approved by the authority having jurisdiction. This includes, but is not limited to, all risers, water mains, piping, sprinkler heads, escutcheons, pipe sleeves, fire department connections, backflow preventers, testing and permits as required. It is this subcontractor's responsibility to obtain approvals from all parties for this design.
- 3) **Work Required:** Provide all work for this scope including, but not limited to, cutting, core drilling, sleeves, blocking, backing and patching of penetrations specific to this subcontractor's work.
- 4) **Fire Stopping:** Provide all fire stopping for this scope of work by a certified contractor.

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- 5) **Switches:** Provide and install all supervisory, flow and tamper switches as necessary by code and authority having jurisdiction.
- 6) **Valve Tags:** Provide identification signs at all valves.
- 7) **Inspections:** Call for and coordinate with authority having jurisdiction all inspections including third party inspections. Notify all affected trades as well as Shiel Sexton of the inspection results in order to maintain the current schedule.
- 8) **Seismic Supports:** Provide all seismic supports as required by codes whether or not shown on the Contract Documents.
- 9) **Labeling:** Provide all labeling as required by the specifications.
- 10) **Plan Review:** Review all fire protection plans and specifications in contrast to the architectural and life safety plans/specifications as well as the governing code requirements for discrepancies. In the event that none are referenced in your proposal, Shiel Sexton will interpret your response to be verification that this subcontractor will not request any change orders for the duration of this project based on missing/incorrect information regarding coordination or code compliance.
- 11) **Permits:** All expenses related to plan review and permitting of fire sprinkler system shall be included in base bid.
- 12) **Access Panels:** Provide access panels, and layout drawings showing physical location in walls or hard ceilings for this scope of work. Access doors shall allow proper access through drywall ceilings, partitions, etc., to valves, devices, etc., as it applies to your work. Access doors must provide acceptable access as approved by Shiel Sexton. Access doors will be installed by General Trades subcontractor.
- 13) **Temporary Protection:** Provide temporary protection of pipe rough ins, valves, heads, etc. to prevent damage or premature discharge of active systems. Provide touch-up and repair of any primed and finished surfaces damaged by this installation.
- 14) **Scissor Lifts:** Understand the use of scissor lifts will be at the discretion of Shiel Sexton supervision. Damage to wall and ceiling framing, floor systems and underground utilities will be charged to all subcontractors using lifts in the area. Once certain finishes are complete in the area Shiel Sexton may choose to no longer allow Scissor Lifts.
- 15) **3-D Coordination with other Trades:** Review and coordinate with electrical, mechanical and plumbing subcontractors to provide a complete, compatible and operational system. Shiel Sexton will lead the 3-D coordination process, and this contractor is required to provide a 3-D model of their work scope. It is our intention to begin 3-D coordination prior to completion of construction documents.
- 16) **Bid Requirements:** Include all requirements in the instructions to bidders.

17) **Testing:** Test each zone after installation is completed. Cap as needed for testing to be performed. Provide testing documentation to the Shiel Sexton team.

18) **Allowances:** Bidder should include the following allowances in bid sum.

- a. None

Exclusions:

- 1) None.

BC 1.11 – ELECTRICAL

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
078413 – PENETRATION FIRESTOPPING (PARTIAL)
078446 – FIRE-RESISTIVE JOINT SYSTEMS (PARTIAL)
083113 – ACCESS DOORS AND FRAMES (PARTIAL)
260501 – BASIC ELECTRICAL REQUIREMENTS
260502 – AGREEMENT AND WAIVER FOR USE OF ELECTRONIC FILES
260502A – ELECTRONIC FILES – HEAPY RELEASE FORM TO CONTRACTORS
260504 – BASIC ELECTRICAL MATERIALS AND METHODS
260505 – FIRESTOPPING
260509 – EXCAVATION, BACKFILL AND SURFACE RESTORATION
260513 – MEDIUM VOLTAGE CABLES – SHIELDED JACKETED POWER CABLE
260519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS - COPPER
260526 – GROUNDING & BONDING FOR ELECTRICAL SYSTEMS
260533 – RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
260553 – IDENTIFICATION FOR ELECTRICAL SYSTEMS
260565 – SPECIFIC WIRING APPLICATIONS
260573 – OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY
260800 – ELECTRICAL COMMISSIONING REQUIREMENTS
260923 – LIGHTING CONTROLS
261319 – MEDIUM-VOLTAGE VACUUM INTERRUPTER SWITCHGEAR
262213 – DISTRIBUTUION TRANSFORMERS – STANDARD TYPE
262416 – PANELBOARDS
262726 – WIRING DEVICES AND COVERPLATES
262739 – ELEVATOR POWER MODULE AND WIRING
262816 – DISCONNECT SWITCHES
262913 – MOTOR CONTROLLERS
263623 – AUTOMATIC TRANSFER SWITCHES – ASCO SERIES 7000
264100 – FACILITY LIGHTNING PROTECTION SYSTEM – FOR BUILDING ADDITION
264313 – SURGE PROTECTION DEVICES FOR LOW VOLTAGE ELECTRICAL POWER CIRCUITS
265100 – INTERIOR LIGHTING
265613 – EMERGENCY AND EXIT LIGHTING
265619 – EXTERIOR LIGHTING
270000 - COMMUNICATIONS
280513 – CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY
283100 – FIRE DETECTION AND ALARM (ADDRESSABLE)

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Complete Electrical System:** Provide a complete and permanent fully functional electrical distribution system as required. Provide all substations, switchboards, distribution boards, panel boards, transformers, branch circuit breakers, fusible switches, and safety switches/ disconnects, grounding, lightning protection, GFI breakers, shunt trip breakers, ceiling panels, devices, trim, etc., normal power branch and feeder wiring, emergency power branch and feeder wiring and all connections and terminations. Provide all seismic supports, brackets, backing, anchors and all associated means and methods for an approved installation.
 - a. **Demolition/Make Safe:** Provide make safe activities for existing electrical components and lighting called to be demolished or salvaged.
 - b. **Vista Switch:** Provide work outlined for vista switch installation to include, demo, ductbank and installation of owner provided vista switch.
 - c. **Lab Equipment:** Provide final connections to all lab equipment.
- 2) **Generator Work:** New generator is not included as part of this bid package. However, preparations for the new generator will be part of this contract as indicated. Work is to include setting of temporary generator to maintain service to existing building. Relocating existing generator to location shown and reconnecting to existing gear. Work should include any pad, conduits, feeders, switches etc. necessary for the relocated generator to be fully functional.
- 3) **Complete Fire Alarm System:** Provide a complete and fully functional fire alarm system as required. Include all necessary connections to the fire protection systems, and the HVAC systems.
- 4) **Building Interior/external lighting:** Provide a complete and permanent fully functional lighting system as required. Provide all necessary lighting controls, both programmable and manual, dimming systems, and occupancy sensors meeting the intent of the design. In addition, provide all required and compliant exit lighting fixtures, normal power branch wiring and emergency power branch wiring.
- 5) **Wiring & Raceway:** Provide all raceways for wiring as indicated in specifications and drawings.
- 6) **Seismic Requirements:** Provide all seismic supports, brackets, backing, fasteners, anchors, fixture wires and all associated means and methods for an approved installation.
- 7) **Connections:** Provide and complete all mechanical, plumbing and HVAC power connections for all motors, VFD's, starters, safety switches, pad-mount equipment, VAV boxes, dampers, controllers, DDC monitors, line voltage thermostats, pumps, BMS system, fan coil units, exhaust fans, radiant heat system, fire dampers, motorized dampers and all other associated equipment. Provide disconnects for all equipment noted on the contract documents.
- 8) **Grounding:** Provide all building grounding work as specified and detailed.

Indiana University Indianapolis
Science Laboratory Building
Work Scopes

- 9) **Access Doors:** Furnish all access doors or special doors required for access to work installed in this bid category. Doors will be installed by the General Trades contractor.
- 10) **Firestopping:** Provide all firestopping and fire sealants at penetrations for this scope where required by a certified contractor.
- 11) **Final Clean:** All equipment and fixtures shall be thoroughly cleaned and made ready for final inspection. Remove all labels and glue residue.
- 12) **All power included:** All power line voltage is inclusive, whether or not shown or identified on the electrical drawings. It is the responsibility of this contractor to review and coordinate all components and Contract Drawings for the project and meeting the intent of all designs.
- 13) **3-D Coordination:** Coordinate with plumbing, mechanical, and fire protection subcontractors to provide a fully coordinated 3-D layout of all piping, especially in areas with tight clearances. Shiel Sexton will lead the 3-D coordination process, and this contractor is required to provide a 3-D model of their work scope. Subcontractor shall be responsible to field verify all dimensions as required for coordination, proper installation and completion of their scope of work.
- 14) **Testing:** Provide all labor and material to test each device, system or component prior to the system/equipment start-up. Such checkout is intended to positively demonstrate that each device, system or component functions properly when the start-up phase begins. Documentation recording these testing activities is the responsibility of this trade contractor.
- 15) **Owner Training:** Be responsible for the instruction and training of owner designated representatives/personnel for formal equipment and systems start-ups, all training and coordinate a turnover program with Shiel Sexton and the Owner. Provide all training manuals, videos or DVD of training session.
- 16) **Temporary Protection:** Provide all protection of electrical equipment and systems until acceptance by the Owner.
- 17) **Labels:** Provide all labels, tags, nameplates, etc. for all electrically connected equipment, etc. Include circuit number labeling by sticker on inside of faceplate.
- 18) **Accessories:** Provide and install all necessary hangers, supports, bracing, anchors, etc., per plans and specifications and in accordance with all seismic requirements, as well as engineer of record and jurisdiction having authority. Include all clips, hangers, supports, sleeves and other attachments prior to application of fireproofing materials. This Subcontractor shall bear the cost for repairing fireproofing damaged by its work force.
- 19) **Underground Installations:** All underground installations required for the electrical scope of work will be installed complete by this subcontractor. This will include all excavation, bedding, concrete embedment, backfilling, compaction and disposal of excess soils per the requirements of the soils management plan which requires all spoils be exported to the landfill and documented.

- 20) **Scissor Lifts:** Understand the use of scissor lifts will be at the discretion of Shiel Sexton supervision. Damage to wall and ceiling framing, floor systems and underground utilities will be charged to all subcontractors using lifts in the area. Once certain finishes are complete in the area Shiel Sexton may choose to no longer allow Scissor Lifts.
- 21) **Construction Temporary Electrical and Lighting:** This subcontractor to furnish, install, secure, maintain and remove all transformers, panels, disconnects, distribution boxes, lighting fixtures, lighting strings, cabling, conduit and wire and other appurtenances necessary for a complete and reliable temporary power and lighting system which fulfills the requirements as follows:
- a. **Temporary Power:** All building temporary power service equipment as required until permanent service equipment is installed, tested, approved and energized. De-energize and remove segments of the temporary power distribution system and cutover all associated electrical distribution and circuits to the permanent service equipment as required. All temporary power installations and distribution systems including branch wiring will meet and/or exceed all OSHA regulations and requirements.
 - i. **Location:** Power will be accessed from the existing SELB building directly to the north.
 - ii. **Usage:** Installation will be covered by this contract and usage will be paid by the Construction Manager.
 - iii. **Building Power:** Provide 4 locations per floor for temp power posts for general trade use.
 - iv. **Trailer Power:** Provide electrical power to Construction Managers trailer and break trailer for duration of the project to include removal at completion.
 - b. **Temporary Control:** Provide ability to turn on/off all temporary lighting during the course of construction without the need to access breakers/panels.
 - c. **Temporary Lighting:** Provide the temporary minimum lighting levels as outlined in the General Requirements above and in conjunction with the OSHA regulations. Every room shall receive temporary lighting. The minimum acceptable lighting levels will meet OSHA regulations in all areas throughout the construction project. This subcontractor is ultimately responsible for all temporary power and lighting installations and in maintaining said system to all governing authorities having jurisdiction for inspections, Shiel Sexton, Owner's representative and the Owner. The subcontractor, at all times throughout the project duration, is fully compliant with OSHA's regulations and requirements.
 - d. **Task lighting:** Each subcontractor shall provide their own task lighting.
 - e. **Removal of temporary systems:** Include removal of all temporary power and lighting systems.
 - f. **Temporary Power Relocation:** Relocate, modify or reinstall all temporary power installations as required to facilitate the permanent constructability process for the duration of the project. Provide, maintain and inspect the temporary power installation systems. Provide all materials necessary in meeting the intent for a fully working and compliant temporary power system.

22) **Complete Telecommunication System:**

- a. Provide telecommunications package as indicated per the project telecom bid documents. Provide all conduit, wiring, seismic supports, brackets, backing, anchors and all associated means and methods for an approved installation. Refer to responsibility matrix on T000 for equipment requirements.
- b. Refer to T000 for responsibility matrix.

23) **Complete Electronic Safety and Security:**

- a. Provide a complete and fully functional safety and security package per the project bid documents. Includes but not limited to rough-in, conduits and wiring for access control as shown on documents, power to door hardware. Refer to responsibility matrix on T000 for equipment requirements.
- b. Refer to T000 for responsibility matrix.

25) **Bid Requirements:** Include all requirements in the instructions to bidders.

26) **Allowances:** Bidder should include the following allowances in bid sum.

- a. Loading Dock Coordination \$20,000
- b. Temp Power Adjustments \$10,000

Exclusions:

- 1) None

BC 1.12 – ELEVATOR

Specification Sections: This category's subcontractor is the owner of the following specification sections and should include all items outlined therein.

DIVISION 00-01 – IU CPF PROCUREMENT DIVISIONS
DIVISION 00 – PROCUREMENT & CONTRACTING REQUIREMENTS
DIVISION 01 – GENERAL REQUIREMENTS
142400 – HYDRAULIC ELEVATOR

This category's subcontractor is a shared owner of all project specifications as it relates to this work scope.

Inclusions and Clarifications:

- 1) **Elevators:**
 - a. Provide elevators as indicated in the project bid documents to include but not limited to cab, enclosure, doors, jambs, fixtures, controls, control devices, pumps, piping, fire key box, silencers, inserts, guides, and necessary components for a fully functional unit.
 - b. Includes required time to assist other trades in shaft work including operating the car.
 - c. Includes return visits as needed to correct punch list and pre-inspection work.
 - d. This contractor to include final adjustments of elevator to insure smooth travel.
 - e. This contract responsible for assuring elevator meets all local and state codes and regulations.
 - f. This contract to include all necessary relays, transformers, low voltage, etc., necessary to provide fully functional elevators and equipment per the project documents, in addition to what is shown on electrical plans.
 - g. Include accommodations for 6 months of construction use.
- 2) **Bid Requirements:** Include all requirements in the instructions to bidders.
- 3) **Allowances:** Bidder should include the following allowances in bid sum.
 - a. None

Exclusions:

- 1) None.

BC 1.13 – COMBINATION BID

Inclusions and Clarifications:

- 1) **Combination Bid:** Combination bid is available for bid categories 1.08 – Plumbing and 1.09 – HVAC. A separate bid form is included for combination bids.

Exclusions:

- 2) None.

BID FORM

CONTRACT NO. 1.01 – EARTHWORK & UTILITIES

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
SWPP		\$	\$	\$
Site Clearing		\$	\$	\$
Storm System		\$	\$	\$
Sanitary		\$	\$	\$
Domestic Water		\$	\$	\$
Earthwork		\$	\$	\$
Site Logistics		\$	\$	\$

Payment & Perf. Bond		\$	\$	\$
ALLOWANCE Maintenance – Stone		\$	\$	\$20,000
ALLOWANCE Maintenance – Fence		\$	\$	\$20,000
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
 2. Addendum No. 2, dated _____.
 3. Addendum No. 3, dated _____.
 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
1. Material/Equipment: _____
 a. _____ Weeks
 2. Material/Equipment: _____
 a. _____ Weeks
 3. Material/Equipment: _____
 a. _____ Weeks
 4. Material/Equipment: _____
 a. _____ Weeks
 5. Material/Equipment: _____
 a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)
2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.02 – RAMMED AGGREGATE PIERS

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Layout & Locates				
Spoils Removal		\$	\$	\$
Testing & Monitoring		\$	\$	\$
Pier Install		\$	\$	\$
Pier Install - Equipment		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.03 – CONCRETE, MASONRY AND STEEL

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Layout & Locates		\$	\$	\$
Concrete - Foundations		\$	\$	\$
Concrete - Building		\$	\$	\$
Waterproofing		\$	\$	\$
Masonry		\$	\$	\$
Steel		\$	\$	\$
Crane		\$	\$	\$

Payment & Perf. Bond		\$	\$	\$
ALLOWANCE – Loading Dock Coordination		\$	\$	\$20,000
ALLOWANCE – Handrail Adjustments		\$	\$	\$10,000
ALLOWANCE – Misc. Steel		\$	\$	\$10,000
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
 2. Addendum No. 2, dated _____.
 3. Addendum No. 3, dated _____.
 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
1. Material/Equipment: _____
a. _____ Weeks
 2. Material/Equipment: _____
a. _____ Weeks
 3. Material/Equipment: _____
a. _____ Weeks
 4. Material/Equipment: _____
a. _____ Weeks
 5. Material/Equipment: _____
a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)
2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.04 – GLASS AND GLAZING

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Curtainwall		\$	\$	\$
Doors and Hardware		\$	\$	\$
Interior Glazing		\$	\$	\$
Mullion Extensions		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.05 – ROOFING

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
TPO		\$	\$	\$
Copings and Flashings		\$	\$	\$
Insulation		\$	\$	\$
Pedestal Pavers		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.06 – METAL AND STONE PANELS

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Metal Panels		\$	\$	\$
Stone Panels		\$	\$	\$
Insulation		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
ALLOWANCE – Additional Ice & Water Shield		\$	\$	\$7,500
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.07 – FLOORING AND WALL TILE

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Carpet & Resilient		\$	\$	\$
Tile		\$	\$	\$
Traffic Coating		\$	\$	\$
Polished & Sealed Flrs		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.08 – PLUMBING

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Water System		\$	\$	\$
Storm System		\$	\$	\$
Sanitary System		\$	\$	\$
Lab Vac & Compressed Air		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
ALLOWANCE – Temporary Services		\$	\$	\$15,000
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.09 – HVAC

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Air Handling Units		\$	\$	\$
Equipment				
Ductwork		\$	\$	\$
Hydronic Piping		\$	\$	\$
Insulation		\$	\$	\$
Startup		\$	\$	\$
Temperature Controls		\$	\$	\$
Test and Balance		\$	\$	\$

Payment & Perf. Bond		\$	\$	\$
ALLOWANCE – Temporary Services		\$	\$	\$10,000
ALLOWANCE – Temp Controls Coordination		\$	\$	\$15,000
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
 2. Addendum No. 2, dated _____.
 3. Addendum No. 3, dated _____.
 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
1. Material/Equipment: _____
a. _____ Weeks
 2. Material/Equipment: _____
a. _____ Weeks
 3. Material/Equipment: _____
a. _____ Weeks
 4. Material/Equipment: _____
a. _____ Weeks
 5. Material/Equipment: _____
a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)
2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.10 – FIRE PROTECTION

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Wet System		\$	\$	\$
Dry System		\$	\$	\$
Equipment		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for

allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$ _____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.11 – ELECTRICAL

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Temporary Power		\$	\$	\$
Generator Relocation		\$	\$	\$
Power		\$	\$	\$
Fire Alarm		\$	\$	\$
Lighting		\$	\$	\$
Telecommunications		\$	\$	\$
Safety & Security		\$	\$	\$

Payment & Perf. Bond		\$	\$	\$
ALLOWANCE – Loading Dock Coordination		\$	\$	\$20,000
ALLOWANCE – Temp Power Adjustments		\$	\$	\$10,000
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
 2. Addendum No. 2, dated _____.
 3. Addendum No. 3, dated _____.
 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
1. Material/Equipment: _____
 a. _____ Weeks
 2. Material/Equipment: _____
 a. _____ Weeks
 3. Material/Equipment: _____
 a. _____ Weeks
 4. Material/Equipment: _____
 a. _____ Weeks
 5. Material/Equipment: _____
 a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)
2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.12 – ELEVATOR

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Freight Unit		\$	\$	\$
Passenger Unit		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
 - 1. Addendum No. 1, dated _____.
 - 2. Addendum No. 2, dated _____.
 - 3. Addendum No. 3, dated _____.
 - 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
 - 1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
 - 1. Material/Equipment: _____
 - a. _____ Weeks
 - 2. Material/Equipment: _____
 - a. _____ Weeks
 - 3. Material/Equipment: _____
 - a. _____ Weeks
 - 4. Material/Equipment: _____
 - a. _____ Weeks
 - 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor's obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent's authority.

1.13 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$_____)

2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT

BID FORM

CONTRACT NO. 1.13 – COMBINATION BID (Plumbing & HVAC)

1.1 GENERAL INFORMATION

- A. Bidder: _____.
- B. Contact Name: _____.
- C. Contact Email: _____.
- D. Contact Phone: _____.
- E. Project Name: IU Indianapolis – Science Building - Addition
- F. Project Location: 310 N. Blackford St., Indianapolis, IN 46202
- G. Owner: Trustees of Indiana University
- H. Architect: arcDESIGN
- I. Construction Manager: Harmon Shiel Sexton Indy Science JV

1.2 CERTIFICATIONS AND BASE BID

- A. **Base Bid:** The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by the Architect of Record and their Consultants of Record, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and installation services, including all scheduled allowances, necessary to complete the construction of the Work for the contract for which a bid price is indicated for the above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

Base Bid Numerical: \$ _____

Base Bid Written: \$ _____

1.3 DOCUMENTS REQUIRED FOR BID & 48 HOUR ITEMS

A. The following documents are required for a complete bid and shall be attached hereto:

1. Bid Form
2. Form 96 – Contractors Bid for Public Work
3. Bid Bond/Bid Security
4. Drug Testing Program - In compliance with Indiana Code 4-13-18
5. Contractor Asbestos Certification
6. Asbestos Protocol for Contractors
7. MBE/WBE/VBE Participation Plan
8. Alternates Form

B. The following documents shall be submitted via email withing 48 hours of bid:

1. Schedule of Subcontractors, Manufacturers, and Products
2. Schedule of Values
3. Confirmation of Payment and Performance Bond

1.4 CONTRACT BID ITEMIZATION (for information only)

DESCRIPTION	QUANTITY	LABOR	MATERIAL	TOTAL
Mob/Demob		\$	\$	\$
Water System		\$	\$	\$
Storm System		\$	\$	\$
Sanitary System		\$	\$	\$
Lab Vac & Compressed Air		\$	\$	\$
Air Handling Units		\$	\$	\$
Equipment		\$	\$	\$
Ductwork		\$	\$	\$

Hydronic Piping		\$	\$	\$
Insulation		\$	\$	\$
Startup		\$	\$	\$
Temperature Controls		\$	\$	\$
Test and Balance		\$	\$	\$
Payment & Perf. Bond		\$	\$	\$
ALLOWANCE – Temporary Services – Plumbing		\$	\$	\$15,000
ALLOWANCE – Temporary Services - HVAC		\$	\$	\$10,000
ALLOWANCE – Temp Controls Coordination		\$	\$	\$15,000
TOTAL BASE BID (MUST MATCH 1.2A ABOVE)				\$

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:
1. Addendum No. 1, dated _____.
 2. Addendum No. 2, dated _____.
 3. Addendum No. 3, dated _____.
 4. Addendum No. 4, dated _____.

1.6 ALTERNATES

- A. See attached Alternates Form. **Indicate ADD or DEDUCT by circling the appropriate one.**
1. Refer to Alternates Form – Attachment 3 for details.

1.7 MATERIAL/EQUIPMENT LEAD TIMES

- A. Indicate any and all long lead time for material/equipment that could impact the schedule or are greater than 6 weeks.
1. Material/Equipment: _____

- a. _____ Weeks
- 2. Material/Equipment: _____
 - a. _____ Weeks
- 3. Material/Equipment: _____
 - a. _____ Weeks
- 4. Material/Equipment: _____
 - a. _____ Weeks
- 5. Material/Equipment: _____
 - a. _____ Weeks

1.8 COMPLETION DATE | SCHEDULE

- A. The Bidder has reviewed the project schedule and acknowledges that bid has been prepared in such a manner that adequate manpower and equipment are accounted for.

1.9 ALLOWANCE

- A. Allowance dollars, if applicable, are included in the base bid amount, as indicated in above Bid Itemization and are to be used only per the direction of Shiel Sexton Co., Inc. Allowance dollars include all labor, material, equipment, hauling / handling, and storage. Overhead and profit for allowances is included in base bid amount. All allowance dollars not used will be deducted from the contract amount. Allowance money will not be used for work previously scoped and only to be used for added scope.

1.10 TAX EXEMPTIONS

- A. The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers that this project is TAX EXEMPT, and therefore, has NOT included these taxes in his Base Bid price.

1.11 CONTRACTOR'S LICENSE

- A. The undersigned further states that it is a duly licensed Contractor, for the type of work proposed, in the State of Indiana, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.12 PERFORMANCE AND PAYMENT BONDS

- A. Subcontractors shall furnish Performance and Payment Bonds, each in an amount at least equal to one-hundred (100%) of the contract price as security for the faithful performance and payment of all the subcontractor’s obligations under the contract documents. These bonds shall remain in effect at least until two (2) years after the date when final payment becomes due, except as otherwise provided by law or regulation or by the contract documents. All bonds shall be in the forms prescribed by law, regulation, and the contract documents and be executed by

such sureties as (i) are licensed to conduct business in the State of Indiana, and (ii) are named in the current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570 (amended) by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the power of attorney or other instrument establishing the agent’s authority.

1.13 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety if requested within ten (10) days after a written Notice of Award, if offered within sixty (60) days after receipt of bids, and on failure to do so agrees to forfeit to Construction Manager the bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Total Base Bid amount above:

1. _____ Dollars (\$ _____)
2. Bid Bond to be made out to Harmon Shiel Sexton Indy Science JV.

1.14 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2024.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

END OF DOCUMENT



ALTERNATES BID FORM *Attachment 03*

SUMMARY

Section includes administrative and procedural requirements for alternates.

Utilize this form for submission of alternates pricing.

DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.

SCHEDULE OF ALTERNATES (BID FORM)

- A. **ALTERNATE No. 01: Air Handling Unit – MANDATORY ALTERNATE**
 - 1. **Base Bid:** No work
 - 2. **Alternate:** New air handling units to be installed per Drawings and Specifications. Provide breakdown pricing per manufacturer:

1a – Haakon \$ _____

1b – Air Enterprises \$ _____

1c – Air Flow Equipment \$ _____

1d – Ingenia \$ _____



ALTERNATES BID FORM
Attachment 03

B. **ALTERNATE No. 04:** New Building – Roof Drain Pipes

1. **Base Bid:** Provide a combined overflow and main pipe roof drain leader system, in lieu of the indicated separate system.
2. **Alternate:** Provide all work as indicated in the Drawings and Specifications pertaining to the new roof drain leaders, including but not limited to separate overflow pipes and insulation.

ADD / DEDUCT \$ _____
(CIRCLE CORRECT OPTION)



CONTRACTOR'S BID FOR PUBLIC WORK - FORM 96

State Form 52414 (R2 / 2-13) / Form 96 (Revised 2013)
Prescribed by State Board of Accounts

PART I

(To be completed for all bids. Please type or print)

Date (month, day, year): _____

1. Governmental Unit (Owner): _____

2. County : _____

3. Bidder (Firm): _____

Address: _____

City/State/ZIPcode: _____

4. Telephone Number: _____

5. Agent of Bidder (if applicable): _____

Pursuant to notices given, the undersigned offers to furnish labor and/or material necessary to complete the public works project of _____

(Governmental Unit) in accordance with plans and specifications prepared by _____

_____ and dated _____ for the sum of

_____ \$ _____

The undersigned further agrees to furnish a bond or certified check with this bid for an amount specified in the notice of the letting. If alternative bids apply, the undersigned submits a proposal for each in accordance with the notice. Any addendums attached will be specifically referenced at the applicable page.

If additional units of material included in the contract are needed, the cost of units must be the same as that shown in the original contract if accepted by the governmental unit. If the bid is to be awarded on a unit basis, the itemization of the units shall be shown on a separate attachment.

The contractor and his subcontractors, if any, shall not discriminate against or intimidate any employee, or applicant for employment, to be employed in the performance of this contract, with respect to any matter directly or indirectly related to employment because of race, religion, color, sex, national origin or ancestry. Breach of this covenant may be regarded as a material breach of the contract.

CERTIFICATION OF USE OF UNITED STATES STEEL PRODUCTS *(If applicable)*

I, the undersigned bidder or agent as a contractor on a public works project, understand my statutory obligation to use steel products made in the United States (I.C. 5-16-8-2). I hereby certify that I and all subcontractors employed by me for this project will use U.S. steel products on this project if awarded. I understand that violations hereunder may result in forfeiture of contractual payments.

ACCEPTANCE

The above bid is accepted this _____ day of _____, _____, subject to the following conditions: _____

Contracting Authority Members:

PART II

(For projects of \$150,000 or more – IC 36-1-12-4)

Governmental Unit: _____

Bidder (Firm) _____

Date (month, day, year): _____

These statements to be submitted under oath by each bidder with and as a part of his bid. Attach additional pages for each section as needed.

SECTION I EXPERIENCE QUESTIONNAIRE

1. What public works projects has your organization completed for the period of one (1) year prior to the date of the current bid?

Table with 4 columns: Contract Amount, Class of Work, Completion Date, Name and Address of Owner. 4 empty rows.

2. What public works projects are now in process of construction by your organization?

Table with 4 columns: Contract Amount, Class of Work, Expected Completion Date, Name and Address of Owner. 4 empty rows.

3. Have you ever failed to complete any work awarded to you? _____ If so, where and why?

4. List references from private firms for which you have performed work.

SECTION II PLAN AND EQUIPMENT QUESTIONNAIRE

1. Explain your plan or layout for performing proposed work. *(Examples could include a narrative of when you could begin work, complete the project, number of workers, etc. and any other information which you believe would enable the governmental unit to consider your bid.)*

2. Please list the names and addresses of all subcontractors *(i.e. persons or firms outside your own firm who have performed part of the work)* that you have used on public works projects during the past five (5) years along with a brief description of the work done by each subcontractor.

3. If you intend to sublet any portion of the work, state the name and address of each subcontractor, equipment to be used by the subcontractor, and whether you will require a bond. However, if you are unable to currently provide a listing, please understand a listing must be provided prior to contract approval. Until the completion of the proposed project, you are under a continuing obligation to immediately notify the governmental unit in the event that you subsequently determine that you will use a subcontractor on the proposed project.

4. What equipment do you have available to use for the proposed project? Any equipment to be used by subcontractors may also be required to be listed by the governmental unit.

5. Have you entered into contracts or received offers for all materials which substantiate the prices used in preparing your proposal? If not, please explain the rationale used which would corroborate the prices listed.

SECTION III CONTRACTOR'S FINANCIAL STATEMENT

Attachment of bidder's financial statement is mandatory. Any bid submitted without said financial statement as required by statute shall thereby be rendered invalid. The financial statement provided hereunder to the governing body awarding the contract must be specific enough in detail so that said governing body can make a proper determination of the bidder's capability for completing the project if awarded.

BID OF

_____ (Contractor)

_____ (Address)

**FOR
PUBLIC WORKS PROJECTS
OF**

Filed _____, _____

Action taken _____

CONTRACTOR ASBESTOS CERTIFICATION

TO: INDIANA UNIVERSITY

The Contractor certifies that:

No asbestos containing material was selected as a building material for this project. For all materials used on the project which were marked on the material or on the packaging the following or similar wording "May contain mineral fibers" the contractor will have on file, with copies provided to the owner, either of the following – (1) The manufacturer's certification that the material does not contain asbestos or (2) Laboratory results from an EPA accredited laboratory indicating the material does not contain asbestos in accordance with EPA and OSHA requirements.

IU Project Name and Number: _____

Contractor Firm: _____

Contractor Name: _____

Contractor Signature: _____ Date _____

**Asbestos Protocol for Contractors
Communication of Hazards**

Asbestos-containing materials (ACM) exist in many buildings constructed prior to January 1, 1981. Pursuant to the OSHA Construction Industry Asbestos Standard 29 CFR 1926.1101, "Communication of Hazards," a building owner is required to inform contractors doing demolition or renovation of the presence, location and quantity of ACM found at the work sites in its buildings. The IU Environmental Health and Safety Department (EHS) performs the asbestos inspection of buildings on the IU campuses and, if necessary, will conduct or oversee the safe removal of all known and accessible ACM prior to renovation or demolition work.

EHS generates a post-inspection Asbestos Notice of each work site, which identifies building materials that are visible or otherwise known to be present at the site at the time of inspection as being "Non-ACM" or "ACM."

The inspection, and therefore the information contained in the notice, is limited to what is visible to the inspector at the time of the inspection. This means that during the course of construction work, it is possible to encounter ACM that was not identified on the notice because of the physical limitations on the Asbestos Inspector's ability to see and identify ACM at the time of the inspection. Contractors are expected to have knowledge of the types and likely locations of ACM generally found in building materials and to be able to make visual identification of ACM and must provide documentation that each employee has attended Asbestos Awareness Training within the last calendar year.

Under no circumstances are contractors permitted to disturb ACM. Contractors are required to stop work immediately upon discovering suspected ACM and to make a report to the owner's Project Manager. The Project Manager may direct the contractor to the EHS office if a disturbance has occurred and/or to coordinate additional surveying.

For the Contractor

I understand and agree that the employees and agents of my company and/or the employees and agents of my company's subcontractor(s) are prohibited from disturbing ACM.

I understand and agree that, upon the discovery of ACM or suspected ACM at the worksite, work shall be stopped immediately and a report of the discovery made to the owner's Project Manager. I agree that my employees, agents and/or the employees and agents of my subcontractor(s) will comply with the directions of the Owner's Project Manager with regard to responding to the discovery or disturbance of ACT.

I understand and agree that failure on the part of my employees and agents and/or the employees and agents of my subcontractor(s) to comply with the above requirements may result in fines being imposed against my company or the owner, or both, by the Indiana Department of Environmental Management (IDEM), or by other federal, state, county or municipal authorities. I agree I will reimburse the owner for any costs incurred by the owner based on violations of this protocol by my employees or agents and/or the employees or agents of my subcontractor(s), including but not limited to fines, penalties, attorneys fees and/or court costs.

I have read and understand these requirements:

Contractor Signature

Date

IU Project Number

Printed Name

IU Project Title

MINORITY, WOMEN’S AND VETERAN’S BUSINESS ENTERPRISE PARTICIPATION PLAN

The Bidder/Firm must submit with its bid/proposal a Minority, Women’s and Veteran’s Business Enterprise Participation Plan. Minority Business Enterprise (MBE), Women’s Business Enterprise (WBE) and Veteran’s Business Enterprise (VBE) are defined below. In this Plan, the Bidder/Firm must show that there are certified by the State of Indiana (see below) MBE/WBE/VBE(s) participating in the project. Participation may be as a subcontractor or second tier participation with common suppliers. The Bidder/Firm must indicate the name of the MBE/WBE/VBE(s) with which it will work; the contact name and phone number of the MBE/WBE/VBE(s); the service supplied by the MBE/WBE/VBE(s); and the specific dollar amount from the project that will be directed toward each MBE/WBE/VBE. Please note: If the Trade is an overhead item for your entire business, please calculate the proportion of the business that will actually apply to the project in question.

Documentation of the Bidder’s/Firm’s good faith effort to meet the participation goal must be submitted at bid time; see Page 3 of this form.

Contractors will find a listing of all MBE/WBE/VBE suppliers certified by the State of Indiana at the following website: www.in.gov/idoa/mwbe/2743.htm

Failure to provide a completed Plan at the time of bid/proposal submission will result in the rejection of the bid/proposal. A completed plan shall include evidence of the good faith efforts of the Bidder/Firm to include Minority, Women's and Veteran's Business Enterprises in the project. Indiana University reserves the right to verify all information included in the Minority, Women’s and Veteran’s Business Enterprise Participation Plan before making final determination of the Bidder’s/Firm’s responsiveness and responsibility.

By submission of the bid/proposal, the Bidder/Firm thereby acknowledges and agrees to be bound by the IU Business Diversity Initiative. Questions involving the Minority, Women’s and Veteran’s Business Enterprise Participation Plan should be directed to the IU Supplier Diversity Department at 317/278-5384.

Definitions:

- a. “Minority-owned Business Enterprise” (MBE) means an individual, partnership, corporation, limited liability company, or joint venture of any kind that is owned and controlled by (1) or more persons who are (a) United States citizens; and (b) members of a racial minority group: African American, American Indians, Hispanics, Asian Americans or other similar minority group as defined by 13 CFR 124.103
- b. “Woman-owned Business Enterprise” (WBE) means an individual, partnership, corporation, limited liability company, or joint venture of any kind that is owned and controlled by (1) or more persons who are (a) United States citizens; and (b) whose gender is female.
- c. “Veteran-owned Business Enterprise” (VBE) means an Indiana firm with its principal place of business located in Indiana and is currently certified by the Department of Veterans Affairs as a veteran-owned business.

MBE/WBE/VBE PARTICIPATION PLAN

PROJECT # _____ BID/PROPOSAL DUE DATE _____

PROJECT NAME _____

BIDDER/FIRM _____

ADDRESS _____

CITY/STATE/ZIP _____

PHONE: () _____

EMAIL: _____

URL: _____

MBE, WBE, VBE Participation Plan

BIDDER/FIRM _____ PROJECT # _____

PROJECT NAME _____

The following certified minority, women and/or veteran -owned firms will be participating in the project according to the following schedule. Indicate whether each firm is an MBE, WBE or VBE by selecting the MBE, WBE or VBE box below.

E-mail each firm's certification document, within 48 hours post-bid, to the Owner @ bidtab@indiana.edu.

1.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	
2.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	
3.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	
4.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	

If additional room is necessary, please attach a separate page.

By my signature, I certify that the above statements are true and accurate, all as of the date below. I also understand that any changes to this plan must be approved by Indiana University and documented by Construction Change Directive.

Agent of Bidder

Date

MBE, WBE, VBE Participation Plan

BIDDER/FIRM _____ PROJECT # _____

PROJECT NAME _____

Describe below your good faith efforts to obtain certified minority, women's and veteran's business enterprise participation for this project. Be sure to attach a copy of all solicitation efforts, e.g., ads that were published or networking events, etc.

As part of the Bidder/Firm's good faith efforts, list below the MBE/WBE/VBE contractors you individually contacted, requesting a quote for this project. Please ensure that reasonable time and information is provided to the potential MBE/WBE/VBE contractors to allow for a response.

Check all that apply:

MBE, WBE, VBE firms contacted (company name and commodity)	Method of contact (i.e. phone or fax number, e-mail or mailing address AND contact name)	MBE	WBE	VBE	Quote Received Not Low	No Response
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If extra space is necessary, please attach additional pages.

PAGES 1, 2, AND 3 OF THIS DOCUMENT MUST BE SUBMITTED WITH THE BID

ATTACHMENT 08 - LOGISTICS PLAN

Relocated Generator w/ Fencing and Lockable Gate

Fencing

Science Engineering Building (SELB)

N Blackford St

Close Exit Door

Demo Dock

Topsoil

Container Container

Wood Fountain

Stoned Laydown

Waste

Science Building

Stone

24' Double Swing Gate

Stoned Entrance

Concrete Wash-out Waste Waste

Proposed Underground Detention

Lift Traffic Only
Root Zone Ground Protection

24' Wide Reinforced Walk and Apron

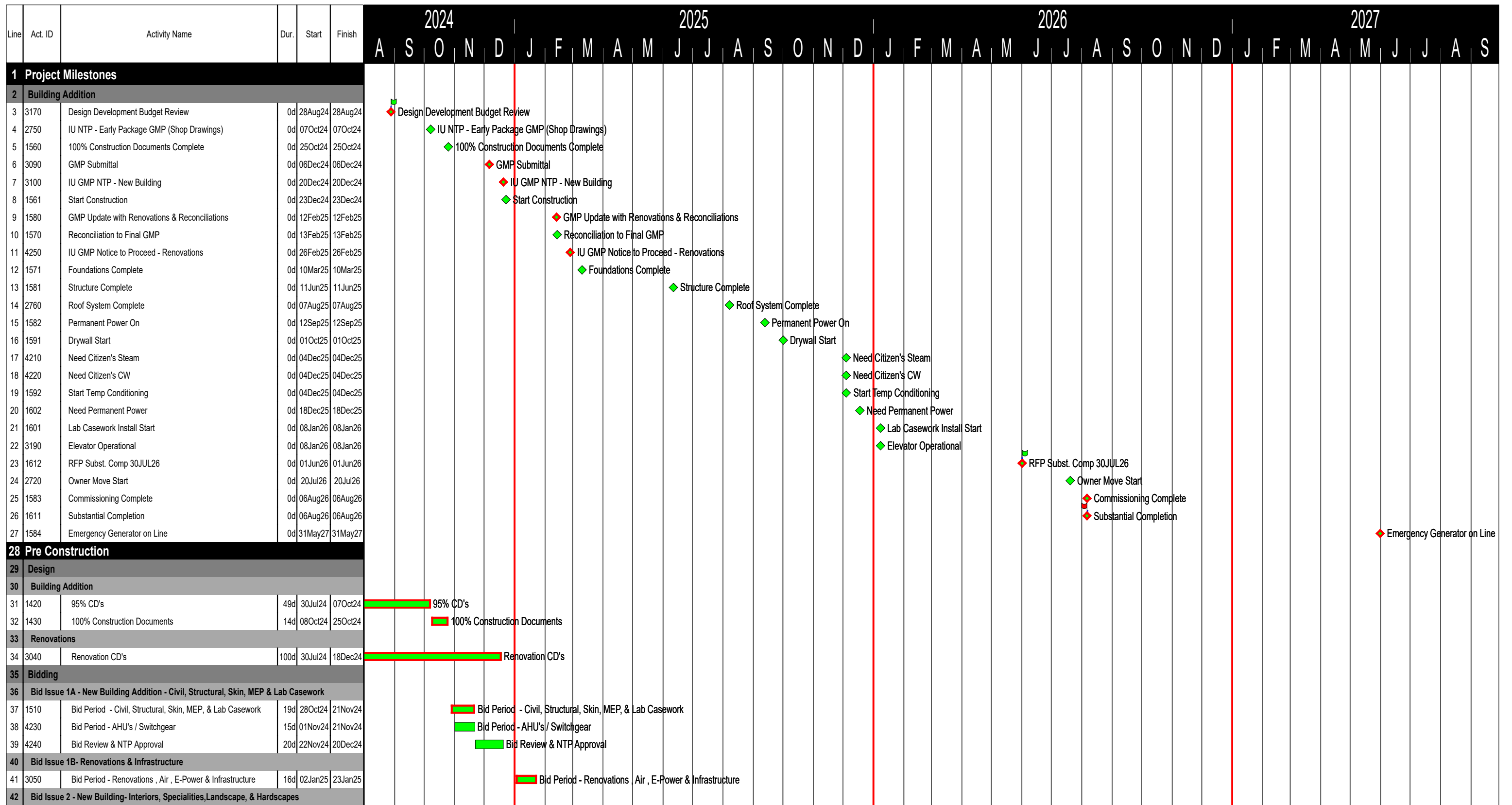
Concrete Apron

36' Wide Curb Cut

Existing Sidewalk

W New York St





Science Building Addition & Renovation

Indiana University

Proposal Schedule

Run Date: 10/2/2024
Progress Date: 3/15/2024

Page 1 of 7

ATTACHMENT 10 - DOCUMENTS LOG

Printed on Mon Oct 28, 2024 at 01:12 pm EDT

Job #: 24063 IU Indy Science Building Expansion & Renovation
 Blackford & New York
 Indianapolis, Indiana 46202



Shiel Sexton Company, Inc.

Current Drawings

Drawing No.	Drawing Title	Revision	Drawing Date	Received Date	Set
General					
G000	VOL. 1 COVER SHEET	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G001	VOL. 2 COVER SHEET	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G002	GENERAL NOTES & ABBREVIATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G120	CODE SUMMARY REPORT	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G121	LIFE SAFETY-LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G122	LIFE SAFETY-LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G123	LIFE SAFETY-LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
G124	LIFE SAFETY-LEVEL PENTHOUSE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Civil					
C100	SURVEY SHEET	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C101	SURVEY SHEET	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C400	SWPPP	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C401	SOILS MAP	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C402	FIRM MAP	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C403	WETLANDS MAP	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C404	EROSION CONTROL SPECIFICATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C405	CONSTRUCTION EROSION CONTROL PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C406	POST - CONSTRUCTION EROSION CONTROL PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C407	EROSION CONTROL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C600	OVERALL STORMWATER AND UTILITY LAYOUT	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C601	STORM SEWER PLAN & PROFILE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C602	STORM SEWER PLAN & PROFILE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C603	STORM SEWER PLAN & PROFILE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C604	SANITARY SEWER PLAN & PROFILE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C605	WATER PLAN & PROFILE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C606	PIPE AND STRUCTURE DATA TABLES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C607	MAINTENANCE OF TRAFFIC	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C608	STORM SEWER DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C609	STORM SEWER DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C610	OUTLET CONTROL STRUCTURE DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C611	STORM AND SANITARY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C612	SANITARY SEWER DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C613	ADS UNDERGROUND DETENTION DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



Shiel Sexton Company, Inc.

Printed on Mon Oct 28, 2024 at 01:12 pm EDT

Job #: 24063 IU Indy Science Building Expansion & Renovation
Blackford & New York
Indianapolis, Indiana 46202

Drawing No.	Drawing Title	Revision	Drawing Date	Received Date	Set
C614	ADS UNDERGROUND DETENTION DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C615	MAINTENANCE OF TRAFFIC DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
C616	WATER DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Landscape					
L010	TREE PRESERVATION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L020	SITE DEMOLITION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L100	SITE MATERIALS PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L110	LAYOUT PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L120	GRADING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L130	PLANTING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L131	PLANTING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L140	IRRIGATION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L150	SITE DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
L151	SITE DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Structural					
S001	ABBREVIATIONS AND SYMBOLS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S002	GENERAL NOTES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S003	GENERAL NOTES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S004	SPECIAL INSPECTION REQUIREMENTS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S005	LOAD MAPS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S006	WIND LOAD ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S007	AXONOMETRICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S101	FOUNDATION AND SLAB ON GRADE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S102	SECOND FLOOR FRAMING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S103	THIRD FLOOR FRAMING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S104	PENTHOUSE FLOOR AND LOW ROOF FRAMING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S105	HIGH ROOF FRAMING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S201	ENLARGED PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S211	BUILDING SECTIONS AND DETAILS AT CONNECTOR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S301	FOUNDATION SCHEDULES, SECTIONS, AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S302	FOUNDATION SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S303	FOUNDATION SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S304	FOUNDATION SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S311	CONCRETE COLUMN SCHEDULES, SECTIONS, AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S312	CONCRETE COLUMN SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S321	CONCRETE BEAM SCHEDULE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S322	CONCRETE BEAM SCHEDULE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S323	CONCRETE BEAM SCHEDULE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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S324	CONCRETE BEAM SCHEDULE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S325	CONCRETE BEAM SCHEDULE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S326	CONCRETE BEAM SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S331	CONCRETE SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S332	CONCRETE SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S333	CONCRETE SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S401	CMU SCHEDULES, SECTIONS, AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S501	STEEL SCHEDULES, SECTIONS, AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S502	STEEL SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S503	STEEL SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S504	STEEL SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S511	STEEL COLUMN SCHEDULES, SECTIONS, AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
S521	STEEL FRAME ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Architectural					
A001	SITE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A010	WALL TYPES - EXTERIOR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A011	WALL TYPES - INTERIOR GWB PARTITIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A012	TYP DETAILS FOR GWB PARTITIONS & SHAFTS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A013	TYP DETAILS FOR GWB PARTITIONS & SHAFTS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A014	TYP DETAILS FOR INTERIOR GWB PARTITION BLOCKING	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A015	WALL TYPES - MASONRY	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A020	TYPICAL DEVICE MOUNTING DIAGRAMS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A030	ACCESSIBILITY DIAGRAMS FOR RESTROOMS & SHOWERS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A031	ACCESSIBILITY DIAGRAMS FOR ELEVATORS & STAIRS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A101	DEMOLITION PLAN - LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A102	DEMOLITION PLAN - LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A105	DEMOLITION ELEVATION - SELB	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A121	FLOOR PLAN - LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A122	FLOOR PLAN - LEVEL 2	1	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A123	FLOOR PLAN - LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A124	FLOOR AND ROOF PLAN - PENTHOUSE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A141	CEILING PLAN-LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A142	CEILING PLAN-LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A143	CEILING PLAN-LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A150	INTERIOR FINISH SCHEDULE AND LEGEND	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A151	INTERIOR FINISH PLAN-LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A152	INTERIOR FINISH PLAN-LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A153	INTERIOR FINISH PLAN-LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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A161	INTERIOR FFE LOCATION PLAN-LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A162	INTERIOR FFE LOCATION PLAN-LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A163	INTERIOR FFE LOCATION PLAN-LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A200	EXTERIOR ELEVATIONS - NORTH & EAST	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A201	EXTERIOR ELEVATIONS - SOUTH AND WEST	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A202	EXTERIOR ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A300	BUILDING SECTIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A310	WALL SECTIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A311	WALL SECTIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A312	WALL SECTIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A313	WALL SECTIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A320	ENLARGED VIEWS - CONNECTOR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A321	EXTERIOR ENLARGED VIEWS - TERRACE AND SW CORNER	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A350	EXTERIOR PLAN DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A351	EXTERIOR PLAN DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A352	EXTERIOR PLAN DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A353	EXTERIOR PLAN DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A360	EXTERIOR SECTION DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A361	EXTERIOR SECTION DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A362	EXTERIOR SECTION DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A363	EXTERIOR SECTION DETAILS - ROOF	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A364	EXTERIOR ENLARGED VIEWS - CONNECTOR DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A365	EXTERIOR SECTION DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A370	EXTERIOR ROOFING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A400	ENLARGED PLAN AND ELEV - RESTROOMS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A401	ENLARGED PLAN AND ELEV - BREAKROOM	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A402	ENLARGED PLAN AND ELEV - BENCH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A450	INTERIOR ELEVATIONS - LOBBY	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A451	INTERIOR ELEVATIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A452	INTERIOR ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A453	INTERIOR ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A460	INTERIOR WALL SECTIONS AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A470	INTERIOR VESTIBULE & GLASS RAILING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A500	ENLARGED PLANS & SECTIONS - NORTH STAIR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A501	ENLARGED PLANS & SECTIONS - NORTH ELEVATOR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A502	ENLARGED PLANS & SECTIONS - SOUTH STAIR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A503	ENLARGED PLANS & SECTIONS - SOUTH ELEVATOR	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A510	EXIT STAIR - TYP REFERENCE DIAGRAMS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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A511	NORTH STAIR DETAILS - CONCRETE FILLED METAL PAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A512	SOUTH STAIR DETAILS - STEEL PAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A550	GWB CEILING DETAILS FOR SEISMIC DESIGN CATEGORY A-B	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A551	ACOUSTIC CEILING DETAILS FOR SEISMIC DESIGN CATEGORY A-B	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A555	FLOOR TRANSITIONS DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A570	FIXED LADDER & ELEVATOR DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A600	DOOR & FRAME TYPE DIAGRAMS & SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A601	DOOR DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A603	MILLWORK DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
A900	3D VIEWS FOR REFERENCE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Lab					
QL001	LABORATORY GENERAL NOTES, LEGENDS, & ABBREVIATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL002	CIP, SINK, & FIXTURE SCHEDULES, CIP DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL003	SCHEDULES, COLD ROOM DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL101	OVERALL LABORATORY FLOOR PLAN - LEVEL 01	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL102	OVERALL LABORATORY FLOOR PLAN - LEVEL 02	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL103	OVERALL LABORATORY FLOOR PLAN - LEVEL 03	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL401A	ENLARGED LABORATORY FLOOR PLAN - LEVEL 01, NORTH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL401B	ENLARGED LABORATORY FLOOR PLAN - LEVEL 01, SOUTH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL402A	ENLARGED LABORATORY FLOOR PLAN - LEVEL 02, NORTH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL402B	ENLARGED LABORATORY FLOOR PLAN - LEVEL 02, SOUTH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL403A	ENLARGED LABORATORY FLOOR PLAN - LEVEL 03, NORTH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL403B	ENLARGED LABORATORY FLOOR PLAN - LEVEL 03, SOUTH	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL601	LABORATORY ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL602	LABORATORY ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL603	LABORATORY ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL604	LABORATORY ELEVATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL901	LABORATORY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL902	LABORATORY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
QL903	LABORATORY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Mechanical					
M001	MECHANICAL LEGEND, NOTES, AND INDEX OF DRAWINGS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M121	FIRST FLOOR MECHANICAL DUCTWORK PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M122	SECOND FLOOR MECHANICAL DUCTWORK PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M123	THIRD FLOOR MECHANICAL DUCTWORK PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M124	PENTHOUSE AND ROOF FLOOR MECHANICAL DUCTWORK PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M221	FIRST FLOOR MECHANICAL PIPING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M222	SECOND FLOOR MECHANICAL PIPING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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M223	THIRD FLOOR MECHANICAL PIPING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M224	PENTHOUSE AND ROOF MECHANICAL PIPING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M401	FIRST AND SECOND FLOOR MECHANICAL AIRFLOW DIAGRAM	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M402	THIRD AND FOURTH FLOOR MECHANICAL AIRFLOW DIAGRAM	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M403	ENLARGED MECHANICAL PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M404	ENLARGED MECHANICAL PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M500	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M501	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M502	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M503	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M504	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M505	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M506	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M507	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M508	MECHANICAL DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M601	MECHANICAL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M602	MECHANICAL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M603	MECHANICAL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M604	MECHANICAL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M605	MECHANICAL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M701	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M702	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M703	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M704	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M705	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M706	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M707	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M708	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
M709	MECHANICAL CONTROL SCHEMATICS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Plumbing					
P001	PLUMBING LEGEND, NOTES, AND INDEX OF DRAWINGS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P120	FIRST FLOOR BELOW FLOOR PLUMBING SUPPLY PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P121	FIRST FLOOR ABOVE FLOOR PLUMBING SUPPLY PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P122	SECOND FLOOR PLUMBING SUPPLY PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P123	THIRD FLOOR PLUMBING SUPPLY PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P124	PENTHOUSE AND ROOF PLUMBING SUPPLY PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P220	FIRST FLOOR BELOW FLOOR PLUMBING DRAINAGE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P221	FIRST FLOOR ABOVE FLOOR PLUMBING DRAINAGE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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Drawing No.	Drawing Title	Revision	Drawing Date	Received Date	Set
P222	SECOND FLOOR PLUMBING DRAINAGE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P223	THIRD FLOOR PLUMBING DRAINAGE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P224	PENTHOUSE AND ROOF PLUMBING DRAINAGE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P401	ENLARGED PLUMBING PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P501	PLUMBING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P502	PLUMBING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P503	PLUMBING SANITARY VENT STACK	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P504	PLUMBING RISER DIAGRAMS - LAB GAS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P505	PLUMBING RISER DIAGRAMS - LAB GAS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P506	PLUMBING RISER DIAGRAMS - STORM	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P507	PLUMBING RISER DIAGRAMS - STORM	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P508	PLUMBING RISER DIAGRAMS - WATER DISTRIBUTION	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
P601	PLUMBING SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Fire Suppression					
FS001	FIRE SUPPRESSION LEGEND, NOTES, AND INDEX OF DRAWINGS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS120	SELB PIPING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS121	FIRST FLOOR FIRE SUPPRESSION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS122	SECOND FLOOR FIRE SUPPRESSION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS123	THIRD FLOOR FIRE SUPPRESSION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS124	PENTHOUSE AND ROOF FIRE SUPPRESSION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS501	FIRE SUPPRESSION SCHEDULES AND DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
FS502	FIRE SUPPRESSION RISER DIAGRAM	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Electrical					
E001	ELECTRICAL LEGEND, NOTES, AND INDEX OF DRAWINGS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E002	ELECTRICAL SITE POWER PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E120	EXISTING SELB CONDUIT PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E121	FIRST FLOOR CONDUIT PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E122	SECOND FLOOR CONDUIT PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E123	THIRD FLOOR CONDUIT PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E124	PENTHOUSE AND ROOF CONDUIT PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E221	FIRST FLOOR ELECTRICAL POWER PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E222	SECOND FLOOR ELECTRICAL POWER PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E223	THIRD FLOOR ELECTRICAL POWER PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E224	PENTHOUSE AND ROOF ELECTRICAL POWER PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E321	FIRST FLOOR FIRE ALARM PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E322	SECOND FLOOR FIRE ALARM PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E323	THIRD FLOOR FIRE ALARM PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E324	PENTHOUSE AND ROOF FIRE ALARM PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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Drawing No.	Drawing Title	Revision	Drawing Date	Received Date	Set
E401	ENLARGED ELECTRICAL PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E501	SINGLE LINE DIAGRAM -NORMAL POWER - NEW WORK	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E502	SINGLE LINE DIAGRAM - EMERGENCY POWER - NEW WORK	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E503	METERING	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E504	GROUNDING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E505	LIGHTNING PROTECTION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E506	ELECTRICAL DIAGRAMS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E601	ELECTRICAL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E701	PANEL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E702	PANEL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E703	PANEL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
E704	PANEL SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Lighting					
EL001	SITE LIGHTING DEMOLITION PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL002	SITE LIGHTING PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL121	LIGHTING PLAN - LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL122	LIGHTING PLAN - LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL123	LIGHTING PLAN - LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL124	LIGHTING PLAN - PENTHOUSE	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL501	LIGHTING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL502	LIGHTING DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL601	LIGHTING SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
EL602	LIGHTING PANELBOARD SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
Technology					
T000	SYMBOLS AND ABBREVIATIONS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T002	TECHNOLOGY SITE PLAN	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T121	TECHNOLOGY PLAN -LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T122	TECHNOLOGY PLAN -LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T123	TECHNOLOGY PLAN -LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T124	TECHNOLOGY PLAN -LEVEL 4	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T201	OVERALL TECHNOLOGY PLAN - LEVEL 1	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T202	OVERALL TECHNOLOGY PLAN - LEVEL 2	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T203	OVERALL TECHNOLOGY PLAN -LEVEL 3	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T401	TECHNOLOGY ENLARGED PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T402	TECHNOLOGY ENLARGED PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T403	TECHNOLOGY ENLARGED PLANS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T501	TECHNOLOGY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T502	TECHNOLOGY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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Drawing No.	Drawing Title	Revision	Drawing Date	Received Date	Set
T503	TECHNOLOGY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T504	TECHNOLOGY DETAILS	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)
T601	TECHNOLOGY SCHEDULES	0	10/25/2024	10/25/2024	100% BID SET (10/25/24)



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Current Specifications

Number	Description	Revision	Issued Date	Received Date	Set
00 - Procurement and Contracting Requirements					
00 11 16	INVITATION TO BID	0	10/25/24	10/25/24	Bid Set
00 21 00	SUBCONTRACTORS AND PRODUCTS LIST	0	10/25/24	10/25/24	Bid Set
00 21 13	INSTRUCTIONS TO BIDDERS	0	10/25/24	10/25/24	Bid Set
00 58 00	SUPPLEMENTARY PROJECT SITE REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
00 58 50	SUPPLEMENTARY SUSTAINABLE DESIGN REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
00-01 - IU CPF Procurement Divisions					
00 00 00	PROCUREMENT AND CONTRACTING REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
00 01	NOTICE TO BIDDERS	0	10/25/24	10/25/24	Bid Set
00 01 00	COVER PAGE	0	10/25/24	10/25/24	Bid Set
00 01 07	SEALS PAGE	0	10/25/24	10/25/24	Bid Set
00 01 10	TABLE OF CONTENTS	0	10/25/24	10/25/24	Bid Set
00 11 13	ADVERTISEMENT FOR BIDS	0	10/25/24	10/25/24	Bid Set
Appendix A	PROCUREMENT AND CONTRACTING REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
Appendix B	GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION	0	10/25/24	10/25/24	Bid Set
Appendix C	INSURANCE REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
Appendix C-1	IU BIM GUIDELINES AND STANDARDS	0	10/25/24	10/25/24	Bid Set
01 - General Requirements					
01 00	TRADE SPECIFIC WORK SCOPES	0	10/25/24	10/25/24	Bid Set
01 00 00	GENERAL REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
01 12 00	EXECUTION REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
01 23 00	ALTERNATES	0	10/25/24	10/25/24	Bid Set
01 31 00	PROJECT MANAGEMENT AND COORDINATION	0	10/25/24	10/25/24	Bid Set
01 32 00	ELECTRONIC FILE REQUEST AND LICENSE AGREEMENT	0	10/25/24	10/25/24	Bid Set
01 32 33	PHOTOGRAPHIC DOCUMENTATION	0	10/25/24	10/25/24	Bid Set
01 33 00	SUBMITTAL PROCEDURES	0	10/25/24	10/25/24	Bid Set
01 40 00	QUALITY REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
01 42 00	REFERENCES	0	10/25/24	10/25/24	Bid Set
01 55 26	TRAFFIC CONTROL AND MAINTENANCE OF TRAFFIC (MOT)	0	10/25/24	10/25/24	Bid Set
01 56 39	TREE PRESERVATION	0	10/25/24	10/25/24	Bid Set
01 60 00	PRODUCT REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
01 73 00	EXECUTION	0	10/25/24	10/25/24	Bid Set
01 73 29	CUTTING AND PATCHING	0	10/25/24	10/25/24	Bid Set



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Number	Description	Revision	Issued Date	Received Date	Set
01 74 19	CONSTRUCTION AND WASTE MANAGEMENT DISPOSAL	0	10/25/24	10/25/24	Bid Set
01 81 13.20	SUSTAINABLE DESIGN REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
01 81 19	CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT	0	10/25/24	10/25/24	Bid Set
01 91 13	GENERAL COMMISSIONING REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
02 - Existing Conditions					
02 10 00	SITE PREPARATION	0	10/25/24	10/25/24	Bid Set
02 41 19	SELECTIVE DEMOLITION	0	10/25/24	10/25/24	Bid Set
02 41 91.1	SELECTIVE STRUCTURE DEMOLITION - SITE	0	10/25/24	10/25/24	Bid Set
03 - Concrete					
03 30 00	CAST-IN-PLACE CONCRETE	0	10/25/24	10/25/24	Bid Set
03 30 01	SITE CIP CONCRETE	0	10/25/24	10/25/24	Bid Set
03 33 00	ARCHITECTURAL CONCRETE	0	10/25/24	10/25/24	Bid Set
03 35 43	POLISHED CONCRETE FINISHING	0	10/25/24	10/25/24	Bid Set
03 45 00	PRECAST ARCHITECTURAL CONCRETE	0	10/25/24	10/25/24	Bid Set
03 60 00	GROUTING	0	10/25/24	10/25/24	Bid Set
04 - Masonry					
04 40 00	EXTERIOR DIMENSION STONework	0	10/25/24	10/25/24	Bid Set
04 42 00	EXTERIOR STONE CLADDING	0	10/25/24	10/25/24	Bid Set
05 - Metals					
05 12 00	STRUCTURAL STEEL	0	10/25/24	10/25/24	Bid Set
05 31 00	STEEL DECKING	0	10/25/24	10/25/24	Bid Set
05 40 00	COLD-FORMED METAL FRAMING	0	10/25/24	10/25/24	Bid Set
05 50 00	METAL FABRICATION	0	10/25/24	10/25/24	Bid Set
05 50 01	SITE MISC. METALS	0	10/25/24	10/25/24	Bid Set
05 51 13	METAL PAN STAIRS	0	10/25/24	10/25/24	Bid Set
05 52 13	PIPE AND TUBE RAILINGS	0	10/25/24	10/25/24	Bid Set
05 73 13	GLAZED DECORATIVE METAL RAILINGS	0	10/25/24	10/25/24	Bid Set
06 - Wood, Plastics, and Composites					
06 10 53	MISCELLANEOUS ROUGH CARPENTRY	0	10/25/24	10/25/24	Bid Set
06 16 00	SHEATHING	0	10/25/24	10/25/24	Bid Set
06 40 00	ARCHITECTURAL WOODWORK	0	10/25/24	10/25/24	Bid Set
07 - Thermal and Moisture Protection					
07 13 26	SELF-ADHERING SHEET WATERPROOFING	0	10/25/24	10/25/24	Bid Set
07 16 16	CRYSTALLINE WATERPROOFING	0	10/25/24	10/25/24	Bid Set
07 18 00	TRAFFIC COATINGS	0	10/25/24	10/25/24	Bid Set
07 19 05	CONCRETE SEALER	0	10/25/24	10/25/24	Bid Set
07 21 00	THERMAL INSULATION	0	10/25/24	10/25/24	Bid Set



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07 27 26	FLUID-APPLIED MEMBRANE AIR BARRIERS	0	10/25/24	10/25/24	Bid Set
07 42 16	METAL PLATE WALL PANELS	0	10/25/24	10/25/24	Bid Set
07 54 23	THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING	0	10/25/24	10/25/24	Bid Set
07 62 00	SHEET METAL FLASHING AND TRIM	0	10/25/24	10/25/24	Bid Set
07 71 00	ROOF SPECIALTIES	0	10/25/24	10/25/24	Bid Set
07 72 00	ROOF ACCESSORIES	0	10/25/24	10/25/24	Bid Set
07 84 13	PENETRATION FIRESTOPPING	0	10/25/24	10/25/24	Bid Set
07 84 46	FIRE-RESISTIVE JOINT SYSTEMS	0	10/25/24	10/25/24	Bid Set
07 92 00	JOINT SEALANTS	0	10/25/24	10/25/24	Bid Set
07 95 13.13	INTERIOR EXPANSION JOINT COVER ASSEMBLIES	0	10/25/24	10/25/24	Bid Set
07 95 13.16	EXTERIOR EXPANSION JOINT COVER ASSEMBLIES	0	10/25/24	10/25/24	Bid Set
08 - Openings					
08 11 13	HOLLOW METAL DOORS AND FRAMES	0	10/25/24	10/25/24	Bid Set
08 11 16	ALUMINUM FLUSH DOORS	0	10/25/24	10/25/24	Bid Set
08 12 16	ALUMINUM DOORS AND FRAMES	0	10/25/24	10/25/24	Bid Set
08 14 16	FLUSH WOOD DOORS	0	10/25/24	10/25/24	Bid Set
08 31 13	ACCESS DOORS AND FRAMES	0	10/25/24	10/25/24	Bid Set
08 41 13	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS	0	10/25/24	10/25/24	Bid Set
08 41 28	INTERIOR ALL GLASS ENTRANCES	0	10/25/24	10/25/24	Bid Set
08 44 23	STRUCTURAL SEALANT GLAZED CURTAIN WALLS	0	10/25/24	10/25/24	Bid Set
08 71 00	DOOR HARDWARE	0	10/25/24	10/25/24	Bid Set
08 80 00	GLAZING	0	10/25/24	10/25/24	Bid Set
08 91 19	FIXED LOUVERS	0	10/25/24	10/25/24	Bid Set
09 - Finishes					
09 05 61	MOISTURE VAPOR EMISSION CONTROL	0	10/25/24	10/25/24	Bid Set
09 21 00	GYPSUM BOARD ASSEMBLIES	0	10/25/24	10/25/24	Bid Set
09 30 00	TILING	0	10/25/24	10/25/24	Bid Set
09 51 00	ACOUSTICAL PANEL CEILINGS	0	10/25/24	10/25/24	Bid Set
09 65 00	RESILIENT FLOORING AND ACCESSORIES	0	10/25/24	10/25/24	Bid Set
09 66 23	RESINOUS MATRIX TERRAZZO FLOORING	0	10/25/24	10/25/24	Bid Set
09 68 10	CARPETING	0	10/25/24	10/25/24	Bid Set
09 72 00	WALL COVERINGS	0	10/25/24	10/25/24	Bid Set
09 77 23	FABRIC-WRAPPED PANELS	0	10/25/24	10/25/24	Bid Set
09 91 00	PAINTING	0	10/25/24	10/25/24	Bid Set
09 96 11	HIGH-PERFORMANCE COATINGS	0	10/25/24	10/25/24	Bid Set
10 - Specialties					
10 14 00	PANEL SIGNAGE	0	10/25/24	10/25/24	Bid Set



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10 21 13	TOILET COMPARTMENTS	0	10/25/24	10/25/24	Bid Set
10 26 00	WALL AND DOOR PROTECTION	0	10/25/24	10/25/24	Bid Set
10 28 00	TOILET, BATH, AND LAUNDRY ACCESSORIES	0	10/25/24	10/25/24	Bid Set
10 28 19	TUB AND SHOWER ENCLOSURES	0	10/25/24	10/25/24	Bid Set
10 44 13	FIRE PROTECTION CABINETS	0	10/25/24	10/25/24	Bid Set
10 44 16	FIRE EXTINGUISHERS	0	10/25/24	10/25/24	Bid Set
11 - Equipment					
11 24 23	FALL ARREST SYSTEM	0	10/25/24	10/25/24	Bid Set
11 53 00	LABORATORY EQUIPMENT	0	10/25/24	10/25/24	Bid Set
11 53 13	FUME HOODS AND EXHAUST DEVICES	0	10/25/24	10/25/24	Bid Set
11 53 19	LABORATORY STERILIZERS	0	10/25/24	10/25/24	Bid Set
11 53 33	LASER SAFETY EQUIPMENT	0	10/25/24	10/25/24	Bid Set
11 53 43	LABORATORY SERVICE FITTINGS AND FIXTURES	0	10/25/24	10/25/24	Bid Set
12 - Furnishings					
12 24 13	ROLLER WINDOW SHADES	0	10/25/24	10/25/24	Bid Set
12 35 53	LABORATORY CASEWORK AND OTHER FURNISHINGS	0	10/25/24	10/25/24	Bid Set
12 78 00	BANQUETTE SEATING	0	10/25/24	10/25/24	Bid Set
13 - Special Construction					
13 21 14	CONTROLLED ENVIRONMENTAL ROOMS	0	10/25/24	10/25/24	Bid Set
14 - Conveying Equipment					
14 24 00	HYDRAULIC ELEVATOR	0	10/25/24	10/25/24	Bid Set
21 - Fire Suppression					
21 05 01	BASIC FIRE SUPPRESSION REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
21 05 02	AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES & HEAPY RELEASE FORM TO CONTRACTORS	0	10/25/24	10/25/24	Bid Set
21 05 04	BASIC FIRE SUPPRESSION MATERIALS AND METHODS	0	10/25/24	10/25/24	Bid Set
21 05 05	FIRESTOPPING	0	10/25/24	10/25/24	Bid Set
21 05 07	PIPING MATERIALS AND METHODS FOR FIRE SUPPRESSION	0	10/25/24	10/25/24	Bid Set
21 05 13	ELECTRICAL REQUIREMENTS FOR FIRE SUPPRESSION EQUIPMENT	0	10/25/24	10/25/24	Bid Set
21 05 19	GAUGES FOR FIRE SUPPRESSION PIPING	0	10/25/24	10/25/24	Bid Set
21 05 29	HANGERS AND SUPPORTS FOR FIRE SUPPRESSION PIPING	0	10/25/24	10/25/24	Bid Set
21 05 53	IDENTIFICATION OF FIRE SUPPRESSION PIPING AND EQUIPMENT	0	10/25/24	10/25/24	Bid Set
21 13 12	FIRE SUPPRESSION PIPING	0	10/25/24	10/25/24	Bid Set
21 13 13	FIRE SUPPRESSION SPRINKLER SYSTEM	0	10/25/24	10/25/24	Bid Set
21 13 14	FIRE SUPPRESSION STANDPIPE SYSTEM	0	10/25/24	10/25/24	Bid Set
21 13 15	FIRE SUPPRESSION EQUIPMENT	0	10/25/24	10/25/24	Bid Set
22 - Plumbing					
22 05 01	BASIC PLUMBING REQUIREMENTS	0	10/25/24	10/25/24	Bid Set



Shiel Sexton Company, Inc.

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 Blackford & New York
 Indianapolis, Indiana 46202

Number	Description	Revision	Issued Date	Received Date	Set
22 05 02	AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES & HEAPY RELEASE FOR TO CONTRACTORS	0	10/25/24	10/25/24	Bid Set
22 05 04	BASIC PLUMBING MATERIALS AND METHODS	0	10/25/24	10/25/24	Bid Set
22 05 07	PIPING MATERIALS AND METHODS	0	10/25/24	10/25/24	Bid Set
22 05 13	ELECTRICAL REQUIREMENTS FOR PLUMBING EQUIPMENT	0	10/25/24	10/25/24	Bid Set
22 05 19	METERS AND GAUGES FOR PLUMBING PIPING	0	10/25/24	10/25/24	Bid Set
22 05 23	GENERAL DUTY VALVES FOR PLUMBING PIPING	0	10/25/24	10/25/24	Bid Set
22 05 29	HANGERS AND SUPPORTS FOR PLUMBING PIPING	0	10/25/24	10/25/24	Bid Set
22 05 30	BASES AND SUPPORTS FOR PLUMBING EQUIPMENT	0	10/25/24	10/25/24	Bid Set
22 05 49	VIBRATION CONTROL FOR PLUMBING	0	10/25/24	10/25/24	Bid Set
22 05 53	IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT	0	10/25/24	10/25/24	Bid Set
22 07 19	PLUMBING PIPING INSULATION	0	10/25/24	10/25/24	Bid Set
22 08 00	PLUMBING COMMISSIONING REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
22 11 16	INTERIOR DOMESTIC WATER PIPING	0	10/25/24	10/25/24	Bid Set
22 11 19	INTERIOR DOMESTIC WATER PIPING SPECIALTIES	0	10/25/24	10/25/24	Bid Set
22 11 23	WATER PRESSURE BOOSTER PUMPING SYSTEM - VARIABLE SPEED	0	10/25/24	10/25/24	Bid Set
22 13 16	INTERIOR DRAINAGE AND VENT SYSTEMS	0	10/25/24	10/25/24	Bid Set
22 13 19	DRAINAGE SYSTEMS SPECIALTIES	0	10/25/24	10/25/24	Bid Set
22 31 16	COMMERCIAL DOMESTIC WATER SOFTENERS	0	10/25/24	10/25/24	Bid Set
22 32 28	PURE WATER SYSTEM - PRE-PACKAGED	0	10/25/24	10/25/24	Bid Set
22 33 00	DOMESTIC WATER HEATERS SEMI-INSTANTANEOUS	0	10/25/24	10/25/24	Bid Set
22 42 00	PLUMBING FIXTURES	0	10/25/24	10/25/24	Bid Set
22 62 19	MEDICAL LABORATORY GAS AND VACUUM SYSTEMS (NON-FLAMMABLE)	0	10/25/24	10/25/24	Bid Set
23 - Heating, Ventilating, and Air Conditioning (HVAC)					
23 05 01	BASIC HVAC REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
23 05 02	AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES & HEAPY RELEASE FORM TO CONTRACTORS	0	10/25/24	10/25/24	Bid Set
23 05 04	BASIC HVAC MATERIALS AND METHODS	0	10/25/24	10/25/24	Bid Set
23 05 07	PIPING MATERIALS AND METHODS	0	10/25/24	10/25/24	Bid Set
23 05 13	ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT	0	10/25/24	10/25/24	Bid Set
23 05 14	ADJUSTABLE FREQUENCY MOTOR CONTROLLER	0	10/25/24	10/25/24	Bid Set
23 05 19	GAUGES AND MAKE UP METERS FOR HVAC PIPING	0	10/25/24	10/25/24	Bid Set
23 05 21	FLOW AND ENERGY METERS	0	10/25/24	10/25/24	Bid Set
23 05 23	GENERAL DUTY VALVES FOR HVAC PIPING	0	10/25/24	10/25/24	Bid Set
23 05 29	HANGERS AND SUPPORTS FOR HVAC PIPING	0	10/25/24	10/25/24	Bid Set
23 05 30	BASES AND SUPPORTS FOR HVAC EQUIPMENT	0	10/25/24	10/25/24	Bid Set
23 05 31	HVAC EQUIPMENT DRIVES	0	10/25/24	10/25/24	Bid Set
23 05 49	VIBRATION CONTROL FOR HVAC	0	10/25/24	10/25/24	Bid Set
23 05 50	FLEXIBLE HVAC PIPE CONNECTORS	0	10/25/24	10/25/24	Bid Set



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Number	Description	Revision	Issued Date	Received Date	Set
23 05 53	IDENTIFICATION OF HVAC PIPING AND EQUIPMENT	0	10/25/24	10/25/24	Bid Set
23 05 93	TESTING, ADJUSTING AND BALANCING FOR HVAC	0	10/25/24	10/25/24	Bid Set
23 07 13	DUCT INSULATION	0	10/25/24	10/25/24	Bid Set
23 07 16	HVAC EQUIPMENT INSULATION	0	10/25/24	10/25/24	Bid Set
23 07 19	HVAC PIPE INSULATION	0	10/25/24	10/25/24	Bid Set
23 08 00	COMMISSIONING OF HVAC SYSTEMS	0	10/25/24	10/25/24	Bid Set
23 09 00	HVAC INSTRUMENTATION AND CONTROLS	0	10/25/24	10/25/24	Bid Set
23 21 13	HYDRONIC PIPING	0	10/25/24	10/25/24	Bid Set
23 21 14	EXPANSION TANKS	0	10/25/24	10/25/24	Bid Set
23 21 17	GLYCOL SOLUTION SYSTEMS	0	10/25/24	10/25/24	Bid Set
23 21 23	HYDRONIC PUMPS	0	10/25/24	10/25/24	Bid Set
23 22 13	STEAM AND CONDENSATE PIPING SYSTEM	0	10/25/24	10/25/24	Bid Set
23 22 23	STEAM CONDENSATE PUMPING UNITS	0	10/25/24	10/25/24	Bid Set
23 25 00	WATER TREATMENT SYSTEMS	0	10/25/24	10/25/24	Bid Set
23 31 13	HVAC DUCTWORK	0	10/25/24	10/25/24	Bid Set
23 31 19	AIR PLENUM CASINGS	0	10/25/24	10/25/24	Bid Set
23 33 00	AIR DUCT ACCESSORIES	0	10/25/24	10/25/24	Bid Set
23 35 00	SPECIAL EXHAUST SYSTEMS	0	10/25/24	10/25/24	Bid Set
23 36 16	AIR TERMINAL	0	10/25/24	10/25/24	Bid Set
23 36 24	AIRFLOW CONTROL VALVES	0	10/25/24	10/25/24	Bid Set
23 37 00	AIR OUTLETS AND INLETS	0	10/25/24	10/25/24	Bid Set
23 41 00	AIR FILTERS	0	10/25/24	10/25/24	Bid Set
23 41 33	FAN FILTER CEILING MODULES	0	10/25/24	10/25/24	Bid Set
23 57 00	HEAT EXCHANGERS	0	10/25/24	10/25/24	Bid Set
23 73 23	CUSTOM AIR HANDLING UNITS	0	10/25/24	10/25/24	Bid Set
23 82 16	DUCT HEATING COILS	0	10/25/24	10/25/24	Bid Set
23 82 19	FAN-COIL UNITS	0	10/25/24	10/25/24	Bid Set
23 82 39	UNIT HEATERS	0	10/25/24	10/25/24	Bid Set
23 84 13	HUMIDIFIERS - DIRECT BUILDING STEAM TYPE	0	10/25/24	10/25/24	Bid Set
23 84 15	HUMIDIFIERS - STEAM DISPERSION DEVICES & ACCESSORIES	0	10/25/24	10/25/24	Bid Set
26 - Electrical					
26 05 01	BASIC ELECTRICAL REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
26 05 02	AGREEMENT AND WAIVER FOR THE USE OF ELECTRONIC FILES & HEAPY RELEASE FORM TO CONTRACTORS	0	10/25/24	10/25/24	Bid Set
26 05 04	BASIC ELECTRICAL MATERIALS AND METHODS	0	10/25/24	10/25/24	Bid Set
26 05 05	FIRESTOPPING	0	10/25/24	10/25/24	Bid Set
26 05 09	EXCAVATION, BACKFILL AND SURFACE RESTORATION	0	10/25/24	10/25/24	Bid Set
26 05 13	MEDIUM-VOLTAGE CABLES - SHIELDED JACKETED POWER CABLE	0	10/25/24	10/25/24	Bid Set



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Number	Description	Revision	Issued Date	Received Date	Set
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS - COPPER	0	10/25/24	10/25/24	Bid Set
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS	0	10/25/24	10/25/24	Bid Set
26 05 33	RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS	0	10/25/24	10/25/24	Bid Set
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEMS	0	10/25/24	10/25/24	Bid Set
26 05 65	SPECIFIC WIRING APPLICATIONS	0	10/25/24	10/25/24	Bid Set
26 05 73	OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY	0	10/25/24	10/25/24	Bid Set
26 08 00	ELECTRICAL COMMISSIONING REQUIREMENTS	0	10/25/24	10/25/24	Bid Set
26 09 23	LIGHTING CONTROL DEVICES	0	10/25/24	10/25/24	Bid Set
26 13 19	MEDIUM-VOLTAGE VACUUM INTERRUPTER SWITCHGEAR	0	10/25/24	10/25/24	Bid Set
26 22 13	DISTRIBUTION TRANSFORMERS - STANDARD TYPE	0	10/25/24	10/25/24	Bid Set
26 24 16	PANELBOARDS	0	10/25/24	10/25/24	Bid Set
26 27 26	WIRING DEVICES AND COVERPLATES	0	10/25/24	10/25/24	Bid Set
26 27 39	ELEVATOR POWER MODULE AND WIRING	0	10/25/24	10/25/24	Bid Set
26 28 16	DISCONNECT SWITCHES	0	10/25/24	10/25/24	Bid Set
26 29 13	MOTOR CONTROLLERS	0	10/25/24	10/25/24	Bid Set
26 32 13	DIESEL ENGING DRIVEN GENERATOR SETS WALK IN WEATHERPROOF HOUSING	0	10/25/24	10/25/24	Bid Set
26 36 23	AUTOMATIC TRANSFER SWITCHES	0	10/25/24	10/25/24	Bid Set
26 41 00	FACILITY LIGHTNING PROTECTION SYSTEM - FOR BUILDING ADDITION	0	10/25/24	10/25/24	Bid Set
26 43 13	SURGE PROTECTION DEVICES (SPD'S) FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS	0	10/25/24	10/25/24	Bid Set
26 51 00	INTERIOR LIGHTING	0	10/25/24	10/25/24	Bid Set
26 52 13	EMERGENCY AND EXIT LIGHTING	0	10/25/24	10/25/24	Bid Set
26 56 19	EXTERIOR LIGHTING	0	10/25/24	10/25/24	Bid Set
27 - Communications					
27 00 00	COMMUNICATIONS	0	10/25/24	10/25/24	Bid Set
28 - Electronic Safety and Security					
28 31 00	FIRE DETECTION AND ALARM (ADDRESSABLE)	0	10/25/24	10/25/24	Bid Set
31 - Earthwork					
31 10 00	SITE DEMOLITION	0	10/25/24	10/25/24	Bid Set
31 11 00	SITE CLEARING	0	10/25/24	10/25/24	Bid Set
31 20 00	EARTH MOVING	0	10/25/24	10/25/24	Bid Set
31 23 17	TRENCHING	0	10/25/24	10/25/24	Bid Set
31 23 19	DEWATERING	0	10/25/24	10/25/24	Bid Set
31 23 24	FLOWABLE FILL	0	10/25/24	10/25/24	Bid Set
31 25 13	EROSION CONTROLS	0	10/25/24	10/25/24	Bid Set
31 66 13	AGGREGATE PIERS	0	10/25/24	10/25/24	Bid Set
32 - Exterior Improvements					
32 05 13	SOIL MATERIALS	0	10/25/24	10/25/24	Bid Set



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Number	Description	Revision	Issued Date	Received Date	Set
32 05 16	AGGREGATE MATERIALS	0	10/25/24	10/25/24	Bid Set
32 11 23	GRANULAR BASE	0	10/25/24	10/25/24	Bid Set
32 13 13	CONCRETE PAVING	0	10/25/24	10/25/24	Bid Set
32 13 73	PAVEMENT JOINT SEALANTS	0	10/25/24	10/25/24	Bid Set
32 14 13.16	PAVING SLABS ON PEDESTALS	0	10/25/24	10/25/24	Bid Set
32 15 40	AGGREGATE SURFACING	0	10/25/24	10/25/24	Bid Set
32 33 00	SITE FURNISHINGS	0	10/25/24	10/25/24	Bid Set
32 84 00	IRRIGATION	0	10/25/24	10/25/24	Bid Set
32 91 13	TOPSOIL PREPARATION	0	10/25/24	10/25/24	Bid Set
32 91 14	BIOISOILS	0	10/25/24	10/25/24	Bid Set
32 92 00	TURF AND GRASSES	0	10/25/24	10/25/24	Bid Set
32 93 00	PLANTING	0	10/25/24	10/25/24	Bid Set
33 - Utilities					
33 00 00.30	CEG 2024 Sanitary Systems Manual	0	10/25/24	10/25/24	Bid Set
33 00 00.30-2	CEG 2024 Water Systems Manual	0	10/25/24	10/25/24	Bid Set
33 05 14	PRECAST CONCRETE STRUCTURES	0	10/25/24	10/25/24	Bid Set
33 41 00	STORM DRAINAGE PIPING	0	10/25/24	10/25/24	Bid Set



Subcontract Agreement

10/14/24

Job No.:	XXXXX-
Commitment No.:	XXXXX-XXX

SUBCONTRACT AGREEMENT BETWEEN:

CONTRACTOR:	SUBCONTRACTOR:
	XXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXXXXXXXX

PROJECT INFORMATION

OWNER: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXX	DESIGNER:
PROJECT: XXXXXXXXXXXXXXXXXXXXXXX	LIQUIDATED DAMAGES: (Per calendar day) XX
PROJECT LOCATION: XXXXXXXXXXXXXXXXXXXXXXX	SUBCONTRACT SUM: (includes all taxes) \$ 0.00 Includes MBE and WBE
COMMENCEMENT DATE: Refer to Attachment "B"	COMPLETION DATE: Refer to Attachment "B"

This Subcontract Agreement DOES Or DOES NOT require Payment and Performance bonds.

Subcontractor agrees to furnish materials and services in accordance with all the terms of the Subcontract Agreement and the following documents attached hereto: Attachment A – Scope of Work, Attachment B – Schedule, Attachment C – Document Log, Attachment D – Billing Procedures, Attachment E – Safety Summary, and Attachment F – Quality Summary. Use the above referenced "Job.No." on all documentation regarding this Project.

CONTRACTOR: SHIEL SEXTON COMPANY **SUBCONTRACTOR:** XXXXXXXXXXXXXXXXXXXX

Signed: _____ Signed: _____

Printed: _____ Printed: _____

Title: _____ Title: _____

Date: _____ Date: _____

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Article 11	Shop Drawings and Submittals
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Article 13	Dimensions and Elevations
Article 14	Clean Up
Article 15	Contractor Furnished Equipment, Labor or Materials
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Article 33	Miscellaneous Provisions

Contractor and Subcontractor expressly desire to contract with respect to a specific portion of the Work for the construction of the Project and in consideration of the mutual promises herein and intending to be legally, Contractor and Subcontractor agree as follows:

ARTICLE 1 SUBCONTRACT DOCUMENTS

1.1 Subcontract Documents

The Subcontract Documents consist of (1) this Subcontract Agreement between Contractor and Subcontractor including Attachments A through F, (2) the Prime Contract between the Owner and Contractor and other documents enumerated therein (collectively referred to as "Contract Documents") and all change orders and modifications thereto, (3) the drawings, specifications, general conditions, special conditions, and addenda prepared by the Owner and/or Designer for the Project, (4) Exhibit 1 – State Specific Changes to the Subcontract Agreement, if any, and (5) other documents which are more specifically described and enumerated in Attachment C - Document Log. The Subcontract Agreement represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Subcontract Agreement can only be modified or amended in writing signed by both parties.

1.2 Availability of Subcontract Documents

The Subcontract Documents are available for examination by the Subcontractor at all reasonable times at the office of the Contractor. The Subcontractor may request copies of the Subcontract Documents, but Contractor may charge Subcontractor the cost of printing and reproduction.

1.3 Subcontract Documents are Complementary

This Subcontract Agreement and the Subcontract Documents are intended to supplement and complement each other and shall, where possible, be thus interpreted. In the case of conflict or inconsistency within, among, or between the Subcontract Documents, the provision granting greater rights or remedies to the Contractor, or imposing the greater duty, standard, responsibility or obligation on the Subcontractor shall govern. Unless clarified by a request for information made by the Subcontractor, in the case of a conflict or inconsistency with, and among the drawings and specification or applicable standard codes and ordinances or with a Contract Document not clarified by addendum, the better quality or greater quantity of work shall be provided in accordance with the Owner's or Contractor's interpretation. When the Prime Contract stipulates the interpretation of the Subcontract Documents is the responsibility of the Designer, the Subcontractor shall be bound by all such interpretations.

1.4 Examination of Subcontract Documents

The Subcontractor represents and agrees that it has carefully examined and understands this Subcontract Agreement and the Subcontract Documents, that it has investigated the nature, locality and site of the Work and the conditions and difficulties under which the Work will be performed, and that it enters this Subcontract Agreement on the basis of its own examination, investigation and evaluation and not in reliance upon any opinions or representations of the Contractor, the Owner, or Architect, or any of its respective employees unless specifically set forth herein. Neither Contractor nor the Owner shall be liable to Subcontractor for any claim for an adjustment to the Subcontract Sum or an extension of time if such claim directly or indirectly arises from Subcontractor's failure or refusal to investigate or familiarize itself with the conditions under which this Subcontract Agreement is to be performed.

ARTICLE 2 RIGHTS AND RESPONSIBILITIES

The Subcontractor shall assume toward the Contractor all obligations duties, procedures, requirements, and responsibilities which the Contractor, under the Prime Contract, assume toward the Owner. The Contractor shall have the benefit of all rights, remedies and redress against the Subcontractor that the Owner, under the Prime Contract, has against the Contractor. The terms and provisions of this Subcontract Agreement relating to the Subcontractor's Work are in addition to and not in substitution of any of the terms and conditions of the Prime Contract. If the Prime Contract requires that a specific provision or regulation (for example, Federal Acquisition Regulations) be expressly included in the Subcontract Agreement, such provision shall be deemed to be to be

incorporated into this Subcontract Agreement as if it were expressly written herein. Any sub-subcontractor shall be bound to Subcontractor, to the extent of the Work performed by the sub-subcontractor, to the same extent the Subcontractor is bound to Contractor, and by which the sub-subcontractor assumes all obligations and responsibilities that Subcontractor assumes under this Subcontract Agreement. The Subcontract Documents shall not be construed to create a contractual relationship with any entities or persons other than the Contractor and Subcontractor.

ARTICLE 3 SCOPE OF WORK

3.1 Subcontractor's Work

Subcontractor, as an independent contractor, shall perform the Work indicated in the Subcontract Documents in strict accordance with this Subcontract Agreement, the Project Schedule and applicable laws.

3.2 Scope of Work

The Subcontractor shall use its best skill, attention and judgment to execute the Work described in the Subcontract Documents, including, without limitation, all labor, supervision, materials, equipment, hoisting, shoring, bracing, work access, supplies, tools, fuel, transportation, parking, installation, temporary facilities, clean up, and all other items or services of any kind whatsoever necessary to fully perform and complete the Work. Subcontractor shall provide necessary precautions to protect properly the work of other subcontractors and entities engaged in the Project from damage caused by operations under this Subcontract Agreement. Subcontractor shall pay for all costs of the performance of its obligations under this Subcontract, even if those costs exceed the Subcontract Sum. Subject to the provisions of this Subcontract Agreement, Subcontractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under this Subcontract Agreement.

3.3 Performance Specifications

When the Subcontract Documents applicable to Subcontractor's Work contain Performance Specifications, the Subcontractor agrees and represents that the performance requirements are achievable by the Subcontractor, the Subcontract Sum includes the cost of all design services related to or required for the achievement of the Performance Specifications, and all design services shall be performed by qualified and licensed architects, engineers, and other professionals selected and paid by the Subcontractor. Subcontractor's design professionals shall maintain errors and omissions or professional liability insurance in the amounts and on the terms and conditions set forth in Article 9.

3.4 Familiarity of Conditions

The Subcontractor represents and agrees that it has (1) carefully examined this Subcontract Agreement and the Subcontract Documents and understands their respective provisions; (2) visited the jobsite and investigated and satisfied itself with the nature, locality, and physical conditions of the Project for layout, staging, material layout, hoisting, access, availability of utilities, and other conditions and difficulties under which the Work is to be performed; (3) investigated and satisfied itself with respect to the prevailing weather and climatologic conditions at the jobsite under which the Work is to be performed; (4) investigated and satisfied itself with the conformation and condition of the soil together with the quality and quantity of subsurface and surface materials or obstacles to be encountered insofar as such information is ascertainable from the Subcontract Documents, an inspection of the Project site or the results of exploratory work required by the Owner of the Contractor and hence the Subcontractor, or if none was required, then conducted by the Owner and included in the Subcontract Document; (5) reviewed all laws applicable to the Work; and (6) enters into this Subcontract Agreement on the basis of its own examination, investigation and evaluation of all such matters and not in reliance upon any opinions or representations of the Contractor, Owner, Designer or any of their respective agents or employees. Neither the Contractor nor the Owner shall be liable to the Subcontractor for any claim for an adjustment to the Subcontract Sum or an extension of the time if such claim arises from Subcontractor's failure or refusal to investigate or familiarize itself with the conditions under which this Subcontract Agreement is to be performed.

3.5 Design Deficiencies Notification

Subcontractor shall give Contractor written notice within three (3) days of discovering any condition or omission in the Subcontract Documents which Subcontractor believes is or may be a design error, inconsistency, or deficiency.

3.6 Subcontractor's Competency and Experience

The Subcontractor represents and warrants it has sufficient supervision, labor, and experience for performance of the type, quality and quantity of Work required for complete performance of this Subcontract Agreement. If requested, Subcontractor shall provide a copy of its license as evidence of its competency to perform the Work.

3.7 Tests and Inspections

The Subcontractor shall give timely and proper notice and coordinate with Contractor and independent testing agencies for all required tests and inspections of Subcontractor's Work as required by the Subcontract Documents so as to not delay the progress of the Work. Subcontractor shall be responsible for additional costs due to failure of tests and/or inspections or lack of coordination by Subcontractor.

ARTICLE 4 SUBCONTRACT SUM

4.1 Definition

The Subcontract Sum is set forth on page 1. The Subcontract Sum shall be subject to additions and deductions as provided in the Subcontract Documents and agreed in writing by the Contractor.

4.2 Binding Submission of Bid

In the event the Subcontractor has submitted a bid for the Subcontract Work, the Subcontractor agrees to be bound by the agreed amount of the Subcontract Sum, the Subcontract Time, and all other terms and provisions of the Subcontract Documents for a period of one hundred twenty (120) days after submission of the bid. In the event the Contractor enters into a Prime Contract with regard to the Project, the Subcontractor shall be bound by all the terms and provisions of the Subcontract Documents. In the event the Contractor does not enter into a Prime Contract for the Project, this Subcontract Agreement shall be terminated and neither party shall have any further liability thereunder. In the event the Contractor has entered into a Prime Contract but the Prime Contract is terminated prior to the Commencement Date as set forth in this Subcontract Agreement, the Subcontract shall be terminated and neither party shall have any further liability thereunder.

4.3 Escalation Included in Subcontract Sum

Escalation in costs, including but not limited to, material, labor, equipment, tools, delivery, surcharges, or fuel costs are included in the Subcontract Sum and shall not be a basis for increase in the Subcontract Sum.

4.4 Taxes Included in Subcontract Sum

The Subcontract Sum includes all Federal, State, County, Municipal, and Local tax requirements, social security acts, unemployment compensation acts, workers' compensation acts, and other taxes imposed by law and based upon labor, services, materials, equipment, or other items acquired, performed, furnished, or used for, or in connection with the Work, including but not limited to, sales, use, and personal property taxes payable by, or levied or assessed against the Owner, Contractor, or Subcontractor. If the law requires any such taxes to be stated and charged separately, the total price of all items plus the amount of such taxes shall not exceed the Subcontract Sum.

4.5 Allowances in Subcontract Sum

The Subcontract Sum may include specific allowances for Work as remunerated in the Prime Contract, Subcontract Documents, or Attachment A. Unless otherwise provided in the Subcontract Documents, allowances shall cover the complete cost to Subcontractor of the materials, labor, installation, equipment, taxes, handling, overhead, profit and other costs associated with the Work. Whenever the actual cost of the Work is less than the allowance, the Subcontract Sum shall be adjusted accordingly by a deductive change order so as to provide a credit to Contractor for the value of any unused portion of the Allowance. Unless noted otherwise in the Subcontract Documents, allowances shall be used by Subcontractor only upon the express written authorization of Contractor.

4.6 Subcontract Sum Includes “As Designed” Materials

The Subcontractor represents that it has based the Subcontract Sum on the exact materials specified in the Subcontract Documents. The Subcontract Sum is not contingent upon approval by the Contractor, the Owner, or the Designer of any submission by the Subcontractor of substitute “or equal” materials unless previously approved by an addendum issued by the Owner or Designer. Any Subcontractor proposed change of materials after the execution of this Subcontract Agreement shall be governed by the applicable provisions of the Subcontract Documents.

4.7 Manufacturer’s Recommendations Included in Subcontract Sum

The Subcontractor warrants and represents that it shall comply with all manufacturers’ recommendations related to the use of materials or equipment and/or related to the installation of any of its Work. Where Subcontractor’s Work shall adhere or attach to existing conditions or the work of others, the Subcontractor shall ensure and warrant that the products used are compatible and installed in accordance with the manufacturer’s recommendations.

4.8 Subcontract Sum as Full Payment

The Subcontractor accepts the Subcontract Sum as full and complete payment for the Subcontract Work. The Subcontract Sum includes Subcontractor’s profit, overhead, and the entire Subcontractor cost of performing the Subcontractor’s Work.

ARTICLE 5 PAYMENT

5.1 Schedule of Values

Within twenty-one (21) days prior to submitting its first pay application or earlier if requested by Contractor, the Subcontractor shall submit a schedule of values to the Contractor, for its review and approval. The schedule of values shall allocate the entire Subcontract Sum among the various parts of the Work of this Subcontract Agreement, aggregating the Subcontract Sum, and shall be made out in such detail and supported by such evidence as the Contractor may direct or as required by the Owner. The approved schedule of values shall be used as a basis for reviewing the Subcontractor’s applications for payment.

5.2 Payment

Provided the Subcontractor’s application for payment is received by the Contractor as described in this Article 5 and Attachment D, the Contractor shall include the Subcontractor’s Work covered by that application in the next application for payment which the Contractor is entitled to submit to the Owner. Upon receipt of payment from the Owner on account of Subcontractor’s portion of the Work, the Contractor shall pay the Subcontractor in current funds received from the Owner for the satisfactory performance and completion of the Work, and of all the duties, obligations, and responsibilities of the Subcontractor under this Subcontract Agreement. Contractor’s receipt of payment from the Owner is a condition precedent to the corresponding payment by Contractor to Subcontractor for a progress payment or for final payment unless Owner’s failure to make such payment is conclusively determined to be due to the sole fault of the Contractor. If Contractor has posted a payment bond for the Project, Contractor’s receipt of payment from the Owner for Subcontractor’s portion of the Work is a condition precedent to the Subcontractor’s right to make any claim against Contractor’s payment bond for the Project. Nothing contained in the Subcontract Agreement shall require payments received by Contractor from Owner to

be placed in a separate account and not commingled with other money of the Contractor, or shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust.

5.3 Lien Waivers

Subcontractor shall comply with all Owner lien waiver requirements. If none, Subcontractor shall comply with Contractor's lien waiver requirements and execute Contractor's form of lien waiver. If requested, Subcontractor shall provide lien waivers from each of its sub-subcontractors, vendors and suppliers. All payments will be withheld until receipt by Contractor of the required lien waiver(s). Acceptance of periodic progress payments by the Subcontractor shall constitute a waiver of any and all claims by the Subcontractor against the Contractor, the Owner, the Designer, the Surety, the premises or any payment bond unless such claims are expressly reserved on the face of the application for payment.

5.4 Progress Payment Application Submission Time

The payment period for each Subcontractor application for payment shall be from the 25th day of the previous month through the 24th day of the current month, unless an earlier date is required for timely submission of Contractor's application for payment to the Owner. All invoices, statements and applications for payment shall be received in the office of the Contractor, SHIEL SEXTON COMPANY, 902 N. CAPITOL AVE., INDIANAPOLIS, IN 46204, no later than 12:00 o'clock noon on the 24th day of each month, except in February, November and December in which such payment applications shall be received no later than noon on the 16th of said month, unless notified otherwise. All payment requests must show Contractor's job number, along with the Subcontract Number; if this information is omitted, the payment application will be returned. Each month's invoice shall be submitted on an AIA G702 or G703 format unless required otherwise. If the Subcontractor's application for payment is received by the Contractor after the application date fixed above, the Subcontractor's Work covered by it shall be included by the Contractor in the next month's application for payment submitted to the Owner.

5.5 Withholding Subcontractor Payment

The Contractor may withhold payment from the Subcontractor, in whole or in part, for any failure of the Subcontractor to perform in accordance with the terms and conditions of the Subcontract Documents or for the reasons and circumstances by which the Owner may withhold payment from the Contractor under the Prime Contract, regardless of whether or not the Owner has actually withheld payment from the Contractor, unless contrary to law. If there is any evidence of any lien or claim arising out of the Subcontractor's Work for which the Owner or Contractor may become liable, or if Subcontractor causes damage to work of others, Contractor may withhold payment in an amount sufficient to indemnify the Owner or Contractor for any loss or damage either may sustain in discharging such liens, claims or damage, including reasonable attorney's fees. If such lien, claim or damage arises after final payment to the Subcontractor, or if the amount due Subcontractor is insufficient to indemnify the Owner or Contractor, the Subcontractor, within seven (7) days of written demand by Contractor, shall reimburse Contractor for all costs incurred by the Owner or Contractor in discharging such lien or claim.

5.6 Backcharges

Contractor may deduct from any payment due Subcontractor any costs incurred by Contractor which are chargeable to Subcontractor.

5.7 Notice of Disapproval

Upon the partial or entire disapproval by the Contractor, Owner, or Designer of the Subcontractor's payment application, the Contractor shall provide reasonable notice to the Subcontractor. When the basis for the disapproval has been remedied, the Subcontractor shall be paid the amounts withheld, upon receipt of payment by the Contractor from Owner.

5.8 Payment Disbursement and Retainage

Each application for payment shall be based upon the most recent schedule of values submitted by the Subcontractor.

5.8.1 Subcontractor applications for payment shall indicate the percentage of completion of each portion of the Subcontractor's Work as of the end of the period covered by the application for payment.

- 5.8.2 Subject to the provisions of the Subcontract Documents, the amount of each progress payment shall be computed as set forth in the paragraphs below.
- 5.8.2.1 Take that portion of the Subcontract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Subcontractor's Work by the share of the total Subcontract Sum allocated to that portion of the Subcontractor's Work in the schedule of values, less 10.00% to be actually retained. The amount to be retained is not dependent upon the percentage retained from payments by the Owner, unless contrary to law. Pending final determination of cost to the Contractor of changes in the Work that have been properly authorized by the Contractor, amounts not in dispute shall be included to the same extent provided in the Prime Contract, even though the Subcontract Sum has not yet been adjusted;
- 5.8.2.2 Add that portion of the Subcontract Sum properly allocable to materials and equipment delivered and suitably stored at the site by the Subcontractor for subsequent incorporation in the Subcontractor's Work or, if approved by the Contractor and Owner, suitably stored off the site at a location agreed upon in writing, less the same percentage retainage required by the Prime Contract to be applied to such materials and equipment in the Contractor's application for payment;
- 5.8.2.3 Subtract the aggregate of previous payments made by the Contractor; and
- 5.8.2.4 Subtract amounts, if any, which are related to Work of the Subcontractor for which the Owner has withheld or nullified, in whole or in part, a certificate of payment for a cause that is the fault of the Subcontractor.
- 5.8.3 The Contractor shall pay the Subcontractor each progress payment within two (2) weeks after receipt by the Contractor of payment from the Owner or in the event Contractor is not paid due to reasons conclusively established to be the Contractor's sole fault, fifteen (15) days after issuance of the Certificate of Payment from the Owner approving the progress payment. In the event a prompt payment or other statute governs the time for making payments to subcontractors, payments shall be made in accordance with such statute.
- 5.8.4 The Subcontractor agrees to disperse payments in a timely manner to avoid non-payment claims by its sub-subcontractors, mechanics, journeymen, laborers, material vendors, lessors of tools or machinery, or any other party who may furnish work, materials, services, tool or machinery for construction. Contractor reserves the right in its sole judgment to make any progress payment, and the final payment, directly or by joint check, to Subcontractor and the party or parties who have supplied labor, materials or services which were included in the application for payment submitted by Subcontractor and approved for payment and deduct such payments from the Subcontract Sum. In no event shall any direct or joint payment be construed to create any contract between Contractor and sub-subcontractors of any tier, obligations to such sub-subcontractors, or rights in such sub-subcontractors against the Contractor.
- 5.8.5 If Subcontractor fails to promptly pay for all materials, equipment, labor, or services used or furnished in connection with the performance of its Work, Subcontractor, upon request, shall immediately provide Contractor with a listing of all unpaid amounts, listing the name and address of each payee, the amount due each payee, and the reason the amount was not paid.

5.9 Early Release of Retainage

If allowed under the Prime Contract and if approved by the Owner in writing, Contractor may approve an early release of retainage.

5.10 Subcontract Sum to Remain in Balance

At all times the Subcontract Sum shall remain in balance with the cost of the Work remaining to be completed, such that the undistributed sum including retainage, equal or exceed the amount necessary to pay for Work already completed but unpaid and all Work to be completed. If at any time, the Subcontract Sum becomes unbalanced, Contractor may order Subcontractor to continue its Work without further payments until the Subcontract Sum is in balance with the cost of the Work to be completed.

5.11 Substantial Completion

After the Owner's representative issues the certificate for payment, and within two (2) weeks of Contractor's receipt of payment from the Owner covering such substantially completed Work, the Contractor shall, to the full extent allowed in the Prime Contract, make payment to the Subcontractor, deducting any portion of the funds for the Subcontractor's Work withheld in accordance with the certificate to cover costs of items to be completed or corrected by the Subcontractor. Such payment to the Subcontractor shall be the entire unpaid balance of the Subcontract Sum less 10%. The Contractor may withhold additional sums due to: (1) the Subcontractor's failure to remedy defective work; (2) the filing or probability of filing of third party claims; (3) the failure of Subcontractor to make payments for labor, materials or equipment; (4) concern that the work cannot be completed for the unpaid balance of the contract; (5) damage to the Owner or another contractor; (6) concern that the work will not be completed on time and that the unpaid balance would be inadequate to cover actual or liquidated damages, if any, for the anticipated delay; and (7) the failure of the Subcontractor to carry out its work in accordance with the Subcontract Documents. Payment to the Contractor by Owner shall be a condition precedent to the Subcontractor to receive payment from the Contractor.

5.12 Payment not Evidence of Performance

No payment made to Subcontractor, whether it be a progress or final payment, shall be construed as evidence of Subcontractor's satisfactory performance or completion of the Work, either in whole or in part, or acceptance by Contractor or Owner of defective or faulty or improper Work or materials, nor shall it release Subcontractor from any obligations under the Subcontract Agreement.

5.13 Payment Interest

Payments due and unpaid by Owner to Contractor shall bear interest from the date payment is due at such rate as allowed by the Prime Contract. If no interest is allowed for in the Prime Contract, no interest shall be due under this Subcontract Agreement. Within two (2) weeks of Contractor's receipt of payment of interest from the Owner, such sums shall be paid to the Subcontractor.

5.14 Owner Title

Subcontractor warrants that title to all Work, materials, and equipment will pass to the Owner either by incorporation in the Project or upon receipt of payment by the Subcontractor for such Work, materials, and equipment whichever occurs first. Work, materials, and equipment including paid materials stored offsite with required Subcontractor insurance shall be free and clear of all liens, claims, security interests or encumbrances.

5.15 Payment for Stored Materials

If payment for materials stored offsite is allowed by the Prime Contract and is requested and made, title to such materials shall pass to the Contractor and through to the Owner as may be agreed between the Contractor and Owner, but the Subcontractor shall remain fully liable for all such materials not delivered to the job site and shall be responsible for providing insurance for such store materials as approved by Contractor and Owner. Subcontractor shall provide any documentation requested by Contractor supporting Subcontractor's request for payment of materials stored offsite.

5.16 Final Payment

Final payment, constituting the entire unpaid balance of the Subcontract Sum, shall be made by the Contractor to the Subcontractor when the Subcontractor's Work is fully performed in accordance with the requirements of the Subcontract Documents, the Owner's representative has issued a certificate for payment covering the Subcontractor's completed Work and the Contractor has received payment from

the Owner, the receipt of which is a condition precedent to the right of the Subcontractor to final payment from the Contractor. Final payment shall be made within two (2) weeks after receipt of final payment by the Contractor from the Owner unless a shorter time period is required by a prompt payment or other statute. Before issuance of the final payment, the Subcontractor, upon request, shall submit evidence satisfactory to the Contractor that all payrolls, bills for materials and equipment, and all known indebtedness connected with the Subcontractor's Work have been satisfied. Acceptance of final payment by the Subcontractor shall constitute a waiver of any and all claims by the Subcontractor against the Contractor, the Owner or the Architect. The Subcontractor shall furnish a final lien waiver and release of all claims acceptable to the Contractor and Owner.

ARTICLE 6 CONTRACT DELIVERABLES

With the execution of this Subcontract Agreement, the Subcontractor shall provide and deliver to the Contractor the following contract deliverable items which the Subcontractor certifies to the Contractor as being currently true, accurate, and correct with no material changes:

- (1) A copy of Subcontractor's Certificate of Insurance in accordance with Article 9;
- (2) A list of the Subcontractor's Project staff;
- (3) A copy of Subcontractor's license, if required;
- (4) A copy of Subcontractor's Sales Tax Registration Certificate;
- (5) Subcontractor's payment and performance bonds, if required;
- (6) A list of all tiers of sub-subcontractors and suppliers (including their addresses and the amounts due or to become due to each). The list shall be updated with each Progress Payment Application showing all additions, deletions, and substitutions to such list, the contract deliverables for each new sub-subcontractor, supplier of any tier, and revised amounts due or to become due;
- (7) A copy of any certificate of qualification required by the Subcontract Documents or applicable law or regulation, including but not limited to, certification as a minority business enterprise or woman-owned business enterprise, Federal small business, or other status requiring certification;
- (8) A copy of Subcontractor's Wage Scale Certification, if required;
- (9) Subcontractor's schedule of values prior to first payment application pursuant to Article 5;
- (10) Subcontractor's detailed work plan and schedule in accordance with Article 10;
- (11) Subcontractor's detailed submittal log and schedule in accordance with Article 11;
- (12) Subcontractor's Project Specific Safety Plan;
- (13) Subcontractor's Project Specific Quality Plan;
- (14) All other information required by this Subcontract Agreement to be submitted with the executed Agreement.

ARTICLE 7 SUBCONTRACTOR PROJECT STAFF

7.1 Project Staff Requirements

The Subcontractor shall staff the Project at all times with competent and adequate personnel for the proper management, administration, coordination, and supervision of Subcontractor's Work, and Subcontractor's compliance with all applicable laws. Subcontractor's Project staff shall be deemed acceptable by Contractor, unless Contractor objects within a reasonable time of Subcontractor providing its Project staff as required by this Subcontract Agreement. Subcontractor shall not change the approved staff without Contractor's written approval unless any such person ceases to be employed by Subcontractor, in which event such person shall be replaced with an individual whom Contractor has no reasonable objection.

7.2 Project Representative

The Subcontractor shall employ and assign a competent Project Representative who shall be in attendance at the Project site at all times during performance of the Work. The Project Representative shall represent the Subcontractor and receive communications from Contractor which shall be binding. The Project Representative shall have full authority to act on Subcontractor's behalf in all matters necessary for proper coordination, direction and technical administration of Subcontractor's Work and shall be responsible for inspection of portions of work already performed to determine that such portions are in proper condition to receive Subcontractor's subsequent Work. Subcontractor's Project Representative shall be the superintendent unless a different Project Representative is proposed and accepted pursuant to Paragraph 7.1.

ARTICLE 8 SUBCONTRACTOR BONDS

8.1 Bond Requirements

If Contractor requires Subcontractor to provide performance and payment bonds, Subcontractor shall obtain bonding from a commercial surety acceptable to the Contractor. Each bond shall be for a sum equal to the Subcontract Sum, and shall be in a form acceptable to the Contractor, and shall name, as co-obligee, the Contractor, and if requested, the Owner, lender, or other party, and shall be delivered to Contractor immediately upon execution of this Subcontract Agreement. Additions to or reductions from the Subcontract Sum or other modifications to the Subcontractor's Work shall not invalidate or impair any rights of Contractor under any bond furnished by Subcontractor.

8.2 Requirements in Absence of Bonds

If Contractor does not initially require Subcontractor to furnish bonds, but prior to or after commencement of Subcontractor's Work, Contractor may elect to require Subcontractor to submit a current audited financial statement, require the Subcontractor to provide bonds in the amount and form acceptable to Contractor, require the Subcontractor to provide an irrevocable letter of credit or other security acceptable to Contractor, require all sub-vendors to enter into joint check arrangements, and/or increase retainage to an amount sufficient to protect Contractor's interest.

8.3 Failure to Provide Bonds

In the event Subcontractor fails to provide bonds to Contractor in an acceptable form within the time specified in this Subcontract Agreement or if Subcontractor fails to comply with this Article, Contractor may, upon five (5) days written notice, terminate the Subcontractor in accordance with the provisions of this Subcontract Agreement.

ARTICLE 9 INSURANCE

9.1 Insurance Coverage

Unless additional coverage and/or limits are required of Subcontractor by the Prime Contract or by law, the Subcontractor shall purchase and maintain insurance of the following types of coverage and limits of liability as will protect the Subcontractor, Contractor and Owner from claims that may arise out of, or result from, the Subcontractor's operations and completed operations under the Subcontract Agreement whether such operations be by the Subcontractor or by any sub-subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- (1) claims under workers' compensation, disability benefit and other similar employee benefit laws that are applicable to the Work to be performed;
- (2) claims for damages because of bodily injury, occupational sickness or disease, or death of the Subcontractor's employees;
- (3) claims for damages because of bodily injury, sickness or disease, or death of persons other than the Subcontractor's employees;
- (4) claims for damages covered by usual personal injury liability coverage which are sustained (a) by a person as a result of an offense directly or indirectly related to employment of such person by the Subcontractor or (b) by another person;
- (5) claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and

- (6) claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle.

Subcontractor must provide a certificate of insurance (either the ACCORD 25-S or the AIA G705) providing the coverage, limits of liability and endorsements listed below:

Contractor utilizes myCOI Central, a software management system used to track certificates of insurance and to track and verify insurance coverage. Upon Subcontractor's receipt of this Agreement, Subcontractor will receive an email from registration@myCOItracking.com. Subcontractor must follow the instructions contained in the e-mail and complete the online registration. Upon completion of registration, Contractor will request proof of insurance directly from Subcontractor's insurance agent(s). In addition to the other terms and conditions contained herein, Subcontractor may not commence Work and no payments will be made, until Subcontractor is registered in myCOI Central, and a compliant Certificate of Insurance has been received.

If coverage limits specified by the Owner are required of Subcontractor and if greater than the coverage limits reflected on the Certificates provided to Contractor, Subcontractor shall immediately obtain the required higher coverage limits and furnish Contractor with replacement Certificates showing proper coverage limits.

Commercial General Liability

Bodily Injury & Property Damage	Each Occurrence	\$1,000,000
	General Aggregate	\$1,000,000
	Products-Completed	\$2,000,000
	Operations Aggregate	
	Personal & Advertising	\$1,000,000
	Injury	
	Fire Damage	\$ 100,000

*CGL policy shall include coverage for property damage for the X (explosion), C (collapse) and U (underground) hazards.

* Any Subcontractor performing operations that include EIFS services and/or products represents and warrants that Subcontractor's Commercial General Liability policy provides coverage for all EIFS related services and/or products. This shall be confirmed on Certificate of Insurance submitted by Subcontractor.

Automobile Liability

(Incl. Owned, hired & non-owned)
Bodily Injury & Property Damage
Combined Single Limit

Each Accident	\$1,000,000
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Workers Compensation

Statutory

Employers Liability

Each Accident	\$1,000,000
Disease-Each Employee	\$1,000,000
Policy Limit	\$1,000,000

Umbrella/Excess Liability

Each Occurrence	\$5,000,000
Retention	\$10,000
Annual Aggregate	\$5,000,000

Contractor's Pollution Legal Liability (including coverage for asbestos abatement operations) shall be required of any subcontractor performing any abatement services.

Each Claim/Occurrence	\$1,000,000
Mold/Fungi Bacteria	\$1,000,000

Retention	\$50,000
Annual Aggregate	\$2,000,000

Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than \$5 Million per claim and \$10 Million in the aggregate. Coverage must also include Aircraft Damage and Slung Cargo.

Additional Endorsements

The Subcontractor and its sub-subcontractor’s insurance policies must provide the following endorsements for Contractor and his officers, agents, employees, successors, or assigns. Certificates of Insurance shall indicate that these endorsements in favor of the respective Certificate Holder are in effect:

- (1) Commercial General Liability, Automobile Liability, and Excess Liability shall add Contractor and Owner as Additional Insured; Insurance Services Office (ISO) endorsement CG 2010 10 01 and CG 2037 or its equivalent shall be included in the Commercial General Liability policy;
- (2) Commercial General Liability shall be endorsed to provide that General Aggregate applies separately to each Project; Insurance Services Office (ISO) endorsement CG 2503 or its equivalent;
- (3) Commercial General Liability, Automobile Liability and Worker’s Compensation shall be endorsed to provide Waiver of Subrogation in favor of SHIEL SEXTON COMPANY and Owner (when required by Prime Contract);
- (4) Commercial General Liability, Automobile Liability and Worker’s Compensation shall be endorsed to provide thirty (30) days Notice of Cancellation; and
- (5) All policies, excluding Worker’s Compensation) shall be endorsed to provide Primary and Non-contributory coverage with respect to any insurance maintained by Contractor, including any excess liability coverage maintained by Contractor. Subcontractor’s Excess/Umbrella policies shall exhausted vertically above Subcontractor’s primary Commercial General Liability policy.

Professional Errors and Omissions Liability

Professional Errors and Omissions Liability coverage is required by all Subcontractors performing any design/build work or any professional services.

Each Claim/Occur.	\$2,000,000
Annual Aggregate	\$4,000,000
Maximum Deductible/ Retention	\$ 50,000

- (1) Deductible/retention on the professional errors and omissions liability coverage in excess of \$50,000 shall be disclosed to the Contractor prior to execution of this Subcontract Agreement;
- (2) Professional Liability Coverage is to be maintained in effect for a period of three (3) years from Substantial Completion of the Project;
- (3) Subcontractor’s Professional Liability policy shall provide coverage for all design services provided by or on behalf of Subcontractor; and
- (4) Subcontractor shall confirm that the full required professional liability limit is in effect for the Project. Subcontractor shall provide written notice to Contractor of any reduction in limits under the required Professional Liability Policy.

The insurance required by this Paragraph shall be written for not less than aforementioned specified limits of liability, as required by law, or the Prime Contract, whichever coverage is greater.

9.1.1 Coverages shall be written on an occurrence basis (pollution liability and professional errors and omissions may be written on a claims-made basis) and shall be maintained without interruption from the date of commencement of the Subcontractor’s Work until the date of final payment or date of any coverage required to be maintained after final payment to the Subcontractor,

whichever is later. With respect to the Subcontractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Prime Contract.

- 9.1.2 If any of the foregoing insurance coverages are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final application for payment as required in this Subcontract Agreement. If any information concerning reduction of coverage is not furnished by the insurer, it shall be furnished by the Subcontractor with reasonable promptness according to the Subcontractor's information and belief.
- 9.1.3 The Subcontractor and all its sub-subcontractors in connection with the above mentioned Workers' Compensation and Occupational Disease Insurance, shall furnish to Contractor duly executed Certificate of Compliance forms as prescribed by the Indiana Workers' Compensation Bureau or governing agency in the State where the Project is located showing that such insurance is in full force and effect. If the Project is located in a State other than Indiana, Subcontractor shall provide duly executed Certificate of Compliance forms showing that the Subcontractor has complied with all Worker's Compensation Insurance requirements of the State of which the Project is located.
- 9.1.4 Additional Insured endorsement shall include: (1) coverage for claims caused in whole or in part by the Subcontractor's negligent acts or omissions during the Subcontractor's operations.
- 9.1.5 It is expressly agreed and understood by and between the Contractor and Subcontractor that all insurance, whether issued on a primary or excess basis, afforded the additional insureds shall be primary insurance to any other insurance available to Contractor and shall not contribute to Subcontractor's insurance. Subcontractor's Excess/Umbrella policies shall exhausted vertically above Subcontractor's primary Commercial General Liability policy Subcontractor's failure to provide the endorsement required by this Subcontract Agreement shall not affect Subcontractor's agreement hereunder.

9.2 Insurance in Force and Adequacy

Certificates of insurance acceptable to the Contractor shall be purchased and filed with the Contractor prior to commencement of the Subcontractor's Work. Policies shall be made available upon request. Contractor does not represent that the insurance coverage specified in Article 9, whether in scope of coverage or amount of coverage, are adequate to protect the obligations of Subcontractor under this Subcontract Agreement and Subcontractor shall be solely responsible for any deficiencies thereof. If Subcontractor determines for its own purposes that it requires insurance in excess of the coverage specified in Article 9, nothing in this Subcontract Agreement shall prevent Subcontractor, at its own expense, from purchasing insurance coverages in excess of the coverage required by this Subcontract Agreement. Nothing shall be deemed to limit Subcontractor's liability under this Subcontract Agreement.

9.3 Property Insurance

- 9.3.1 When requested in writing, the Contractor shall provide the Subcontractor with copies of the property and equipment policies in effect for the Project, if available from the Owner.
- 9.3.2 Property insurance for the Subcontractor's materials and equipment required for the Subcontractor's Work, stored off site or in transit, shall be paid for by the Subcontractor.
- 9.3.3 Subcontractor shall be responsible for payment of the deductible of the property insurance provided by the Owner or Contractor.

9.4 Waiver of Subrogation

The Contractor and Subcontractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Owner, the Designer, the Designer's consultants, separate contractors, and any of their subcontractors, sub-subcontractors,

agents and employees for damages caused by fire or other causes of loss to the extent covered by property insurance provided under the Prime Contractor other property insurance applicable to the Work, except such rights as they may have to proceeds of such insurance held by the Owner as a fiduciary. The Subcontractor shall require of the Subcontractor's Sub-subcontractors, agents and employees, by appropriate agreements, written where legally required for validity, similar waivers in favor of the parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

ARTICLE 10 SCHEDULE AND COORDINATION

10.1 Time is of the Essence

Time is of the essence in this Subcontract Agreement. Subcontractor recognizes that Contractor and/or Owner may sustain severe financial loss if the Project or any part of it is delayed because Subcontractor fails to perform any or all of its Work in accordance with the Subcontract Agreement, the Subcontract Documents, or the Project Schedule. The Subcontractor shall supervise and direct the Subcontractor's Work, and shall cooperate with the Contractor in scheduling and performing the Subcontractor's Work and shall diligently and continuously prosecute, perform and complete its Work to avoid conflict, delay, impedance, obstruction, hindrance, or interference to the commencement, progress, or completion of the whole or any part of the Work of the Contractor, other subcontractors, the Owner, or separate contractors.

10.2 Commencement of Work

The Subcontractor shall commence its Work when directed to do so by the Contractor.

10.3 Subcontract Time

Subcontract Time is defined as the period of time, inclusive of authorized adjustments, allotted in the Subcontract Documents for the Subcontractor's Work which shall be substantially completed by the completion date as set forth in the Subcontract Documents. By executing this Subcontract Agreement, the Subcontractor represents and warrants that the Subcontract Time is a reasonable period for performing the Work.

10.4 Subcontractor's Schedule and Plan

The Subcontractor shall participate and cooperate in the development of the Project Schedule and other efforts to achieve timely completion of the Project by providing detailed information for the scheduling of the times and sequence of Subcontractor's operations required for its Work to meet the Project Schedule. Subcontractor shall continuously monitor the Project Schedule so as to be fully familiar with the timing, phasing and sequence of operations of the Subcontractor's Work and of other work on the Project, and shall execute the Work in accordance with the requirements of the Project Schedule, including any revisions thereto, and shall meet all interim or final milestone dates included in the Project Schedule. Subcontractor shall submit within five (5) days after execution of this Subcontract Agreement, in a form prescribed by Contractor, for Contractor's approval, Subcontractor's detailed plan and schedule for performing and coordinating its Work in conformance with the Project Schedule and other work on the Project.

10.5 Work Priority

The Contractor, in order to respond to job conditions and/or achieve timely completion of the Project, shall have the right to modify the Project Schedule, to suspend, delay or accelerate, in whole or in part, the commencement or execution of the Subcontractor's Work or any portion thereof or to vary the sequence thereof, to reasonably decide the time, order and priority of the various portions of Subcontractor's Work, and all other matters relating to the scheduling and coordination of Subcontractor's Work with other work on the Project. Subcontractor shall not be entitled to additional compensation for

changes made by the Contractor pursuant to this Paragraph except as provided elsewhere in this Subcontract Agreement.

10.6 Coordination of Work

The Subcontractor shall cooperate and coordinate its Work or any portion thereof with the Contractor, other subcontractors, trades and other contractors working on the Project. The Subcontractor shall participate in coordination meetings and specifically notify the Contractor of potential conflicts of scheduling and/or contiguous work requirements before beginning its Work and during the duration of its Work. Failure of the Subcontractor to promptly report any conflict, defect, or uncompleted work by others shall constitute a waiver and estoppel of any claim by Subcontractor for any damage or for any claim for an extension of time arising from any such conflict, defect, or uncompleted work. In addition, Subcontractor shall be liable to Contractor for any damage caused Contractor by Subcontractor's failure to promptly report any such conflict, defect, or uncompleted work.

Once a week, at a minimum, Subcontractor shall record all changes it makes during construction on Contractor's as-built coordination drawings and specifications located at Contractor's Project site office. If requested by Contractor, Subcontractor shall maintain its own up-to-date as-built drawings and specifications.

10.7 Staging and Storage

Suitable areas for storage of the Subcontractor's material and equipment during the course of the Work shall be provided with the written approval of Contractor. Any materials and equipment stored onsite shall be organized in an orderly manner, on proper cribbing, protected from ongoing and future work, protected from weather, if necessary to prevent damage or deterioration, and secured by Subcontractor.

10.8 Reports

The Subcontractor shall furnish to the Contractor periodic progress reports on the Work of this Subcontract Agreement. At a minimum, the following items shall be supplied fully and accurately completed and signed by Subcontractor's Representative and delivered to Contractor:

- (1) Daily reports (if requested, on Contractor's form) that include number of workers on site, hours worked, activities completed, equipment utilized, materials delivered and upcoming activities to be delivered by 9:00 a.m. the next working day;
- (2) Daily production quantity sheets as required by Contractor to be delivered by 9:00 a.m. the next working day;
- (3) Weekly four (4) week look-ahead schedule updates with durations to accomplish tasks necessary to meet the current Project Schedule to be delivered forty-eight (48) hours prior to Contractor's established subcontractor coordination meeting; and
- (4) All required reports, shop drawings, samples, test reports, or other information promptly as required by this Subcontract Agreement, the Subcontract Documents, the Project Schedule or the Contractor.

10.9 Overtime and Additional Shifts

If Contractor deems it necessary, the Subcontractor may be ordered to work overtime, add additional manpower, and/or add additional shifts.

10.9.1 If Subcontractor is not behind schedule, Contractor will pay Subcontractor the actual additional premium portion of wages for overtime or additional shift work not then included in the Subcontract Sum, plus any applicable taxes on such additional wages, but no overhead, profit or loss productivity shall be claimed, asserted or reimbursed. Premium portions shall be documented by certified payroll if requested by Contractor. Subcontractor shall provide Contractor the estimated cost of said overtime or additional shift work prior to commencing such overtime or additional work or at time of directive, whichever is earlier.

10.9.2 If Subcontractor, through its own sole or partial fault or neglect, is behind schedule, Subcontractor shall, in addition to all of the obligations imposed by this Subcontract Agreement, at the Subcontractor's own cost, work such overtime, add manpower, and/or add additional shifts as may be necessary to expedite its Work to meet the Project Schedule. Should the Subcontractor fail to expedite the Work or make up for the time lost, Contractor shall have the right to supplement Subcontractor's Work by retaining others to work additional and/or overtime shifts, reducing Subcontractor's scope of Work and/or to take whatever other action it deems necessary to avoid delay in the completion of the Work and of the Project, and the cost of supplementing and/or such other action shall be borne by the Subcontractor

10.9.3 If Subcontractor loses time due to weather (provided that such weather conditions are not the basis of a claim for extension of time), Subcontractor shall make-up such lost time by working an extended week at no additional cost to Contractor.

ARTICLE 11 SHOP DRAWINGS AND SUBMITTALS

11.1 Submittals

The Subcontractor shall promptly submit for review and approval all shop drawings, samples, product data, manufacturers' literature and similar submittals required by the Subcontract Documents. The Subcontractor shall be responsible for the accuracy and conformity of its submittals to the Subcontract Documents.

11.2 Submission

Within five (5) days of the execution of this Subcontract Agreement, Subcontractor shall prepare and submit to Contractor a submittal log and schedule. On a weekly basis, Subcontractor shall update the log showing the status of all required shop drawings, product data, samples, and other required submittals. The Subcontractor shall promptly submit required submittals with reasonable promptness and in such sequence as to cause no delay in its own Work, the work of the Contractor, or any other subcontractors. Subcontractor shall make every reasonable effort to submit all required shop drawings and submittals in a complete and coordinated package. Submittal of partial packages shall be approved in advance by Contractor.

11.3 Review by Contractor

Contractor is not responsible for verifying dimensions or field conditions in reviewing Subcontractor's shop drawings and other submittals. Review by Contractor shall not be construed as a detailed examination of the shop drawings or other submittals and shall not relieve the Subcontractor, manufacturer, fabricator, or supplier from the responsibility for the proper matching and fitting of the Work with contiguous work and the coordination of the Work with other work being performed on the Project, which obligation and responsibility shall continue to be Subcontractors until completion and final acceptance of the Work.

ARTICLE 12 CONTIGUOUS WORK

Should the proper and accurate performance of the Subcontractor's Work depend upon the proper and accurate performance of other work not covered by this Subcontract Agreement, the Subcontractor shall carefully examine such other work, determine whether it is in fit, ready, and suitable condition for the proper and accurate performance of the Work of this Subcontract Agreement, and use all means necessary to discover any defects in such other work. Before proceeding with the Work, Subcontractor shall report promptly in writing any such improper conditions or deficiencies to Contractor and allow Contractor a reasonable time to have such improper conditions and defects remedied. Any unreported improper conditions or deficiencies shall be deemed accepted by the Subcontractor upon the commencement of the Subcontractor's Work and shall become the responsibility of the Subcontractor.

ARTICLE 13 DIMENSIONS AND ELEVATIONS

Notwithstanding the dimensions and elevations on the Subcontract Documents, the Subcontractor shall be responsible for verifying the dimensions and elevations of the Project prior to ordering materials or commencing the Subcontractor's Work. The Subcontractor is solely responsible for monitoring the progress of the Project and for coordinating and performing all field measurements in a timely manner sufficient to support the Project Schedule and to insure the proper matching and fitting of the Work covered by this Subcontract Agreement with contiguous work. If schedule constraints prohibit obtaining field measurements, Subcontractor is responsible for requesting Contractor guaranteed dimensions timely.

ARTICLE 14 CLEAN UP

14.1 Duty of Subcontractor

The Contractor takes pride in maintaining a clean jobsite for safety and efficient productivity. The Subcontractor shall, at all times and at its own expense, perform the following:

- (1) Keep the premises and surrounding area free from accumulation of all dirt, debris, waste materials, packaging materials and other rubbish caused in connection with the execution of its Work by collecting and lawfully depositing said materials and rubbish in locations or containers as designated by Contractor;
- (2) Organize stored materials and equipment in a neat and organized fashion;
- (3) Clean and remove from its Work and from all contiguous work of others all dirt, soiling, stains, spillage, overspray, residue, protective coatings, and debris caused in connection with the execution of its Work and make good all defects resulting therefrom;
- (4) Perform such cleaning as may be required to leave the area of Work "broom clean"; and
- (5) At the entire completion of its Work, remove all of its tools, equipment, scaffolding, shanties, and surplus materials.

14.2 Contractor's Rights to Clean Up

If the Subcontractor fails to perform necessary or required clean up during the course of and at the completion of its Work, upon twenty-four (24) hours notice to Subcontractor, Contractor may provide such clean up on behalf of Subcontractor and charge Subcontractor for the costs incurred, plus ten percent (10%) for overhead and ten percent (10%) for profit. Contractor's right for clean up includes the right to provide cleanup during evening, night, and weekend hours, in which case shift differential or overtime premiums will be included in the charges assessed to Subcontractor. In addition to Contractor's other rights and remedies, if Subcontractor fails to perform its clean up obligations under this Subcontract Agreement, Contractor shall have the right to stop Subcontractor's Work until cleanup is achieved.

14.3 Cleaning Responsibility Disputes

In the event a dispute arises among the Subcontractor and other trades as to the responsibility for such cleanup, the Contractor may perform the cleanup and allocate costs among the responsible parties, as the Contractor determines in its reasonable discretion. The allocation made by the Contractor shall be binding on the Subcontractor.

ARTICLE 15 CONTRACTOR FURNISHED EQUIPMENT, LABOR OR MATERIALS

15.1 Responsibilities of Parties

In the event Contractor furnishes to Subcontractor for its use any materials, equipment, or temporary facilities, the Subcontractor shall at its own expense:

- (1) Relocate as required, assume care, custody, and control of such material, equipment, or temporary facilities;
- (2) Maintain, service, and repair such material, equipment, or temporary facilities;

- (3) Use such material, equipment, or temporary facilities in strict compliance with this Subcontract Agreement, the Subcontract Documents, and all applicable laws;
- (4) Provide and maintain such insurances as required by Contractor;
- (5) Return such material, equipment, or temporary facilities to Contractor in the same condition Subcontractor received same to the initial location received or such other location as may be directed by Contractor; and
- (6) Comply with all applicable laws.

15.2 “As is” Condition

Contractor furnished material, equipment, or temporary facilities are provided “as is”. Whenever Subcontractor, or its sub-subcontractor, or any employees or agents of the same, uses the same, Subcontractor, its successors and assigns, shall defend, indemnify, and hold harmless Contractor, its agents and employees, from and against all liabilities, for injuries to persons, damage to property, and any and all costs and expenses, including reasonable attorneys’ fees, resulting from any claims arising out of such use or occupancy by Subcontractor or its sub-subcontractor, or any of their respective employees and/or agents.

ARTICLE 16 DELAYS AND EXTENSIONS OF TIME

16.1 Delays Caused by Contractor, Owner, or Designer

No extension of time will be valid except as set forth below:

- 16.1.1 If for any reason beyond its control, Subcontractor is materially delayed, disrupted, or interfered with in the progress of its Work under such circumstances as would entitle Contractor to an extension of time under the Prime Contract and applicable law, or by an act or omission of the Owner or Designer or their respective contractors, agents and employees, provided Subcontractor shall have filed with Contractor a written claim for such extension that in accordance with Article 20, Contractor will cooperate with Subcontractor in submitting any just claim to the Owner. Subcontractor agrees to be bound by any and all determinations made under the Prime Contract by the party so authorized to make such determinations. Subcontractor shall reimburse Contractor for its reasonable costs and expenses incurred in submitting such claim on behalf of Subcontractor. Subcontractor shall not claim any extension of time, cost reimbursement, compensation or damage for delay, disruption or interference to the Work, except to the extent that Contractor is entitled to corresponding time extension, cost reimbursement, compensation or damages from the Owner under the Prime Contract. Subcontractor’s recovery will be limited to the time extension and/or amount, if any, which Contractor actually receives for the Owner on account of such claim.
- 16.1.2 If Subcontractor’s Work is delayed, disrupted or interfered with solely by Contractor, then the time for completion of the Subcontract Work shall be extended for a period equal to the reasonably estimated period of delay as reasonably determined by Contractor. No extension of time shall be granted unless a written claim therefore shall be presented to Contractor within five (5) days after commencement of the delaying event or condition. The time extensions granted to Subcontractor shall be the sole remedy and relief available to Subcontractor in the event of a delay caused by Contractor. Subcontractor expressly waives any right to claim damages or entitlement for delay, home office expenses, additional compensation, direct or indirect, acceleration, extra work resulting from such delay, extended overhead, wage escalation, overtime wage provisions, lost productivity or lost opportunity, lost profit or financial impact on Subcontractor’s other projects.
- 16.1.3 Subcontract Time extensions will be granted only to extend the time required by the Subcontractor to perform and complete critical work elements and activities. The Subcontract Time shall not be extended for delays to parts of the Subcontract Work, whether or not changed by any Change Order, that are not on the critical path of the current Project Schedule. Concurrent Subcontract Work activities which are not critical to Subcontract Completion shall not be the subject of

additional time extensions if those work activities were performed, or could be performed, within a movable time frame concurrent with a critical path activity.

16.1.4 Failure to provide such written claims within the prescribed time period shall result in an irrevocable waiver of any such claim. No extension of time will be valid without the Contractor's written consent.

16.2 Limitations on Subcontractor

Notwithstanding the foregoing, in no event shall Subcontractor be entitled to any extension of time or any damages for any delays, disruptions, or inferences caused or contributed to in any way by Subcontractor.

16.3 Delay Caused by Subcontractor

Subcontractor shall be liable for all damages, including liquidated damages if made part of this Subcontract Agreement, payable by Contractor to the Owner for delays caused in whole or in part by the Subcontractor, or Subcontractor's employees, agents, sub-subcontractors, material suppliers or any other person or entity for whose acts Subcontractor may be liable. In addition, Subcontractor shall be liable for all actual damages incurred by Contractor for delays caused in whole or in part by the Subcontractor, or Subcontractor's employees, agents, sub-subcontractors, material suppliers or any other person or entity for whose acts Subcontractor may be liable. In the event that a delay is caused by Subcontractor and another entity(s) for whose acts Subcontractor is not liable, Contractor shall have the right to reasonably apportion said damages among the responsible parties and said apportionment shall be binding on the Subcontractor.

ARTICLE 17 CHANGES TO THE WORK

17.1 Contractor Right to Make Changes

Contractor reserves the right to, at any time, make changes, additions, and/or deletions, including those required by modifications to the Prime Contract issued subsequent to the execution of this Subcontract Agreement in the Work as it may deem necessary. Any adjustment in the Subcontract Sum or the Subcontract Time shall be made by Change Order. If the Subcontractor proceeds with changed or revised Work without a fully executed Change Order, the Subcontractor does so at its own risk.

17.1.1 An adjustment in the Subcontract Sum may be established by one of the following methods:

- (1) Mutual acceptance of a complete itemized lump sum;
- (2) Time and materials records and a mutually acceptable fixed or percentage fee;
- (3) Unit prices as indicated in the Subcontract Documents or as subsequently agreed to;
- (4) Costs determined in a manner acceptable to the parties and a mutually acceptable fixed or percentage fee; or
- (5) Another method provided in the Subcontract Documents.

If the parties cannot reach an agreement as to the proper method of adjustment, the Contractor may determine the method of adjustment based upon reasonable expenditures and savings.

17.1.2 An adjustment in the Subcontract Sum for overhead and profit shall be determined by the following descending order of priority:

- (1) Established rates in the Prime Contract between Owner and Contractor;
- (2) Established rates in the Subcontract Documents;
- (3) Agreed upon rates between Contractor and Subcontractor as described in Attachment A – Scope of Work;
- (4) If no rates are established, then 10% markup on Subcontractor's direct labor and 5% on materials and equipment, or 5% on sub-subcontractor's cost of work.

17.2 Change Requests

Upon receipt of an instrument to change the Work issued by the Owner, Designer, or the Contractor, Subcontractor shall review each instrument and provide to Contractor, in writing, within the time requested by Contractor, but in no event later than ten (10) days of receipt of the change instrument, a specific analysis as to the impact, if any, on the Subcontractor's Work, including any adjustment to Subcontract Time or Subcontract Sum. In support of each analysis and in order to facilitate checking the validity of the impact, Subcontractor shall submit a complete itemization of costs including labor, materials, equipment, and sub-subcontracts. Sub-Subcontractors shall provide the same supporting data and itemization as that of the Subcontractor. If requested by the Contractor, Subcontractor shall furnish further detailed records in a form satisfactory to Contractor. Failure to provide a detailed analysis of a change request within the specified time period shall constitute a waiver of Subcontractor's right to assert a subsequent claim. A change request may originate from instruments such as: Requests for Information (RFI), Architectural Supplemental Instructions (ASI), Proposal Requests (PR), Change Directives (CD or CCD), Requests for Proposal (RFP), Bulletins, and other types of instruments. In the event the Subcontract Documents provide for Construction Change Directives or similar mechanisms for changes in the Work, Subcontract shall comply with the Subcontract Documents with respect thereto.

17.3 Validity by Written Change Order

The Subcontract Sum and/or Subcontract Time may only be changed by the written Change Order from Contractor. An executed change order shall constitute a settlement and release of all claims, costs, and expenses of Subcontractor related to such change orders, including, but not limited to, all direct and indirect costs, the Project Schedule, and any and all claims as of the date of the change order. The Subcontract Sum and/or Subcontract Time adjustment shall not be included in Subcontractor's payment application until a written change order has been fully executed by both the Subcontractor and Contractor. A final Change Order shall constitute a settlement and release of all claims, known and unknown, of Subcontractor related to the Project.

17.4 Claim for Lost Profit

If any change reduces the quantity of the Subcontractor's Work, including pursuant to Article 29 or 30, Subcontractor shall not make any claim for loss of anticipated profit.

17.5 Substantiation of Adjustment

At the Contractor's request, the Subcontractor shall maintain throughout the Project for the Contractor's review and approval an appropriately itemized and substantiated accounting of the following items attributable to the Work:

- (1) Labor costs, including Social Security, health, welfare, retirement and other fringe benefits and compensation as normally required and state workers' compensation insurance;
- (2) Costs of materials, supplies and equipment, whether incorporated in the Subcontract Work or consumed, including transportation costs;
- (3) Costs of renting machinery and equipment other than hand tools;
- (4) Costs of bonds and insurance premiums, permit fees and taxes attributable to the change; and
- (5) Costs of additional supervision and field office personnel services necessitated by the change.

17.6 Change Dispute

If, with respect to any change in Subcontractor's Work, Contractor and Subcontractor cannot agree upon an adjustment in Subcontract Sum or Subcontract Time, Contractor shall have the right to order the Subcontractor to proceed with the change in accordance with Contractor instructions and Subcontractor shall so proceed to carry out the changed Work and prepare and submit records to Contractor for review on a daily basis, to describe in detail all such work performed and with such detailed data as may be required by the Contractor. Any claim for adjustment to the Subcontract Sum or Subcontract Time shall be submitted in accordance with Article 20. Failure to proceed shall constitute a material breach of contract, regardless of the ultimate decision on the dispute; it being understood and agreed that any controversy between the parties shall not be deemed a basis for delay or suspension of the Work.

17.7 Contractor Signed Time and Material Record

Signature of Contractor's representatives upon any time and/or material record prepared by Subcontractor shall only signify Contractor's receipt or review of such record and shall not constitute Contractor's agreement that Subcontractor is entitled to any additional payment for such work. Subcontractor submitted time records must be accompanied by Subcontractor's actual daily time sheets signed by the Contractor's representative or the same shall be rejected.

ARTICLE 18 LOSS OR DAMAGE TO WORK

Contractor shall not be responsible for any loss or damage to Subcontractor's Work, supplies, materials, tools, equipment, appliances, or personal property, owned, rented, or used, however caused. Subcontractor assumes all risk of loss for its Work, regardless of whether Subcontractor has been paid for such Work. Unless otherwise specifically provided in this Subcontract Agreement, Contractor is not responsible for providing any protection of Subcontractor's Work or any protective service for Subcontractor's benefit.

ARTICLE 19 MECHANIC'S LIENS

Subcontractor's Duty to Discharge Liens or Claims

Provided Subcontractor is paid in accordance with the Subcontract Agreement, if any sub-subcontractor, laborer, materialmen or supplier of Subcontractor any other person directly or indirectly acting for, through or under it or any of them files or maintains a lien, stop notice, or claim against the Project or premises of the Project or any part thereof or any interests therein or any improvements thereon or against any monies due or to become due from the Owner to Contractor or from Owner to Subcontractor, for or on account of any work, labor, services, materials, supplies, equipment or other items performed or furnished for in connection with the Project, Subcontractor shall cause such liens and claims to be satisfied, removed or discharged at its own expense by bond, payment or otherwise within ten (10) days from the date of the filing of such liens or claims. Upon its failure to do so, Contractor shall have the right, in addition to all other rights and remedies provided under this Subcontract Agreement and the Subcontract Documents, or by law, to cause such liens or claims to be satisfied, removed or discharged by whatever means the Owner or Contractor chooses at the entire cost and expense of Subcontractor (such cost and expense to include attorney's fees and disbursements). The Contractor shall be entitled to withhold funds on any other project to satisfy lien or claims in the event the funds retained or withheld on this Project are insufficient to satisfy lien claims for which the Subcontractor is responsible under this Article. Subcontractor shall defend, indemnify, protect and hold harmless the Owner or Contractor from and against any and all such liens and claims and actions brought or judgments rendered thereon, and from and against any and all loss, damages, liability, costs and expenses, including reasonable attorney's fees and disbursements, which Contractor and/or Owner may sustain or incur in connection therewith.

ARTICLE 20 CLAIMS

20.1 Obligation to Continue Work

Regardless of any claims or disputes, or any action taken or to be taken under this Subcontract Agreement with respect to such claims or disputes, whether for an extension of time or for additional compensation or otherwise, Subcontractor at all times shall proceed diligently with the prosecution of its Work.

20.2 Condition Precedent to Subcontractor's Right to Submit a Claim

Subcontractor's shall be in complete compliance with its Subcontract Agreement obligations, including but not limited to, the Subcontract Documents, schedule, billing, quality, safety, contract documentation, as a condition precedent to Subcontractor's right to submit a claim, whether of an extension of time or for additional compensation or otherwise. Upon receipt of a claim, Contractor shall promptly notify Subcontractor if, in Contractor's reasonable discretion, Subcontractor is not in compliance with its Subcontract Agreement. If Subcontractor is not in compliance with its Subcontract Agreement obligations, Contractor shall have no obligation to review, consider or submit a claim until Subcontractor remedies all issues set forth in Contractor's notification to Subcontractor.

20.3 When Contractor Can Seek Recovery from the Owner

If Subcontractor asserts a claim for damages under circumstances that entitle Contractor to make a claim for damages against the Owner under the Prime Contract, Subcontractor shall file with Contractor a written claim that meets the requirements of this Article 20 and is in the form required by the Prime Contract for claims by Contractor against Owner no later than five (5) days prior to the time when Contractor is required to file such claim with the Owner. If no specific deadline for claims is contained in the Prime Contract, the Subcontractor shall submit such claim within fourteen (14) days of the commencement of the event allegedly giving rise to the claim.

20.4 When Contractor Cannot Seek Recovery from Owner

If Subcontractor asserts a claim for alleged damages which is prohibited by the Subcontract Documents, or asserts such claim under circumstances that do not entitle Contractor to make a claim for such damages against the Owner under the Prime Contract, upon written notice from Contractor, Subcontractor shall withdraw the claim.

20.5 Preparation of Claims

With respect to any claim submitted by Subcontractor, Subcontractor shall prepare the claim in writing and in a format acceptable to Contractor. At a minimum, the claim shall include detailed information concerning the alleged claim-causing event, Subcontractor's damages which allegedly resulted from the event, how the event allegedly caused such damages, and steps allegedly taken by Subcontractor to mitigate the extent of its alleged damages. The claim shall separately list each type of damage allegedly incurred (but in no event damages barred or waived by the Subcontract Documents or this Subcontract Agreement) and give the most accurate estimate possible of the amount for each type of alleged damage. Upon request by Contractor, Subcontractor shall provide any other information concerning the claim. By submitting a claim, Subcontractor grants Contractor the right to examine or audit all of Subcontractor's accounting records, job records, payroll records and other records and documents which may have any bearing on the claim.

20.6 Waiver of Claims

Failure by Subcontractor to deliver a claim for alleged damages to Contractor within the time limits set forth in this Article 20 and/or to provide the required damage amounts and other specific information and supporting documentation as determined by Contractor, shall constitute a waiver and estoppel of Subcontractor's rights with respect to such claim for alleged damages.

20.7 Subcontractor Cooperation

Subcontractor shall cooperate in the prosecution of claims filed by Subcontractor, and shall reimburse Contractor for all expenses and costs incurred by Contractor in connection with the preparation and prosecution of such claims against Owner or others who may be responsible, including without limitation, costs of litigation, arbitration or alternative dispute resolution proceedings and reasonable attorney's fees and disbursements. Nothing in this Article shall require Contractor to assert any claim against the Owner on Subcontractor's behalf which, in Contractor's reasonable judgment, is fraudulent, contrary to law, barred by the Subcontract Agreement, the Subcontract Documents or the Prime Contract or made by Subcontractor in bad faith.

20.8 Claims Against Contractor Arising from Subcontractor's Work

If the Owner or a third party brings a claim against Contractor and such claim arises directly, or indirectly, in whole or in part from Subcontractor's Work or other involvement in the Project, Subcontractor shall cooperate with Contractor and its counsel in the defense of such claim; provide, at Subcontractor's expense, all witnesses, expert testimony, documents and other assistance Contractor reasonably believes necessary for such defense; and indemnify and hold Contractor harmless from the cost of any judgment or settlement of such claim, Contractor's reasonable costs in responding to the claim, and Contractor's reasonable attorneys' fees and disbursements.

20.9 Subcontractor Bound by Claims Procedures

Subcontractor expressly consents to be bound to Contractor to the same degree and manner that Contractor is bound to the Owner by all decisions and determinations made in accordance with any procedure for the resolution of claims provided in the Prime Contract. The provisions of this Article shall be binding upon Subcontractor, whether or not Subcontractor records or files a mechanic's lien, stop work notice, action against any bond posted by Contractor, or files suit thereon. Subcontractor acknowledges that this Article waives or limits rights it otherwise would have in connection with such liens, stop notices or bonds.

20.10 Waiver of Consequential Damages

The Contractor and Subcontractor waive claims against each other for consequential damages arising out of or relating to this Subcontract Agreement, including without limitation, any consequential damages arising or relating to this Subcontract Agreement. In the event the Prime Contract does not contain a waiver of consequential damages, then Contractor may make a claim against Subcontractor, but only to the extent a claim is made against Contractor for Owner's damages.

ARTICLE 21 PERMITS AND COMPLIANCE WITH LAWS

The Subcontractor shall give notices and comply with applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on performance of the Work of this Subcontract Agreement. Unless specifically excluded in Attachment A – Scope of Work, the Subcontractor shall secure and pay for permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Subcontractor's Work whether or not specifically mentioned or provided by this Subcontract Agreement or the Subcontract Documents without additional charge or expense to the Contractor. The Subcontractor shall be responsible for, and correct, at its own cost and expense, any violations thereof resulting from or in connection with the performance of its Work. The Subcontractor shall at any time, upon demand, furnish such proof as the Contractor may require showing such compliance and/or the correction of such violations. The Subcontractor shall defend, hold harmless and indemnify Contractor from and against any and all loss, injury, claims, actions, proceedings, liability, damages, fines, penalties, costs and expenses, including legal fees and disbursements, caused or occasioned directly or indirectly by the Subcontractor's failure to comply with any of said laws, statutes, ordinances, codes, rules and regulations, and orders or to correct such violations.

ARTICLE 22 LABOR RELATIONS

22.1 Jurisdictional Disputes

If any item of the Subcontract Work becomes the subject of a jurisdictional dispute as to the employees or craft used for such Work, Subcontractor shall lawfully resolve such dispute and if arbitrated, abide by the decision, holding the Contractor and Owner free of involvement in the dispute, and if time is lost by the dispute, an extension of time shall be considered only pursuant to this Subcontract Agreement, but only to the extent allowed by the Owner under the Prime Contract, provided a claim is submitted in accordance with Article 20 of this Subcontract Agreement.

22.2 Wage Scale Determinations

Subcontractor will pay not less than the wage scale and fringe benefits, if any, required by the Subcontract Documents or, if applicable, prevailing wage or common wage determinations, Federal Davis Bacon wage determinations, or collective bargaining agreements to which Subcontractor is signatory. Subcontractor will comply with all applicable wage laws, statutes and regulations. On projects with wage scale requirements or if requested by Contractor, Subcontractor shall submit certified copies of payrolls with each payment application or more frequent as requested by Contractor.

22.3 Control of Employees

Subcontractor shall maintain control over all its employees, sub-subcontractors, suppliers and others for whom Subcontractor is responsible. Subcontractor shall remove or cause to be removed from the Project any person or entity for whom Subcontractor is responsible who is determined by the Owner, Designer, or Contractor to be detrimental to the Project. Subcontractor shall not employ any person who wrongfully

causes, or who is likely to wrongfully cause, strikes, work stoppages or other actions detrimental to the Project.

22.4 Strike

In the event of a strike, picketing or other action resulting from Subcontractor's Work, after forty-eight (48) hours notice to Subcontractor, Contractor may take any lawful steps necessary to complete Subcontractor's Work. Subcontractor shall take all necessary action to ensure harmonious labor relations, including compliance of all labor agreements and jurisdictional decisions. If Contractor establishes a gate for use by Subcontractor, its employees, sub-subcontractors, materialman, suppliers, and agents of Subcontractor shall use such gate until further notice from Contractor.

22.5 Failure to Comply

If Subcontractor fails to comply with this Article, upon written notice of such non-compliance from Contractor, Subcontractor shall commence to cure such non-compliance within twenty-four (24) hours, and shall achieve compliance within three (3) days of receipt of written notice. Any failure by Subcontractor to do so after receipt of written notice to comply shall constitute a material breach of this Subcontract Agreement and Contractor shall have the right to terminate this Subcontract Agreement for cause.

ARTICLE 23 EQUAL OPPORTUNITY, AFFIRMATIVE ACTION, AND ADA

23.1 Non Discrimination

Subcontractor at its own expense, shall conform to the nondiscrimination and affirmative active policies and plans required by this Subcontract Agreement, the Subcontract Documents and with all laws applicable to the Project.

23.2 Federal Law

Subcontractor shall, at its own expense, conform and comply with all Federal laws which apply to the Project, including but not limited to and unless exempted, Equal Employment Opportunity Clause, the Civil Rights Act of 1991, the American with Disabilities Act and affirmative action requirements, and Federal Acquisition Regulation.

23.3 Immigration Law

Subcontractor hereby represents warrants and covenants that Subcontractor has:

- (1) Complied, and shall at all times during performance of this Subcontract Agreement, comply in all respects with all applicable immigration laws, statutes, rules, codes, orders and regulations, including, but not limited to, the Immigration Reform Control Act of 1986, as amended, and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended, and any successor statutes thereto;
- (2) Properly maintained, and shall at all times during performance of this Subcontract Agreement properly maintain, all records required by the Department of Homeland Security (the "DHS"), including, but not limited to, the completion and maintenance of the Form I-9 for each of Subcontractor's employees; and
- (3) Responded, and shall at all time during performance of this Agreement respond, in a timely fashion to any inspection requests related to such I-9 Forms. During performance of this Agreement, Subcontractor shall, and shall cause its directors, officers, managers, agents and employees to, fully cooperate in all respects with any audit, inquiry, inspection or investigation that may be conducted by the DHS of Subcontractor or any of its employees.

23.4 Reporting

Subcontractor shall furnish all information and reports required by this Subcontract Agreement, the Subcontract Documents, and applicable laws. Subcontractor shall permit access to records and accounts for the purpose of investigation to ascertain such compliance. Unless exempted by law, Subcontractor will include the requirements of this Article in every sub-subcontract or purchase order so that it is binding upon each sub-subcontractor or supplier.

23.5 ADA Compliance

In the event the Subcontractor believes it necessary to modify its sequence of Work, the work environment, or means and methods to comply with the applicable requirements of the Americans With Disabilities Act (ADA), the Subcontractor shall notify Contractor in writing of proposed modifications and allow Contractor a reasonable time to review the request and seek written approval of the Owner and/or Designer. All costs of the proposed modifications shall be borne by the Subcontractor, including impact costs to other subcontractors or other parts of the Project. No modifications shall be made until the Contractor has consented in writing. Nothing herein shall be construed to make Contractor or Subcontractor responsible for conformance of the Designer's Design to ADA requirements.

23.6 Failure to Comply

If Subcontractor, its employees, sub-subcontractors, suppliers or any other person or entity responsible to Subcontractor fails to comply with any applicable law or requirement of this Subcontract Agreement or the Subcontract Documents, upon written notice of such non-compliance from Contractor, Subcontractor shall commence to cure such non-compliance within twenty-four (24) hours, and shall achieve compliance within three (3) days of receipt of written notice. Any failure by Subcontractor to do so after receipt of written notice to comply shall constitute a material breach of this Subcontract Agreement and Contractor shall have the right to terminate this Subcontract Agreement for cause.

ARTICLE 24 SAFETY

24.1 Conformance

Subcontractor shall at its own expense, comply with all manufacturer's literature, safety signage and laws, statutes, codes, rules and regulations, lawful orders and/or ordinances promulgated by any governmental authority, including without limitation, the applicable requirements of the Occupational Safety and Health Act of 1970, and the Construction Safety Act of 1969. Subcontractor shall take all precautions which are necessary to protect against any conditions created during or caused by its Work which will involve any risk of bodily harm to persons or risk of damage to any property. Subcontractor shall continuously inspect its Work and the materials and equipment which Subcontractor brings on the Project site to discover and determine any such conditions which affect the safety and health of employees. Subcontractor shall be solely responsible for discovering and correcting any conditions.

24.2 Use of Power-operated Equipment for Hoisting

Subcontractor and any of its sub-subcontractors, vendors, suppliers utilizing power-operated equipment that can hoist, lower and horizontally move a suspended load, as set forth in 29 C.F.R. 1926.1400 shall comply with OSHA Crane and Derricks Subpart CC. In addition, Subcontractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery and other services necessary to comply with 29 C.F.R. 1926.1402 relating to ground conditions and supporting material. The subcontractor shall be deemed the Controlling Entity as that term is defined in 29 C.F.R 1926.1401.

24.3 Project Site Rules and Regulations

Subcontractor hereby acknowledges that at all times during the term of this Subcontract Agreement; it shall comply with the safety policy and the jobsite rules and regulations of the Contractor, which may be modified from time to time. Subcontractor shall take all necessary steps toward compliance and shall have sole responsibility for the safety of its employees and agents. Subcontractor shall be liable for each hazardous condition which Subcontractor either creates or controls, whether or not the persons exposed to the hazard are Subcontractor's employees or agents. Subcontractor is responsible for providing its employees and agents appropriate personnel protective equipment (PPE) for the activity being performed; at a minimum hard hats and appropriate clothing for the Project as required by Contractor.

24.4 Controlling Contractor

Subcontractor shall at all times be the controlling employer responsible for the safety programs and precautions applicable to its Work. Subcontractor shall control the activities of its employees and any other person or entity for which Subcontractor is responsible. Subcontractor shall be liable for each

hazardous condition which Subcontractor either creates or controls. Subcontractor shall also be responsible for preventing its employees and persons or entities for which it is responsible from being exposed to any hazardous or dangerous condition. In the event an action is undertaken against Contractor for violations of law as a result of conditions allegedly created or controlled by Subcontractor or its sub-subcontractors, or any other person or entity for which Subcontractor is responsible, Subcontractor shall indemnify and hold Contractor harmless from all costs and/or damages which may be assessed as the result of such action, including reasonable attorney's fees and disbursements incurred in the defense of such action.

24.5 Accident and Injury Reporting

Subcontractor shall immediately report to the Contractor any injury or near miss to an employee or agent of the Subcontractor which occurred at the Project site. Subcontractor shall deliver copies of all accident and injury reports to Contractor and any other person or entity entitled thereto by applicable law, this Subcontract Agreement or the Subcontract Documents within twenty-four (24) hours of occurrence unless any law or requirement of the Subcontract Documents requires earlier notice.

24.6 Safety Representative

Subcontractor and sub-subcontractors shall have on the Project site a designated, qualified and competent Safety Representative empowered to act on behalf of Subcontractor in all matters pertaining to safety at all times while Subcontractor's Work is being performed. Before commencing its Work, Subcontractor shall furnish to Contractor written notice of the appointment of its Safety Representative or its Sub-subcontractor's Safety Representative. Appointed Safety Representative(s) shall not be changed without written approval of Contractor. Subcontractor and its sub-tier contractors shall conduct daily (or more frequently if Work activities change) safety inspections of their Work areas and take corrective measures as warranted. If circumstances warrant such action in the Contractor's reasonable discretion, Contractor shall have the right to demand that Subcontractor provide a fulltime safety professional as Subcontractor's Safety Representative, who sole responsibility shall be to monitor the safe performance of Subcontractor's Work and matters related thereto.

24.7 Drug Testing

If required by the Subcontract Documents, by law or at Contractor's request, Contractor shall have the right to require Subcontractor and all of its sub-subcontractors to prove that all of their employees working at the Project site have satisfactorily pass a drug screening test. All costs associated with administering the drug screening tests shall be borne by the Subcontractor.

24.8 Shoring and Bracing

It is the sole responsibility of Subcontractor to furnish and install all temporary bracing and shoring required to support the Subcontractor's Work and surrounding areas during erection, excavation and installation, including masonry, steel, earth work, and concrete, as the case may be. All temporary bracing shall be kept in place until the Subcontractor Work is permanently secure and all permanent attachments are in place. By executing this Subcontract Agreement, Subcontractor acknowledges that it has visited, inspected, and studied the existing conditions and is satisfied as to the physical conditions thereof, and all other factors relating to its performance of the Subcontractor's Work. In addition, Subcontractor acknowledges that it has visited and inspected the Project real estate and recognizes the job conditions, project layout, staging areas, hoisting requirements, etc. of the Project.

ARTICLE 25 HAZARDOUS AND OTHER REGULATED SUBSTANCES

25.1 Compliance with Laws

The Subcontractor shall comply with all Federal, State and local laws, rules, orders and regulations concerning health, safety and the environment, including but not limited to, those of the United States Environmental Protection Agency and the Indiana Department of Environmental Management or the state environmental agency in the State where the Work is being performed, if applicable. The Subcontractor shall not place or use at the site any hazardous chemicals, regulated substance, toxic waste or similar substances except those specified by the Designer or customarily used in the construction industry, and

only then in accordance with all applicable laws or regulations. Subcontractor shall not use asbestos or polychlorinated biphenyl or materials containing those substances in the performance of the Work except with the express written permission of the Contractor, Owner, and Designer

25.2 Conditions of Use

The Subcontractor hereby agrees to comply with the provisions of the Contractor's or Owner's hazard communication policy, to inform Subcontractor's employees, agents, Sub-subcontractors and invitees as to all hazards to which they may reasonably be exposed and require the utilization of appropriate precautions with respect to protecting such individuals from hazardous substances. Subcontractor agrees to provide a Material Safety Data Sheet, "Standards for Storage" or manufacturers "Disposition Instructions" for materials and equipment used in performance of Subcontractor's Work, including providing such information from its sub-subcontractors and vendors in sufficient detail and time to permit compliance with such laws by the Contractor, other subcontractors and other employers on the Project site. In addition,

- (1) If Subcontractor foresees bringing hazardous chemicals onto the site, then Subcontractor shall provide a list of all such chemicals to the Contractor, and Subcontractor shall update such list as necessary.
- (2) Subcontractor shall maintain and make available at the Project site, in the Subcontractor's project office, or in the Subcontractor's on-site vehicle, current Material Safety Data Sheets for each listed chemical.
- (3) Subcontractor shall ensure that appropriate personal protective equipment is available for handling each listed chemical.
- (4) Subcontractor shall ensure that appropriate warning labels are attached to all incoming containers of each listed chemical.
- (5) Subcontractor shall handle each listed chemical in accordance with manufacturer's recommendations and all applicable local, state and federal regulations.

25.3 Regulated Substance Disposal

Subcontractor shall not dispose of a regulated substance on the Project site. Subcontractor shall provide separate disposal receptacles to be used exclusively for the storage or temporary disposal of regulated substances. Such separate disposal receptacles must be approved by law for the particular regulated substance that will be placed in them. When storing, treating or disposing of regulated substances, Subcontractor and Subcontractor's waste hauler shall comply with all applicable laws. Subcontractor shall identify its waste haulers and provide Contractor with a copy of each manifest or other document relating to the storage, transportation and disposal of a regulated substance from the Project site.

25.4 Indemnification by Subcontractor

The Subcontractor shall indemnify the Owner and Contractor for the cost and expense the Owner and Contractor incurs, including reasonable attorney's fees for (1) remediation of a regulated material or substance brought to the site and negligently handled or stored by the Subcontractor or (2) where the Subcontractor fails to perform its obligations under this Article except to the extent that the cost and expense are due to the Contractor's sole fault or negligence.

25.5 Discovery of Regulated Substances

If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a regulated substance, hazardous material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Subcontractor, the Subcontractor shall, upon recognizing the condition, immediately stop Work in the affected area and promptly report the condition to the Contractor in writing. When the material or substance has been rendered harmless, the Subcontractor's Work in the affected area shall resume upon written agreement of the Contractor and Subcontractor.

25.6 Claims because of Regulated Substances

If Subcontractor has claims resulting from delays, disruptions or interferences because of the discovery of asbestos, polychlorinated biphenyls (PCB's) or other regulated substances, Subcontractor shall submit such claims in accordance with this Subcontract Agreement.

ARTICLE 26 NOTICES

26.1 Notices to Contractor

All notices to the Contractor shall be in writing, addressed to Contractor's Authorized Representative and delivered to its address indicated on the signature page. A copy of any such notice shall also be delivered to Contractor's job site office. Contractor's Authorized Representative shall be the Project Manager, Group Manager or Vice President who executed this Agreement, unless Subcontractor is notified otherwise in writing or herein.

26.2 Notices to Subcontractor

Except in the case of an emergency, all notices to Subcontractor shall be in writing, addressed to Subcontractor's Authorized Representative. Subcontractor's Authorized Representative shall be the person who executed this Subcontract Agreement, and the address shall be that of the home or principal office, unless Contractor is notified otherwise in writing or herein.

26.3 Delivery and Effective Date of Notices

Delivery of notices may be by hand, facsimile, overnight express courier or U.S. Mail. Copies of notices may be delivered by email. Notices shall be effective immediately upon delivery to the party to whom it is addressed.

ARTICLE 27 CORRECTION OF DEFECTIVE WORK AND INSPECTION OF WORK

27.1 Correction of Work

The Subcontractor shall within three (3) days after receipt of written notice from the Contractor, proceed to take down all portions of the Work which Contractor, Owner, or Designer have determined to be unsound, defective, improper, or in any way failing to conform to this Subcontract Agreement or the Subcontract Documents and replace the same with proper and satisfactory work and materials and make good all work damaged, or destroyed thereby, including the work of others, or as a result of unsound, defective, improper or nonconforming work or material. If the Subcontractor fails to do so, Contractor may, without prejudice to any other remedy the Contractor may have, make good such deficiencies and may deduct the reasonable cost thereof from the payments then or thereafter due the Subcontractor. If the cost incurred by the Contractor exceeds the unpaid balance of the Subcontract Sum, the Subcontractor shall pay the difference to the Contractor within ten (10) days of demand.

27.2 Uncovering of Work

If requested in writing by the Contractor, the Subcontractor shall uncover any portion of the Subcontract Work which has been covered by the Subcontractor for inspection by the Contractor, Owner, or Designer to determine if Work is unsound, defective, improper, or in any way failing to conform to this Subcontract Agreement or the Subcontract Documents whether or not the Contractor, Owner, or Designer had requested to inspect the Subcontract Work prior to it being covered. If Subcontractor uncovers Work pursuant to a directive and such Work upon inspection is found to not comply with the Subcontract Documents, the Subcontractor shall be responsible for all costs and time of uncovering, correcting, and restoring the Work so to make it conform to the Subcontract Documents. If such Work upon inspection does comply with the Subcontract Documents, the Contractor shall adjust the Subcontract Sum by change order for the costs and time of uncovering and recovering the Work.

ARTICLE 28 WARRANTY

The Subcontractor warrants to the Contractor and Owner that materials and equipment furnished under this Subcontract Agreement will be of good quality and new unless the Subcontract Documents require or permit otherwise. The Subcontractor further warrants that the Work will conform to the requirements of the Subcontract Documents and be free from defects, except for those inherent in the quality of Work the Subcontract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Subcontractor's warranty excludes remedy for damage or defect caused by abuse, alternations to the Work not executed by the Subcontractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Contractor or Owner, the Subcontractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

- 28.1** Unless a later date is required by the Prime Contract, the warranty period shall commence upon the Contractor's Substantial Completion of the Project, as certified by the Owner and Designer, and shall run for a period of one (1) year unless a special or extended warranty is required by the Subcontract Documents.
- 28.2** If required by the Contractor, Owner or Subcontract Documents, the Subcontractor shall furnish separate guarantees for the Work or portions thereof.
- 28.3** Subcontractor, at its sole cost and expense, agrees to make good, to the reasonable satisfaction of the Owner, any portion of the Work which proves defective or to repair any damage to other work caused by the defect or repair thereof. If Subcontractor fails to perform in accordance with this Article within the time directed by Owner or Contractor, Contractor may perform such Work and Subcontractor agrees to reimburse Contractor its reasonable costs upon demand including ten percent (10%) for overhead and ten percent (10%) for profit.

ARTICLE 29 TERMINATION FOR CAUSE

29.1 Termination for Cause

If at any time Subcontractor:

- (1) fails or refuses to supply sufficient labor, materials, tools, equipment or supervision;
- (2) fails or refuses to perform the Work promptly and diligently;
- (3) fails to meet the Project Schedule;
- (4) causes delay, interference or stops the work of Contractor or any its subcontractors;
- (5) fails or refuses to perform any of its obligations under this Subcontract Agreement or the Subcontract Documents;
- (6) is in material breach of any provision of the Subcontract Agreement; or
- (7) files bankruptcy or becomes insolvent or goes into liquidation (either voluntarily or under an order of a court of competent jurisdiction), or makes a general assignment for the benefit of creditors, or otherwise evidences financial incapacity;

then in any such event, each of which shall constitute a material default under this Subcontract Agreement, Contractor shall have the right, in addition to any other rights and remedies provided under this Subcontract Agreement, the Subcontract Documents or by law, after forty-eight (48) hours written notice to the Subcontractor to terminate all or any portion of Subcontractor's right to proceed under the Subcontract Agreement and to enter upon the premises and take possession, for the purpose of completing that portion of the Work affected by such termination, of all Subcontractor's records, materials, tools and equipment and all other items relating to that subject portion of Subcontractor's Work on the Project, including materials stored off-site for use in completing Subcontractor's Work.

29.1.1 In case of such termination of the Subcontractor, the Contractor may finish the Subcontractor's Work by whatever method the Contractor may deem expedient. If the unpaid balance of the Subcontract Sum exceeds the expense of finishing the Subcontractor's Work and other damages

incurred by the Contractor and not expressly waived, such excess shall be paid to the Subcontractor. If such expense and damages exceed such unpaid balance, the Subcontractor shall pay the difference to the Contractor.

29.1.2 In addition to the costs specified above, Contractor may deduct from the Subcontract Sum and/or otherwise recover from Subcontractor an amount sufficient to indemnify Contractor and hold Contractor harmless from any loss or liability arising out of Subcontractor's Work or other involvement in the Project, including, but not limited to, the costs of any claims by others resulting from Subcontractor's acts or omissions including an judgment or award to or settlement with the claiming party and reasonable attorneys' fees and disbursements incurred defending or resolving such claims

29.2 Termination of Owner by Contractor

In the event the Contractor terminates the Prime Contract with the Owner due to default on the part of the Owner, Subcontractor shall not be entitled to recover from Contractor more than the sum actually received by Contractor from Owner for work performed and materials, supplies and equipment furnished by Subcontractor pursuant to this Subcontract Agreement. The rights and remedies of Contractor, other subcontractors and third parties shall be taken into consideration in Contractor's determination of Subcontractor's pro rata share of any payments received by Contractor from the Owner.

29.3 Termination of Contractor by Owner

In the event the Owner terminates the Prime Contract with the Contractor, Contractor may deliver a termination notice to Subcontractor, whereupon Subcontractor shall follow Contractor's directions, including, but not limited to, a direction to stop work and Contractor's termination of Subcontractor's Work pursuant to Article 30. If Owner elects to assume Contractor's rights and obligations under this Subcontract Agreement, Subcontractor shall perform the remainder of its duties under this Subcontract Agreement and Subcontract Documents for the Owner, and will look solely to the Owner for further payments and performance of all outstanding obligations which Contractor would have owed to Subcontractor under this Subcontract Agreement.

29.4 Receipt of Payment

The right of Subcontractor to payment from Contractor for any termination shall be subject to the provisions of this Subcontract Agreement and the Subcontract Documents. In no event shall Subcontractor be entitled to recover unexpended overhead, unearned profit or damages as the result of any such termination. Settlement of termination costs shall constitute a settlement and release of any and all claims, known or unknown, of the Subcontractor arising as a result of any such termination.

ARTICLE 30 TERMINATION FOR CONVENIENCE

30.1 Contractor Right to Terminate

The performance of the Work may be terminated at any time in whole, or from time to time in part, by Contractor for its convenience. Any such termination shall be effected by delivery to Subcontractor of a written notice of termination specifying the extent to which performance of the work is terminated and the date upon which termination becomes effective.

30.2 Subcontractor's Obligations

After receipt of a notice of termination, whether for cause or convenience, and except as otherwise directed by Contractor, Subcontractor shall, in good faith, and to the best of its ability, do all things necessary, in the light of such notice and of such requests in implementation thereof as Contractor may make, to assure the efficient, proper closeout of the terminated work (including the protection of Owner's property). Among other things, the Subcontractor shall:

- (1) cease operations as directed by the Contractor in the notice;
- (2) take actions necessary, or that the Contractor may direct, for the protection and preservation of the Work; and

- (3) except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing sub-subcontracts and purchase orders and enter into no further sub-subcontracts and purchase orders;
- (4) as directed by the Contractor, transfer title and deliver to the Contractor any fabricated or unfabricated parts, work in progress, completed work, supplies or other material produced or acquired for the Subcontract Work terminated and completed or partially completed plans, drawings, information, and other property the, if the Subcontract Agreement had been completed, the Subcontractor would have been required to furnish to the Contractor;
- (5) with the approval of Contractor, settle all outstanding liabilities and all claims arising out of such termination or orders and subcontracts; and
- (6) take any other reasonable action as directed by the Contractor.

30.3 Equitable Adjustment

In the event of such termination, there shall be an equitable reduction of the Subcontract Sum to reflect the reduction in the Work, and no cost incurred after the effective date of the notice of termination shall be reimbursable unless it relates to carrying out the un-terminated portion of the Work, or taking required closeout measures.

30.4 Right to Convert to Termination for Convenience

In the event any termination of Subcontractor for cause under this Subcontract Agreement is later determined to have been improper, the termination shall be automatically converted to a termination for convenience, and the Subcontractor shall be limited in its recovery strictly to the compensation provided for in this Article.

ARTICLE 31 INDEMNIFICATION

31.1 Indemnification Obligations

To the fullest extent permitted by law of the State where the Project is located, the Subcontractor shall defend, indemnify and hold harmless the Owner, Contractor, Designer, and their respective agents and employees ("Indemnified Parties") of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Subcontractor's Work under this Subcontract Agreement, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Article. Subcontractor shall not be required to indemnify Contractor for its sole negligence.

31.1.1 In claims against any person or entity indemnified under this Article, by an employee of the Subcontractor, the Subcontractor's sub-subcontractors, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Article shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the Subcontractor or the Subcontractor's sub-subcontractors under workers' compensation acts, disability benefit acts or other employee benefit acts.

31.1.2 The obligations for defense and indemnification herein required are severable. In the event the laws (whether by statute or court decision) of the State where the Project is located provide that contracts or provisions for indemnification of a party's own negligence are against public policy or are otherwise void and unenforceable, the obligation for Subcontractor to defend, indemnify and hold harmless the Indemnified Parties against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Subcontractor's Work and due or alleged to be due by the negligent acts or omissions of the Subcontractor, sub-subcontractor, anyone employed by them or anyone for whose acts they may be liable, will be deemed to be a severable distinct obligation.

31.2 Condition Precedent to Payment

The full and faithful performance of Subcontractor's defense and indemnification obligations is a condition precedent to Subcontractor's right to receive payment under this Subcontract Agreement.

ARTICLE 32 CHOICE OF LAW AND DISPUTE RESOLUTION

32.1 Choice of Law

This Subcontract Agreement shall be governed by and construed in accordance with the laws of the place of the Project.

32.2 Dispute Resolution

If Subcontractor has a dispute or claim against regarding the interpretation or application of any provision of this Subcontract Agreement or the breach thereof, Subcontractor shall, within seven (7) days after such dispute arises, submit its claim, in writing, to Contractor, attaching all supporting documentation. Subcontractor shall provide such additional documents or information as requested by Contractor. Contractor shall respond within a reasonable time period, not to exceed thirty (30) days after receipt of Subcontractor's written claim and additionally requested supporting documentation or information, if any. In the event Subcontractor objects or does not agree to Contractor's response, the parties shall meet promptly and attempt to resolve the dispute. If the Contractor and Subcontractor are unable to thereby resolve the dispute, the parties shall mediate the dispute as set forth below. As a condition precedent to any party initiating mediation, the Subcontractor must first comply fully with the provisions set forth herein. Nothing in this paragraph 32.2 shall be construed to change or extend any time period set forth in this Subcontract Agreement in which Subcontractor is seeking an adjustment in the Subcontract Sum or Subcontract Time.

32.3 Mediation

32.3.1 - Any claim arising out of or related to this Subcontract Agreement, except those waived in this Subcontract Agreement, shall be subject to mediation as a condition precedent to binding dispute resolution.

32.3.2 - The parties shall endeavor to resolve their claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Indiana Rules for Alternative Dispute Resolution in effect on the date of the Agreement. For work performed outside of Indiana, mediation shall be in accordance with the Construction Industry Mediation Procedure of the American Arbitration Association. A request for mediation shall be made in writing, delivered to the other party to this Subcontract Agreement.

32.3.3 - The parties shall share the mediator's fee equally. Each party shall pay its own attorney's fees associated with mediation. The mediation shall be held in Indianapolis, Indiana or in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

32.4 Dispute Resolution with the Owner

In the event that 1) Subcontractor requests that Contractor to pursue a claim pursuant to Paragraphs 20.2 – 20.8 against the Owner for any claim that is rejected by the Owner or otherwise deemed unacceptable by Subcontractor and Contractor consents to pursue such claim on Subcontractor's behalf or 2) Owner asserts a claim against Contractor in which Subcontractor's Work is at issue, Subcontractor shall be bound by the dispute resolution procedures in the Prime Contract and Contractor may join Subcontractor into any such proceeding. The Subcontractor shall furnish all notices and information within the time required under the Prime Contract to enable the Contractor to timely assert a claim or defense of the Subcontractor. Subcontractor shall be bound by the outcome of the dispute resolution procedure.

Contractor shall pay the Subcontractor its proportionate share of any recovery due the Subcontractor on the basis of the ratio of the Subcontractor' claims to other claims that are asserted, less the expenses

and attorney's fees of the procedure. Receipt by Contractor of a payment from the Owner or other responsible party shall be a condition precedent to the obligation of the Contractor to pay the Subcontractor for any work, claim or damage. The Subcontractor shall pay the Contractor its proportionate share of any recovery by the Owner against the Contractor involving the Subcontractor's Work or materials and pay the Contractor its proportionate share of the expenses and attorney's fees incurred in defending such Owner's claim against the Contractor.

If the Prime Contract does not provide for a dispute resolution procedure, or if, in the sole judgment of the Contractor, the controversy, dispute or claim is principally between the Contractor and Subcontractor, then the claim shall be determined in accordance with Paragraphs 32.2, 32.3 and 32.5, provided however, in the event of a dispute between the Owner and Contractor, or Contractor and any other person or entity in which Subcontractor's Work is at issue, Contractor may instead join Subcontractor into any such proceeding in which the dispute is pending.

The Subcontractor agrees to continue performance of the Subcontract Work and shall proceed in accordance with the directives of the Contractor in the event of any dispute or claim, regardless as to whether or not a claim has been asserted in accordance with Article 32. Failure to so proceed shall constitute a material breach of contract, regardless of the ultimate decision on the dispute. It being understood and agreed that any controversy between the parties shall not be deemed a basis to delay or suspend the Work, unless directed otherwise by the Contractor.

The Subcontractor agrees to indemnify the Contractor for any and all costs, including attorney's fees, of defending a claim by the Owner or any other party in the dispute resolution procedure if such claim relates to or arises out of the Subcontract Agreement, the Subcontractor's Work or from the Subcontractor's failure to prosecute its work.

32.5 Arbitration

Any claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered privately in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Subcontract Agreement, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all claims then known to that party on which arbitration is permitted to be demanded.

The parties agree that any arbitration shall be held in Indianapolis, Indiana, or the place of the Project, unless an alternative location is mutually agreed upon. The parties shall share the arbitrator's fees and other costs associated with the arbitration unless otherwise determined by the arbitrators in accordance with this Subcontract Agreement.

Any dispute involving more than \$500,000 shall be heard by an arbitrator panel consisting of three (3) arbitrators, at least one of whom shall be an attorney. Each party shall select one arbitrator and the third shall be selected by the arbitrators selected by the parties.

The parties shall exchange documents and be permitted to take not more than three (3) depositions, unless the parties mutually agree otherwise.

A demand for arbitration shall not be made after the date when the institution of legal or equitable proceedings based on the claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the claim.

Either party may consolidate an arbitration conducted under this Subcontract Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation; (2) the arbitrations to be consolidated substantially involve common questions of

law or fact; and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

Either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a claim not described in the written consent.

The Contractor and Subcontractor grant to any person or entity made a party to an arbitration conducted under this Subcontract Agreement, whether by joinder or consolidation, the same rights of joinder and consolidation as the Contractor and Subcontractor under this Subcontract Agreement.

This agreement to arbitrate and any other written agreement to arbitrate with an additional person or persons referred to herein shall be specifically enforceable under applicable law in any court having jurisdiction thereof. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

The parties shall be bound to and responsible for the award for interest, arbitration fees, costs and attorney's fees, as determined by the arbitrators.

ARTICLE 33 MISCELLANEOUS PROVISIONS

33.1 Invalidity of Any Provision

If any part of the Subcontract Agreement is declared invalid by a court of competent jurisdiction or by a valid arbitration proceeding, the part held invalid shall not in any matter affect the validity of the remaining parts of the Subcontract Agreement and all such remaining parts shall be held to be the full agreement of the parties.

33.2 Neutral Interpretation

The form of Subcontract Agreement has been prepared initially by Contractor. However, in the event of any dispute over its meaning or application, the Subcontract Agreement shall be interpreted fairly and reasonably and neither more strongly for, nor more strongly against, either party.

33.3 Relationships

Except as expressly provided herein, nothing contained in this Subcontract Agreement shall create any contractual or third party beneficiary relationship between any parties other than Contractor and Subcontractor.

33.4 Attorney's Fee

If a claim between Contractor or Subcontractor is arbitrated or litigated, the arbitrator(s) or court shall award to the prevailing party all of its reasonable attorney's fees and costs or arbitration or litigation ("costs"). The prevailing party is the party prosecuting a claim if it receives as an award or judgment ("award") that is more than fifty percent (50%) of its claim as that claim is stated at the commencement of the arbitration hearing or litigation trial ("total claim"). If the prosecuting party receives an award that is fifty percent (50%) or less of its total claim, it is not the prevailing party and shall not be awarded any attorney fees or costs. If the prosecuting party receives no award, then the defending party is the prevailing party and shall be awarded its attorney fees and costs. If counterclaims are arbitrated or litigated, the same definition of prevailing party shall apply to award on the counterclaim. However, if both parties meet the definition of prevailing party as to their respective claim or counterclaim prior to offsetting the respective awards against one another, then the respective awards will be offset against one another leaving a positive balance as to the larger award. If that positive balance is more than fifty percent (50%) of the total claim of the party receiving the larger award, then that party shall be the prevailing party and be awarded its attorney fees and costs.

The Contractor and Subcontractor agree that, other than that an attorney's fee clause is included in the Subcontract Agreement, this attorney fee clause is strictly confidential and shall be redacted from any copies of the Subcontract Agreement provided to the arbitrator(s) or court and not disclosed to the arbitrator(s) or court until after an award is entered and then only for the purpose of a determination of attorney fees and costs as a bifurcated issue. If a party discloses the terms of this Paragraph to the arbitrator(s) or court prior to a the entry of an award, then the disclosing party shall forfeit all right to attorney fees and costs even if it is a prevailing party and the non-disclosing party shall be awarded one half of its attorneys fees it if is not the prevailing party and all if its attorneys fees if it is a prevailing party.

33.5 Assignment by the Subcontractor

Without the Contractor's written consent, Subcontractor shall not assign the Work of this Subcontract Agreement, sub-subcontract the whole of this Subcontract Agreement, or assign any right to payment. In the event Subcontractor seeks to further assign this Subcontract Agreement, it shall adhere to the following:

For Work where the Contractor has agreed to accept a Contingent Assignment, Subcontractor shall enter into written agreements by which the Subcontractor, sub-subcontractor, supplier, vendor, lessor, or materialman (collectively known as "sub-vendors") are mutually bound, to the extent of the Work to be performed, assuming toward each other all obligations and responsibilities that the Contractor and Subcontractor assume toward each other and having the benefit of all rights, remedies and redress against the other that the Contractor and Subcontractor have by virtue of the provisions of this Subcontract Agreement. The following items shall apply to each sub-vendor executing the Contingent Assignment:

- (1) Each sub-vendor shall execute the Contingent Assignment form agreeing that it will continue and complete the performance of its contractual obligations on behalf of the Contractor at no additional cost to the Contractor beyond the cost stated in its contract with the Subcontractor;
- (2) Upon written notice by Contractor to any sub-vendor, of an occurrence of default by Subcontractor under this Subcontract Agreement, the Contingent Assignment to Contractor shall become effective and the appropriate party shall immediately undertake to continue performance as directed by the Contractor;
- (3) All prior payments paid to sub-vendor or to the Subcontractor for the Work of a sub-vendor shall be credited toward any sums due pursuant to the terms of the Contingent Assignment. Contractor shall not be obligated to perform or discharge any past obligation, duty or liability of Subcontractor under any contract or agreement, by reason of existence of or exercise of the Contingent Assignment; and
- (4) Subcontractor shall include this provision of this Subcontract Agreement in all its sub-subcontracts, purchase orders and other contracts and agreements relative to Subcontractor's Work.

The form of Subcontract Agreement has been prepared initially by Contractor. However, in the event of any dispute over its meaning or application, the Subcontract Agreement shall be interpreted fairly and reasonably and neither more strongly for, nor more strongly against, either party.

33.6 No Oral Modifications

This Subcontract Agreement may be amended only by a written document signed on behalf of Contractor and Subcontractor.

33.7 Paragraph Headings

The paragraph headings used in this Subcontract Agreement are inserted for reference and convenience only and in no way limit or define any provision herein.

33.8 Merger of Previous Proposals

All previous proposals, promises and understandings relating to the subject matter of this Subcontract Agreement, whether written or oral, are null and void and have been replaced by the terms and conditions contained in this Subcontract Agreement.

33.9 Waiver

The waiver by Contractor of any breach or default of this Subcontract Agreement by Subcontractor shall not be construed as a waiver of any other breach or default of the same or any other terms or conditions of this Subcontract Agreement. Forbearance from demanding strict compliance with any term or provision of this Subcontract Agreement shall not operate as a waiver and shall not prevent Contractor from subsequently demanding strict compliance therewith.

[END OF SUBCONTRACT – ATTACHMENTS TO FOLLOW]



Subcontract Attachment A Scope of Work

Subcontractor Name: XXXXXXXXXXXXXXXXXXXX

Project Name: XXXXXXXXXXXXX

Scope of Work (The intent of listing scope items is for ease of major scope identification and is NOT intended to limit the requirements of the Subcontract Documents or to be a complete listing of all items to complete the Subcontract Work or for complete systems):

Contractor (Initials and Date) _____

Subcontractor (Initials and Date) _____



Subcontract Attachment B Schedule

See attached Project Schedule



Subcontract Attachment C Document Log

See attached Document Log



Subcontract Attachment D Billing Procedures

The following is a summary of billings procedures to ensure Subcontractor's prompt payment:

- This Project is titled: XXXXXXXXXX and the SHIEL SEXTON COMPANY Project Number is: XXXXX-.
- Subcontractor Pay Applications must be invoiced on an AIA document (AIA G702 & G703)
- A completed lien waiver must accompany every Pay Application (See Lien Waiver Attachment D.1 and D.2).
- At no time should Subcontractor invoice for change orders unless Subcontractor is in receipt of a fully executed Change Order from SHIEL SEXTON COMPANY. Assorted invoices for extra work, which are not incorporated in an executed Change Order, will not be processed. Fax or email all assorted change requests and detailed pricing to the Project Manager for review and consideration. Individual executed Change Orders must be listed item-by- item on the AIA G703 and not indicated as one lump sum.
- All executed Subcontract Agreements and Change Orders must be signed and returned to SHIEL SEXTON COMPANY prior to any payments being released.
- Subcontractor's legal company name, address, and Project Number shall be listed on the G702 & G703 of the AIA document.
- Email to XXXXXXXXXX@shielsexton.com a "Pencil Copy" of the Pay Application to the Project Manager by the 20th of each month if required. The Project Manager will review and notify Subcontractor of any requested revisions. Email, fax, or mail approved Pay Application to Accounting by noon on the 24th of the month.
- Attach a summary of the total man-hours worked on the project for the pay period.
- All Pay Applications must be received by the SHIEL SEXTON COMPANY Accounting Department by **NOON on the 24th** of the month. Any Pay Applications received after this date and time will be considered late and will not be processed until the following month.
- If the 24th falls on a Saturday then the pay requests are due at Noon on the 23rd. If the 24th falls on a Sunday then the pay request are due at Noon on the 25th.
- There are early cut off dates in November, December and February. A letter will be issued prior to those dates informing you of the requirement.
- Some contract scopes may be eligible for payment of materials store off the project site when allowed by the Owner and agreed to by the Shiel Sexton Project Manager. Subcontractors who are preapproved for payment of materials stored offsite, should use Attachment D.3

Please **DO NOT** turn in any Pay Applications to the Project Manager or Superintendent at the job site.

Please **DO** call with any questions you may have. Contact phone number as follows: (317) 423-6000

Send only one original Pay Application by either mail to the address below or emailed to sscap@shielsexton.com

SHIEL SEXTON COMPANY
ATTN: Accounting - XXXXXX
902 N. Capitol Ave.
Indianapolis, IN 46204

Attachment D.1
SHIEL SEXTON COMPANY
SUBCONTRACTOR CONDITIONAL INTERIM WAIVER AND RELEASE OF LIENS AND CLAIMS

Whereas, XXXXXXXXXXXXXXXXXXXXXXXX ("Subcontractor") who has furnished certain materials, equipment, services, and/or labor pursuant to a subcontract agreement or purchase order with SHIEL SEXTON COMPANY ("Contractor") for the project known as XXXXXXXXXXXXXXXXXXXXXXXX ("Project"), which is located at XXXXXXXXXXXXXXXXXXXXXXXX (collectively referred to as the "Property"), and is owned by XXXXXXXXXXXXXXXXXXXXXXXX ("Owner").

Upon receipt of the sum of \$ _____ [insert sum requested in current pay application] ("**Current Payment**"), the Subcontractor waives and releases any and all liens or claims of liens and all claims, demands, actions, causes of action or other rights against the Contractor, Owner and the Property or any right against any labor and/or material payment bond it has or may have through the date of _____, 20____, [insert **last date** of work performed that corresponds to **Current Payment**] ("**Current Date**") and reserving those rights and liens that the Subcontractor might have in any retainage on account of materials, equipment, services and/or labor furnished by the undersigned to or on account of the Contractor. Further, the Subcontractor covenants and agrees to apply sums received as the Current Payment first, and in no event later than 7 days after the receipt of the Current Payment, to pay all employees, laborers, materialmen, sub-subcontractors and sub-subconsultants employed by the undersigned in connection with the Project and all bills or indebtedness incurred through the Current Date for materials, equipment, services, and/or labor, benefit funds, trade unions, and taxes, furnished by such parties to the undersigned in connection with the execution of the Subcontractor's work on the Project (collectively referred to as "Lower Tier Payment Obligations").

The Subcontractor further represents that all Lower Tier Payment Obligations incurred through the date of _____, 20____, [insert 1) the **last date** of work performed that corresponds to the **last** pay application or 2) the **Current Date** if Subcontractor has paid all Lower Tier Payment Obligations through the Current Date] have been fully paid and that no obligation, legal, equitable or otherwise, are owed by the Subcontractor to such parties. Subcontractor further agrees to indemnify, defend and hold harmless the Owner and the Contractor for and against any and all liabilities, losses, costs, expenses and fees, including reasonable attorney's fees and court costs by reason of claims or liens for any labor, materials or services furnished for the Project.

The Subcontractor acknowledges that this Waiver and Release is given to induce the payment recited above, and that this Waiver and Release is in substantial conformance with the requirements of applicable law.

The undersigned executing this Waiver and Release hereby represents and warrants that he/she has full power and authority to bind the Subcontractor to the terms hereof and affirms that the foregoing is true and correct as of the date of the undersigned signature.

Applicable to Payment Request(s) No. _____

(or) Invoice(s) No. _____

Company XXXXXXXXXXXXXXXXXXXXXXXX

Signed _____ (SEAL)

By: _____

Title _____

SUBSCRIBED AND SWORN TO before me this _____ day of _____, 20__.

My commission expires _____.

Notary Public

SHIEL SEXTON COMPANY
FINAL WAIVER AND RELEASE OF LIENS AND CLAIMS

STATE OF _____
COUNTY OF _____

Whereas, XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX ("Subcontractor") who has furnished certain materials, equipment, services, and/or labor pursuant to a subcontract agreement or purchase order with SHIEL SEXTON COMPANY ("Contractor") for the project known as XXXXXXXXXXXXXXXXXXXXXXXXXXXX ("Project"), which is located at XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (collectively referred to as the "Property"), and is owned by XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX ("Owner").

Upon receipt of the sum of \$_____ ("Final Payment"), the Subcontractor waives and releases any and all liens or claims of liens and all claims, demands, actions, causes of action or other rights against the Contractor, Owner and the Property or any right against any labor and/or material payment bond it has or may have through the date of _____, 20__ ("Current Date"). Further, the Subcontractor covenants and agrees to apply sums received as the Final Payment first, and in no event later than 15 days after the receipt of the Final Payment, to pay all employees, laborers, materialmen, sub-subcontractors and sub-subconsultants employed by the undersigned in connection with the Project and all bills or indebtedness incurred through the Current Date for materials, equipment, services, and/or labor and taxes, furnished by such parties to the undersigned in connection with the execution of the Subcontractor's work on the Project. Subcontractor further agrees to indemnify, defend and hold harmless the Owner and the Contractor for and against any and all liabilities, losses, costs, expenses and fees, including reasonable attorney's fees and court costs by reason of claims or liens for any labor, materials or services furnished for the Project.

Upon consideration of the sum of \$_____ ("Total Contract Amount"), the Company waives and releases any and all claims, demands, actions, causes of action or other rights against the Contractor, Owner and the Property, at law, under a contract, in tort, equity or otherwise, and any and all liens or claims of liens or any right against any labor and/or material payment bond it has, may have had or may have in the future upon the foregoing described Property or in relation to the Subcontractor's performance of work on or the furnishing of equipment, services, and/or labor for the Project.

This Waiver and Release applies to all facts, acts, events, circumstances, changes, constructive or actual delays, accelerations, extra work, disruptions, interferences and the like which have occurred, or may be claimed to have occurred prior to the date of this Waiver and Release, whether or not known to the Subcontractor at the time of execution of this Waiver and Release.

The Subcontractor acknowledges that this Waiver and Release is in substantial conformity with the requirements of applicable law and shall be binding and conclusive against the Subcontractor for all purposes, subject only to payment in full of the amount set forth above.

The undersigned executing this Waiver and Release hereby represents and warrants that he/she has full power and authority to bind the Subcontractor to the terms hereof.

Given under hand and seal this _____ day of _____, 20__.

Company XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Signed _____ (SEAL)

By: _____

Title _____

SUBSCRIBED AND SWORN TO before me this _____ day of _____, 20__.

My commission expires _____.

Notary Public

SHIEL SEXTON COMPANY
PROCEDURE FOR OBTAINING PAYMENT FOR MATERIALS NOT STORED AT THE SITE
OF THE WORK

Subcontractor Name: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Project Name: XXXXXXXXXXXXXXXXXXXXXXX

Shiel Sexton Project Representative: XXXXXXXXXXXXXXX

Materials: _____
and/or those as described in the Material Bill of Sale attached hereto as Exhibit A

Off Site Storage Agreement

Due to the limited amount of space available for the storage of materials at the site and/or to allow for Subcontractor flexibility to handle their risk of material price fluctuations, Shiel Sexton Company, Inc. ('Shiel Sexton) will, under the following conditions, approve partial payments for certain materials stored off the premises. On projects where the Owner has its own procedure or forms, such procedure and forms shall take precedence over this Agreement.

- 1. Prior Approval - The Subcontractor shall obtain the approval of Shiel Sexton before making an application for payment for materials stored off the site. Materials must be suitable for storage and must be properly packaged.
2. Storage Site - The Subcontractor shall furnish and maintain a suitable storage site and proper storage conditions, which must be approved in advance by Shiel Sexton's Project Representative. The site must be located within the state where the Project is located.

When materials are not stored at Subcontractor's owned facility, Subcontractor will provide a fully executed warehouse receipt regarding the storage of the off-site store materials using the form attached hereto Exhibit B.

- 3. Storage Conditions - The material covered in an application for payment must be stored above grade and must be properly protected at all times against weather, heat, cold, moisture and other hazards as the material may require. All protection must be provided by the Subcontractor at its own expense and must be maintained throughout the storage period. Materials in storage are stored at Subcontractor's risk and Subcontractor must provide appropriate insurance coverage for said materials.

Material must not be co-mingled with other similar material but must be stored by itself and must be plainly labeled "Property of Shiel Sexton Company, Inc. and/or Owner, along with the full Project name and address].

It must be stored so that it can be readily inspected, measured, and counted at any time by Shiel Sexton's Project Representative.

- 4. Bill of Sale - Request for partial payment for materials stored under the above conditions must be accompanied by a Material Bill of Sale in the form attached hereto, properly identifying the material, and transferring ownership of the materials to Owner and Shiel Sexton. The Bill of Sale must be accompanied by an inventory of the stored material together with a description of the storage site by street number and City, or by legal description of the premises.
5. Insurance - Subcontractor shall provide certificates of insurance to Shiel Sexton's Project Representative prior to storing any materials showing coverage for the warehouse or other off storage facility, the off-site stored materials, and in-transit coverage of the materials being delivered to the Project site. Such certificates shall name Shiel Sexton and Owner as additional insured and by tendering same, Subcontractor agrees to be responsible for all deductibles.
6. Responsibility - The Subcontractor agrees that in accepting partial payment for the stored materials it is in no way relieved of responsibility for the safe storage of the material and its safe transportation to and installation in the Work, or for furnishing and installing the material in strict accordance with Contract Documents.

The Subcontractor also agrees that acceptance by Shiel Sexton of a Bill of Sale for the material does not imply acceptance of the material, which shall be subject to final acceptance or rejection up to the time the Subcontractor's Work is completed and finally accepted.

The Subcontractor also agrees that any warranty, guarantee or other contractual obligation covering its Work under the Contract Documents and Subcontract Agreement are in no way impaired as a result of the partial payment and/or the acceptance of the Bill of Sale. A progress payment for materials stored in accordance with this Agreement shall not constitute acceptance of materials or work not in accordance with the Contract Documents.

Shiel Sexton accepts no responsibility in connection with the material.

- 7. **Photos of Stored Materials** - Subcontractor shall submit photos of all stored materials with appropriate project identification shown on the stored materials or their packaging along with a signed and of this Agreement with any Application for Payment that includes a request for payment for materials stored offsite. Subcontractor shall submit updated photos upon request.
- 8. Unless otherwise defined in this Agreement, capitalized terms used herein shall have the meanings ascribed to them in the Subcontract between the parties."
- 9. **Acceptance** - The Subcontractor shall indicate its acceptance of the above conditions by signing and returning one copy of this Off-Site Storage Agreement.

ACCEPTED

(Subcontractor Company Name)

(Name of Authorized Representative)

(Signature of Authorized Representative)

Date

STORAGE CONDITIONS APPROVED

Shiel Sexton Company, Inc

(Name of Shiel Sexton Project Manager)

(Signature of Shiel Sexton Project Manager)

Date
XXXXXXXXXXXXXXXXXXXX



Subcontract Attachment E Safety Summary

Prior to the start of Subcontractor's Work, Subcontractor and their sub-subcontractors shall provide the following documents to SHIEL SEXTON COMPANY:

- Project Specific Safety Plan (See the following for detail).
- Hazard Communication Program & MSDS book (submit in a binder with index)
- Contractor Safety Information form (fill out attached form E.1)
- Documentation of training and applicable training certifications

It is critical that these documents are furnished in a timely manner or the start of the Subcontractor's work could be delayed.

Project Specific Safety Plan

Subcontractor and their sub-subcontractors shall provide SHIEL SEXTON COMPANY a copy of a written **Project Specific Safety Plan**. This plan must provide responses to the following 11 points listed below. Please refer to the specific point (i.e., 1, 2, 3, etc.) being addressed in the plan. Subcontractors will be responsible for ensuring that their sub-subcontractors comply with this requirement, and must provide all plans to SHIEL SEXTON COMPANY prior to the start of Work.

- (1) The name of the Safety Representative who is responsible for the day-to-day implementation of Subcontractor company's and this project's safety plan and rules. This Safety Representative must be on site daily.
- (2) Provisions for documented safety inspection on this Project. Note in your response the frequency of inspections, names and positions of inspectors, any special circumstances that would necessitate additional inspections and the documentation methods for these inspections (i.e. forms, distribution, etc.). All inspections will be copied to SHIEL SEXTON COMPANY on-site management staff.
- (3) Please provide training records specific to the tasks that are going to be performed on this Project that includes but is not limited to the following:
 - Management personnel and safety inspectors
 - Competent person trainings i.e. scaffolding, steel erection, fall protection, excavations, rigging etc.
 - Forklift, Boom lift, scissor lift, etc. (must have wallet card and provide copy)

These individuals will be held accountable as the competent or trained person for the areas that are identified, so please list the specific employees.

- (4) The interval for job site safety meetings (tool box talks) (documented). Tool box talks are required to be completed by all Subcontractors and returned to the SHIEL SEXTON COMPANY on-site office listing the topic, instructor, and attendees.
- (5) What specific fall hazards will Subcontractor encounter on this project? What are these locations? How will you eliminate or control each hazard specifically.

- (6) What are Subcontractor's PPE requirements for this project? Please be specific to any unique tools or activities.
- (7) Describe any remaining hazards that are involved with the Subcontract Work to be performed and explain (in detail) how these hazards will be eliminated or controlled. DO NOT PROVIDE A COPY OF YOUR SAFETY PROGRAM OR STATE IT IS INCLUDED IN YOUR PROGRAM AS COMPLETION OF THIS SECTION – be specific to this Project.
- (8) Please detail your Company substance abuse policy. If no policy exists, note as such.
- (9) Describe the accident reporting, first aid, and emergency procedures for this Project. Note all first aid and any accidents must be reported to SHIEL SEXTON COMPANY. Indicate the procedures taken in the event of an accident, i.e. clinic location and transportation policy. Also note who will report this accident and/or first aid event to SHIEL SEXTON COMPANY and what method they will use to do so.
- (10) Provide the procedure for ensuring that the details of this Project Specific Safety Plan will be communicated to your organization, employees, and subcontractors?
- (11) Spanish Language Protocols must be incorporated into the plan. If you have no non-English speaking employees please note as such.



Subcontract Attachment F Quality Summary

Prior to starting Subcontractor's Work, Subcontractor shall provide the following documents to SHIEL SEXTON COMPANY:

- Job Specific Quality Plan* (JSQP) (See the following for detail)
- Applicable Certifications*

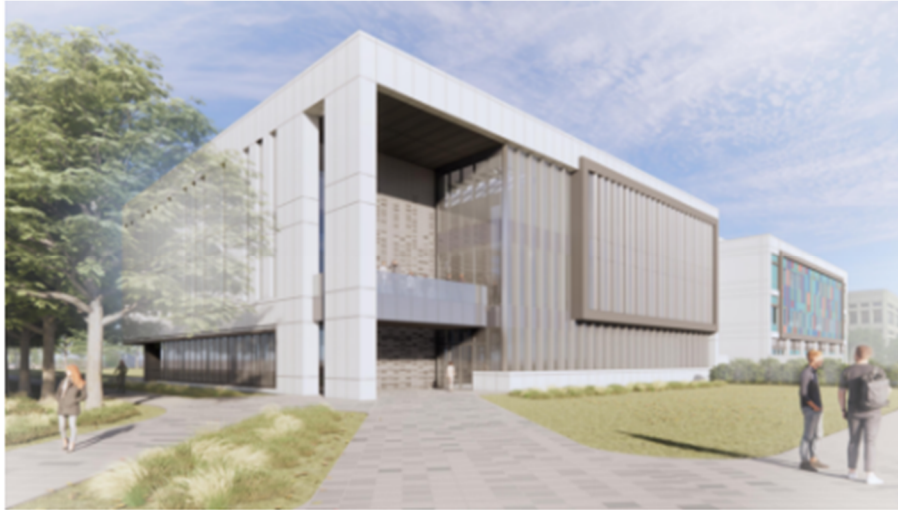
*It is critical these documents are furnished promptly to not delay the start of Subcontractor's Work

Subcontractor and their sub-subcontractors shall provide SHIEL SEXTON COMPANY a copy of a written Job Specific Quality Plan (JSQP). This plan must provide responses to the following 14 points below. Subcontractors are responsible for ensuring that their sub-subcontractors each submit a plan individually to SHIEL SEXTON COMPANY.

- (1) Does your company have a written quality program? If so, please provide a copy.
- (2) Please describe the methods that will be used to ensure that all Subcontract Documents, Specifications and Drawings are met on this project?
- (3) The name & contact information of the person who is responsible for the day-to-day implementation of this plan and what role this person will play during the project? This person must be on site daily.
- (4) The name & contact info of the person who is corporately (at your office) responsible for quality?
- (5) Please identify how you will control construction and quality documents and who is responsible?
- (6) List the provisions for documented quality inspections. Note the frequency of inspections and the person or persons that will perform the inspections. Please also include the documentation methods for these inspections (i.e. forms, distribution, etc.). Copy SHIEL SEXTON COMPANY on all inspections.
- (7) Please describe any unique quality obstacles your organization foresees on this Project. i.e. material storage, complexity, familiarity with a new products or methods, constructability, new supplier or subcontractor, working environment, lighting needs, layout, control lines, etc.
- (8) Please attach copies of all certifications (if required) as described in the specifications (i.e. welding certifications.). Note as "N/A" if not required.
- (9) Please list (if required per Subcontract) the testing agencies you intend to use, credentials, contact information, and how the results will be reported to SHIEL SEXTON COMPANY. Note as "N/A" if not required.
- (10) Deviation reporting (quality accidents or mistakes). Please communicate how your company will communicate all Subcontractor's deviations from plans and specifications to SHIEL SEXTON COMPANY. SHIEL SEXTON COMPANY expects a timely report for all such instances.
- (11) Detail how your company will communicate the quality plan to the field forces.
- (12) Provide designated personnel for Punch item management.
- (13) Indicate who is responsible for Punch list supervision and completion.
- (14) Provide key personnel and companies associated with Commissioning and Functional testing.

Indianapolis University Indianapolis Academic Success Building

BIM EXECUTION PLAN



IUI LAB ADDITION

Indianapolis, Indiana

September 26, 2024



Signature Page

By signature below, this BIM Execution Plan is herewith adopted and incorporated the contract document – of the governing contracts on the Indiana University Indianapolis Lab Addition project.

_____	_____
Shiel Sexton [Construction Manager]	Date
_____	_____
[Steel Contractor]	Date
_____	_____
[Mechanical Contractor]	Date
_____	_____
[Plumbing Contractor]	Date
_____	_____
[Fire Protection Contractor]	Date
_____	_____
[Glazing Contractor]	Date
_____	_____
[Electrical Contractor]	Date
_____	_____
	Date
_____	_____
	Date



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I. BEP Overview

This BIM Execution Plan (“BEP”) sets forth the strategy for the implementation of BIM on the Indiana University Indianapolis Lab Addition (“Project”) in Indianapolis, Indiana.

This BEP defines the goals, roles and responsibilities, specific requirements, scope (Level of Development or “LOD”) and schedule(s) for the use of BIM tools, method, and processes in the design, fabrication, construction and long-term facility management of the Project.

The BEP should be considered a living document and shall be continually developed and refined throughout the Project’s lifecycle.

When executed and agreed upon by the Project Participants, this BEP, including any written modifications thereto, shall become considered part of and incorporated into the Addendum.

A. Project Initiation

1. Project Description

Owner	Indiana University Indianapolis
Project	Lab Addition
Project Address	Indianapolis, IN
Project Description	Research Facility

2. Project Goals and Objectives

Below is a list of goals and objectives for using BIM and collaborative project management technology and processes for the project:

- Reduce errors through improved coordination, visual understanding
- Reduce errors through coordinated design and construction
- Streamline system routing to reduce cost; improve efficiency
- Improve communication for all project stakeholders
- Streamline decision making for project stakeholders
- Reduce RFI’s during construction
- Reduce change order costs during construction through reduced interference of systems and more proven, constructible, design
- Use BIM for constructability review during design for accurate feedback and improved decision making and sequencing
- Increase opportunities for prefabrication when it can reduce cost
- 4D schedule visualization of baseline schedule
- Enable accurate quantity takeoff, estimate, trend and cost feedback
- Leverage the use of virtual mock-ups to proof the constructability, sequence and quality assurance of the scheduled physical mock-ups
- Improved ability to record and locate and service key assets

3. Project Participants

The Project Participants are responsible for:

- Completing this BIM Execution Plan
- Specify project phases / milestones

- Map out communication among project team members for each project phase
- List the goals and objectives of using BIM and collaborative project management technologies on the project
- Utilizing the file management folder structure in the collaborative project management system
- Enforcing the action plan set out in this document throughout design and construction of the project
- Develop, update, and maintain fabrication drawings during entire duration of project

Below is a list of the project team members.

Name	Role/Title	Email	Phone
Owner			
Shiel Sexton			
Greg Wellings	VDC Manager	gwellings@shielsexton.com	317-693-4576
Architect			
Structural Contractor			
Glazing Contractor			
Plumbing Contractor			
Fire Protection Contractor			

Name	Role/Title	Email	Phone
HVAC Contractor			
Electrical Contractor			

B. Modeling Plan

To run this Project more efficiently and cost-effectively during every phase, advanced planning is vital. Deciding which models will be created during the different phases of the Project and who will be responsible for updating models and distributing them is crucial. Content and format of models should also be predetermined as much as possible.

1. Model Managers

Each Project Participant that is responsible for contributing modeling content will assign a Model Manager to the Project.

When Participants are responsible for multiple systems, they are to provide an individual model manager, at minimum, for each of the following systems: Fire Protection Systems, HVAC Systems, Hydronic Pipe Systems, Plumbing Pipe Systems, Waste-Vent-Sanitary Pipe Systems, Special Gas Systems, Electrical Systems, and Network Systems.

Additional Managers may be warranted and included at a later time.

Each Model Manager has a number of responsibilities that include, but are not limited to:

- Transferring modeling content from one party to another
- Validating the LOD and controls as defined for each project phase
- Including existing conditions to remain for coordination purposes
- Validating modeling content during each phase
- Combining or linking multiple models
- Participating in model coordination sessions
- Communicating issues back to internal and cross-company teams
- Maintaining file naming conventions
- Managing version control, archiving and backups
- Properly storing models in the collaborative project management system
- Updating and distributing fabrication drawings
- Uploading AS-BUILT materials
- Creating and maintaining a drawing list
- Maintaining all AS-BUILT documents
- Submitting RFIs, reviewing RFI responses and updating their models
- Attending all pre-coordination and scope clarification meetings

The Model Managers for the Project are listed in the table below.

Company Name	Model Manager	Email	Phone
Owner			
Architect			
Shiel Sexton (Lead Model Manager)	Greg Wellings	gwellings@shielsexton.com	317-693-4576
Fire Protection Systems			
HVAC Systems			
Hydronic Piping Systems			
Plumbing Piping Systems			
Waste-Vent-Sanitary Piping Systems			
Special Gas Systems			
Electrical Systems			
Network Systems			

2. Models vs Contract Documents

This BEP does not alter the definition(s) in Contract Documents or Instruments of Service as previously defined in any governing contracts of the Project. Furthermore, the Architect's BIM files are not Instruments of Service or Construction Documents. In the event of a conflict or ambiguity between or amongst the BIM files and the Construction Documents, the content of the Construction Documents shall prevail.

3. Planned Models

The Project will involve the creation of multiple models by various Project Participants throughout the Project's duration. At a minimum, the models listed and described in the matrix below will be created.

The matrix below identifies, what models shall be created for the Project, a summary of the content and intended purpose of each model, the project phases in which the models will be required and utilized, the Project Participant(s) responsible for the creation, authoring and maintenance of the models, and the approved BIM software tools used to create the models and acceptable file formats.

In addition to the intended purpose of each model as stated in the matrix below, it is understood and agreed upon by all Project Participants that all models on the Project aim to support the Project's stated BIM goals set forth in Section A.2 of this BEP.

Other models may be created specifically for certain types of analysis, such as energy consumption or safety. These analysis models are usually spinoffs of either the design intent model or the construction model.

Model Name	Model Content	Project Phase	Authoring Company	Authoring Tool
Architectural Model	Architectural elements that define the design intent. (e.g. Levels, Grids, Walls, Roofs, Floors, Ceilings, Doors, Windows, Millwork, Casework, Fixtures, Stairs, and misc. items and accessories)	DD, CD, Coordination, Construction, and Turnover	Architect	Per Architect
Structural Model	Structural elements that define the design intent of the structural frame of the Project. (e.g. Foundations, Structural Steel, Concrete walls and slabs, Misc. Steel, Connections, Stairs, and Bridges)	DD, CD, Coordination, Construction, and Turnover	Structural Engineer	Per Structural Engineer
MEPFP Model	Provide model(s) that fully and accurately describes all areas of major MEP design complexity or congestion, such as mechanical rooms or key transition points between vertical distribution shafts and horizontal distribution. (E.g. Fire Protection, Air Terminals, Diffusers, Ductwork, Piping, Water Distribution, Electrical Distribution, Conduit at/or above 1-1/2", Permanently Fixed Lighting Fixtures, etc.)	DD, CD, Coordination, Construction, and Turnover	MEP Engineer	Per Engineer
Civil Model	Shall include all 3D geometry, physical characteristics and product data needed to verify clearances, analyze conflicts, and construct utility systems to within 5' (five feet) of the Project building envelope. Include site and existing obstructions that are adjacent to the systems; model existing utilities as needed.	Coordination, Construction and Turnover	Architect / Civil Engineer	Per Engineer
Construction Model	Provide model(s) that fully and accurately describe all items not represented in the design team models that are historically "means and methods" and are required for constructability review and systems coordination. (e.g. Structural Framing, Equipment Framing, Temporary Construction, Logistics, Sheeting, Material Staging, Phasing / Sequencing, etc.)	Coordination, Construction and Turnover	Shiel Sexton	Revit 2022 Navisworks 2022
MEPFP and Structural Fabrication Models	Provide model(s) that fully and accurately describe all As-Built Structural, Mechanical, Plumbing, Fire Protection, Electrical, Lighting, Electrical Equipment, Switchgear, Conduit, Cable Trays, etc.	Coordination, Construction and Turnover	Trade Subcontractors	Revit 2022, .DWG, and .NWC files req'd at minimum
Miscellaneous Fabrication Models	Provide model(s) that fully and accurately describe any and all secondary and tertiary systems (e.g. Pneumatic Tube Systems, Specialty Casework, Fixtures, Equipment, etc.)	Coordination, Construction and Turnover	Trades Subcontractors	Revit 2022, .DWG, and .NWC files req'd at minimum
Coordination Model	Model(s) derived from compiled design models, construction models, and fabrication models for use in systems coordination / clash detection	Coordination, Construction and Turnover	Shiel Sexton	2022 Navisworks

Record Model	Compiled design models filtered and structured so as to meet Indiana University Indianapolis's facilities needs and support their existing operations and maintenance systems and protocols	Turnover	Architect	Per Owner
As-Built Model	Construction gap models, fabrication models, and coordination models filtered and structured so as to meet Indiana University Indianapolis's facilities needs and support their existing operations and maintenance systems and protocols	Turnover	Shiel Sexton Participating Trade Contractors	2022 Navisworks (NWD) Native Fabrication Files, Revit, .DWG, .pdf, and .NWC files

4. Project Model General Division Strategy

The Project Schedule requires development of multiple design packages.

The Project Model General Division Strategy is enumerated below. All project team workstations, hardware and network specifications shall be 64-bit. Exceptions for trade and fabrication subcontractors shall be made as appropriate. All modeling optimization and industry best practices shall be implemented, including those detailed in the most current Autodesk® Model Performance Technical Note.

1. The **Architectural Model** through all project phases shall be subdivided into the fewest number of model files not to exceed 200MB each.
2. The **Structure Model** through all project phases shall be subdivided into the fewest number of model files not to exceed 200MB each, and maintain parametric links with the **Architectural Model** allowing automatic generation of all plans, sections, elevations, custom details and 3D views.
3. The **MEP Models** through all project phases shall be subdivided into the fewest number of model files not to exceed 200MB each, and maintain parametric links with the **Architectural Model** and the **Structure Model** allowing automatic generation of all plans, sections, elevations, custom details and 3D views.

Any changes to the Project Model General Division Strategy will be incorporated as modifications to this BEP.

5. Phased Modeling Plan

General

All information needed to describe Design Development or Construction Documents shall be graphically or alphanumerically included in and derived from the design models only.

As required by the governing contract(s), Construction Documents shall be provided to Indiana University Indianapolis at Project closeout in a two-dimensional Autodesk® AutoCAD (.DWG) format. Indiana University Indianapolis shall provide the project team with any necessary Export Settings (.TXT) files required for translation of the design model (.RVT) format into Indiana University Indianapolis standards for (.DWG) formatting of Construction Documents.

Model Purpose

For Design Development through Construction Documents, the Architectural Model will continue to act as the baseline. The subsystem design models will be modified accordingly to represent the enhanced design.

Parametric links shall always be maintained within and between all the design team models to enable the automatic generation of all plans, sections, elevations, custom details, schedules and 3D views.

Responsibilities, Process and Procedures

From the start of Construction Documents through Project completion, when the design team updates their models, they will be incorporated into the coordination process and reviewed.

The construction team shall create construction gap models containing constructability items which are not represented in the design models that are needed for constructability review and systems coordination of MEP/FP trades.

Fabrication Models

Subcontractors shall use the design team models as the reference basis for their fabrication models. Fabrication models will use the Structural Model as structural basis model for fabrication modeling and MEP systems coordination until the Structural Fabrication Model has been produced and approved to use for analysis.

All fabrication models shall be continuously developed and submitted into the systems coordination process in both of the following acceptable formats: Autodesk® Navisworks .NWC format, and a 3D (three-dimensional) .dwg. Only fabrication models submitted in these formats will be accepted. In addition, all fabrication models will be required to be submitted in the native file format and .pdfs of fabrication drawings.

Subcontractor fabrication models shall be used to facilitate systems coordination, provide cost feedback, pre-fabricate components, and will represent the Record Model for their specific scope of work.

All subcontractors shall be pre-qualified with demonstrable BIM resources, technical skills, and experience to be verified by the construction team.

All subcontractors shall perform according to the following:

- Subcontractors will fully coordinate its work with the work of other subcontractors on the Project.
- Subcontractors will attend all the coordination meetings at a location to be determined by Shiel Sexton where the project team can virtually build portions of the building, simulate risk prevention, hold coordination meetings, provide all necessary engineering, design and 3D drafting services as needed, and make whatever reasonable dimension, configuration, or location modifications to the Work as may be required to affect the coordination process at no additional cost.
- For these coordination meetings it is required that all subcontractors' project managers and site foremen attend.
- For the purposes of coordinating the fit and installation of all mechanical, electrical and finishes, all MEP/FP subcontractors and the select general trade subcontractors will prepare fully detailed and scalable models that are used for clash avoidance and optimization.
- All key subcontractors are required to use 3D models for coordination. The MEP/FP subcontractor shall post their fabrication models on the Project Collaboration Site, utilizing a shared workspace that the team can access. Clash results are run and distributed by the Lead Model Manager to the trades involved.

- Fabrication models are used to embed data from the equipment vendors to make it easier for the Indiana University Indianapolis’s Facilities and maintenance staff to access the information at the completion of the project (if determined necessary)

In addition, all coordinated drawings created for this project shall be stored and transferred on an online communications service that shall be utilized by all subcontractors.

Subcontractors are responsible for creating, uploading, and maintaining the fabrication drawings at all times.

All daily coordination between subcontractors may take place by virtual team interactions that are administered at a frequency as specified by the Lead Model Manager. Each subcontractor shall be responsible for their own fabrication model. All subcontractors are required to continuously coordinate outside of the regular scheduled coordination meetings.

6. Minimum Modeling Requirements

System suppliers, equipment suppliers, and subcontractors model content, shall at a minimum, contain:

ARCHITECTURAL	
The contractor responsible for installation of various architectural components will be responsible for making sure that the contents of the model represent a complete system and that tolerance for system access and maintenance along with insulation are included where appropriate. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the general trade contractors to coordinate with other trades.	
COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Walls	Interior partitions and furring (including all wall layers) modeled to their correct thickness, height, and assembly. Walls requiring additional bracing or reinforcing shall also be modeled. Interior partitions and furring that extend multiple floors to be split at each floor.
Ceilings	All ceiling types to be modeled (acoustical tile, gypsum, etc.) including all soffits. All ceiling system bracing and supports to be modeled. Ceilings shall not contain 3D holes for items being coordinated with the ceiling layout (diffusers, lights, etc.).
Flooring	Stone floor toppings not included in Structural Model. Access flooring (including support stanchions and struts). Holes are needed in floors and walls if they will be sleeved. For penetrations that will be cored, these penetrations shall not be modeled.
Casework	All casework, countertops, integral fixtures, etc. to be modeled.
Doors, Frames & Hardware	Doors and openings (all types), door leaves (correct swing and handedness) and frames
Enclosure	Windows, curtain walls, storefront systems, skylights, borrowed lites and windows leaves (including all frames, mullions and muntins). All other wall panels, curtain wall systems, and other exterior wall types to be modeled as separate pre-installed assemblies. Precast panels and access panels to be modeled as separate objects with actual joint spacing. Exterior wall cladding to be separate from main wall structure (e.g. brick cladding, metal panel, etc.). Exterior walls not included in Structural Model (including all wall layers, penetrations and openings).
Roofing	Roofing systems (including all roof layers, penetrations and openings). Scuppers and drains not included in MEP models.
Vertical Circulation	Treads, risers, stringers and monolithic stairs not included in Structural model. All ramps modeled at correct pitch. Railings including all handrails, guardrails and posts. Elevators and escalators modeled dimensionally accurate including all embeds, anchorage, structural supports, etc. required to complete the system.
Equipment	Fixed equipment not included in MEP models. Canopies to be included with all supports and anchorages detailed. All Kitchen Equipment to be modeled and will include fixed and moveable along with hoods.
Owner’s Equipment and Medical Equipment	Models shall contain structural support requirements, mounting points, isolation pads and support hardware. Electrical, medical gas and plumbing connection points and access and service areas to operate and maintain equipment to be included in models.

Pneumatic Tube Systems	All components of the pneumatic tube system(s) to be modeled with clearance and access spaces. The system includes user stations, piping, traffic control devices, transfer units, blowers, terminal ports, and other miscellaneous equipment.
Furnishings	All fixed furniture systems to be modeled with space allocated (at a minimum) for significant artwork. Fountains and pools to be modeled not included in Civil Model.
Audio / Visual	Ceiling mounted projectors with mounting devices, projection screens, termination panels, rack mounted equipment, racks, and other audio / visual equipment to be modeled.
Miscellaneous	Stoops and wells not included in Structural Model. Columns not included in Structural Model to be modeled in separate pre-installation pieces or in the step by step fashion that it will be poured or assembled. Slabs and floors not included in Structural model

STRUCTURAL

The contractor responsible for installation of various structural components will be responsible for making sure that the contents of the model represent a complete system and that tolerance for system access and maintenance along with insulation and/or fireproofing are included where appropriate. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the general trade contractors to coordinate with other trades.

COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Foundations	All concrete slabs (including penetrations and openings), foundation walls, other structural walls, caissons, footings, and grade beams to be modeled. Concrete shall be modeled with pour stops / breaks according to the schedule and pour sequence.
Structural Concrete	All concrete beams, concrete columns, slabs, shear walls to be modeled. Concrete shall be modeled with pour stops / breaks according to the schedule and pour sequence. Concrete cores (stair towers, elevator shafts, etc.) to be split at each floor.
Structural Steel	All primary steel members (columns, beams, trusses and joists) and secondary steel members (X-bracing, façade support angles, lintels, gusset plates, braces, equipment supports, kickers, clip angles, etc.), and metal decking (including penetrations, edge angles, pour stops, and openings) to be modeled. Structural stair components to be modeled. with accurate riser height, tread width & depth, railing profile, landing size, etc.
Miscellaneous	Concrete stoops, wells, monolithic stairs, equipment pads, housekeeping pad, etc. to be modeled.

CIVIL

The contractor responsible for installation of various civil / site components will be responsible for making sure that the contents of the model represent a complete system and that tolerance for system access and maintenance included where appropriate. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the general trade contractors to coordinate with other trades.

COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Topography	Existing to remain, existing to cut and new fill
Utilities	All utilities to within 5'-0" of building perimeter to be modeled. Vaults, manholes, catch basins, tanks, duct banks, bundled conduit and piping, backflow preventers and control valves underground storage containers and other underground structures to be included.
Pavements	Major asphalt and concrete paving (roads, parking lots, drives, turnarounds, etc.)
Miscellaneous	All light poles, light pole bases, and bollards. Site structures not included in Architectural Model need to be at least mass modeled.

HVAC

The contractor responsible for installation of HVAC duct will be responsible for making sure that the contents of the model represent a complete system and that tolerance for system access and maintenance along with insulation are included where appropriate. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the HVAC contractor to coordinate with other trades.

COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
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Supply, Return, and Exhaust Duct	All ductwork is required to be modeled including low exhaust and return. Insulation is required to be modeled on ductwork. All flanges are to be accounted for. Terminate all no-fly zones to the floor below.
Grease Duct	Ductwork is required to be modeled including sloping requirements and as specified or per SMACNA requirements. Identify cleanout locations and access doors. Model and maintain adequate clearance at these locations during coordination. Insulation on grease duct is required to be modeled. Coordinate termination locations with equipment. All flanges are to be accounted for. Terminate all no-fly zones to the floor below.
Stainless Steel Duct	Ductwork is required to be modeled including sloping requirements as specified and/or per SMACNA requirements. Coordinate termination locations with equipment. All flanges are to be accounted for. Terminate all no-fly zones to the floor below.
Flexible Duct	All duct connections to grilles registers and diffusers are required to be modeled. Flexible connections to equipment shall be modeled. Insulation on flexible duct is required to be modeled. All flanges are to be accounted for. Terminate all no-fly zones to the floor below.
Grilles, Registers, and Diffusers	Architectural reflected ceiling drawings shall be used as the basis for grille, register, and diffuser locations. If requested, model flow zones for grills, registers, and diffusers.
Terminal boxes	VAV and CAV boxes shall include no-fly zones to properly access and maintain the equipment. Terminate all no-fly zones to the floor below. Model all connections. Model all control elements for equipment.
Return / Exhaust air valves	Air valves shall include no-fly zones to properly access and maintain the equipment. Terminate all no-fly zones to the floor below.
Equipment	Models shall include all AHUs, HRUs, fan coil and blower coil units, and exhaust and supply air fans. Equipment shall include no-fly zones to properly access and maintain the equipment. No-fly zones should include door swings on AHUs, filter sections and coil replacement sections. Terminate all no-fly zones to the floor below.
Fire and Smoke Dampers	Dampers shall include no-fly zones for proper access for inspection and maintenance. Coordinate all damper locations with rated assemblies. Terminate all no-fly zones to the floor below. Include all necessary access doors / panels to gain access to the damper. Indicate on the damper the location of the parts that need to be reached.
Duct Access Doors	Model no-fly zones at locations where duct access doors will be located. Terminate all no-fly zones to the floor below.
Hangers and Supports	Hangers and supports for duct and equipment are required to be modeled, including any control systems.
Penetrations	If required, model all wall, floor, and other object penetrations. These penetrations shall be modeled as a separate object and labeled as such. These penetrations should account for insulation, flanges, equipment, and workability space as required to install the materials.
Controls	All equipment and distribution for controls are to be modeled and all required access zones are to be accounted for.

MECHANICAL PIPING

The contractor responsible for installation of HVAC piping will be responsible for making sure that the contents of the model represent a complete system and that tolerance for system access and maintenance along with insulation are included where appropriate. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the HVAC piping contractor to coordinate with other trades.

COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Chilled Water and Condenser Water Piping	Piping is required to be modeled with insulation. All chilled water and condenser water piping is required to be modeled regardless of size. Pipe flanges and fittings are to be modeled.
Heating Water Piping	Piping is required to be modeled with insulation. All heating water piping is required to be modeled regardless of size. Pipe and fittings flanges are to be modeled.
Steam and Condensate Piping	Piping is required to be modeled with insulation. All steam and condensate piping is required to be modeled regardless of size. Steam traps are required to be modeled. Horizontal and vertical expansion fittings are required to be modeled according to approved submittals. Pipe flanges and fittings are to be modeled.
Gas Piping	All natural gas and compressed air piping is required to be modeled regardless of size. Pipe flanges and fittings are to be modeled. Insulation shall be modeled.
Vent Piping	Piping is required to be modeled with insulation. All vent piping is required to be modeled regardless of size. Pipe flanges and fittings are to be modeled.
Pumps	Model pumps according to actual size and orientation per approved submittals. Models should be provided by manufacturer if available. Include no-fly zones to access and maintain equipment. Pumps located above ceilings shall be located during coordination in areas where they can easily be accessed. Terminate all no-fly zones to the floor

	below. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Equipment	Models should include boilers, steam generators, chillers, cooling towers, heat exchangers, unit heaters, PRV stations, condensate receivers, expansion tanks, air separators, flash tanks, and pressure vessels according to actual size per approved submittals. Models should be provided by manufacturer if available. Include no-fly zones to access and maintain equipment. Terminate all no-fly zones to the floor below. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Valves	Valves shall be modeled for all mechanical piping systems. Valve locations are required to be identified during coordination and no-fly zones shall be included to represent space where access is needed to close and open the valve. Terminate all no-fly zones to the floor below. Provide all required access panels / doors required to reach the valves. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Hangers and Supports	Hangers and supports for mechanical piping are required to be modeled. Steam and condensate piping should include guides and anchors where applicable and according to approved submittals. Include hanger support for any equipment.
Penetrations	If required, model all wall, floor, and other object penetrations. These penetrations shall be modeled as a separate object and labeled as such. These penetrations should account for insulation, flanges, equipment, and workability space as required to install the materials.
Controls	All equipment and distribution for controls are to be modeled and all required access zones are to be accounted for.

PLUMBING / SPECIAL GAS / WASTE-VENT-SANITARY (WVS)	
The contractor responsible for installation of domestic water systems and special gas will be responsible for making sure that the contents of the model represent a complete system and that tolerance for system access and maintenance along with insulation are included. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the plumbing contractor to coordinate with other trades.	
COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Domestic Water Piping	Piping is required to be modeled with insulation. All domestic hot and cold water piping and special gas pipping is required to be modeled regardless of size. Pipe flanges and fittings are to be modeled.
Waste / Vent Piping	All waste runs (with pitch), cleanout locations, vent and support carriers to be modeled. Piping is required to be modeled with insulation. All vent piping is required to be modeled regardless of size. Pipe flanges and fittings are to be modeled. Model access zones for cleanouts to the floor below. Include all required access doors / panels to reach the cleanouts.
Pumps	Model pumps according to actual size and orientation per approved submittals. Models should be provided by manufacturer if available. Include no-fly zones to access and maintain equipment. Pumps located above ceilings shall be located during coordination in areas where they can easily be accessed. Terminate all no-fly zones to the floor below. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Equipment	Models should include boilers, filtration systems, pumps, fittings, shutoff valves, water softeners, water heaters, expansion tanks, ejector pumps, down spouts, fittings, pressure vessels, and backflow preventers according to actual size per approved submittals. Models should be provided by manufacturer if available. Include no-fly zones to access and maintain equipment. Terminate all no-fly zones to the floor below. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Valves	Valves shall be modeled for all piping systems. Valve locations are required to be identified during coordination and no-fly zones shall be included to represent space where access is needed to close and open the valve. Terminate all no-fly zones to the floor below. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal. Include all required access doors / panels to reach the valves.
Hangers and Supports	Hangers and supports for plumbing piping are required to be modeled. Isolation pads and support hardware, pitched lines, and sleeves through foundation walls are also to be modeled. Model all hangers for equipment and control systems.
Penetrations	If required, model all wall, floor, and other object penetrations. These penetrations shall be modeled as a separate object and labeled as such. These penetrations should account for insulation, flanges, equipment, and workability space as required to install the materials.
Controls	All equipment and distribution for controls are to be modeled and all required access zones are to be accounted for.

FIRE PROTECTION	
<p>The contractor responsible for installation of fire protection piping systems will be responsible for making sure that the contents of the model represent a complete system. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the fire protection contractor to coordinate with other trades. Coordination of sprinkler piping shall avoid trapping portions of the system in such a way that auxiliary drains are required. Where additional drains are required, these shall be indicated during the coordination process and noted on fabrication and as-built drawings.</p>	
COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Sprinkler piping	All sprinkler piping, that includes main distribution, standpipe risers, branch lines and head locations at proper elevations is required to be modeled regardless of size. Sprinkler systems requiring slope shall be modeled with correct slope and per NFPA requirements.
Valves	Zone valves, dry pipe valves, test valves, drain valves, and pre-action valves shall be modeled for all sprinkler systems. Valve locations are required to be identified during coordination and no-fly zones shall be included to represent space where access is needed to inspect and operate the valves. Terminate all no-fly zones to the floor below. Include all required access doors / panels to reach the valves. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Fire Protection Equipment	Siamese fittings, fire and jockey pumps, hose cabinets, test valves and compressors are required to be modeled according to actual size per approved submittals. Models should be provided by manufacturer if available. Include no-fly zones to access and maintain equipment. Terminate all no-fly zones to the floor below. If a model cannot be provided by the manufacturer, the trade contractor is responsible for creating a model that matches the approved submittal.
Hangers and Supports	Hangers and supports for sprinkler piping are required to be modeled, including any equipment and control systems.
Penetrations	If required, model all wall, floor, and other object penetrations. These penetrations shall be modeled as a separate object and labeled as such. These penetrations should account for insulation, flanges, equipment, and workability space as required to install the materials.
Controls	All equipment and distribution for controls are to be modeled and all required access zones are to be accounted for.

ELECTRICAL / NETWORK	
<p>The contractor responsible for installation of electrical / network systems will be responsible for making sure that the contents of the model represent a complete system. The table below outlines the minimum requirements for models to be used in coordination. Any elements not included in the model will be the responsibility of the electrical contractor to coordinate with other trades.</p>	
COMPONENT	LEVEL OF DEVELOPMENT AND ADDITIONAL REQUIREMENTS
Distribution	Routing of all individual power and lighting conduits, concrete encased conduit, all conduit racks, hangers, supports, and cable trays to be modeled. All concrete encased conduit shall be modeled to include concrete encasement. All items requiring access for maintenance will require access zones to be modeled. Terminate all no-fly zones to the floor below. Model all conduit regardless of size.
Light Fixtures	Light fixtures to be modeled with appropriate clearance height dimensions above the ceiling as required to access and maintain each type of light fixture. Include no-fly zones to access and maintain fixtures.
Fire Alarm	All the components of the fire alarm system are to be modeled and include the initiating devices (i.e. smoke and heat detectors, in-duct smoke detectors, and pull stations), indicating appliances (i.e. horns, strobe lights, bells, or combination units), control panels, conduit runs, fire extinguisher cabinets, and auxiliary devices (i.e. remote annunciators, electromagnetic door holders, etc.).
Nurse Call / Paging	All components of the nurse call / paging system to be modeled. These systems include call controls, IP endpoints (i.e. IP phones, etc.), application servers, alert systems, access point stations, rack mounted equipment, racks, etc.
Telecommunications	Telecommunication system hardware, panels, major conduit distribution, racks, access points, servers, rack mounted equipment, racks, hangers, supports, cable tray, etc. all to be modeled.
Equipment	All electrical equipment, switchgear, generators, variable frequency drives, bus duct, motor control centers, access panels, wall and floor penetrations, etc. to be modeled. Include no-fly zones to access and maintain equipment.
Penetrations	If required, model all wall, floor, and other object penetrations. These penetrations shall be modeled as a separate object and labeled as such. These penetrations should account for insulation, flanges, equipment, and workability space as required to install the materials.

Controls	All equipment and distribution for controls are to be modeled and all required access zones are to be accounted for.
Hangers and Supports	Hangers and supports for all conduit are required to be modeled, including any equipment and boxes.

7. Analysis Models

a. Integrated Team Coordination

The project team will complete a coordination meeting multiple times a week or as otherwise required for efficiency.

In the event any system has an interference or clash with any differing system, the following hierarchy shall apply as the first pass of resolution:

1. Structure
2. Architecture
3. Light Fixtures
4. Sloped piping
5. Fire Protection Mains
6. Pure Water
7. Sheet Metal
8. Plumbing
9. HVAC Piping
10. Fire Protection Distribution
11. Electrical and Network Distribution

Models posted to the Project Collaboration Site shall adhere to the following:

1. Models shall be posted in their native (.rvt) and as well as a (.dwg) and a (.nwc) format
2. Model files shall contain only their respective work scope
3. All ancillary background data shall not be uploaded
4. Xref and linked files shall be detached
5. Models that have been traced shall be removed
6. All files posted to the Project Collaboration Site shall be at elevations indicated by the Lead Model Manager, as required for coordination
7. All design lines to be removed from the file prior to upload
8. All text is to be placed on a separate layer and turned off
9. Remove all points and other modeled items that are for layout control from third part plug-ins
10. Do not divide NWC's into levels
11. Do not export Room Geometry
12. Align Coordinates with Architectural model, Shared vs Internal, as directed by the Lead Model Manager
13. Provide grid intersection on Exterior of project as directed by Lead Model Manager
14. NWC files are not to be produced from Navisworks.
15. Adjustments are not to be made within Navisworks.

Project team representatives shall be available to attend team coordination meetings as required or needed.

The model manager for each subcontractor shall be present at all systems coordination meetings and maintain general oversight and administrative review of the coordination process.

Team coordination meetings shall be held either via ZOOM or at a location To Be Determined.

All subcontractors are responsible to monitor the progress of their work throughout the BIM coordination process and shall act promptly to resolve any conflict or encroachments that are discovered in the virtual construction process. All subcontractors are responsible for maintaining the coordination schedule as directed by the Lead Model Manager. If a conflict cannot be resolved, the Lead Model Manager's decision shall be binding on all subcontractors without recourse except as provided on the Contract Documents. When all work has been properly adjusted for fit in the model, all subcontractors' project managers shall acknowledge by completing the signoff document related to each area.

Once sign off has occurred, all subcontractors are given one (1) week to finalize layout and provide and submit shop drawings to be reviewed.

Additional coordination models and signoffs will be included as determined by the Lead Model Manager. All housekeeping pads are to be modeled and coordinated prior to installation. All placement and orientation of major equipment will require an additional signoff by each trades' project manager.

Shop drawings are to be dimensioned from grid lines and uploaded to the Project Collaboration Site. Shops drawings are to be kept up to date throughout the duration of the project.

All as-built details are to be kept up to date in the model and will require, at minimum, a posting at the half-way point of the job and a posting at project completion to the Project Collaboration Site during the construction and closeout process. Date to be determined by the Lead Model Manager. All subcontractor model managers will be available for as-built review meetings as necessary.

8. Model Components LOD

As an aid to usability during later phases of the Project, the following table specifies what the content, LOD, and file naming structure of the project models should look like.

a. Modeling LOD

The following detailed LOD Analysis identifies which components will be modeled, by whom, the level of development, and during which project phase or milestone they will be modeled. The LOD is broken down into five levels: 100, 200, 300, 350 and 400. Coordination models shall be created to a minimum of Level 350. More information about specific requirements can be referenced in the latest BIM Forum Level of Development Specification.

b. File Naming Structure

Procore is being implemented as the project collaboration platform. Each discipline will upload their latest fabrication Models to Procore in a folder prepared by the Lead Model Manager(s). **When a contractor has been awarded multiple disciplines HVAC, HYD, PLMB, WVS etc. they are required to have a separate Model Manager for each of the Disciplines that they have been awarded per the naming convention below.**

The following table defines the structure for model file names.

Formatting for Model File Names			
File Name Convetion →		CSI.TRADE ABREV.LEVEL.AREA.JOB NAME.FORMAT 26.ELEC.L03.AREA.A.UND.RES.II.NWC	
Discipline File Names for Models Should Be Formatted as:			
STRUC	Structural Model	WVS	Waste, Vent & Sanitary Model
ARCH	Architectural Model	PLMB	Plumbing Model
HVAC	HVAC Model	HYD	Hydronic Piping Model
MEDG	Medical Gas Model / Special Gas	GLAZ	Glazing Model
FIRE	Fire Protection Model	METAL	Metal Panel Model
ELEC	Electrical Power and Lighting Model	NETW	Network / Telecommunication Model
SITE	Civil and Landscape Model	OWN	Facility / Building Management

c. Coordinate System

The Project Coordinate System shall be controlled by survey data as defined on the Construction Documents. The Project Coordinate System will be related to the Model Reference Point so that the project team is working off the same Coordinate System.

d. Model Reference Point

Models may be linked or combined. In order for the referencing to work properly, a (0,0,0) reference point must be established. This will be established from the design models if previously created.

Project (0,0,0) Reference Point	To Be Determined
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e. System of Measurement Convention

The Project will utilize the following units of measure:	
Length:	Feet and Fractional Inches to the nearest 1/16"
Area:	Square Feet
Volume:	Cubic Feet
Angle:	Decimal Degree
Survey:	US Survey Feet

f. Precision and Dimensioning

Models shall include all appropriate dimensioning as needed for conveying design intent, articulating the design solution, analysis, and construction. With the exception of the exclusions listed below, the model will be considered accurate and complete.

g. Software

The following software is approved for use on the Project. It is the responsibility of each Model Manager to manage the installation and maintenance of software required by their respective team on their own internal IT system(s).

BIM Construction Authoring Software:

1. Autodesk® Revit® (Version to align with the Architectural Model)
2. Autodesk® AutoCAD® MEP 2022

BIM Collaboration Software:

1. Shiel Sexton Procore Site
2. Autodesk® Navisworks Manage
3. Autodesk® Navisworks Freedom Viewer
4. ***If the trades wish to use BIM 360 to assist with work flows it will be managed by one of the trade contractors and not Shiel Sexton.**

g. Software Interoperability Measures

All Model Managers are responsible for the installation and maintenance of project software on their respective IT networks and environments.

- Annual Software Vendor Version Releases: The Model Managers and Indiana University Indianapolis's appointed Information Manager shall communicate as necessary to coordinate annual updates of any Project software and update Models.
- Interim "Build", "Patch" or "Hotfix" Software Vendor Updates: The Model Managers and Indiana University Indianapolis's appointed Information Manager shall communicate as necessary to coordinate the installation of any required build, patch or hotfix updates to any project software.

h. Two-Dimensional Reference Drawings

Any two-dimensional reference drawings included in project models shall be deleted from project models as soon as possible and shall not be considered reliable or accurate depictions of project information.

i. Project Website

Shiel Sexton Procore Site has been implemented as the Project Collaboration Platform. The Lead Model Manager(s) will add all subcontractors' Model Managers to the website via an email invitation from Procore. It is each Model Managers responsibility to respond to that email, to complete the website access process.

j. Additional Requirements

List additional model content and / or requirements necessary to meet BIM goals and objectives for the Project.

Additional Model Requirements

All trades are to model housekeeping pads for their respective equipment

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k. Model Exclusions

Certain items will be excluded from the model. These items can be defined by expressed exclusion and/or by object size. List the objects to be excluded from the model in the table below.

Items to be Excluded from the Model	

9. Facilities Coordination and Turnover Requirements

a. As-Built Model

At project closeout, the contractor shall provide the As-Built Model with the intent to fully reflect as-built conditions and models are due 30 days after substantial completion.

b. Definition of As-Built Models

The complete, aggregate design model, all construction gap model(s), all subcontractor fabrication model(s) and any additional concurrent As-built Model enhancements will serve as the As-Built Model.

The design team is expected to continuously maintain and update the design models with all changes communicated from the construction team throughout the construction process.

c. Additional Concurrent As-Built Model Enhancement Protocols

Any specific procedures or requirements for integrating deliverables from such services into project models and/or Indiana University Indianapolis existing design, construction, facilities or other enterprise systems will be incorporated as amendments to this BEP as necessary.

d. Definition of Models as Record Documents

The Construction Documents, all construction team construction gap model(s) and all subcontractor fabrication models shall serve as Record Documents for the Project.

SECTION 11 53 43 – LABORATORY SERVICE FITTINGS AND FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish labor, materials, tools, equipment, and services for Laboratory Service Fittings and Fixtures, as indicated, in accordance with provisions of Contract Documents.
- B. Completely coordinate with work of other trades.
- C. Section includes:
 - 1. Laboratory service fittings/fixtures, valves, electrical pedestal boxes, and related components.
 - 2. Laboratory safety equipment.
 - 3. ~~Emergency shower tempering system.~~ ADDENDUM #1
 - 4. Laboratory sinks.
 - 5. Ice Maker Hook Up.
 - 6. Recessed Supply Valve and Waste Hose Box.
 - 7. CO2 Point of Use Panel.
- D. Related Sections
 - 1. Division 22 – Plumbing.
 - a. Work includes but is not necessarily limited to furnishing to the project site for installation by Division 22, laboratory fittings, emergency plumbing fixtures, and fixtures described herein and shown on the Laboratory Furnishings and Equipment Drawings.
 - 2. Division 26 – Electrical.
 - a. Electrical work associated with emergency equipment and benchtop electrical pedestals shall be installed by Division 26.

1.2 UNDIVIDED RESPONSIBILITY

- A. Unless specified otherwise, because of special coordination requirements, the scope of work described in this Section shall be provided by the supplier of the Section 12 35 53 scope of work.

1.3 REFERENCES

- A. Work shall conform to the recommended practices for laboratory service fittings and fixtures published by the Scientific Equipment and Furniture Association (SEFA) 7: Fixtures, current version.
- B. Emergency plumbing fixtures shall comply with requirements of ANSI Standard Z358.1: American National Standard for Emergency Eyewash and Shower Equipment, current edition.
- C. Where identified, service fittings and sinks shall be accessible to the disabled in compliance with the requirements of the federal Americans with Disabilities Act (ADA), ADA Accessibility Guidelines (ADAAG), and state accessibility regulations.

- D. Emergency plumbing fixtures shall be accessible to the disabled in compliance with the requirements of the federal Americans with Disabilities Act (ADA), ADA Accessibility Guidelines (ADAAG), and state accessibility regulations.

1.4 ACTION SUBMITTALS

- A. Product Data:
 - 1. Submit complete materials list, including catalogue data of materials, equipment, and products for Work in this Section.
- B. Shop Drawings:
 - 1. Submit complete shop fabrication and installation drawings, including plans, elevations, sections, dimensions, details, and schedules.
 - 2. Show relationship to adjoining materials and construction.
- C. Samples:
 - 1. Submit two (2) samples of each type of specified finish and color specified.

1.5 INFORMATIONAL SUBMITTALS:

- A. Close Out Submittals
 - 1. Certificates:
 - a. Certify that factory tests specified for service fixtures and safety equipment have been performed and that products or systems meet or exceed specified requirements.
 - 2. Operating and maintenance manuals describing operating and maintenance procedures.
 - 3. Maintenance and replacement schedules.
 - 4. Components parts list.
 - 5. Nearest local factory representative for components and repairs.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Work of this Section shall be performed by an organization with five (5) years documented experience specializing in the manufacture of the type of equipment specified, with demonstrated ability to produce the specified equipment of the required quality and quantity for complete installation in a project of this type and size within the required time limits.
 - 2. Upon request, manufacturers shall produce evidence of financial stability and bonding capacity required to perform on this project.
- B. Coordination:
 - 1. Work in this Section requires close coordination with Work in Section 12 35 53, Division 22 Plumbing, and Division 26 Electrical.
 - 2. Coordinate Work to assure an orderly progress in the Project, without removal of previously installed Work, and so as to prevent damage to finishes and products.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fittings and fixtures to job site in recommended packaging, with each fitting individually packaged, marked, and scheduled for point of use.
- B. Inventory fittings, at job site, verify that type and quantity are correct, and re-package until installed.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Service fittings and emergency plumbing fixtures shall be specifically designed for laboratory use.
- B. Service fittings and emergency plumbing fixtures shall be factory pre-assembled including the assembly of valves to turrets, mounting shanks to turrets, etc.

2.2 LABORATORY SERVICE FITTINGS

- A. Description:
 - 1. Laboratory service fittings specified in this section shall be provided by a single manufacturer and shall satisfy the identified requirements, characteristics, and features as specified herein.
 - 2. Service fittings shall be specifically designed for laboratory use.
 - 3. Fittings and fixtures designated to be accessible to the disabled (ADA) shall be in accordance with the applicable building code and the Americans with Disabilities Act (ADA).
 - 4. Provide fittings at locations indicated on the Laboratory Furnishings drawings. Refer to Service Fitting Schedule.
 - 5. Fittings shall be supplied with nipples, lock nuts, shanks, etc.
 - 6. Fittings located on the same plane shall have their handles project the same distance from the plane of reference to present a uniform related appearance, regardless of valve type construction.
 - 7. Fittings shall have plastic colored service index buttons as specified in this Section.
 - 8. Turrets:
 - a. Brass drop forging as specified. Provide one-way, two-way, four-way, as required, with 3/8 inch [10mm] IPS female inlet thread for connections.
 - b. Units shall be furnished with brass shanks, brass locknuts, and washers.
 - c. Flanges shall be brass forging of approved design with 3/8 inch [10mm] IPS female inlet and outlet.
 - 9. Serrated tip fittings:
 - a. Provide 3/8 inch [10mm] IPS thread with tapered hose end.
 - b. Diameter of orifice in serrated tip shall be 1/8 inch [3mm], except where otherwise specified.
 - 10. Compression control valve mechanisms shall not seat directly onto faucet or valve forging.
- B. Acceptable Manufacturers:
 - 1. Manufacturer:
 - a. WaterSaver Faucet Co.

- b. T&S Brass and Bronze Works, Inc.
 - c. Broen
2. Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.
- C. Design:
- 1. Body Profile:
 - a. Service fittings shall have cylindrical body profiles. Mushroom profile not allowed.
 - 1) Deck-mounted:
 - a) Water valves shall be provided with integral flange at work surface.
 - b) Needle, fine control needle, and ball valves shall be provided without deck flanges.
 - 2) Wall/panel-mounted fittings shall be provided with an escutcheon.
 - 3) Overhead-mounted fitting shall be provided without a flange or escutcheon.
 - 2. Service Fitting Construction/Styling:
 - a. Handles:
 - 1) Fittings at all locations.
 - a) Water faucets: Wrist-blade handles with screw on index identification discs. Blade handles shall broach the cartridge, or have other equivalent design, so that they do not turn in the body of the faucet resulting in misalignment.
 - b) Laboratory gases, air, and vacuum valves: Ball valves fitted with lever-type handles and screw on index identification discs.
 - b. Serrated Hose Ends: Exposed, visible flats on outside of outlet for removal and installation.
 - c. Packing Nuts: Exposed, visible packing nuts.
 - d. Goosenecks: Single radius, arc bend except when provided with vacuum breaker.
- D. Materials:
- 1. Service valves, fittings, and accessories: Cast brass with a minimum copper content of 85 percent, except for items which are to be brass forging or bar stock or are specifically specified to be of another material.
 - 2. Assembly components and operating parts such as valve stems, renewable units, packing nuts, outlet nozzles and straight serrated hose ends: Solid brass stock.
 - 3. Replaceable seats, needle cones, valve disc screws and other accessories: Monel or stainless steel alloys especially selected for use intended.
- E. Service Fitting Finishes:
- 1. Finish, Typical:
 - a. Polished Chrome-plated, with clear, acid-resistant (epoxy) coating; refer to Finishes section below for requirements.
 - 2. Finish at stainless steel sinks:
 - a. Polished Chrome-plated, with clear, acid-resistant (epoxy) coating; refer to Finishes section below for requirements.
 - b. Polished Chrome-plated, at handwash sinks only; refer to Finishes section below for requirements.
 - 3. Finish, Fume Hood Fittings: Fittings inside fume hoods shall have a colored powder-coating (epoxy or polyester-based) finish, color-coded to match the fitting service index color.

4. Finish Systems:
 - a. Polished Chrome-Plated Finish with Clear Epoxy Coating:
 - 1) Polished Chrome-Plated Finish:
 - a) Exposed brass surfaces shall be polished and buffed, then electroplated with one layer of nickel and one layer of chrome.
 - b) Each layer of plating shall completely cover visible areas.
 - 2) Clear epoxy coating:
 - a) Following chrome plating, exposed surfaces shall be cleaned and degreased.
 - b) Clear epoxy/polyester hybrid coating shall be applied to exposed surfaces and then baked to permit curing.
 - c) Surfaces shall have a minimum coating thickness of 3 mils [76µm].
 - b. Performance requirements for coated finishes: Meet or exceed SEFA 7 Laboratory Fixtures finish requirements.

F. Water Valves:

1. General:
 - a. Cartridge:
 - 1) Unit shall be renewable.
 - 2) Typical: Ceramic disc cartridge consisting of rotating ceramic discs to control the flow of water for all water fixtures except for pre-rinse units, fume hood fixtures, purified water units, and where noted.
 - a)
 - b) Rotation:
 - (1) Typical: 180 degrees from open to close.
 - (2) Blade Handle Fixtures: 90 degrees from open to close.
 - c) Provide low friction thrust washer for smooth opening and closing.
 - d) Provide internal baffles to reduce water flow noise.
 - 3) Compression unit with Adjustable Volume Control: Where specified.
 - a) Unit shall not turn or move in faucet body.
 - b) Molded PTFE stem packing seal valve stem with adjustable packing nut.
 - c) Materials:
 - (1) Seat: Stainless steel.
 - (2) Stem Packing: Molded PTFE stem packing seal valve stem with adjustable packing nut
 - (3) Valve Disc: Hard synthetic rubber.
 - d) Volume control shall be adjustable to regulate size of inlet port of valve.
 - 4) Fume Hood service:
 - a) Unit shall be sealed in valve body with special composition gasket.
 - b) Metal-to-metal or ground joint type of sealing is not acceptable.
 - c) Materials:
 - (1) Seat: Stainless steel.
 - (2) Stem Packing: PTFE.
 - (3) Valve Disc: Hard, synthetic rubber.
 - b. Finish: Exposed metal shall be finished as specified elsewhere in this Section.
 - c. Goosenecks:
 - 1) Material: Heavy brass tubing.
 - a) Thickness: 0.085 inch [2.16mm], minimum.
 - 2) Provide full thread for attachment of anti-splash outlet fittings, serrated tips, and filter pumps.

- 3) Hot water/cold water gooseneck mixing faucet goosenecks shall swivel, unless specified otherwise.
 - a) Swivel point shall be at turret or at valve level if wall mounted.
 - b) Swing joints shall have heavy Teflon type packings.
 - c) Dual O rings are permitted for rigid/swing goosenecks, only.
 - d. Water service fixtures shall satisfy the requirements of ANSI/ASME A 112.18.1M and be certified by the Canadian Standards Association (CSA) under Standard CAN/CSA B.125.M89.
 - e. Water fixtures shall be fully assembled, and factory tested.
 - f. Vacuum Breakers: Provide vacuum breakers for hot and cold water fittings, including water fittings at fume hoods. Vacuum breakers shall comply with ASSE Standard No. 1001 and CSA Standard CAN/CSA 864-Series M88.
 - 1) Vacuum breaker finish shall match finish of the associated service fitting/fixture.
 - g. Signage: Provide durable 5 inches wide by 5 inches tall [125mm wide by 125mm tall] sign NONPOTABLE WATER - NOT SAFE FOR DRINKING with pictograph or signage as required in the plumbing code of the Authority Having Jurisdiction, at each bench- and panel-mounted industrial (laboratory, protected) water faucet; refer to details on Laboratory Furnishings drawings.
 - 1) Letters shall be a minimum of 1/2 inch [13mm] high.
2. HCW1: Deck-mounted, hot and cold water mixing faucet.
- a. Valves: Renewable water valves.
 - b. Gooseneck Type: Rigid/swing.
 - c. Gooseneck Spread: 8 inches [203mm].
 - d. Flow Control: Faucet shall dispense 1.5 gpm [5.68lpm].
 - e. Outlet: Removable non-aerated laminar flow outlet. Outlet should terminate approximately 9 inches [229mm] above deck.
 - f. Threaded mounting with locknut, washer, and coupling nuts.
 - g. HCW1AH Base Product:
 - 1) Typical, with vacuum breaker: WaterSaver LC414-8-VB-BH-58 with 4 inch [102mm] chrome plated forged brass blade handles and colored plastic index buttons and gooseneck-mounted vacuum breaker. Blade handles shall be pointed up in the OFF position.
3. HCW2: Sensor-operated hot and cold water faucet ~~with thermostatic mixing valve.~~ ADDENDUM #1
- a. Valves:
 - 1) ~~Thermostatic mixing valve with angle check stops. Adjustable limit stop on mixing valve shall be set for 110 DegF [43 DegC].~~ ADDENDUM #1
 - 2) Solenoid valve.
 - b. Flow Control: Faucet shall dispense .5 gpm [5.68lpm].
 - c. Outlet: Removable non-aerated laminar flow outlet.
 - d. Electrical connection box, plug-in transformer, and shielded cables.
 - e. Threaded mountings with locknuts, washers, and coupling nuts
 - f. Electrical connection box, plug-in transformer with NEMA 5-15P, and shielded cables..
 - g. Refer to drawings for sink type and mounting requirements.
 - h.
4. HCW3: Panel-mounted, hot and cold water faucet.
- a. Valves: Renewable water valves.
 - b. Gooseneck Type: Rigid/swing.
 - c. Gooseneck Spread: 8 inches [203mm].

- d. Outlet: Removable non-aerated laminar flow outlet.
 - e. Valves:
 - 1) Renewable unit with integral check valve.
 - 2) Self-closing valve with replaceable stainless steel seat.
 - 3) Cast brass valve body with riser and valve hook.
 - f. Spray head:
 - 1) Rubber-bound spray outlet.
 - 2) Insulated handle with locking ring.
 - g. Adjustable wall support bracket.
 - h. Hose: 44 inch flexible stainless steel.
 - i. Mounting shank (not required for wall installations).
 - j. Floating escutcheon at wall installations.
 - k. Mounting flange. Threaded mounting with locknut, mounting shank, washer, and coupling nuts.
 - l. HCW3AH Base Product:
 - 1) With 4 inch [100mm] blade handles with colored plastic index buttons: T&S Brass S-0133-A12-B with gooseneck mounted vacuum breaker. Blade handles shall be pointed up in the OFF position.
 - 2)
5. PCW: 1/2 inch [13mm] ball valve for equipment cooling water.
- a. Valve: Full port ball valve.
 - 1) Inlet: 1/2 inch [13mm] IPS, female.
 - b. Outlet: 1/2 inch [13mm] quick connect fitting with male plug.
 - c. Provide mounting flange, all applications:
 - d. Provide floating escutcheon for wall mounted applications.
 - e. Handle: Lever handle with colored plastic index button.
 - f. PCWAH Base Product: WaterSaver L4303-159WSA.
6. FHCW: Fume hood-mounted, remote control, laboratory ball valve for water service.
- a. Fixture shall satisfy requirements for accessibility of the disabled.
 - b. Valve:
 - 1) Rod-type remote control ball valve.
 - c. Outlet:
 - 1) Mounting: Panel-mounted.
 - 2) Design:
 - a) 90 degree angle outlet.
 - b) Turret base with serrated hose end.
 - c) Finish: Color coded powder-coating (epoxy or polyester-based).
 - d) Adjustable volume control fitting with hex wrench knob to be attached between turret base and serrated hose end.
 - e) Mounting shank.
 - 3) Dimensions:
 - a) Centerline of serrated hose end shall be 3-1/2 inch [89mm], nominal, from panel. Verify turret length will be nominally close to the center of the cup sink.
 - b) End of serrated hose end shall be 1-7/8 inch [48mm], nominal, from turret centerline.
 - d. Handle:
 - 1) Lever handle with colored plastic index button.
 - 2) Provide guide plate.

- 3) 3/8 inch [10mm] aluminum rod with brass coupling to connect to valve.
- 4) Dimensions: Lever handle shall be 2-7/16 inches [62mm] from stem centerline to end.
- e. FHW2AH Base Product:
 - 1) Typical, with vacuum breaker: WaterSaver L4285VLB-L084VB-WSA.
 - a) Vacuum Breaker:
 - (1) Atmospheric vacuum breaker.
 - (2) Mounting: Panel mounted at top or front of fume hood enclosure.

G. High Purity Water Valves:

- 1. General:
 - a. Suitable for purified water.
 - b. Water fixtures shall be fully assembled, and factory tested.
 - c. Materials:
 - 1) Components in contact with purified water: Polypropylene, unless noted otherwise.
 - 2) Valve stem and bonnet: Brass.
 - 3) Diaphragm: PTFE.
 - d. Finish: Exposed metal shall be finished as specified elsewhere in this Section.
- 2. RO1: Deck-mounted purified water fixture:
 - a. Valve:
 - 1) Forged brass valve body.
 - 2) Compression control diaphragm valve.
 - b. Toggle-style lever handle with combination manual/self-closing control.
 - c. Spread Riser:
 - 1) Brass riser with plastic tube lining.
 - 2) Spread: 6 inches [152mm].
 - 3) Mounting shank.
 - d. Outlet:
 - 1) Polypropylene or PVDF serrated hose end.
 - e. Threaded mountings with locknuts, washers, and coupling nuts.
 - f. Dimensions: End of serrated hose end shall be 9-5/8 inches [244mm], nominal, above bench top.
 - g. RO1AH Base Product:
 - 1) WaterSaver L7833MSC-VB with polypropylene valve interior and polypropylene tube lining and vacuum breaker.
 - 2)
 - h.
- 1. RO2: Panel-mounted purified water fixture with all polypropylene internal construction, as specified herein.
 - i. Valve:
 - 1) Forged brass valve body, angle pattern.
 - 2) Compression control diaphragm valve.
 - 3) 3/8 inch [10mm] plastic tube for supply connection.
 - j. Outlet: 1/4 inch [6mm] polypropylene or PVDF compression fitting.
 - k. Provide floating escutcheon for wall mounted applications.
 - l. Mounting shank for panel mounted applications.
 - m. Threaded mountings with locknuts, washers, and coupling nuts.

- n. Dimensions: Fitting shall extend from wall/panel 4-1/2 inches [114mm], nominal.
- o. RO2AH Base Product:
 - 1) WaterSaver L7840MSC-, modified, with four-arm handle with colored plastic index button with polypropylene valve interior and polypropylene tube lining.

H. Needle Valves:

1. General:

- a. Fully assembled and factory tested at 250 psi [1724kPa] nitrogen pressure and rated for working pressures up to 150 psi [1034kPa].
- b. Valve shall have easily replaceable, subject-to-wear parts.
- c. Material:
 - 1) Body: Brass.
 - 2) Needle: Replaceable, stainless steel, floating needle that is precision ground and self-centering, and which shall seat against a stainless steel or Monel renewable valve seat.
- d. Mounting
 - 1) Deck-, panel-, and overhead service carrier mounted applications: Provide mounting shank.
 - 2) Wall mounted applications: Provide floating escutcheon.
 - 3) All inlet and turret connections shall be 3/8 inch [10mm].
- e. Finish: Exposed metal shall be finished as specified elsewhere in this Section.
- f. Needle valves for natural laboratory gas service shall be certified for use with natural gas by the Canadian Standards Association under ANSI Z21.15 and CGA9.1.
- g. G23AH Base Product:
 - 1) Wall-mounted: WaterSaver L2880-141FT with four-arm handle with colored plastic index button.
 - 2) Panel-mounted: L2880-141WSA with four-arm handle with colored plastic index button.

I. Fine Control Needle Valves:

1. General:

- a. Fully assembled and factory tested at 375 psi [2413kPa] nitrogen pressure and rated for working pressures up to 250 psi [1724kPa].
- b. Action of valve shall be slow compression for fine control under pressure up to 250 psi [1724kPa] and shall have easily replaceable, subject-to-wear parts.
- c. Design:
 - 1) Both needle and seat shall be removable and replaceable.
 - 2) Ultra-fine threads shall provide precise flow control at high working pressures.
 - 3) Long taper needle with a small orifice seat, screwed bonnet with extended heavy-duty threads, and molded stem packing with externally adjustable packing nut.
- d. Valve Construction: Replaceable, stainless steel, floating needle that is precision ground and self-centering, and which shall seat against a stainless steel or Monel renewable valve seat.
- e. Material:
 - 1) Valve Body:
 - a) Typical: Brass.
 - b) Corrosive Gases: Type 316 Stainless steel.
 - 2) Stem Packing: PTFE.
 - 3) Needle: Stainless steel.

- 4) Valve Seat: Stainless steel.
- f. Mounting
 - 1) Deck-, panel-, and overhead service carrier mounted applications: Provide mounting shank.
 - 2) Wall mounted applications: Provide floating escutcheon.
- g. Finish: Exposed metal shall be finished as specified elsewhere in this Section.
- h. Needle valves for natural laboratory gas service shall be certified for use with natural gas by the Canadian Standards Association under ANSI Z21.15/CGA9.1.

J. Laboratory Ball Valves:

- 1. General:
 - a. Suitable for laboratory gases, supplied fully assembled, and factory tested at 125 psi [862kPa] air pressure for working pressures up to 75 psi [517kPa] with easily replaceable, subject-to-wear parts.
 - b. Materials:
 - 1) Ball valve, valve body, handle: Brass.
 - 2) Ball: chrome-plated brass.
 - 3) Seals: Molded PTFE.
 - c. Mounting
 - 1) Deck-, panel-, and overhead service carrier mounted applications: Provide mounting shank.
 - 2) Wall mounted applications: Provide floating escutcheon.
 - d. Handle: Lever handle with colored plastic index button.
 - e. Finish: Exposed metal shall be finished as specified elsewhere in this Section.
 - f. Operation:
 - 1) Ball valves shall be of quarter-turn (closed to fully open) design, be fitted with lever handle, except where indicated otherwise, requiring less than 5 ft/lbs [22n] force to operate, and shall have easily replaceable, subject-to-wear parts.
 - g. Ball valves for natural laboratory gas service shall be certified for use with natural gas by the Canadian Standards Association under ANSI Z21.15/CGA9.1, current editions.
- 2. VAC1, CA1, SG1: Deck-mounted, single, laboratory ball valve fitting.
 - a. Base: Turret base.
 - b. Outlet: Serrated hose end, removable.
 - c. Dimensions:
 - 1) Outlet shall be 5 Inches [127mm], nominal, from turret centerline.
 - 2) Centerline of serrated hose end shall be 2-1/16 inches [52mm], nominal, above bench top.
 - d. Fixture shall satisfy requirements for accessibility of the disabled where noted on plans.
 - e. 1AH Base Product: WaterSaver L4200-131WSA; provided with polished chrome finish with clear epoxy coating.
- 3. VAC2, CA2, SG2: Wall/panel-mounted, single, laboratory ball valve fitting.
 - a. Outlet: Serrated hose end, removable; pointed out, away from wall/panel.
 - b. Dimensions:
 - 1) Outlet shall be 5-1/4 inches [133mm], nominal, from wall.
 - c. Fixture shall satisfy requirements for accessibility of the disabled.
 - d. Refer to Drawings for mounting.
 - e. 2AH Base Product:

- 1) Wall-mounted: WaterSaver L4200-158FT; provided with polished chrome finish with clear epoxy coating.
 - 2) Panel-mounted: WaterSaver L4200-158WSA; provided with polished chrome finish with clear epoxy coating
 - 3) Panel-mounted inside Biological Safety Cabinets: L4200-158WSA ; provided with polished chrome finish with clear epoxy coating.
4. FHVAC, FHCA, FHSG: Fume hood-mounted, remote control, laboratory ball valve for gas service.
- a. Fixture shall satisfy requirements for accessibility of the disabled.
 - b. Valve:
 - 1) Rod-type, remote control, forged brass ball valve.
 - a) Provide 3/8 inch [9.5mm] aluminum rod with brass coupling.
 - c. Outlet:
 - 1) Mounting: Panel-mounted.
 - 2) Design:
 - a) 45 degree angle outlet.
 - b) Turret base with serrated hose end.
 - c) Finish: Color coded powder-coating (epoxy or polyester-based).
 - d) Mounting shank.
 - 3) Dimensions:
 - a) Centerline of serrated hose end shall be 2-5/8 inch [67mm], nominal, from panel. Verify turret length will be nominally close to the center of the cup sink.
 - d. Handle:
 - 1) Lever handle with colored plastic index button.
 - 2) Provide guide plate.
 - 3) 3/8 inch [10mm] aluminum rod with brass coupling to connect to valve.
 - 4) Dimensions: Lever handle shall be 2-7/16 inches [62mm] from stem centerline to end.
 - e. FHB1AH Base Product: WaterSaver L4285VLB-L022WSA provided with polished chrome with clear epoxy coating
- K. Pressure Regulator Fixtures:
1. CO2: Wall-mounted, double valve, straight pattern, ball valve fitting for CO2 incubators.
 - a. Mounting: Wall-mounted.
 - b. Valves:
 - 1) Brass ball valve.
 - 2) Brass body, chrome-plated brass ball, and molded PTFE seals.
 - c. Outlets: 1/4 inch [6.25mm] quick connect fitting.
 - d. Pressure regulators and pressure gauges.
 - e. Dimensions: 8-1/4 inches [210mm], nominal, from centerline of escutcheon to outlet.
 - f. CO2AH Base Product: WaterSaver L4203-364EL-179FT with 4 inch blade handle with colored plastic index button for Carbon dioxide service.
- L. Quick Connects for Panel- or Wall-Mounting:
1. Quick Connects: Provide plug and socket (2-piece) quick connect service fittings for chilled water supply and return fittings, compressed air fittings for pressures greater than 30 psi [207kPa], and other services as indicated in this Section and on the Laboratory Equipment Drawings.

- a. Acceptable Manufacturers:
 - 1) Manufacturers:
 - a) Stäubli International AG.
 - b) WaterSaver Faucet Co.
 - 2) Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.
2. Body and Stem (Plug):
 - a. Description:
 - 1) Quick-connect body for panel mounting.
 - 2) Keying system shall include double keyway and lug system so that plugs can only be assembled into correct body. Body and plug shall be color-coded in accordance with Service Fitting Color Index below.
 - 3) Non-locking so plug can rotate freely with hose assembly.
 - 4) Valve body and stem shall include internal shut-off valves that close when stem is disengaged.
 - 5) Flanged body for wall- or panel-mounting, secured in place with a locknut.
 - b. Materials:
 - 1) Typical: Chrome-plated brass.
 - 2) Internal valve components: Stainless steel.
 - 3) Finish: Polished, with color-coded body features to designate service.
 - c. Valve Inlet: 3/8 inch [9.5mm] NPT male inlet. Coordinate with Division 21.
 - d. Hose Connection: 3/8 inch [9.5mm] female NPT outlet.
 - e. Certified for use with natural laboratory gas by the Canadian Standards Association under ANSI Z21.15/CGA9.1, current edition.
 - f. Base Product:
 - 1) Body: WaterSaver QCFL-_-3M-K_.
 - 2) Plug: WaterSaver QCD-_-3F-K_.
3. Mounting plate, when indicated on Drawings:
 - a. 4 inches by 4 inches by 12 gauge [100mm by 100mm by 2.8mm] Type 304 stainless steel with No. 4 finish.
 - b. Mounting plate shall be pre-drilled for two countersunk fasteners.
 - c. Provide two fasteners appropriate for wall construction.
4. Ceiling Service Panel, when indicated on Drawings: Provided under Section 12 35 53.
5. Hose, PVC (non-flammable gases):
 - a. Outside Diameter: 5/8 inch [16mm].
 - b. Construction:
 - 1) PVC outer layer.
 - a) White.
 - 2) Nylon braided reinforcement.
 - 3) PVC inner core
 - 4) End Fittings:
 - a) Permanently attached with barbed fitting and crimped ferrule.
 - b) End connections shall swivel to prevent kinking or twisting.
 - 5) 3/8 inch [9.5mm] NPT male connection.
 - c. Performance Requirements:
 - 1) Burst Pressure: 1000 psi [6895kPa].
 - 2) Working pressure: 300 psi [2068kPa].
 - d. Hose Length: Distance from ceiling service panel to point of connection on casework plus 12 inches.

6. Utility connections to quick connects shall be installed by Division 22.

M. Service Fitting Color Index for Laboratory Services:

Service Name	Disc Color	Letters	Letter Color
Argon	Violet	AR	White
Carbon Dioxide	Pink	CO2	Black
Chilled Water Return	Green	CHWR	White
Chilled Water Supply	Green	CHWS	White
Cold Water (Potable)	Dark Green	CW	White
Compressed Air (high pressure)	Orange	AIR60, AIR90, AIR100	White
Compressed Air (low pressure)	Orange	AIR	Black
Cylinder Gas	Light Blue	CYL GAS	Black
Deionized Water	White	DI	Black
Gas (Natural Gas)	Blue	GAS	White
Helium	Black	HE	White
Hot Water (Potable)	Red	HW	White
Laboratory (Industrial) Cold Water	Green	ICW	White
Laboratory (Industrial) Hot Water	Red	IHW	White
Nitrogen	Brown	N2	White
Oxygen	Light Green	O2	Black
Purified Water	White	PW	Black
Reverse Osmosis Water	White	RO	Black
Reverse Osmosis/Deionized Water	White	RODI	Black
Steam	Black	STM	White
Vacuum	Yellow	VAC	Black

N. Electrical Pedestal Boxes:

1. Description: Electrical pedestal for power and data in a single fixture.
 - a. Refer to plans for receptacle and data device configurations.
 - b. Connection to the electrical systems shall be under the scope of work of Division 26.
2. Material: Cast aluminum with bottom plate.
3. Auxiliary Materials:
 - a. Receptacles: Heavy-duty, industrial specification grade.
 - 1) Provide GFCI-type receptacles when located within 6 feet [1.83m] of a sink.
 - b. Face plates: Stainless steel.
4. Finish:
 - a. Pedestal: Satin aluminum with clear powder-coating (epoxy or polyester-based) coating.
 - b. Face plates: Satin brushed finish.
5. Construction:
 - a. Machined for both standard and ground fault receptacles, furnished complete with grounding screw, mounting shanks, locknut, and washer.
 - b. Interior partitions to separate power and data.
 - c. Construction shall protect electrical connections from liquids or moisture.
6. Listings: Underwriters Laboratory (UL).
7. Base Product:

- a. WaterSaver Multiplex.

2.3 LABORATORY SAFETY EQUIPMENT

A. Description:

1. Laboratory safety equipment shall be specifically designed for laboratory use.
2. Laboratory safety equipment shall be factory pre-assembled including the assembly of valves to turrets, mounting shanks to turrets, etc., and individually factory tested.

B. Acceptable Manufacturers:

1. Laboratory safety fixtures specified in this section shall be provided by a single manufacturer.
2. Manufacturers:
 - a. Guardian Equipment.
 - b. Haws Corporation.
 - c. Speakman Company.
 - d. WaterSaver Faucet Co.
3. Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.

C. General:

1. Provided products shall satisfy the identified requirements, characteristics, and features as specified herein.
2. Performance:
 - a. Where specified, units shall comply with requirements to be accessible by disabled persons when mounted at the proper mounting height.
 - b. Laboratory safety equipment should be fully factory assembled and hydrostatically tested to meet or exceed ANSI Z358.1.
 - c.

D. Emergency Showers:

1. Shower Valve: Safety shower stay-open brass ball valve.
2. Cabinet:
 - a. Material: 18 gauge [1.3mm] stainless steel with No. 4 finish.
 - b. Provide mounting flange with recessed units.
 - c. Provide stainless steel shower actuation arm with black vinyl grip.
3. Recessed Units:
 - a. Conceal stay-open ball valve behind stainless steel/access panel housing.
4. Showerhead:
 - a. Provide perforated stainless steel spreader.
 - b. Piping: Nipple length shall be as required for a complete installation; verify finished ceiling height.
 - c. Provide escutcheon for exposed piping/nipple.
5. Finish:
 - a. Exposed piping, showerhead, nipple, and escutcheon shall be chrome-plated brass with clear powder-coating (epoxy or polyester-based).

6. SS1: Barrier-free emergency shower.
 - a. Mounting: Cabinet for recess mounting.
 - b. Emergency shower actuation valve: Swing-down type.
 - c. Showerhead: Exposed; ceiling-mounted.
 - d. Basis for design: WaterSaver Model No. ESBF643.

- E. Emergency Eye/Face Wash Fixtures:
 1. Valve: Brass ball valve with Teflon seals.
 2. Eyewash Heads:
 - a. Polypropylene plastic spray heads.
 - b. Flip top dust covers.
 - c. Internal flow control.
 - d. In-line strainer to protect valve and spray heads.
 3. Eyewash Bowl, Wall Bracket: Stainless steel with No. 4 finish, unless noted otherwise.
 4. Recessed Swing-Down Fixtures:
 - a. Eyewash flow shall be activated by swing-down actuation valve connected to eyewash piping.
 - b. Cabinet:
 - 1) Material: 18 gauge [1.3mm] stainless steel with No. 4 finish.
 - 2) Provide mounting flange with recessed units.
 - 3) Provide eyewash components.
 - c. Stay-open brass ball valve shall be concealed behind stainless steel or chrome-plated housing.
 5. Provide all necessary mounting hardware, brackets, etc.
 6. Signage: Fixture shall be furnished with ANSI-compliant, green plastic sign with graphic symbol for safety eyewash.
 - a. Basis for design: WaterSaver Model No. FEBF724.
 7. EWA: Eye/face wash with two fine spray heads, 90 degree swing-down.
 - a. Mounting: Deck-mounted.
 - 1) Provide hardware for mounting to worksurface behind sink.
 - b. Valve:
 - 1) Valve shall be activated by swing-down movement of supply arm,
 - 2) Water flow shall continue after activated until arm is returned to storage position.
 - 3) Brass valve.
 - c. Exposed components: Chrome-plated brass.
 - d. Eyewash heads: Mounted supply arm.
 - e. Mount fixture to right side of faucet, unless indicated otherwise on the Drawings.
 - f. Basis for design: WaterSaver Model No. EWBF849-TM6020.

- F. Drench Hose Fixtures:
 1. Description: Dual-purpose eye wash/drench hose unit with dual gentle spray outlet heads and squeeze handle/valve with locking clip.
 2. Performance: Fixture shall satisfy the requirements of ANSI Z358.1 as both, an eyewash and drench hose.
 3. Materials:
 - a. Mounting flange: Nylon.
 - b. Handle: Nylon.

- c. Valve: Brass.
- a. Hose:
 - 1) Deck-Mounted Units: Flexible, reinforced PVC hose, 300 psi [2068kPa] maximum working pressure.
 - a) Length: 8 feet [2.4m].
 - b) Hose shall be provided with swivel fitting at inlet end.
 - 2) Wall-mounted Units: Nylon retractable, coiled hose.
 - a) Length: 12 feet [3.65m].
 - b) Hose shall be provided with female inlet end.
- 4. Construction:
 - a. Heads shall be equipped with flip top dust cover that automatically releases with water pressure.
 - b. Provide with in-line vacuum breaker. Provide in-line dual check valve backflow preventer, compliant with ASSE 1024/CSA-B64, on inlet of hose in lieu of vacuum breaker when required by local plumbing code.
- 5. Signage: Provide ANSI-compliant identification sign.
- 6. EW Dual-purpose eye wash/drench hose.
 - a. Mounting: Deck-mounted.
 - 1) Provide hose guide bracket undercounter to prevent tangling or binding.
 - 2) Provide mounting shank.
 - b. DH1AH Base Product: WaterSaver Model No. EW1022VB with chrome-plated valve.

~~2.4 EMERGENCY SHOWER TEMPERING SYSTEM~~

~~A. Acceptable Manufacturers:~~

~~1. Manufacturers:~~

- ~~a. Guardian Equipment.~~
- ~~b. Haws Corporation.~~
- ~~c. WaterSaver Faucet Co.~~

~~2. Substitutions: Other manufacturers desiring approval comply with Section 01-25-00.~~

~~3. Substitutions: Not allowed.~~

~~B. Description: Thermostatic mixing valve and recessed stainless steel cabinet for emergency shower and safety station fixtures.~~

~~1. Basis for design: Guardian Equipment G3807LF.~~

~~2. Materials: Cabinet: 16 gauge [1.6mm] Type 304 stainless steel.~~

~~3. Features/Characteristics:~~

- ~~a. Inlet Connections: 1 inch [25mm] for hot and cold water inlets. Each inlet shall have strainer, check valve and supply stop.~~
- ~~b. Outlet Connection: 1 1/4 inch [32mm].~~
- ~~c. Recessed cabinet with hinged door and lock.~~
- ~~d. Flow Capacity: 3 to 44 gallons per minute [11.4 to 166.6L/m]~~
- ~~e. Delivered water temperature range 60 degrees F to 90 degrees F [15degC to 32degC].~~
- ~~f. Initial setting to be 85 degrees F [29degC], unless otherwise instructed by Architect.~~

~~C. Description: Thermostatic mixing valve and recessed cabinet for emergency eye wash fixtures:~~

- ~~1. Basis for design: Guardian Equipment G3607LF.~~
 - ~~2. Materials: Cabinet: 16 gauge [1.6mm] Type 304 stainless steel.~~
 - ~~3. Features/Characteristics:~~
 - ~~a. Inlet Connections 1/2 inch [13mm] for hot and cold water inlets. Each inlet shall have check valve and supply stop.~~
 - ~~b. Outlet Connection: 1/2 inch [13mm].~~
 - ~~c. Recessed cabinet with hinged door and lock.~~
 - ~~d. Flow Capacity: 2 to 6 gallons per minute [7.6 to 22.7L/m]~~
 - ~~e. Delivered water temperature range: 60 degrees F to 90 degrees F [15degC to 32degC].~~
 - ~~f. Initial setting to be 85 degrees F [29degC], unless otherwise instructed by Architect.~~
- ADDENDUM #1**

2.5 LABORATORY SINKS

A. General:

1. Dimensions: Refer to Sink Schedule on Drawings for inside dimensions of sink bowl.
2. Provide tailpiece compatible with waste piping system for sinks unless otherwise specified.
 - a. Refer to Division 22 for piping requirements.

B. Epoxy Resin:

1. Acceptable Manufacturer: Manufacturer shall be the manufacturer of the epoxy resin work surfaces specified in Section 12 35 53.
2. Material: Comply with the requirements of Section 12 35 53 for epoxy resin.
 - a. Color: To match work surface, unless noted otherwise.
3. Features/Characteristics:
 - a. Laboratory Sinks:
 - 1) Mounting: Refer to Sink Schedule on Drawings.
 - 2) Sink installation shall be performed under Division 12 in epoxy resin work surface.
 - 3) Exposed edges shall be radiused not less than 1/4 inch [6mm].
 - 4) Tops without drain grooves: Sink shall be set 1/8 inch [3mm] below the level of the adjacent surface.
 - 5) Provide epoxy resin sink outlet with strainer, stopper, and open-end overflow, and install with continuous bead of silicone sealant.
 - b. Cup Sinks:
 - 1) Fume Hood Locations: Provide cup sinks at fume hoods as described in Section 11 53 13.
 - a) Installed with fume hood work surface.
 - b) Raised rim.
 - 2) Laboratory Work Surface Installations:
 - a) Installed under Division 12 35 53.
 - b) Flush with work surface.
 - 3) Provide integral outlet with threaded tailpiece.
 - 4) Provide strainer for cup sinks.
 - 5) Provide mounting bracket for wall-mounted cup sinks.

C. Molded Plastic:

1. Description: Drop-in type laboratory sink designed of seamless molded one-piece monolithic construction with molded top flange for drop-in, flush with work surface installation.
 - a. Specifically designed for use with corrosive materials such as hydrofluoric acid, silica etching acids and other acids and corrosives commonly used in laboratories.
 2. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Scientific Plastics, Inc.
 - 2) Orion Fittings, Inc.
 - b. Other manufacturers desiring approval comply with Section 01 25 00.
 3. Materials: Virgin polyolefin resins.
 - a. Color: Match laboratory work surface.
 4. Features/Characteristics:
 - a. Laboratory Sinks, Drop-In Type:
 - 1) Drop-in installation by Division 12 in work surface.
 - b. Cup Sinks:
 - 1) Fume Hood Locations: Provide cup sinks at fume hoods as described in Section 11 53 13.
 - 2) Installed with fume hood work surface.
 - 3) Raised rim.
 - a. Provide strainer, open-end overflow standpipe, stopper, and integrally molded threaded tailpiece and outlet.
 - c. Provide mounting bracket for wall-mounted cup sinks.
- D. Stainless steel:
1. General:
 - a. Materials:
 - 1) Type 304 stainless steel with No. 4 finish, unless noted otherwise below, or in Section 12 35 53, Stainless Steel Fabrications.
 - b. Tailpieces shall be compatible with waste piping system for sinks unless otherwise specified. Refer to Division 22 for piping requirements.
 - c. Undercoating: Waterborne and non-flammable in liquid state, with no volatile organic compounds (VOCs) providing sound deadening and preventing condensation.
 2. Laboratory Sinks, integral with stainless steel work surface:
 - a. Features/Characteristics:
 - 1) Provide stainless steel strainer, outlet, standpipe overflow and stopper for sinks unless otherwise specified.
 - b. Material Thickness: To match work surface.
 3. Laboratory Sinks, under-mounted to work surface:
 - a. Under-mount installation by Division 12 in specified work surfaces.
 - b. Material Thickness: 16 gauge [1.6mm].
 - c. Features/Characteristics:
 - 1) Provide stainless steel strainer, outlet, standpipe overflow and stopper for sinks unless otherwise specified.
 - 2) Sink manufacturer to provide required mounting hardware.
 4. Cup Sink:

- a. Materials: Refer to Section 12 35 53, Stainless Steel Fabrications.
 - b. Features/Characteristics:
 - 1) Fume Hood Locations: Provide cup sinks at fume hoods as described in Section 11 53 13.
 - a) Provide strainer, outlet, and tailpiece for cup sinks.
 - b) Provide mounting bracket for wall-mounted cup sinks.
5. Scullery Sink:
- a. Description:
 - 1) Stainless steel top with integral sink bowls in sizes as indicated on Drawings.
 - 2) The requirements for stainless steel tops and sinks described above shall govern in its entirety.
 - 3) Backsplash, marine edge and drain boards shall be provided as indicated in Laboratory Furnishings plans.
 - b. Acceptable Manufacturers:
 - 1) Manufacturers:
 - a) Advance Tabco.
 - b) Eagle Group.
 - c) Elkay.
 - d) Just Manufacturing Company.
 - e) Mortech Manufacturing Co., Inc.
 - 2) Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.
 - c. Material Thickness:
 - 1) Sink, Drainboards, Backsplash, and Rolled Edge: 14 gauge [2.0mm].
 - 2) Legs: 16 gauge [1.6mm].
 - d. Performance:
 - 1) Sink shall have easy-to-clean rounded corners.
 - e. Features/Characteristics:
 - 1) Construction:
 - a) Front, bottom and back of sink compartments shall be formed of one sheet of material with integral 1-1/2 inch [38mm] wide roll rim, extending full length at front and ends of compartments and drain boards.
 - b) Compartment ends and partitions shall be electrically welded into place. Drain boards shall pitch from 2 inches [50mm] at rolled rim and ends to 2-1/2 inches [65mm] below rim at compartments.
 - c) Bottoms shall be pitched to the drain indent.
 - d) Sink units shall be designed and fabricated with sufficient reinforcement to prevent oil canning.
 - e) Sink joints shall be butt-welded, ground smooth by the heliarc welding process.
 - f) Inside radii shall be 1 inch [25mm], minimum, 1-3/4 inch [44mm] maximum.
 - g) No soldering will be permitted in connection with sink construction.
 - h) Provide apron panel in front of sink basin.
 - 2) Legs: Sinks shall be supported on stainless steel round or square tube legs with stainless steel leveling guides.
 - 3) Accessories:
 - a) Provide Elkay LK 86 RT, Just J-35-BLA-CWO-1-1/2, or equal, waste fitting at each compartment of stainless steel construction with strainer, overflow and lever handle.
 - b) Provide tailpiece compatible with laboratory waste piping system.
 - c) Refer to Division 22 for piping requirements.

- d) Provide stainless steel strainer, outlet, standpipe overflow and stopper for sinks, unless otherwise specified.
6. Wall-Mounted Sinks:
- a. Acceptable Manufacturers:
 - 1) Manufacturers:
 - a) Elkay.
 - b) Just Manufacturing Company.
 - 2) Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.
 - b. Handwash Sink:
 - 1) Description: Wall-mounted stainless steel handwash sink with overflow.
 - 2) Basis for design: Elkay Model No. ELV2219.
 - 3) Dimensions:
 - a) Overall: 22 inches long by 19 inches wide by 5-1/2 inches deep [559mm long by 483mm wide by 140mm deep].
 - 4) Material Thickness: 18 gauge [1.3mm].
 - 5) Features/Characteristics:
 - a) Provide mounting hardware for wall-mounted installation.
 - (1) Lavatories mounted on metal stud partitions shall be provided with floor mounted lavatory carrier.
 - b) Coordinate single fixture hole with specified faucet. Faucet specified under Water Valves.
 - c) Provide chrome-plated brass drain fitting with perforated grid and tailpiece: Elkay Model LK174LO, or equivalent.
 - d) Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.

2.6 ICE MAKER HOOK-UP

- A. Description: Recessed wall-mounted box with faceplate and water valve for ice maker hook up.
- B. Acceptable Manufacturers:
 - 1. IPS Corporation.
 - 2. Substitutions: Other manufacturers desiring approval comply with Section 01 25 00.
- C. Base Product: IPS Guy Gray Model MIB 1 wall recessed ice maker hook-up.
 - 1. Materials: 20 gauge [1mm] steel with white powder coated finish.
- D. Dimensions: 7 inches wide by 7 inches tall by 3-1/2 inches deep [178mm wide by 178mm tall by 89mm deep], approximate.
- E. Features: Equip with quarter-turn valve and with 1/2 inch [15mm] soldered connection.

2.7 RECESSED SUPPLY VALVE AND WASTE HOSE BOX

- A. Stainless Steel Supply Valve and Waste Hose Box:
 - 1. Acceptable Manufacturers:
 - a. Acorn Engineering Company.

- b. Substitutions: Other manufacturers desiring approval comply with Section 01 25 00.
- 2. Base Product: Acorn Engineering Company Model 8186-SSLF recessed supply valve and waste hose box with hot and cold water valves.
- 3. Description: Recessed wall box.
- 4. Overall dimensions, approximate: 10-1/2 inches wide by 10-1/2 inches tall by 3-5/8 inches deep [267mm wide by 267mm tall by 92mm deep].
- 5. Material: Type 304 stainless steel, satin finish.
 - a. Thickness: 18 gauge [1.3mm].
- 6. Fabrication:
 - a. Exposed surfaces shall be polished to a No. 4 finish.
 - b. Seams shall be heliarc welded and ground smooth.
 - c. Stops and valve bodies shall be stainless steel, lead-free.
 - d. Equip with two 3/4 inch [19mm] threaded inlet connections and 3/4 inch [19mm] male hose thread outlets.
 - e. Cartridges shall be replaceable.
 - f. Provide lead-free brass vacuum breakers.
 - g. Provide 2 inch [50mm] diameter drain connection to receive waste hose.
 - h. Provide screwdriver stops to service control valves without shutting off the water supply.
 - i. No logo.

2.8 CO2 POINT OF USE PANEL FOR STACKED INCUBATORS

A. Acceptable Manufacturers:

- 1. Manufacturers:
 - a. Air Liquide USA Inc.
 - b. Beacon Medaes.
 - c. Linde.
 - d. Matheson.
 - e. Praxair.
- 2. Substitutions: Other manufacturers desiring approval comply with Section 01 60 00.
- 3. Products specified in this section shall be the provided by a single manufacturer.

B. Description:

- 1. Point of use panel for control of two laboratory gas outlets.
- 2. Regulator, two ball valves, tubing, and outlet fittings mounted to exposed panel face.

C. Materials:

- 1. Body: Chrome-plated brass or stainless steel.
- 2. Diaphragm: Type 316 stainless steel.
- 3. Seats: PCTFE.
- 4. Seal: PTFE.
- 5. Bonnet: Chrome-plated or stainless steel.
- 6. Gauges: Chrome-plated brass or stainless steel.
- 7. Panel: Clear anodized aluminum or stainless steel.
- 8. Knob: Black phenolic, chrome-plated brass, or stainless steel.

- D. Construction:
1. Regulator:
 - a. Delivery Pressure: 0 – 25 psig [0 – 1.75 bar].
 - b. Inlet: 1/4-inch [6mm] brass tube compression inlet connection.
 2. Gauge:
 - a. Diameter: 2-1/2 inch [64mm].
 - b. Bourdon type.
 - c. Pressure Range: 30 inches – 0 – 30 psig [762mm – 0 – 2 bar].
 3. Valves:
 - a. Type: 1/4 turn ball.
 - b. Connections: 1/4-inch [6mm] inlet and outlet compression type.
 4. Fittings:
 - a. 1/4-inch [6mm] stainless steel compression type
 5. Tubing: 1/4-inch [6mm] outside diameter stainless steel.
 6. Mounting:
 - a. Surface-Mounted:
 - 1) Powder-coated aluminum housing
 7. Panel shall be functionally labeled.
 8. Provide 1/4-inch [6mm] compression bulkhead inlet for gas service connection behind panel.
- E. Testing:
1. Panel shall be Helium leak checked and dead-end pressure tested.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of fixtures specified in Section 11 53 43, carefully inspect the installed.
- B. Work specified in other Sections and verify that Work is complete to the point where this installation may properly commence.
- C. Verify that Work has been installed in complete accordance with the original design, approved submittals, and the manufacturer's recommendations.
- D. Discrepancies:
 1. In the event of discrepancy, immediately notify the Architect.

3.2 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for respective fixtures.

- B. Clean and flush supply lines prior to installation of faucets, valves, and safety equipment.

3.3 INSTALLATION

A. General:

1. Install fixtures plumb and level.
2. Use Teflon tape of pipe sealant to seal threaded connections.
3. Provide piping connections to fixtures with valves and escutcheons as specified in Division 22.
4. Verify that fixtures and trim are tight, leak-free and function properly.

- B. Sinks: Set sinks in chemical resistant sealing compound, secure and support, as recommended by the manufacturer.

C. Safety Stations, Emergency Showers, and Emergency Eyewash:

1. Emergency showers must be installed with a minimum of 18 inches [457mm] of clearance from obstruction to the center of the showerhead.
 - a. Eyewash or eye/face wash fixture is not considered an obstruction.
2. Install emergency showers with showerhead positioned not lower than 82 inches [2083mm] or above 96 inches [2438mm] measured from the operational standing surface.
 - a. Refer to drawings for mounting height within that range.
 - b. If no range is provided, shower head shall be installed 96 inches [2438mm] above operational standing surface.
3. Recessed wall cabinets in fire rated partitions shall be installed in accordance with UL approved design.

D. Hose Reels:

1. Manufacturer shall confirm weight of hose reel assembly when hose is filled with water.
2. Structural Support:
 - a. Framed walls and partitions:
 - 1) Provide slotted channel framing between structural flooring and structural deck above in the wall or partition construction to support hose reel assembly.
 - 2) Framing shall be designed to support live load of hose reel assembly.
 - b. Concrete Masonry Walls:
 - 1) Grout concrete masonry solid to support hose reel assembly.
3. Provide masonry anchors as recommended by manufacturer to support live load of hose reel assembly.

3.4 FIELD QUALITY CONTROLS

- A. Review conditions of installation, procedures, and coordination with related Work.
- B. Carefully inspect the installed Work specified in other Sections and verify that Work is complete and ready for the installation of this Work to properly commence.

- C. Verify that Work may be installed in complete accordance with the original design, reviewed submittals and manufacturer's recommendations.

3.5 CLEANING

- A. Clean service fittings and fixtures with a soft cloth and soapy water or as recommended by the manufacturer. Do not use abrasives, detergents, or other cleaners. Do not use solvents in or around a faucet or valve.

END OF SECTION 11 53 43

22 05 09 – EXCAVATION, BACKFILL AND SURFACE RESTORATION (ADDENDUM 1)

PART 1 - GENERAL

- 1.1 Excavate for all in-grade underfloor piping. Backfill to finish grade or to levels consistent with site work activity. Cut existing floor slabs and replace slabs in conformance to 22 05 04 Basic Plumbing Materials and Methods.
- 1.2 Excavation and trench wall supporting, cribbing, sloping and stepping of excavations required for safety shall be done in accordance with OSHA and local requirements. Pumping of water from excavations and trenches which may be required during construction shall be included in this contract.
- 1.3 Contact the Ohio Utilities Protection Service (1-800-362-2764 or 811) sufficiently in advance of the start of any excavation so that notification can be made to member utility departments and utility companies (water, sewer, gas, petroleum, electric, telephone, cable, etc.) having underground utilities in or near the project area. Also contact those companies to verify that utility lines have been located and duly marked and identified.
- 1.4 A utility locator service shall be provided to locate, mark and identify private lines and other utilities that are not located by the means mentioned above.
- 1.5 Existing utilities encountered during excavation work shall be protected in a manner acceptable to the utility owner. Any utilities that are damaged shall be repaired or replaced by this Contractor to the full satisfaction of the utility owner.

PART 2 - PRODUCTS

- 2.1 Refer to Division 31 Earthwork for bedding and backfill materials specifications.

PART 3 - EXECUTION

- 3.1 Trenches for interior piping shall be over excavated and the pipe shall be laid on 6 inches minimum depth sand bed.
- 3.2 Backfilling and compaction of excavations and trenches inside the building shall be with approved backfill materials, to prevent undue settlement.
- 3.3 Backfill shall be mechanically compacted in layers not over 6 inches deep. Water settling will not be permitted. Where excavations have not been properly filled or where settlement occurs, they shall be refilled, compacted, smoothed off, and finally made to conform to the initial requirements. Excess excavated materials shall be removed from the site or disposed of. Refer to Division 31 Earthwork for compaction requirements.
- 3.4 Concrete floor slabs, and other finished surfaces which have been damaged or removed in order to install the underground work shall be replaced by this Contractor equal to original conditions. This requirement is not applicable in areas where the General Contractor or the Site Contractor is obligated to provide new surfaces.
- 3.5 Maintain in place adequate barricades, guards, planking, plating, signage, warning lights, etc., at and around excavations.

END OF SECTION 22 05 09

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SECTION 22 05 53 - IDENTIFICATION OF PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

- 1.1 Identification of plumbing equipment shall consist of equipment labeling, pipe marking and valve tagging as specified hereinafter.
- 1.2 Each item of major equipment shall be labeled. This shall include or compressors, pumps, vacuum pumps, water heaters, tanks and other similar equipment.
- 1.3 Pipe markings shall be applied to all piping.
- 1.4 Underground exterior piping shall be identified with a continuous plastic line marker tape as described in the service piping sections and this section.
- 1.5 Each shutoff valve, other than at equipment, shall be identified with a stamped tag. Valves and tagging shall be scheduled typewritten on 8.50 inches x 11 inches paper, tabulating valve number, piping system, system abbreviation, location of valve (room or area) and service (e.g. - south wing cold water).
- 1.6 Labels, tags and markers shall comply with ANSI A13.1 for lettering size, colors and length of color field. Additional user-defined pipe labeling specified in table below:

<u>Fluid Service</u>	<u>Background Color</u>	<u>Letter Color</u>
<u>Fire quenching fluids</u>	<u>Safety red</u>	<u>White</u>
<u>Toxic and corrosive fluids</u>	<u>Safety orange</u>	<u>Black</u>
<u>Flammable and oxidizing fluids</u>	<u>Safety yellow</u>	<u>Black</u>
<u>Combustible fluids</u>	<u>Safety brown</u>	<u>White</u>
<u>Potable, cooling, boiler feed, and other water</u>	<u>Safety green</u>	<u>White</u>
<u>Compressed air</u>	<u>Safety blue</u>	<u>White</u>
<u>Non-potable water (all types except irrigation water)</u>	<u>Safety purple</u>	<u>White</u>
<u>Non-potable irrigation water</u>	<u>Safety black</u>	<u>White</u>

(Addendum 1)

- 1.7 Equipment and device identification specified in other sections shall be provided as a part of those requirements.
- 1.8 Coordinate pipe markings and valve tags to ensure similar markings.

PART 2 - PRODUCTS

- 2.1 Equipment labeling shall be either, or a mix, of the following:
- A. Permanently attached engraved brass or plastic laminated signs with 1 inch high lettering. Signs on exterior equipment shall be brass.
 - B. Stencil painted identification, 2 inch high letters, with standard fiberboard stencils and standard black (or other appropriate color) exterior stencil enamel.
- 2.2 Pipe markings shall be:
- A. Plastic semi-rigid snap-on type, manufacturer's standard pre-printed color coded pipe markers extending fully around the pipe and insulation or pressure-sensitive vinyl markers similar to the above.
 - B. Non-metallic piping that is insulated for plenum rating purposed shall be labeled with White letters on Brown background. Labeling shall state "Insulation Required for Plenum Rating – Do Not Remove."
 - C. On piping and insulation 6 inches and greater diameter, full band as specified above or strip-type markers fastened to the pipe or insulation with laminated or bonded application or by color-coded plastic tape not less than 1.50 inches wide, full circle at both ends of the marker.
 - D. On non-potable or water systems where piping is not insulated, contractor may install color coded piping with imprinted labeling in lieu of markings specified above. However, arrows for direction of flow shall be provided as specified.
 - E. Arrows for direction of flow provided integral with the pipe marker or separate at each marker.
- 2.3 Underground line marker tape shall be permanent bright-colored, plastic with continuous identification lettering. Tape over service lines that cannot be detected by a metal detector shall be multi-ply with an aluminum foil core.
- 2.4 Valve tags shall be polished brass or plastic laminate with solid brass S hook. Tags shall be engraved with "P" (for plumbing) and the designated number.
- A. Where valves are located above ceilings, provide color coded identification tag on grid. (Addendum 1)
- 2.5 Labels, markings and tags shall be manufactured by W.H. Brady, Seton, Allen, Kolbi, MSI or Industrial Safety Supply.

PART 3 - EXECUTION

- 3.1 Identification labeling, marking and tagging shall be applied after insulation and painting has been completed.
- 3.2 Coordinate names, abbreviations and other designations used in Division 22 identification work, with corresponding designations shown, specified or scheduled on drawings.
- 3.3 The Division 21, 22 and 23 labeling, marking and tagging shall be coordinated and consistent systems of identification.

- 3.4 Equipment labeling shall consist of unit designation as shown on the drawings.
- 3.5 Pipe markers shall be placed:
- A. At each piece of equipment.
 - B. At 25 ft. centers in mechanical rooms and concealed spaces.
 - C. At 50 ft. centers in exposed finished area locations.
 - D. On mains at each branch take-off.
 - E. At least once in each room.
- 3.6 Refer to appropriate sections of this specification for installation of underground line marker tape.
- 3.7 Valve tags shall be placed on each valve except those intended for isolation of individual items of equipment. Valve tag schedules shall be prepared as specified above. Copies of one set of schedules shall be framed under glass or plastic and placed where directed by the Owner. Other sets shall be included in the Operating and Maintenance Manuals.

END OF SECTION 22 05 53

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SECTION 22 11 19 - INTERIOR DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

- 1.1 Water system specialties shall be provided as shown on the drawings and as specified.
- 1.2 Refer to 22 05 07 Piping Materials and Methods for Plumbing, 22 05 23 General Duty Valves for Plumbing Piping, 22 05 19 Meters and Gauges for Plumbing Piping (for thermometers and pressure gauges) and 22 11 16 Interior Domestic Water Piping.
- 1.3 All piping, fittings, valves, solders, fluxes, seals, appurtenances and other equipment in which wetted parts are in contact with water, installed in public drinking water systems and plumbing systems providing potable water for human consumption shall conform to the "Lead Free" requirements of NSF/ANSI 372.

PART 2 - PRODUCTS

- 2.1 Reduced Pressure Backflow Preventer Assembly
 - A. Reduced pressure backflow preventer assembly shall be designed for high-hazard cross-connections and shall consist of:
 1. Two spring loaded check valves and an intermediate automatic pressure differential relief valve assembly with air inlet, relief outlet and unit mounted (factory supplied) discharge air gap fitting.
 2. Shutoff valves, one upstream and one downstream, ball type (2 inches and smaller) or resilient seated O.S.&Y. gate type (2.5 inches and larger). Refer to 22 05 23 General Duty Valves for Plumbing Piping for valve specifications.
 3. Ball type test cocks.
 4. Strainer upstream of the assembly. Refer to strainers specified in this Section.
 5. Check valve upstream of the backflow preventer assembly to prevent nuisance discharge due to fluctuation in service line pressure.
 - B. 2 inch and smaller units shall have bronze body and screwed ends. 2.50 inch and larger units shall have coated cast iron bodies and flanged ends.
 - C. All components of the assembly shall be constructed of corrosion resistant materials or waterways shall be coated with FDA approved epoxy or other equivalent corrosion protection. The assembly shall be listed and labeled per ASSE Standard 1013, conform to AWWA Standard C511, and shall be listed by the U.S. Public Health Service.
 - D. Backflow preventers shall be Watts Series LF919 / LF909 or equal by Apollo Valves; Aalberts - IPS, Beeco, Wilkins, AMES or FEBCO.
- 2.2 Hot Water Recirculating Pump
 - A. Pump shall be system ECM horizontal in-line pipe mounted type with cast iron body. Pump shall be Bell & Gossett EcoCirc Series, or equal by Grundfos, Taco or Armstrong.

- INTERIOR DOMESTIC WATER PIPING SPECIALTIES

- B. Temperature controller for pump cycling shall be a Honeywell L4006A1017 commercial grade aquastat controller with insertion element, 100 – 240 deg. range and 5 - 30 deg. adjustable differential.

2.3 Thermal Expansion Tank

- A. Thermal expansion tank for expansion compensation in the domestic hot water system shall be pressurized diaphragm type, NSF or FDA approved and specifically constructed for domestic hot water systems.
- B. The tank shall be welded steel constructed in accordance with ASME requirements for 150 psi. The tank shall be fitted with a butyl rubber diaphragm (to separate water from the pressurized air section of the tank), stainless steel tapping for system connection and a standard tire air charging valve. Diaphragm type tank shall have a rigid polypropylene interior liner in the water section. Tank exterior shall be prime coat or finish painted.
- C. Tank shall be equal to Amtrol "Thermo-X-Trol" or equal by Wessels or Watts of configuration and acceptance volume as indicated on the drawings.

- 2.4 Strainers shall 125 lb. w.s.p. "Y" pattern cast iron or bronze construction with removable stainless steel strainer element, tapped outlet for blow-down and screwed or flanged ends. Inside and outside of cast iron bodied strainers shall be NSF and FDA approved epoxy coated, ASTM B62 and meet NSF 372. Strainer elements shall be 20 mesh for 2 inches and smaller, 0.0625 inch for 2.50 inches, 3 inches and 4 inches and 0.125 inch for larger sizes. In 2.50 inches and larger sizes, a 20 mesh liner shall also be included for insertion inside the standard screen. Refer to Part 3 for blow down valves.

2.5 Pre-Piped Digital Mixing Valve

- A. Temperature controller shall be controlled digitally via integrated circuit board technology designed to deliver blended water economically at a safe, accurate temperature for sanitary use in re-circulated hot water systems.
- B. The temperature controller valve shall be lead-free stainless steel construction, with polymer electronic enclosure, 100-240 V Power supply (12 V AC output) and 1 -inch NPT Connections. The temperature controller shall include 2 x 4-20 mA current loop interfaces with set-point selection input and measured blend temperature output, 24 V error relay output, external network adaptor and RS485 serial connection port.
- C. The temperature controller shall deliver the specified flow at the maximum pressure drop as indicated on the contract documents, and shall require no minimum system draw-off. The temperature controller shall have a 2 line, 16 character display of delivered temperature with the option of °F or °C. Display also shows the error codes and alarm conditions. Set-point configuration, unit selection, and alarm conditions shall be available via the IrDA programming port used with the programming software or via the Building Automation System. The temperature controller shall have an integral data port for the 4-20 mA interfaces, an integral serial data (RS485) connection port for a multitude of Building Automation Interface, as well as, internet connectivity. The temperature controller shall be UL listed, and compliant with ASSE Standard 1017 and CSA B125 and so certified and identified.
- D. The temperature controller shall control of blended water to within +/-2°F at draw off points a minimum of 5-meters downstream of mixing valve during consistent system demand periods. The temperature controller shall include the following features:
 - 1. Operational water pressure of 10 -150 psig.

- INTERIOR DOMESTIC WATER PIPING SPECIALTIES

2. Minimum valve inlet to outlet temperature requirement 2 degrees.
 3. Automatic shutoff of hot water flow upon cold water inlet supply failure.
 4. Automatic shutoff of hot water flow in the event of a power failure.
 5. Maintain a consistent system "idling" temperature and control "temperature creep".
 6. System shall not require a temperature activated pump shut-off device (aquastat).
 7. Programmable set point range of 100-160°F (37-71°C) plus full hot/full cold.
 8. Recirculation system manifold comprised of system return check valve, return to heater check valve, return to heater ball flow indicator, cold water check valve.
 9. Programmable 1st level hi/lo temp alarm display.
 10. Programmable 2nd level hi/lo temp alarm display/full cold.
- E. A hot water monitoring system shall be provided with the digital mixing center. The system shall provide hot water supply, cold/recirculation water supply and blended water outlet temperature readings, a system graphic, memory card for data storage and web-based software. The system shall also include an Ethernet port for remote network access. The system shall also allow for remote adjustment of set point. Provide Armstrong model SAGE (BS) or approved equal.
- F. The temperature controller(s) shall be pre-piped and tested, and factory assembled to an enameled steel frame with flanged inlet/outlet connections, ball type isolation valves, inlet strainers, mixed return flow indicator, check valves and thermometers. All components shall be lead-free compliant.
- G. The temperature controller shall be DRV25 as manufactured by Armstrong International Hot Water Group.

2.6 Emergency Fixture Mixing Valve

- A. Thermostatic Water Mixing Valve complying with NSF and ASSE 1071 and ANSI Standard Z358.1 shall meet mandated flow and temperature requirements for Eye-Face Wash and Safety Showers.
- B. The valve shall control outlet temperatures over a wide range of flow and shall maintain an outlet temperature to within 5 degrees F and shall include a thermometer to measure temperature at the outlet. The control mechanism shall employ either a liquid filled thermostatic motor, solid bimetal thermostat, or a paraffin filled temperature outlet. In the event of interruption of the hot water supply, the control mechanism shall allow cold-water flow through the valve. In the event of interruption of the cold water supply the control mechanism shall close the hot water supply, stopping all flow. The valve shall be rough brass and mounted on wall exposed.
- C. Mixing valve shall be by Emergency Fixture Manufacturer or equal by Lawler, Bradley, Apollo Valves; Aalberts – IPS, Acorn, Leonard, Powers or Guardian.

2.7 Point-of-Use Thermostatic Mixing Valves

- A. Point-of-use mixing valves shall be designed to thermostatically blend hot and cold water for sink and lavatory supply. Valve construction shall be solid brass or bronze, with corrosion-resistant internal

- INTERIOR DOMESTIC WATER PIPING SPECIALTIES

actuation components, union ends, and integral check valve and removable strainer on each inlet. Temperature control knob (field adjustable from 80 to 120 degrees F) shall have an adjustable stop and vandal-resistant locking mechanism. Unit shall be ASSE 1070 listed.

- B. Valves serving individual faucets shall control to a minimum flow of 0.5 GPM and have a maximum 5 PSI pressure drop at 2.0 GPM. Valves shall have 0.375 inch compression, or 0.5 inch union-threaded or union-sweat connections.
 - C. Valves serving multiple faucets shall control to a minimum flow of 0.5 GPM and have maximum 10 PSI pressure drop at 4.0 GPM. Valves shall have 0.5 inch union-threaded or union-sweat connections.
 - D. On valves serving multiple fixtures, provide a temperature test plug (Pete's plug) on the outlet to assist in setting the discharge temperature. See Section 22 05 19.
 - E. Point-of-use mixing valves shall be Powers, "Hydrogard" Series LFLM495 or equal by Apollo, Acorn, Bradley, Cash Acme, Leonard, Wilkins Caleffi, or Watts.
- 2.8 Wall hydrants shall be bronze, quarter turn, non-freeze, automatic draining type, with stainless steel face and integral vacuum breaker and dual check valve, 0.75 inch hose thread outlet, loose key stop, stainless steel recessing box with hinged locking cover, internal wheel handle and outer brass casing of length required for the wall thickness with integral union elbow. Unit shall comply with ASSE 1052. Hydrants shall be Smith 5519 or equal by Woodford, Wade, Mifab or Zurn.
- 2.9 Interior hose bibbs shall be all brass construction with removable tee handle; 0.75 inch hose thread outlet and integral vacuum breaker, ASSE 1019. Hose bibbs shall be Chicago Faucet No. 998 with rough chrome finish or equal by T & S. (Addendum 1)
- 2.10 Water hammer arresters shall be precharged sealed stainless steel gas bellows type conforming to PDI Standard WH-201 and ASSE 1010. Piston type are prohibited. Units shall be of size and location as shown on the drawings. Units shall be by Smith, Wade, Josam, Mifab, Watts, Sioux Chief or Zurn.

PART 3 - EXECUTION

- 3.1 Backflow preventers shall be located and installed in accordance with the manufacturer's recommendations and the Water Departments requirements. Clearances and elevation shall afford easy access for testing and servicing. Extend full size drain piping from the air gap fitting to a floor drain. Devices shall be tested at the time of being put into service. Submit test data in O & M manuals.
- 3.2 Provide temperature controller for hot water recirculating pump control. Wire thru the controller to cycle the pump. Set differential for 10 °F.
- 3.3 Provide hot water recirculating pump time clock, on/off and pump status control thru the Building Automation System (BAS).
- 3.4 Strainers 2 inches and larger shall be fitted with a ball type blow-down valve. Discharge piping shall be extended to a floor drain.
- 3.5 Central digital mixing centers shall be installed in accordance with the manufacturer's recommendations and details on the drawings. A manufacturer's representative shall perform onsite startup of the central digital mixing center(s), including installation verification, initial setpoint programming and operation and alarm testing.

- INTERIOR DOMESTIC WATER PIPING SPECIALTIES

- 3.6 Thermostatic mixing valves shall be installed in accordance with the manufacturer's recommendations and details on the drawings.
- 3.7 Wall hydrants shall be located approximately 24 inches above final grade. Verify length of casing vs. wall thickness and location of wall insulation to preclude a freezing condition for the hydrant.

END OF SECTION 22 11 19

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SECTION 22 13 16 - INTERIOR DRAINAGE AND VENT SYSTEMS

PART 1 - GENERAL

- 1.1 Interior drainage and vent systems including soil, waste and vent system, acid waste system, and storm drainage system shall be provided as shown on the drawings and as specified.
- 1.2 Refer to 22 05 09 Excavation Backfill and Surface Restoration, 22 05 07 Piping Materials and Methods for Plumbing, 22 05 29 Hangers and Supports for Plumbing Piping and other related sections for provisions affecting this Section.
- 1.3 All referenced standards shall be of the latest edition adopted by the jurisdiction unless specifically noted otherwise.
- 1.4 All cast iron drainage and vent pipe, fittings and joining materials shall be listed to the respective standard(s) stated below, and shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute.

PART 2 - PRODUCTS

- 2.1 Interior soil, waste and vent piping.
 - A. Pipe in grade below the floor slab shall be:
 1. Extra heavy coated cast iron, centrifugally cast with hub and spigot ends, ASTM A74. Fittings shall be drainage type. Joints shall be push-tight with elastomeric gaskets, ASTM C564 and ASTM C1563.
 - B. Pipe, fittings and joints above grade shall be:
 1. Extra heavy coated cast iron pipe, centrifugally cast, with hub and spigot ends, ASTM A74. Fittings shall be drainage type. Joints shall be push-tight with elastomeric gaskets, ASTM C564 and ASTM C1563.
 2. Coated cast iron, centrifugally cast with hubless ends, ASTM A-888 and CISPI 301. Fittings shall be drainage type with hubless ends. Joints shall be made with no-hub couplings consisting of a neoprene gasket ASTM C564, and type 304 corrugated stainless steel shield and clamp assembly, ASTM C1540 compliant. No-hub couplings shall be Ideal "Heavy Duty MD", Clamp-All 80, Husky "SD 2000", Mission "Heavy Weight" or Mifab "Extra-Heavy Duty". (Addendum 1)
 3. Type "M" hard copper tubing, sizes 3" and smaller, ASTM B-88. Fittings shall be DWV drainage type with socket ends. Joints shall be soldered or brazed with lead-free alloy, 95-5 tin-antimony or tin-silver equal to Harris "Stay-Brite", "Stay-Brite 8" or "Bridgit". Solder shall meet ASTM B32. Copper tubing shall not be used for urinal waste.
 4. Threaded nipples for fixture drain stub-outs shall be copper, as specified above, with threaded adapters. Black or galvanized steel pipe is not permitted.
- 2.2 Storm Drainage Piping

- A. Pipe in grade below the floor slab shall be:
 - 1. Extra heavy coated cast iron, centrifugally cast with hub and spigot ends, ASTM A74. Fittings shall be drainage type. Joints shall be push-tight with elastomeric gaskets, ASTM C564 and ASTM C1563.
- B. Pipe, fittings and joints above grade shall be:
 - 1. Extra heavy coated cast iron pipe, centrifugally cast, with hub and spigot ends, ASTM A74. Fittings shall be drainage type. Joints shall be push-tight with elastomeric gaskets, ASTM C564 and ASTM C1563.
 - 2. Coated cast iron, centrifugally cast with hubless ends, ASTM A-888 and CISPI 301. Fittings shall be drainage type with hubless ends. Joints shall be made with no-hub couplings consisting of a neoprene gasket ASTM C564, and type 304 corrugated stainless steel shield and clamp assembly, ASTM C1540 compliant. No-hub couplings shall be Ideal "Heavy Duty MD", Clamp-All 80, Husky "SD 2000", Mission "Heavy Weight" or Mifab "Extra-Heavy Duty". (Addendum 1)

2.3 Acid Waste System

- A. Pipe and fittings below grade shall be acid resisting type and shall be:
 - 1. Schedule 40 (PVDF) polyvinylidene fluoride ASTM D-3222 and F1673, with fusion joints.
- B. Pipe and fittings above grade shall be acid resisting type and shall be:
 - 1. Schedule 40 (PVDF) polyvinylidene fluoride ASTM D-3222 and F1673, with fusion or mechanical joint type seal.
 - 2. Non wrapped plastic piping installed in plenum spaces must be PVCF material, no exceptions.
- C. Traps serving acid sinks shall be of the same material as the waste pipe serving the sinks. Provide suitable adapters to sink tailpiece. Tailpiece will be furnished with the sink, which is furnished by the Equipment Supplier.
- D. Vent piping serving acid storage cabinets shall be the same acid resisting material as above grade pipe and fittings. Provide suitable adapters to the storage cabinet vent fitting.

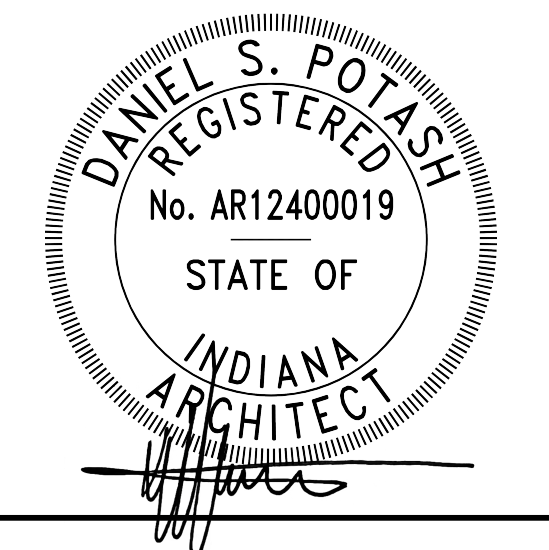
PART 3 - EXECUTION

- 3.1 Cut pipe to required length and ream ends to remove burrs. Align horizontal piping to attain even pitch, minimum of 0.25 inch per ft. on sizes 2.50 inches and smaller, 0.125 inch per ft. on sizes 3 inches and larger unless specifically noted on drawings.
- 3.2 Trenching, bedding and backfill for piping in grade below floor slab shall be in accordance with 22 05 09 Excavation, Backfill and Surface Restoration.
- 3.3 Piping shall not be run above electrical switchgear or panelboards, nor above access space in the immediate vicinity of the equipment, in accordance with N.E.C. Article 110.26.
- 3.4 Gasket lubricant shall be used in the assembly of push-tight joints.

- 3.5 Piping in air plenums shall not exceed maximum flame spread of 25 and smoke development of 50 as established by NFPA 255 test methods.
- 3.6 Above grade piping, in sizes 4 inches and larger, shall be anchored at all changes in direction, at all changes in diameter greater than two pipe sizes, and to prevent axial movement and/or joint separation at each branch opening. Bracing methods shall be as recommended by pipe and/or coupling manufacturer's installation instructions and/or the Cast Iron Soil Pipe Institute (CISPI) Handbook.
- 3.7 Provide hangers on plastic piping at closer spacing than that for metal piping, in accordance with manufacturers recommendations. Plastic piping systems shall be installed in strict conformance with manufacturer's latest installation instructions.
- 3.8 When transitioning, below floor, non-plenum rated waste or storm pipe to above floor, plenum rated material, extend to a maximum 1 ft. above finished floor. Transition to plenum rated piping and continue with plenum rated material in wall and above ceiling.
- 3.9 Vent piping shall extend thru the roof to at least 12 inches above the roofline. Provide the pipe penetration flashing with 4 lb./sq.ft. sheet lead extending at least 8 inches outward from the pipe and extended up the pipe and turned down into the top of the pipe or secured to the pipe with a flashing clamp. The flashing shall be made weathertight at the roofing.
- 3.10 Provide cleanouts in drainage piping as indicated on the drawings and:
 - A. In horizontal piping at intervals no greater than 50 ft. for 4 inch and smaller pipe, 100 ft. for 5 inch and larger pipe.
 - B. At the base of each soil and waste stack and at the base of each downspout.
 - C. Above each sanitary cross.
 - D. In sanitary and storm piping leaving the building for cleanout and testing purposes.
- 3.11 Acid waste system piping shall be installed in accordance with manufacturer's instructions.
- 3.12 Vent piping serving acid storage cabinets shall be run as directly as possible and extend thru the roof. Provide a turned down ell and birdscreen for each vent. Vent opening shall be minimum 24 inches above the roof line.
- 3.13 Drainage and vent piping exposed to view in the kitchen area shall be painted with an aluminum enamel paint.
- 3.14 Maintain a minimum 4 inches backfill depth between the top of the pipe and bottom of the floor slab for all piping installed in grade below the floor. Installation, bedding and backfill for plastic pipe shall conform to ASTM D2321.

END OF SECTION 22 13 16

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BID SET

△ REVISIONS:
1 11.08.2024 Addendum #1

DATE:
10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276

DRAWING TITLE:
**CODE SUMMARY
REPORT**

DRAWING NUMBER:

G120

CODE SUMMARY																																																	
APPLICABLE CODES:	INDIANA BUILDING CODES: 2014 INDIANA BUILDING CODE (2012 IBC W/ AMENDMENTS) 2014 INDIANA FIRE CODE (2012 IFC W/ AMENDMENTS) 2014 INDIANA MECHANICAL CODE (2012 IMC W/ AMENDMENTS) 2012 INDIANA PLUMBING CODE (2008 IPC W/ AMENDMENTS) 2009 INDIANA ELECTRICAL CODE (2008 NFPA 70 W/ AMENDMENTS) 2014 INDIANA ACCESSIBILITY STANDARD (2012 IBC CHAPTER 11 W/ AMENDMENTS & 2009 ICC A117.1) 2010 INDIANA ENERGY CONSERVATION CODE (2007 ASHRAE 90.1 W/ AMENDMENTS)	TRAVEL DISTANCE MAX:	DEAD-END CORRIDOR LIMIT: 50 FT BIS-1, W/ SPLR. [1018.4, IBC] COMMON PATH OF TRAVEL: 100 FT BIS-1, W/ SPLR. [1014.3, IBC] EXIT ACCESS TRAVEL: 300 FT B, W/ SPLR. [1016.2, IBC] 250 FT S-1, W/ SPLR.																																														
	FEDERAL: 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN 2012 NFPA 101, LIFE SAFETY CODE (LSC) CODE REFERENCES ARE FROM THE 2014 IBC UNLESS OTHERWISE NOTED - WHERE THE IBC AND LSC ADDRESS THE SAME TOPIC, THE MOST STRICT PROVISION IS NOTED.		FIRE AND SMOKE DAMPERS: FIRE DAMPERS REQUIRED FOR DUCT PENETRATIONS OF RATED SHAFTS AND 2-HOUR FIRE BARRIERS. SMOKE DAMPERS NOT REQUIRED. [717.5]																																														
SCOPE OF PROJECT:	THE PROJECT INVOLVES A 3-STORY LAB BUILDING ADDITION TO THE EXISTING 3-STORY SCIENCE ENGINEERING LAB BUILDING. EACH FLOOR WILL BE SEPARATE CONTROL AREA. THE EXISTING BUILDING WAS DESIGNED WITH A SEPARATE CONTROL AREA ON THE 2ND FLOOR AND THE REMAINDER OF THE BUILDING BEING A SINGLE CONTROL AREA PER FLOOR.	OCCUPANCY LOAD FACTORS:	BUSINESS: 100 SQ. FT./OCC. UNCONCENTRATED ASSEMBLY USE: 15 SQ. FT./OCC. STORAGE AREAS: 300 SQ. FT./OCC. [TABLE 1004.1.2]																																														
			DOORS:	DOOR WIDTH MUST BE A MINIMUM OF 32 INCHES CLEAR, EXCEPT FOR STORAGE CLOSETS LESS THAN 10 SF IN AREA. A SINGLE DOOR LEAF MUST NOT EXCEED 48 INCHES. [1008.1.1] EGRESS DOORS MUST SWING IN THE DIRECTION OF EGRESS WHEN SERVING 50 OR MORE OCCUPANTS. EGRESS DOORS ARE REQUIRED TO BE SIDE-HINGED SWINGING TYPE, EXCEPT FOR OFFICE AND STORAGE AREAS WITH AN OCCUPANT LOAD OF LESS THAN 10. MANUALLY OPERATED HORIZONTAL SLIDING DOORS PERMITTED FROM ROOMS WITH AN OCCUPANT LOAD THAT DOES NOT EXCEED 10. [1008.1.2]																																													
APPLICABILITY OF CODES TO THE PROJECT:	ADDITIONS ARE PERMITTED TO AN EXISTING BUILDING WITHOUT requiring THE ENTIRE EXISTING BUILDING OR PORTIONS OF THE EXISTING BUILDING UNIMPACTED BY THE PROPOSED SCOPE OF RENOVATION TO BE BROUGHT INTO COMPLIANCE WITH CURRENT CODES. [RULE 4, SECTION 12, GAR] THE REQUIREMENTS IN THIS CODE SUMMARY APPLY ONLY TO NEW CONSTRUCTION.	EGRESS CORRIDORS:	PANIC HARDWARE REQUIRED FOR DOORS THAT LATCH IN A MEANS OF EGRESS FROM AN OCCUPANCY WITH AN OCCUPANT LOAD OF 50 OR MORE. [1008.1.10] CORRIDORS ARE NOT REQUIRED TO BE FIRE-RATED, BASED UPON AUTOMATIC SPRINKLER PROTECTION THROUGHOUT. [TABLE 1018.1] CORRIDORS MUST BE A MINIMUM OF 44 INCHES IN CLEAR AND UNOBSTRUCTED WIDTH. CORRIDORS SERVING AN OCCUPANT LOAD LESS THAN 50 MUST NOT BE LESS THAN 36 INCHES IN CLEAR AND UNOBSTRUCTED WIDTH. [TABLE 1018.2] DEAD END CORRIDORS MUST NOT EXCEED 50 FEET FOR A AND S OCCUPANCIES AND 50 FEET WHERE SERVING B AND S OCCUPANCIES. [1018.4]																																														
			EXIST ACCESS DOORWAYS:	TWO EXIT ACCESS DOORS ARE REQUIRED FROM NEWLY CREATED ROOMS OR AREAS WHERE THE OCCUPANT LOAD EXCEEDS 49 FOR A AND B OCCUPANCIES AND 50 FOR S OCCUPANCIES OR WHERE THE COMMON PATH OF TRAVEL EXCEEDS 75 FEET FOR A OCCUPANCIES AND 100 FEET FOR B AND S OCCUPANCIES. [TABLE 1015.1, TABLE 1014.3]																																													
OCCUPANCY CLASSIFICATIONS:	LABS, OFFICES, AND ROOMS OR SPACES USED FOR ASSEMBLY PURPOSES THAT ARE LESS THAN 750 SQUARE FEET IN AREA OR HAVE A CALCULATED OCCUPANT LOAD LESS THAN 49. • B OCCUPANCY [304.1, 303.1.2, 1 & 2] ROOMS OR SPACES USED FOR ASSEMBLY PURPOSES THAT ARE 750 SQUARE FEET OR MORE IN AREA OR HAVE A CALCULATED OCCUPANT LOAD OF 50 OR MORE. • A-3 OCCUPANCY [303.4] • S-1 STORAGE OCCUPANCY [311.2]	EXIT TRAVEL DISTANCE:	THE MAXIMUM TRAVEL DISTANCE TO AN EXIT IS 250 FEET FOR A,3 AND S-1 OCCUPANCY AREAS AND 300 FEET FOR B OCCUPANCY AREAS. [TABLE 1016.2]																																														
			EXITS:	2 EXITS REQUIRED FOR AN OCCUPANT LOAD OF 1-500 [1021.2] THE 3RD FLOOR MUST BE SERVED BY AT LEAST 1 ENCLOSED EXIT STAIR. [1021.1] AN EXIT CAPACITY OF 0.15 IN OCCUPANT MUST BE PROVIDED FOR HORIZONTAL TRAVEL SUCH AS DOORS, RAMPS, ETC. AN EXIT CAPACITY OF 0.2 IN OCCUPANT MUST BE PROVIDED FOR STAIRS. MULTIPLE MEANS OF EGRESS MUST BE SIZED SUCH THAT THE LOSS OF ANY ONE MEANS OF EGRESS MUST NOT REDUCE THE AVAILABLE CAPACITY TO LESS THAN 50 PERCENT OF THE REQUIRED CAPACITY. [1009.3, 1005.5]																																													
CONSTRUCTION TYPE:	TYPE IIB CONSTRUCTION, EXISTING AND PROPOSED	ARRANGEMENT OF EXITS:	WHEN TWO EXITS OR EXIT ACCESS DOORWAYS ARE REQUIRED, THEY MUST BE SEPARATED BY AT LEAST ONE-THIRD OF THE OVERALL DIAGONAL DIMENSION OF THE AREA SERVED. [1015.2.1]																																														
			STAIRWAYS:	STAIRWAYS MUST NOT BE LESS THAN 44 INCHES IN CLEAR AND UNOBSTRUCTED WIDTH WHERE SERVING 50 OR MORE OCCUPANTS. [1009.4] A HEADROOM OF AT LEAST 6'8" MUST BE PROVIDED. [1009.5] THE TREAD DEPTH MUST BE A MINIMUM OF 11" AND THE RISER HEIGHT MUST BE A MINIMUM OF 4" AND A MAXIMUM OF 7". [1009.7.2]																																													
ALLOWABLE AREA PER FLOOR:	TABULAR AREA: 17,500 SF SPRINKLER INCREASE: ±35,000 SF ALLOWABLE AREA: 52,500 SF [TABLE 503, 506.3] ACTUAL AREA APPROXIMATELY: (1ST FLOOR) EXISTING = 22,216 SF + ADDITION = 14,293 SF TOTAL = 36,418 SF	HANDRAILS:	RAMP WITH A RISE GREATER THAN 6 INCHES AND STAIRS ARE REQUIRED TO HAVE HANDRAILS ON BOTH SIDES AND THE HANDRAILS MUST BE PROVIDED WITHIN 30 INCHES OF REACH ON THE STAIR. HANDRAILS MUST BE AT LEAST 34 INCHES AND NOT GREATER THAN 38 INCHES IN HEIGHT. HANDRAILS MUST BE CONTINUOUS THE FULL LENGTH OF EACH FLIGHT WITHOUT INTERRUPTIONS BY NEWEL POSTS OR OTHER OBSTRUCTIONS. WHERE HANDRAILS ARE NOT CONTINUOUS BETWEEN FLIGHTS, THEY MUST EXTEND AT LEAST 12" BEYOND THE TOP RISER AND CONTINUE TO SLOPE FOR THE DEPTH OF ONE TREAD BEYOND THE BOTTOM RISER. HANDRAILS MUST BE RETURNED TO A WALL, GUARD, OR THE WALKING SURFACE OR MUST CONTINUE TO THE HANDRAIL OF AN ADJACENT STAIR FLIGHT. [1009.15, 1010.9, 1012.2, 1012.4]																																														
	ALLOWABLE HEIGHT:		5 STORIES AND 75' BASED UPON SPRINKLER INCREASE [TABLE 503, 504.2] 3 STORIES ACTUAL	GUARDRAILS:	GUARDS MUST BE PROVIDED ALONG OPEN-SIDED WALKING SURFACES, STAIRWAYS, RAMPS, AND LANDINGS THAT ARE LOCATED MORE THAN 30 INCHES ABOVE THE FLOOR OR GRADE BELOW. GUARDS MUST BE AT LEAST 42 INCHES HIGH, MEASURED VERTICALLY ABOVE THE LEADING EDGE OF THE TREAD AND ADJACENT WALKING SURFACE. OPEN GUARDS MUST HAVE BALLUSTERS OR ORNAMENTAL PATTERNS SUCH THAT A 4-INCH DIAMETER SPHERE CANNOT PASS THROUGH ANY OPENING UP TO A HEIGHT OF 36 INCHES. A SPHERE 4-3/8 INCHES IN DIAMETER MUST NOT PASS THROUGH ANY OPENING FROM A HEIGHT OF 36 TO 42 INCHES. [1013.2, 1013.3, 1013.4]																																												
BUILDING ELEMENTS - FIRE RESISTIVE REQUIREMENTS:	BUILDING ELEMENTS, INCLUDING STRUCTURAL FRAME, WALLS, FLOORS, AND ROOF MUST BE A MINIMUM OF NON-COMBUSTIBLE, NON-RATED CONSTRUCTION EXCEPT WHERE RATED CONSTRUCTIONS IS REQUIRED BY OTHER PROVISIONS OF THE CODE. [TABLE 601] EXTERIOR WALLS NOT REQUIRED TO BE RATED BASED UPON HAVING AT LEAST 10 FEET OF FIRE SEPARATION DISTANCE. [TABLE 602]	ILLUMINATION OF MEANS OF EGRESS:	ILLUMINATION MUST BE PROVIDED FOR REQUIRED MEANS OF EGRESS AS WELL AS THE EXIT DISCHARGE THAT LEADS TO A PUBLIC WAY AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCUPIED. [1006.1]																																														
			INCIDENTAL USE SEPARATIONS:	THE FOLLOWING ROOMS ARE REQUIRED TO BE PROVIDED WITH A NONRATED SEPARATION CONSISTING OF WALLS TERMINATING AT THE DECK, WITH SELF-CLOSING DOORS: • FURNACE ROOMS WITH EQUIPMENT OVER 400,000 BTU/HOUR INPUT • BOILER ROOMS WITH EQUIPMENT OVER 15 PSI AND 10 HP. [TABLE 509] ELECTRICAL TRANSFORMER ROOMS REQUIRED TO BE SEPARATED WITH 1-HOUR CONSTRUCTION IF CONTAINING OIL-INSULATED TRANSFORMERS OVER 750VA, OR DRY-TYPE TRANSFORMERS OVER 112.5KVA, AND THE TRANSFORMERS ARE LESS THAN A CLASS 155 INSULATION SYSTEM RATING. [450.42, 450.21(B), IEC]																																													
MAXIMUM AREA OF EXTERIOR WALL OPENINGS:	UNLIMITED UNPROTECTED OPENINGS BASED UPON HAVING A FIRE SEPARATION DISTANCE GREATER THAN 10 FEET. [705.8.1, EXC. 2]	AUTOMATIC SPRINKLERS:	REQUIRED THROUGHOUT TO PERMIT AREA INCREASE, NONRATED CORRIDORS, AND TRAVEL DISTANCE INCREASES.																																														
			STANDPIPES:	REQUIRED WHERE THE HIGHEST FLOOR LEVEL IS LOCATED 30 FEET OR MORE ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS. [903.3.1]																																													
OCCUPANCY SEPARATIONS:	ASSEMBLY OCCUPANCIES ARE LESS THAN 10% THE FLOOR AREA AND CLASSIFIED AS ACCESSORY USE. REMAINDER OF THE BUILDING DESIGNED AS NON-SEPARATED MIXED USES. [508.2, 508.3]	FIRE ALARM SYSTEM:	FIRE ALARM SYSTEM REQUIRED WHERE THE OCCUPANT LOAD OF THE B OCCUPANCY EXCEEDS 100 ABOVE THE 1ST FLOOR OR THE ENTIRE BUILDING EXCEEDS 500 OCCUPANTS. [907.2.2] MANUAL PULL STATIONS ARE NOT REQUIRED WHERE INITIATION OF SYSTEM IS BY SPRINKLER WATER FLOW. [907.2.1, EXC.]																																														
			SMOKE DETECTORS:	SMOKE DETECTORS MUST BE INSTALLED IN RETURN AIR SYSTEMS WITH A DESIGN CAPACITY GREATER THAN 2,000 CFM, IN THE SUPPLY AIR DUCT. [806.2, IMC] REQUIRED FOR ELEVATOR RECALL. [3003.2]																																													
CONTROL AREAS:	<table border="1"> <thead> <tr> <th colspan="4">TABLE 614.2.2 DESIGN AND NUMBER OF CONTROL AREAS</th> </tr> <tr> <th>FLOOR LEVEL</th> <th>PERCENTAGE OF THE BUILDING ALLOWABLE</th> <th>NUMBER OF CONTROL AREAS</th> <th>FIRE-RISER SPACE RATIO</th> </tr> </thead> <tbody> <tr> <td rowspan="6">High-Rise</td> <td>10</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>5</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>1</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>1</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td rowspan="3">Non-High-Rise</td> <td>10</td> <td>2</td> <td>1</td> <td>1</td> </tr> <tr> <td>5</td> <td>2</td> <td>1</td> <td>1</td> </tr> <tr> <td>3</td> <td>2</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p><small>a. Percentage shall be of the maximum allowable quantity per control area shown in Tables 507.1(1) and 507.1(2), and all increases allowed in the code.</small> <small>b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.</small></p> <p>ACTUAL: 1ST FLOOR: 2 CONTROL AREAS PROVIDED (1 AT SELB & 1 AT THE ADDITION) 2ND FLOOR: 2 CONTROL AREAS PROVIDED (2 AT SELB & 1 AT THE ADDITION) 3RD FLOOR: 2 CONTROL AREAS PROVIDED (1 AT SELB & 1 AT THE ADDITION) * = THIS FLOOR IS MIXED OUT WITH CONTROL AREAS</p> <p>WALLS SEPARATING CONTROL AREAS MUST BE CONSTRUCTED AS 1-HOUR FIRE BARRIERS. THE FLOOR ASSEMBLIES OF THE CONTROL AREA AND THE SUPPORTING CONSTRUCTION MUST BE 2-HOUR RATED CONSTRUCTION. [424.2]</p>	TABLE 614.2.2 DESIGN AND NUMBER OF CONTROL AREAS				FLOOR LEVEL	PERCENTAGE OF THE BUILDING ALLOWABLE	NUMBER OF CONTROL AREAS	FIRE-RISER SPACE RATIO	High-Rise	10	2	2	2	5	2	2	2	3	2	2	2	2	2	2	2	1	2	2	2	1	2	2	2	Non-High-Rise	10	2	1	1	5	2	1	1	3	2	1	1	VARIANCES:	APPROVED VARIANCES FOR THIS PROJECT (#24-08-67) • 712.1 (2014 IBC) - THE 3-STORY FLOOR OPENINGS WILL NOT BE ENCLOSED WITH FIRE-RATED CONSTRUCTION, NOR COMPLY WITH ANY OF THE SPECIFIC VERTICAL OPENING APPLICATIONS. • 713.4 (2014 IBC) - THE 3-STORY STAIR AT THE FRONT OF THE BUILDING WILL NOT BE ENCLOSED WITH FIRE-RATED CONSTRUCTION. • 905.4 (2014 IBC) - STANDPIPE OUTLETS WILL BE PROVIDED ON THE MAIN FLOOR LEVEL LANDINGS AT THE STAIRS IN LIEU OF THE INTERMEDIATE LEVEL LANDINGS. • 1007.8 (2014 IBC) - A 2-WAY COMMUNICATION SYSTEM WILL NOT BE PROVIDED AT THE ELEVATOR LANDING ON EACH FLOOR. • 1509.2.2 (2014 IBC) - THE MECHANICAL PENTHOUSE ON THE ROOF OF THE 3RD FLOOR WILL EXCEED THE MAXIMUM PERMITTED 1/3 OF THE ROOF AREA. APPROVED VARIANCE FOR THIS PROJECT (#24-10-41) • 905.4 (2014 IBC) - THE STANDPIPE HOSE CONNECTIONS FOR THE OPEN STAIR WILL BE PROVIDED IN A HOSE CABINET LOCATED OFF OF THE CORRIDOR LIEU OF THE IN THE OPEN STAIR AT THE INTERMEDIATE LEVEL LANDINGS AS REQUIRED.
		TABLE 614.2.2 DESIGN AND NUMBER OF CONTROL AREAS																																															
FLOOR LEVEL	PERCENTAGE OF THE BUILDING ALLOWABLE	NUMBER OF CONTROL AREAS	FIRE-RISER SPACE RATIO																																														
High-Rise	10	2	2	2																																													
	5	2	2	2																																													
	3	2	2	2																																													
	2	2	2	2																																													
	1	2	2	2																																													
	1	2	2	2																																													
Non-High-Rise	10	2	1	1																																													
	5	2	1	1																																													
	3	2	1	1																																													
EMERGENCY LIGHTING:	EMERGENCY LIGHTING IS REQUIRED AT EXTERIOR LANDINGS IN BUILDINGS THAT REQUIRE MORE THAN ONE EXIT, IN CORRIDORS, AND REQUIRED IN ROOMS AND SPACES THAT REQUIRE TWO OR MORE MEANS OF EGRESS. [1006.3]																																																
PLUMBING FIXTURES:	<p>1ST FLOOR: NUMBER OF OCCUPANTS (PER SEX): 64 (B) • REQUIRED NUMBER OF FIXTURES (PER SEX): TOILETS: 2.28 (B) LAVATORIES: 1.99 (B) • ACTUAL NUMBER OF FIXTURES (PER SEX): TOILETS: 3 + 1 ALL GENDER LAVATORIES: 2 + 1 ALL GENDER</p> <p>2ND FLOOR: NUMBER OF OCCUPANTS (PER SEX): 76 (B) • REQUIRED NUMBER OF FIXTURES (PER SEX): TOILETS: 2.52 (B) LAVATORIES: 1.95 (B) • ACTUAL NUMBER OF FIXTURES (PER SEX): TOILETS: 3 + 1 ALL GENDER LAVATORIES: 2 + 1 ALL GENDER</p> <p>3RD FLOOR: NUMBER OF OCCUPANTS (PER SEX): 71 (B) • REQUIRED NUMBER OF FIXTURES (PER SEX): TOILETS: 2.42 (B) LAVATORIES: 1.99 (B) • ACTUAL NUMBER OF FIXTURES (PER SEX): TOILETS: 3 + 1 ALL GENDER LAVATORIES: 2 + 1 ALL GENDER</p>	DOOR SWING:	EXIT DOORS MUST SWING IN THE DIRECTION OF EGRESS WHEN SERVING 50 OR MORE OCCUPANTS [1008.1.2, IBC] EXIT DOORS ARE REQUIRED TO BE SIDE-HINGED SWINGING TYPE, EXCEPT FOR OFFICE OR STORAGE AREAS WITH AN OCCUPANT LOAD OF LESS THAN 10 [1008.1.2, IBC]																																														
			PANIC HARDWARE:	REQUIRED FOR EGRESS DOOR SERVING A OCCUPANCIES WITH AN OCCUPANT LOAD OF 50 OR MORE. NOT REQUIRED FOR GROUP B OCCUPANCIES. [1008.1.9, IBC]																																													



INDIANA UNIVERSITY INDIANAPOLIS
 20230276 - IN00B - IU INDIANAPOLIS
 MULTI-BUILDING SCIENCE LABORATORY &
 RENOVATION
 ADDRESSES VARY

BID SET

REVISIONS:		
1	ADDENDUM 1	11.08.2024

DATE: 10.25.2024
 arcDESIGN PROJECT NUMBER: 23176
 CLIENT PROJECT NUMBER: 20230276
 DRAWN BY: SS/JT
 DRAWING TITLE:

SITE DEMOLITION
PLAN

DRAWING NUMBER:

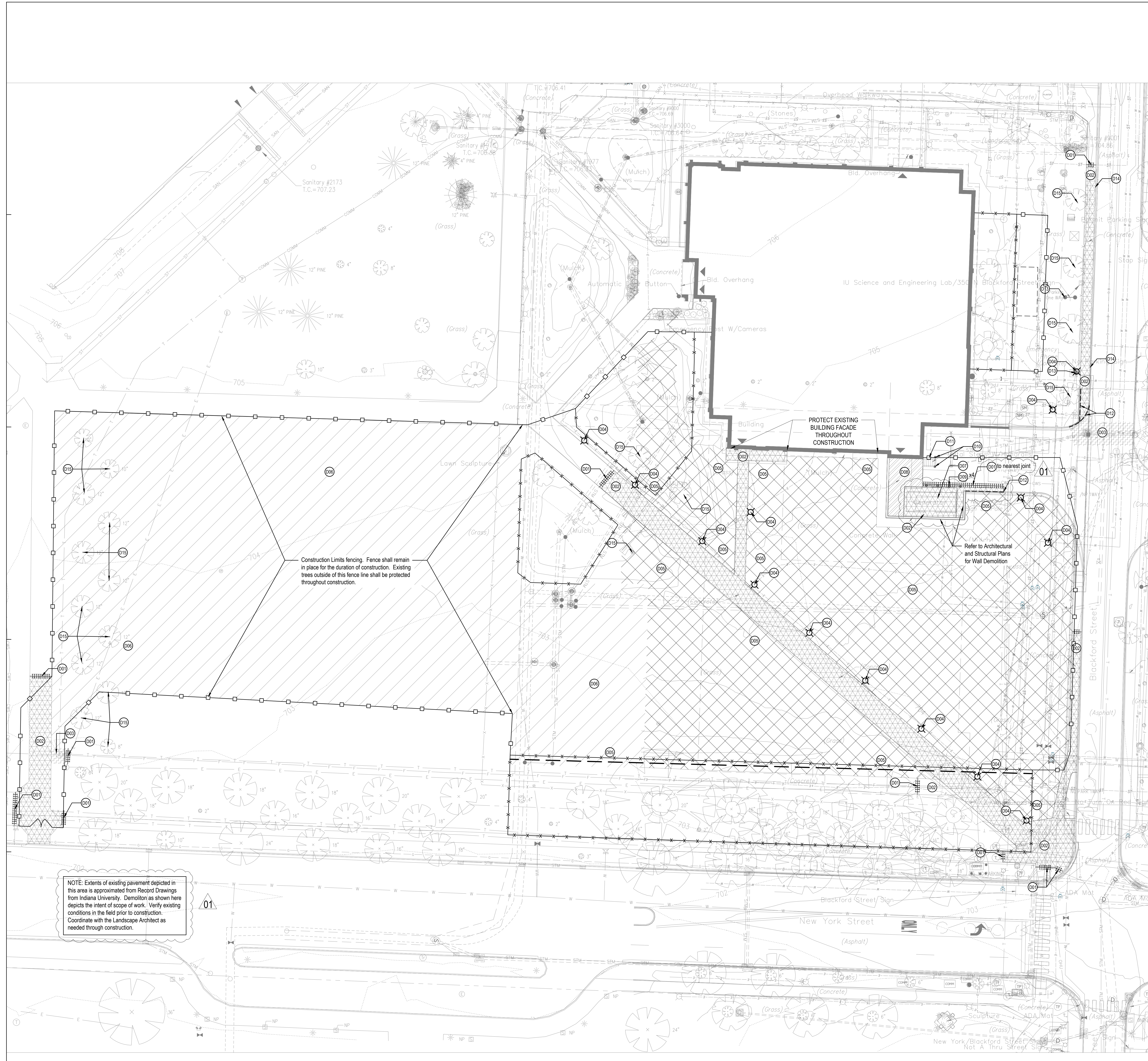
L020

DEMOLITION NOTES

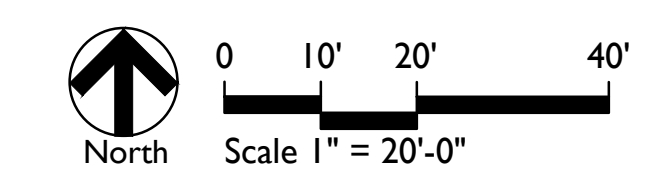
- Contractor shall verify existing utility locations and limits of construction prior to beginning work.
- Contractor shall coordinate all work associated with the removal, relocation, and demolition of existing utilities with respective operating authorities.
- Demolished material shall be disposed of per the direction of Purdue University. If no authorization from the Owner is provided, all material becomes the property of the Contractor and shall be legally disposed of off-site.
- Maintain proper drainage in demolition area.
- All demolished pavements, curbs and other hardscape elements that adjoin site features to remain shall be cleanly saw cut for removal.
- Contractor shall protect all existing pavement, signage, utilities & other site elements to remain throughout the duration of construction.
- CAREFULLY COORDINATE THE SITE DEMOLITION WITH THE STAGING PLAN. SOME EXISTING CONDITIONS, SUCH AS THE WALKS THAT MAY REMAIN FOR A PERIOD OF TIME UNTIL OTHER PEDESTRIAN CIRCULATION IS AVAILABLE.

DEMOLITION LEGEND	
KEY	DESCRIPTION / REFERENCE
001	PAVEMENT TO BE CLEANLY SAW CUT AT NEAREST JOINT
002	FULLY REMOVE CONCRETE PAVEMENT TO SUBGRADE
003	FULLY REMOVE ASPHALT PAVEMENT TO SUBGRADE
004	REMOVE LIGHT POLE, CONCRETE FOOTING AND ELECTRICAL CONNECTIONS. REFER TO EL001 FOR ADDITIONAL INFORMATION
005	CLEAR VEGETATION AS NEEDED FOR CONSTRUCTION. TOPSOIL TO BE STRIPPED AND STOCKPILED FOR RE-USE.
006	REFER TO CONSTRUCTION STAGING PLANS. STRIP TOPSOIL AND STOCKPILE FOR RE-USE IN AREAS USED FOR STAGING.
007	REFER TO MEP PLANS FOR GENERATOR DEMOLITION SCOPE
008	REFER TO ARCHITECTURAL/STRUCTURAL PLANS FOR LIMITS OF LOADING DOCK PAVEMENT DEMOLITION
009	REMOVE BOLLARD IN ITS ENTIRETY
010	BOLLARD TO REMAIN. PROTECT THROUGHOUT CONSTRUCTION.
011	STAIR AND RAILINGS TO BE REMOVED TEMPORARILY AND RE-INSTALLED AFTER RECONSTRUCTION OF EXTERIOR LOADING DOCK
012	CURB TO BE REMOVED
013	E-PHONE TO BE RELOCATED TO FACILITATE UTILITY CONSTRUCTION
014	CURB TO REMAIN. PROTECT THROUGHOUT CONSTRUCTION.
015	TREE TO BE REMOVED. REFER TO L010 AND SPECIFICATIONS FOR ADDITIONAL INFORMATION

NOTE: Refer to Civil Engineering drawings for the demolition of existing water, sanitary, and storm piping and associated structures.



NOTE: Extents of existing pavement depicted in this area is approximated from Record Drawings from Indiana University. Demolition as shown here depicts the intent of scope of work. Verify existing conditions in the field prior to construction. Coordinate with the Landscape Architect as needed through construction.





INDIANA UNIVERSITY INDIANAPOLIS
**20230276 - IN00B - IU INDIANAPOLIS
 MULTI-BUILDING SCIENCE LABORATORY &
 RENOVATION**
 ADDRESSES VARY

BID SET

REVISIONS:

1	ADDENDUM 1	11.08.2024
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DATE: 10.25.2024
 arcDESIGN PROJECT NUMBER: 23176
 CLIENT PROJECT NUMBER: 20230276
 DRAWN BY: SS/JT
 DRAWING TITLE:

SITE MATERIALS PLAN

DRAWING NUMBER:
L100

MATERIAL LEGEND	
KEY	DESCRIPTION / REFERENCE
CU1	CURB, SIDEWALK TURN DOWN EDGE REFER TO DETAIL 4/L150
CU2	CURB, POST. REFER TO DETAIL 9/L151

LIGHTING, SITE	
KEY	DESCRIPTION / REFERENCE
LO1	NEW PEDESTRIAN POLE AND FIXTURE, MATCH EXISTING. REFER TO EL002

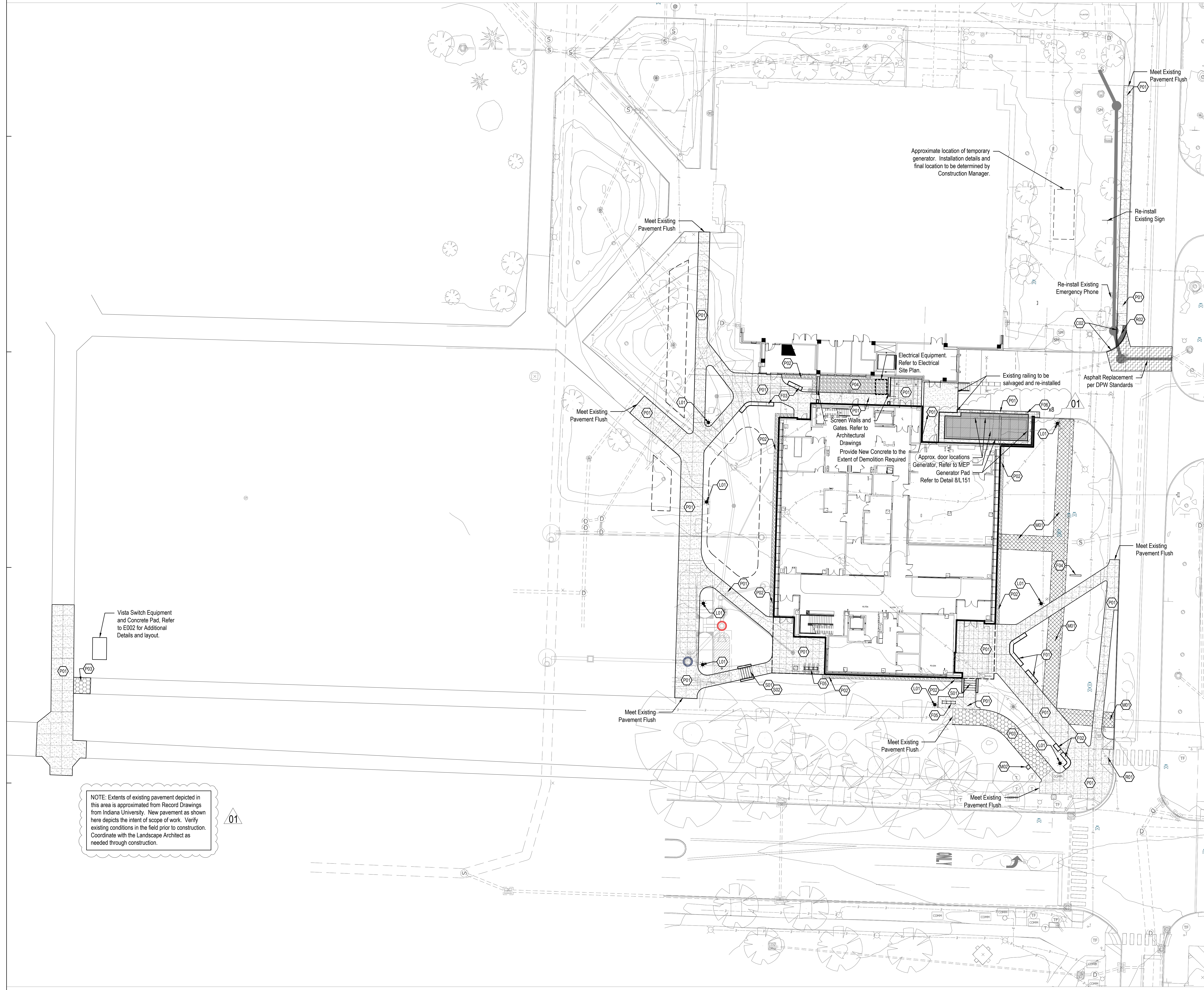
PAVEMENTS	
KEY	DESCRIPTION / REFERENCE
PO1	CONCRETE, STANDARD REFER TO DETAIL 1-3/L150
PO2	GRAVEL MOW STRIP AND METAL EDGING REFER TO DETAIL 6/L150
PO3	ASPHALT TRAIL, MATCH EXISTING REFER TO DETAIL 12/L150
PO4	AGGREGATE SURFACING REFER TO DETAIL 13/L150

RAMPS	
KEY	DESCRIPTION / REFERENCE
RO1	CURB RAMP, DOUBLE FLARE REFER TO DETAIL 5/L150
RO2	CURB RAMP, STRAIGHT REFER TO DETAIL 6/L151

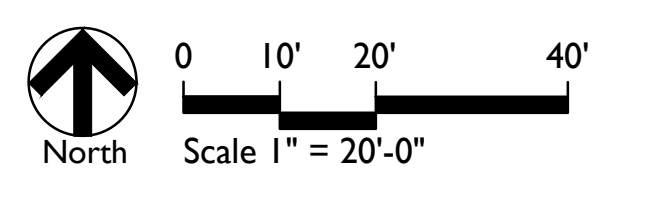
SITE FINISHINGS	
KEY	DESCRIPTION / REFERENCE
FO1	SEAT WALL, AREA 1 REFER TO DETAILS 2-3/L151
FO2	SEAT WALL, AREA 2 REFER TO DETAILS 2 AND 4/L151
FO3	SEAT WALL, AREA 3 REFER TO DETAILS 2 AND 5/L151
FO4	BUILDING SIGNAGE, BY OWNER
FO5	BIKE RACKS REFER TO DETAIL 1/L151
FO6	BOLLARDS REFER TO DETAIL 7/L151

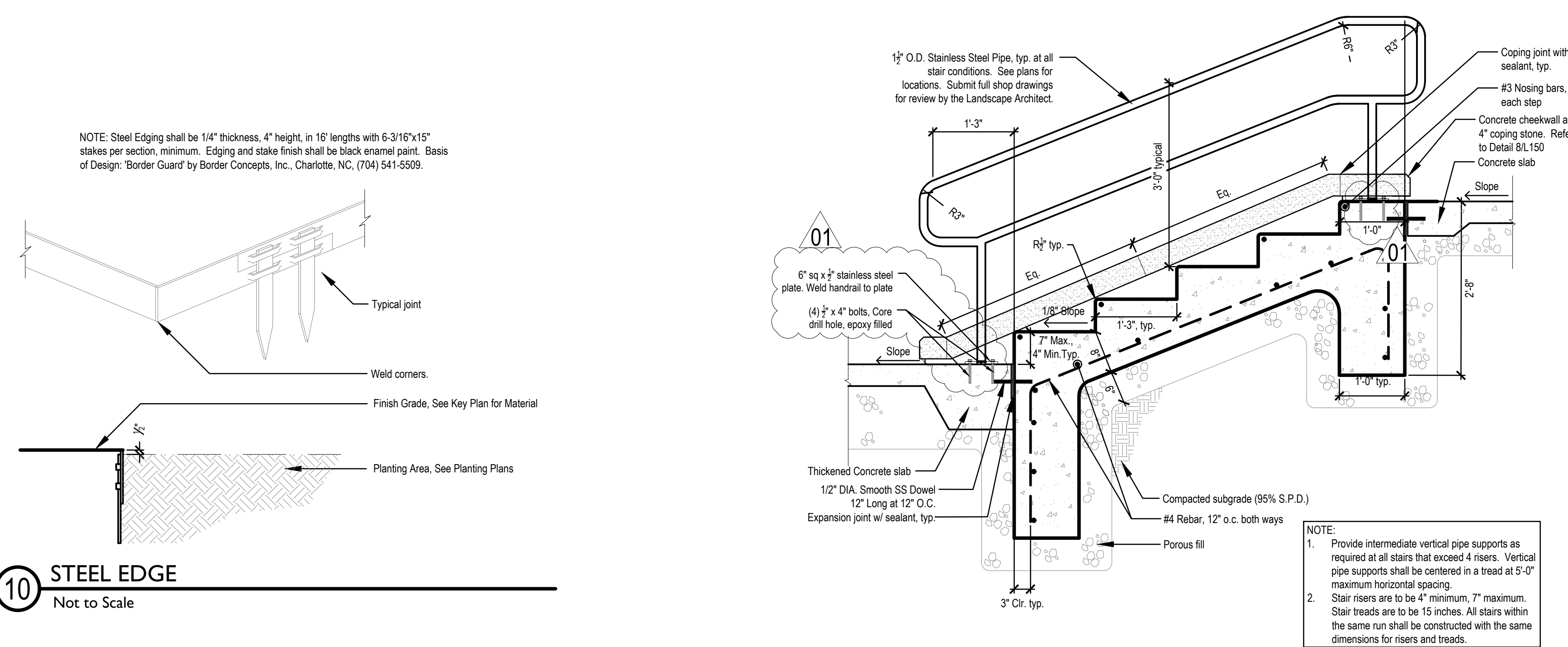
STAIRS	
KEY	DESCRIPTION / REFERENCE
SO1	STAIRS WITH CHEEKWALLS, 5 RISERS REFER TO DETAIL 7/L150

SITE MISC.	
KEY	DESCRIPTION / REFERENCE
MO1	SOIL TEMPERATURE REDUCTION REFER TO DETAIL 11/L150
MO2	CODE BLUE STATION. REFER TO SITE MEP

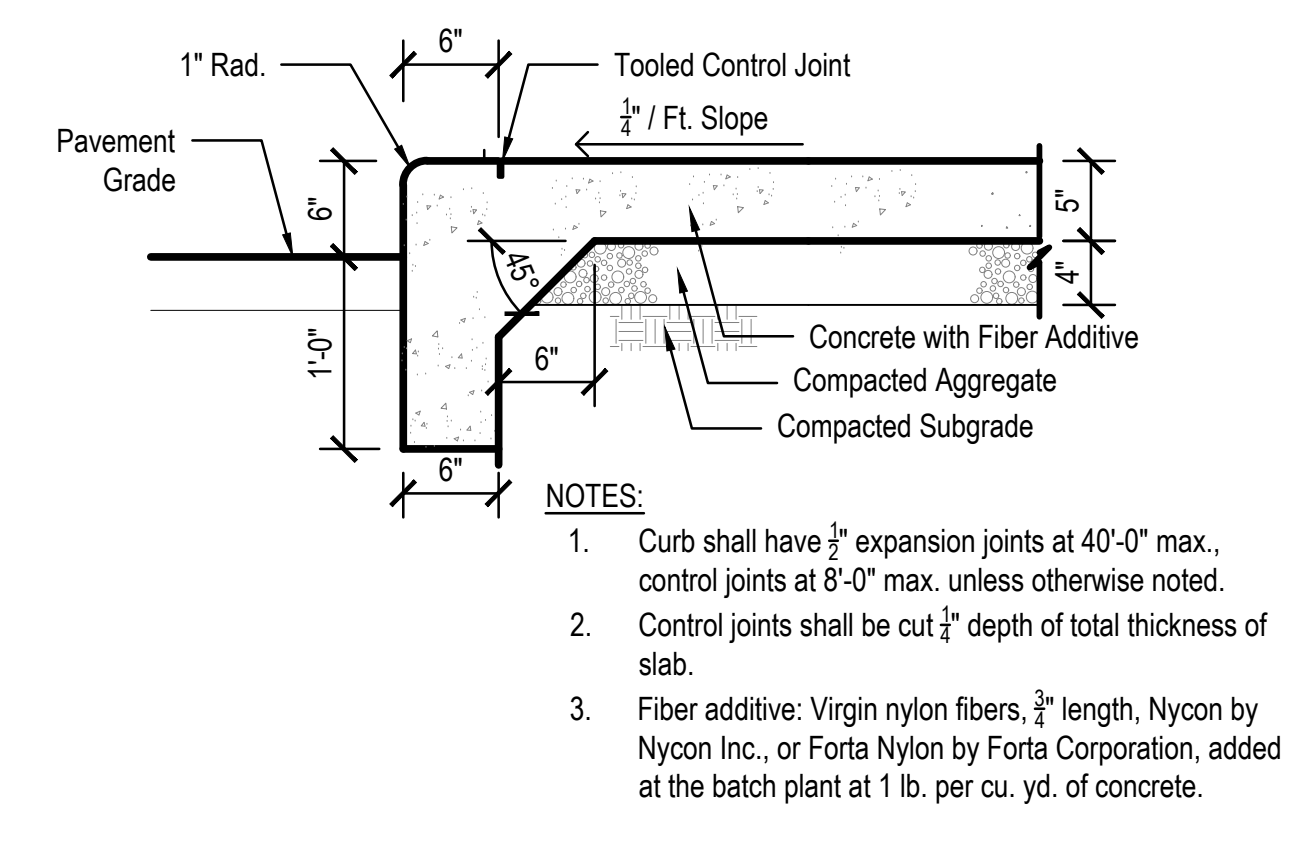


NOTE: Extents of existing pavement depicted in this area is approximated from Record Drawings from Indiana University. New pavement as shown here depicts the intent of scope of work. Verify existing conditions in the field prior to construction. Coordinate with the Landscape Architect as needed through construction.

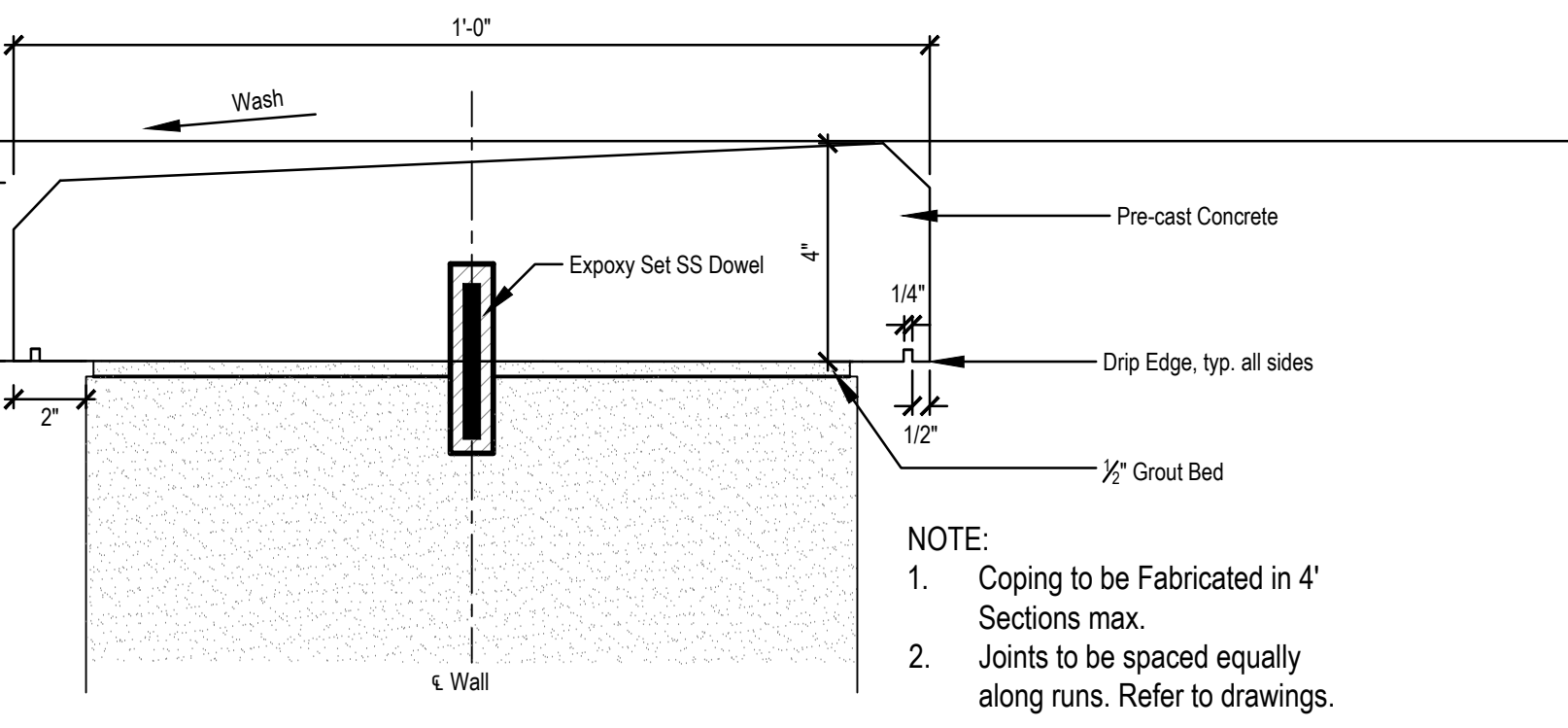




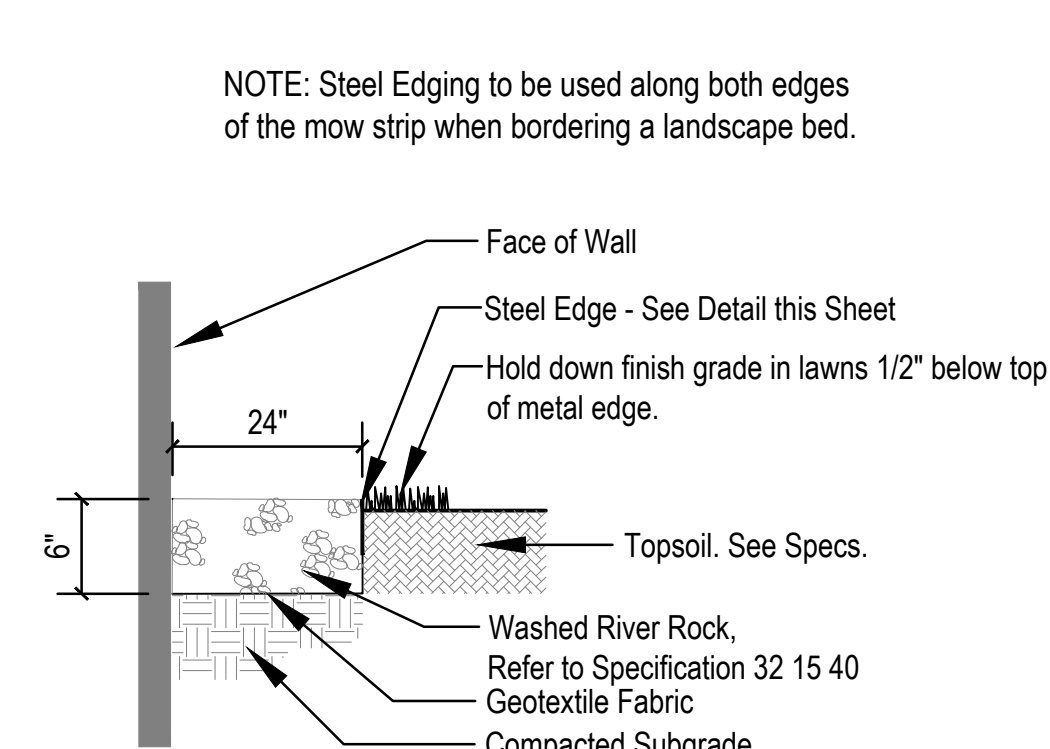
7 STAIRS WITH CHEEKWALL (5 RISERS)
Scale: 3/4" = 1'-0"



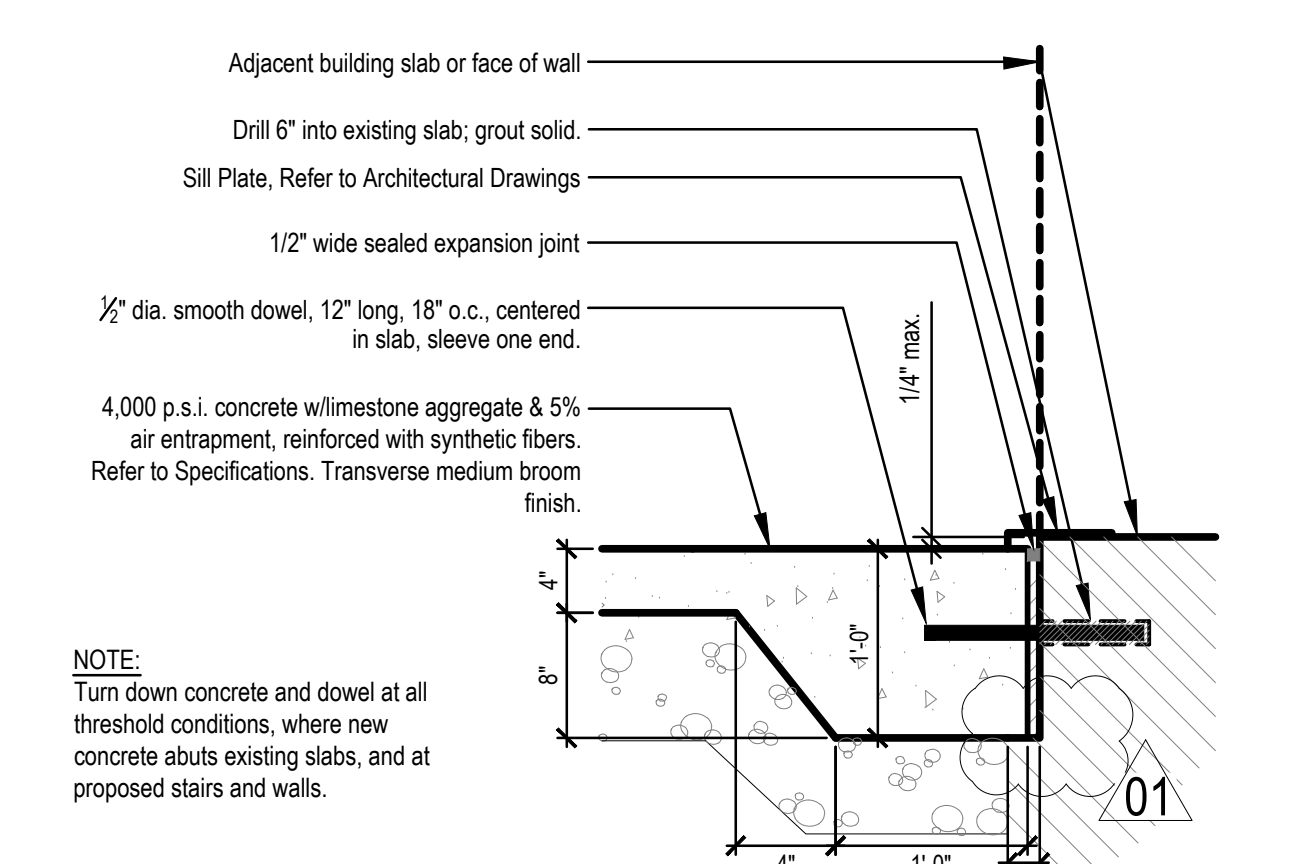
4 INTEGRAL CONCRETE CURB & WALK
Scale: 1" = 1'-0"



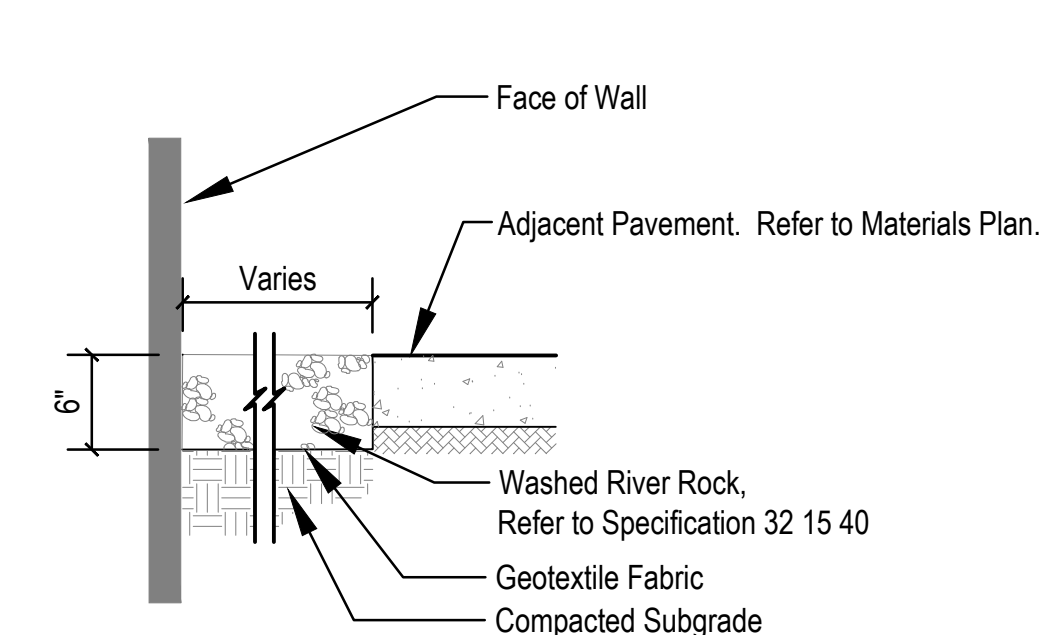
9 PRE-CAST CONCRETE COPING
Not to Scale



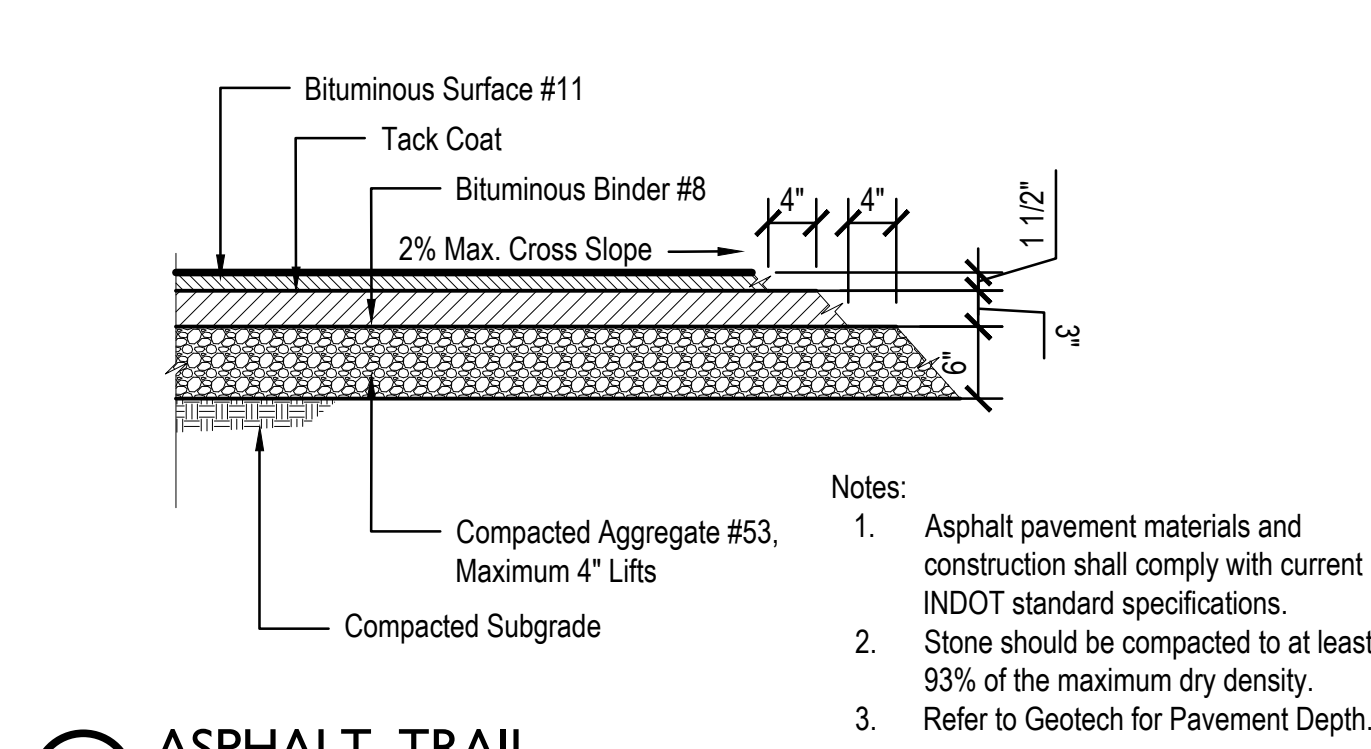
6 MOW STRIP
Not to Scale



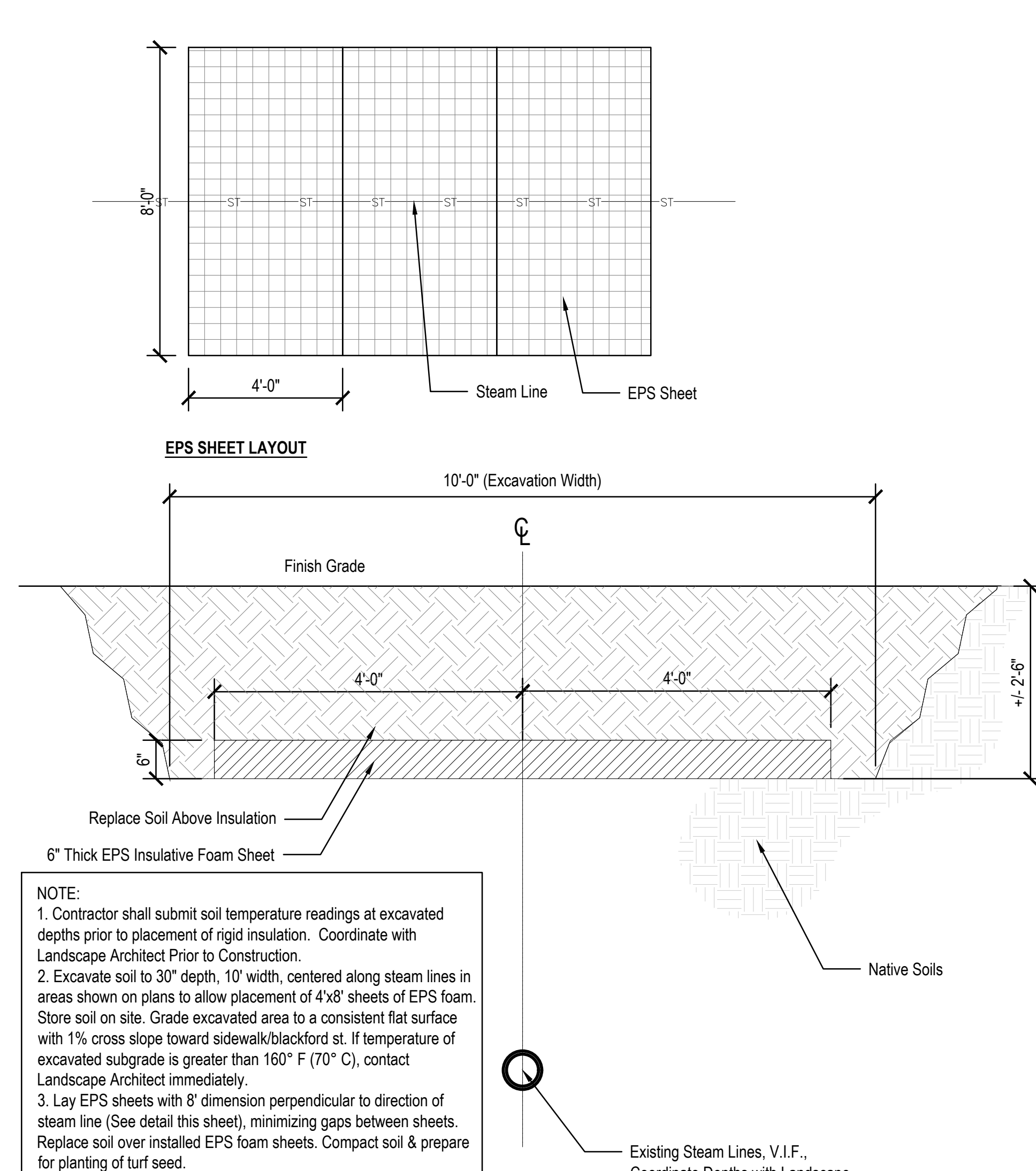
3 DOWELS IN CONCRETE @ THRESHOLD
Scale: 1" = 1'-0"



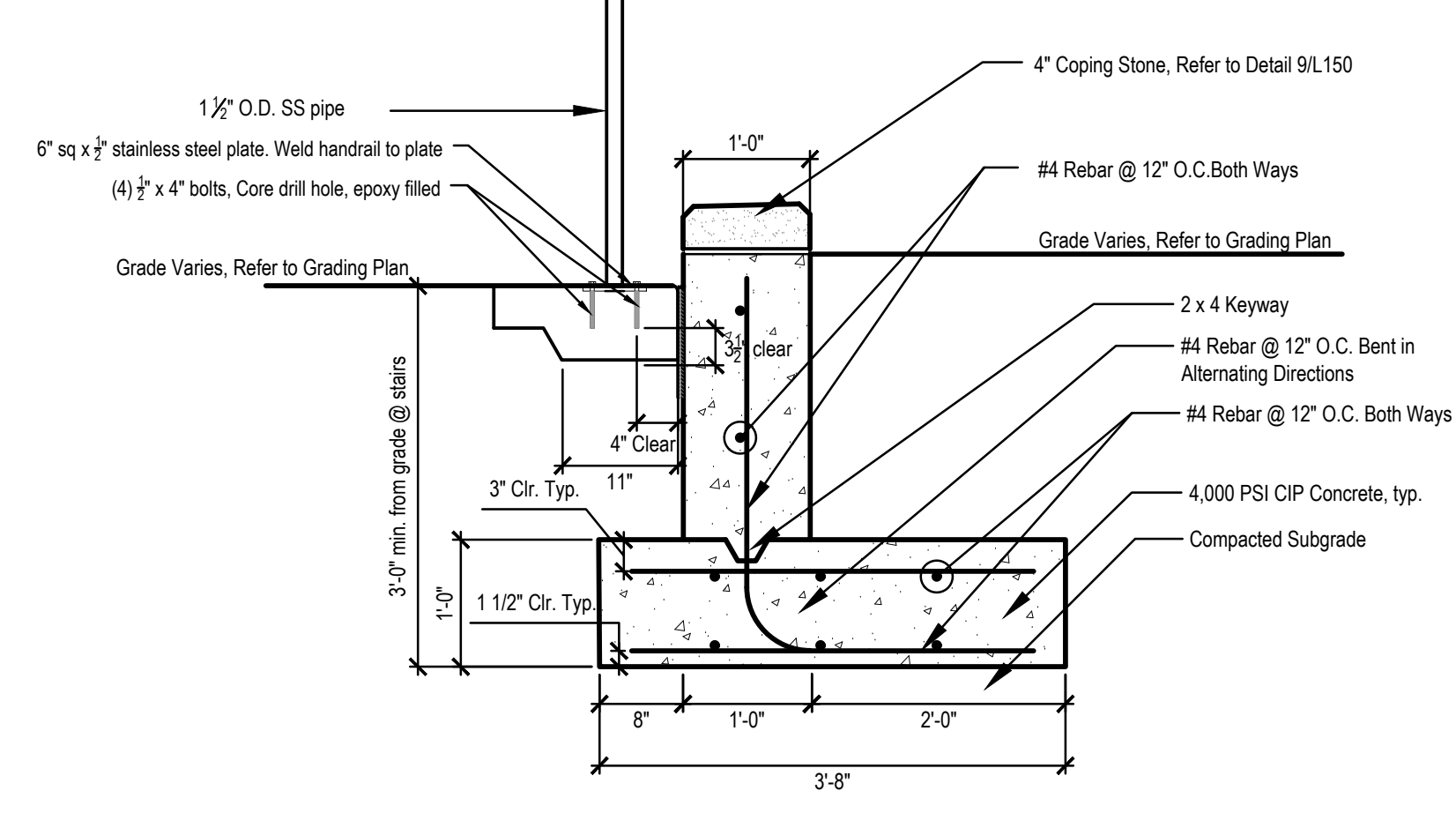
13 AGGREGATE SURFACING
Not to Scale



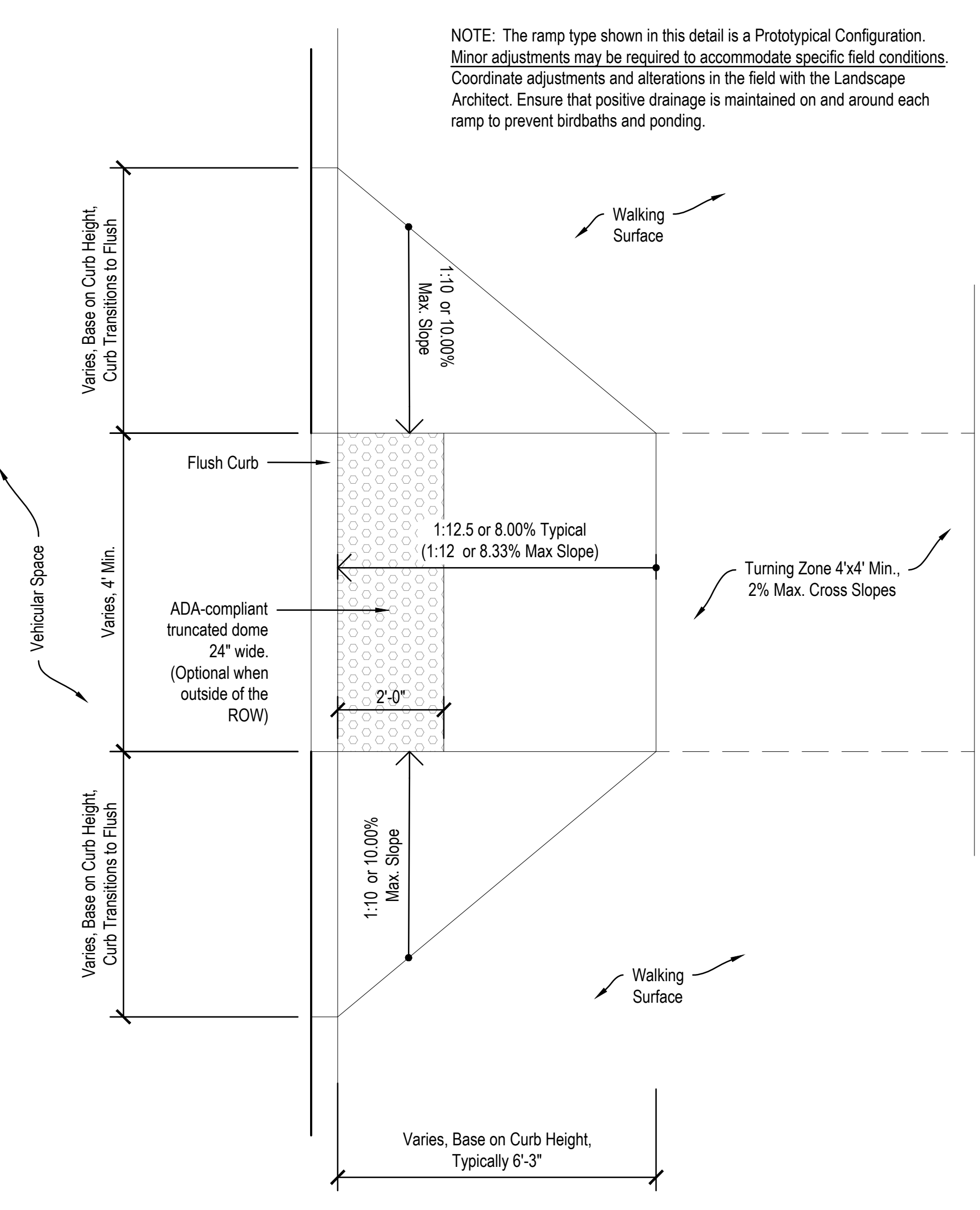
12 ASPHALT, TRAIL
Scale: 3/4" = 1'-0"



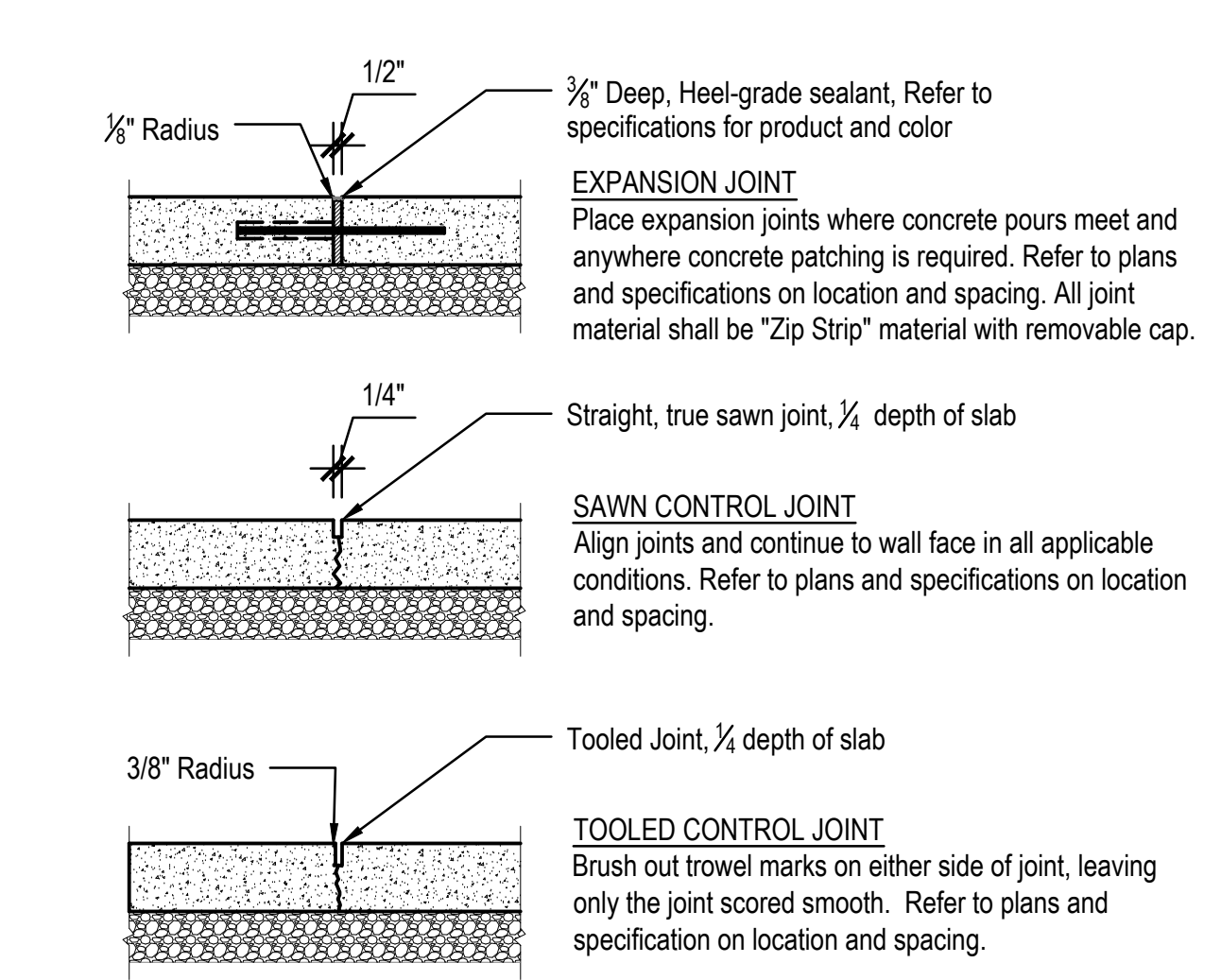
11 SOIL TEMPERATURE REDUCTION WITH EPS FOAM
Scale: 3/4" = 1'-0"



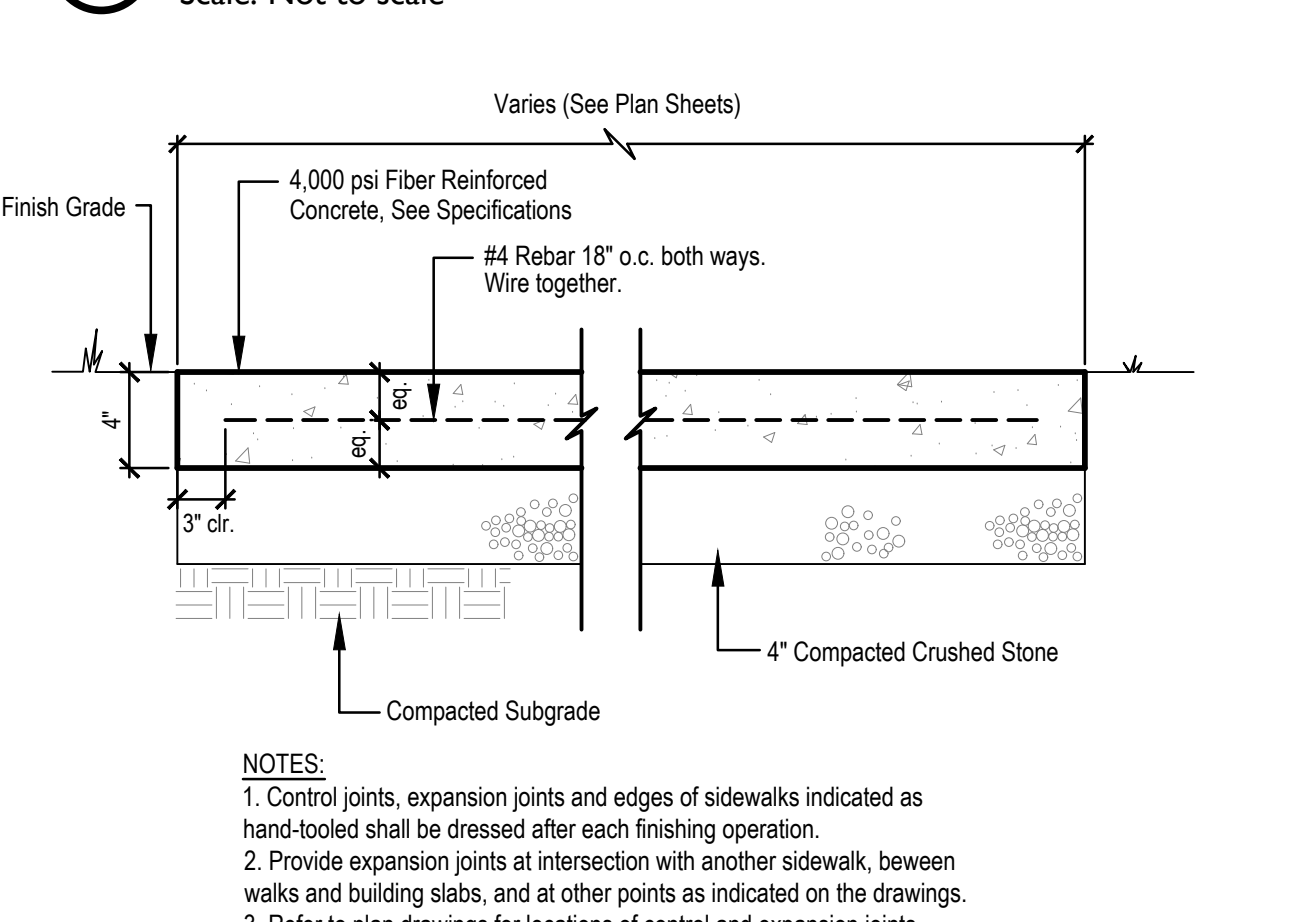
8 HANDRAIL & CHEEK WALL @ STAIRS
Scale: 3/4" = 1'-0"



5 CURB RAMP, DOUBLE FLARE
Scale: 1/2" = 1'-0"

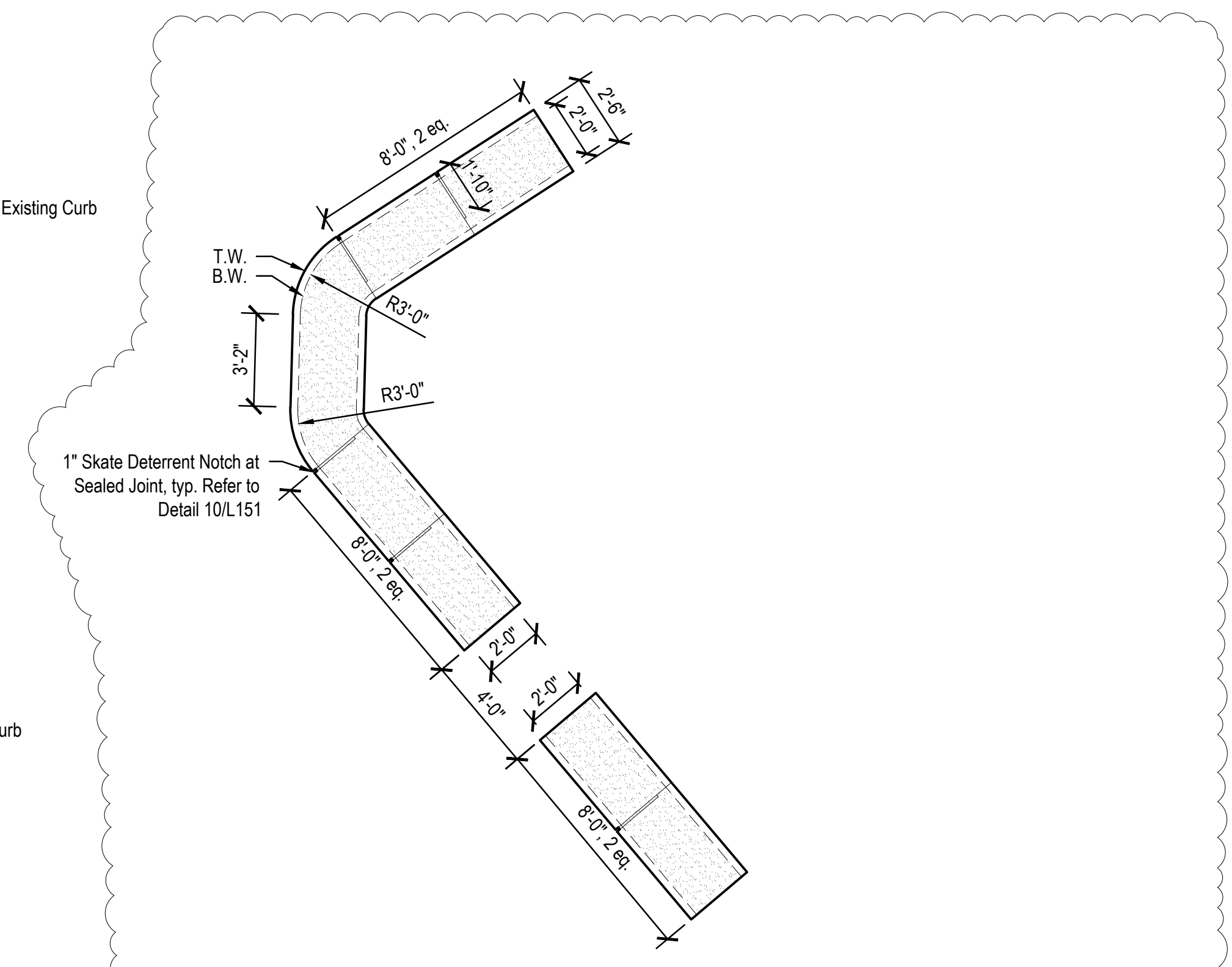


2 CONCRETE, JOINTING
Scale: Not to scale

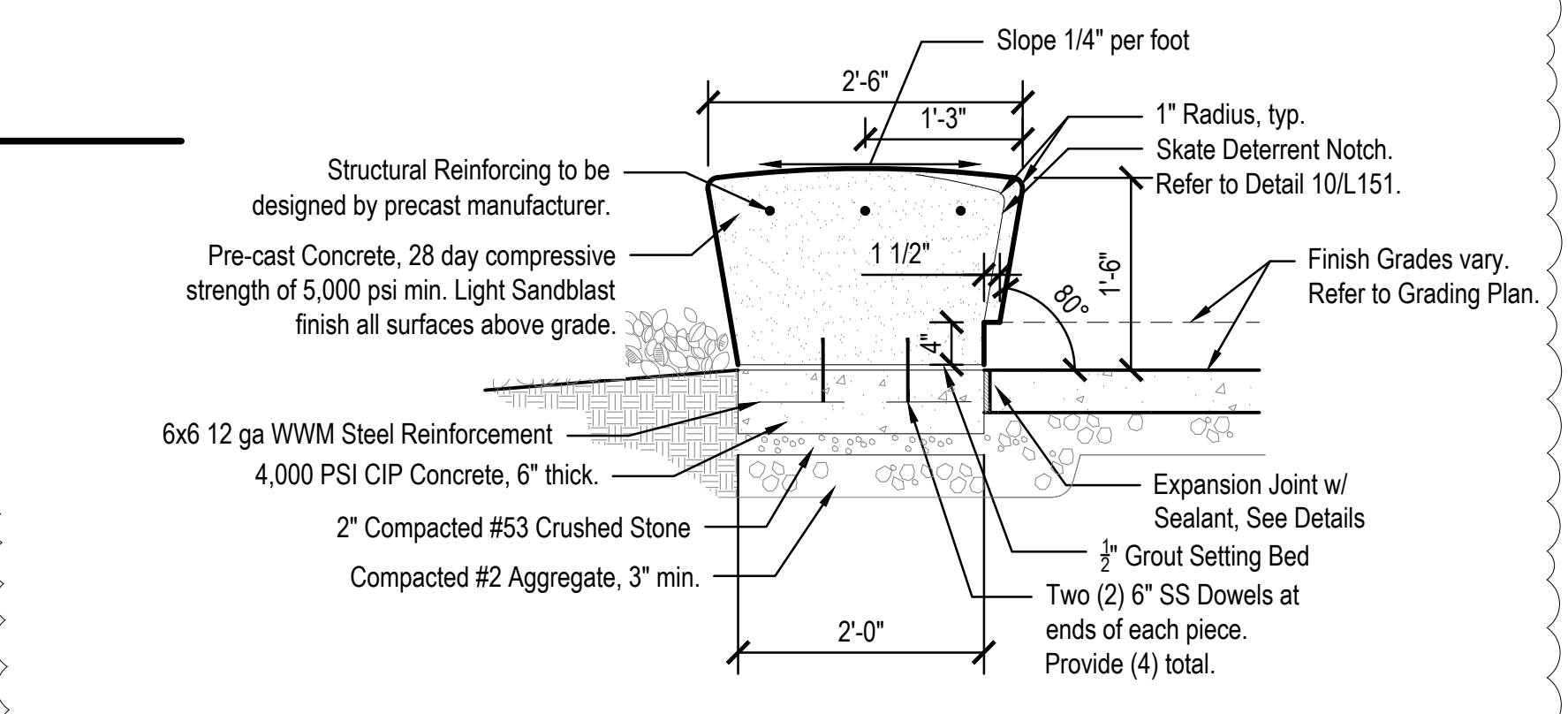


1 CONCRETE PAVEMENT
Not to scale

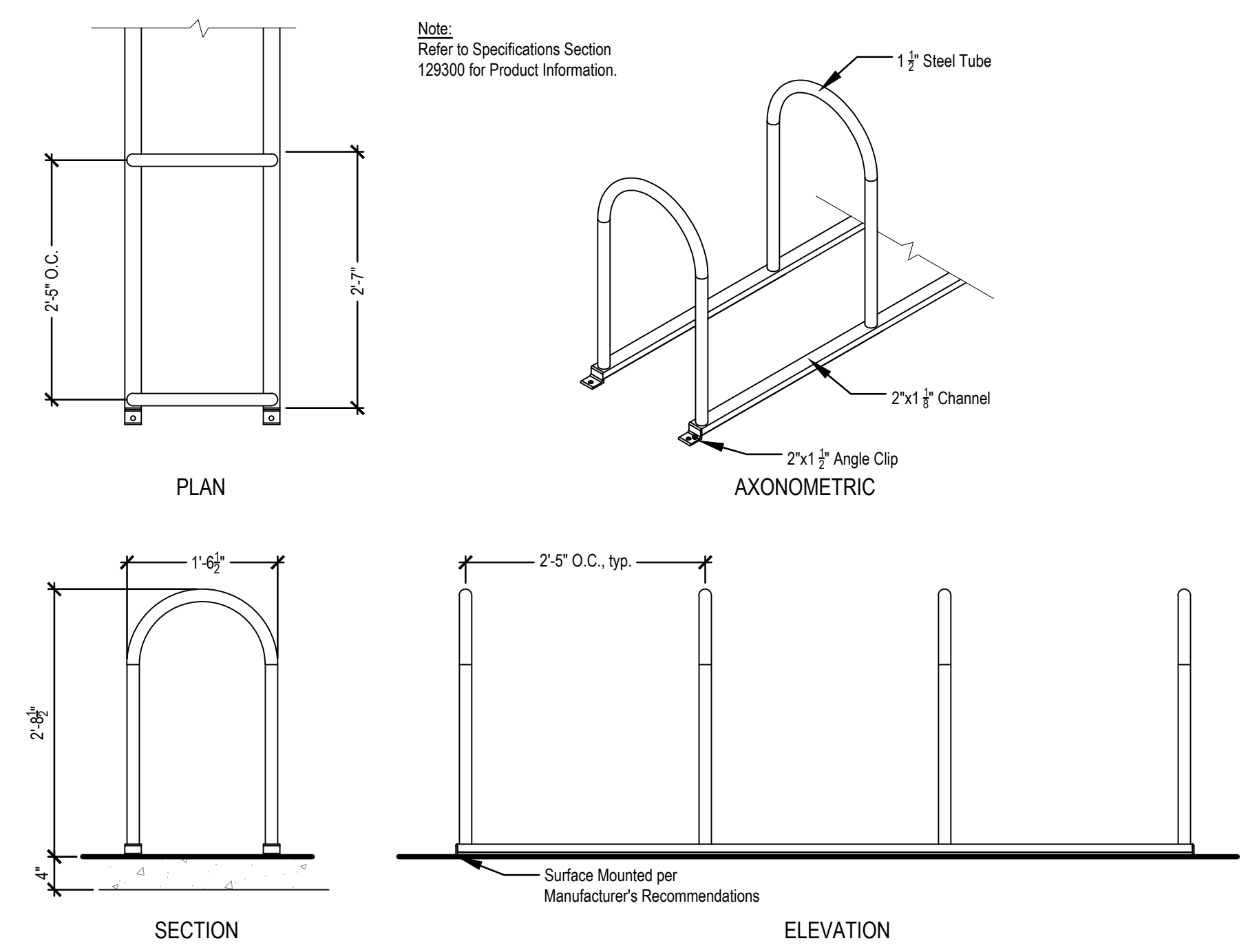
4/30/2024, 10:58:30 AM Autodesk Docs://23176 - IUPUI Lab Expansion and Renovation/ILAB-HOK-AR-Central.rvt



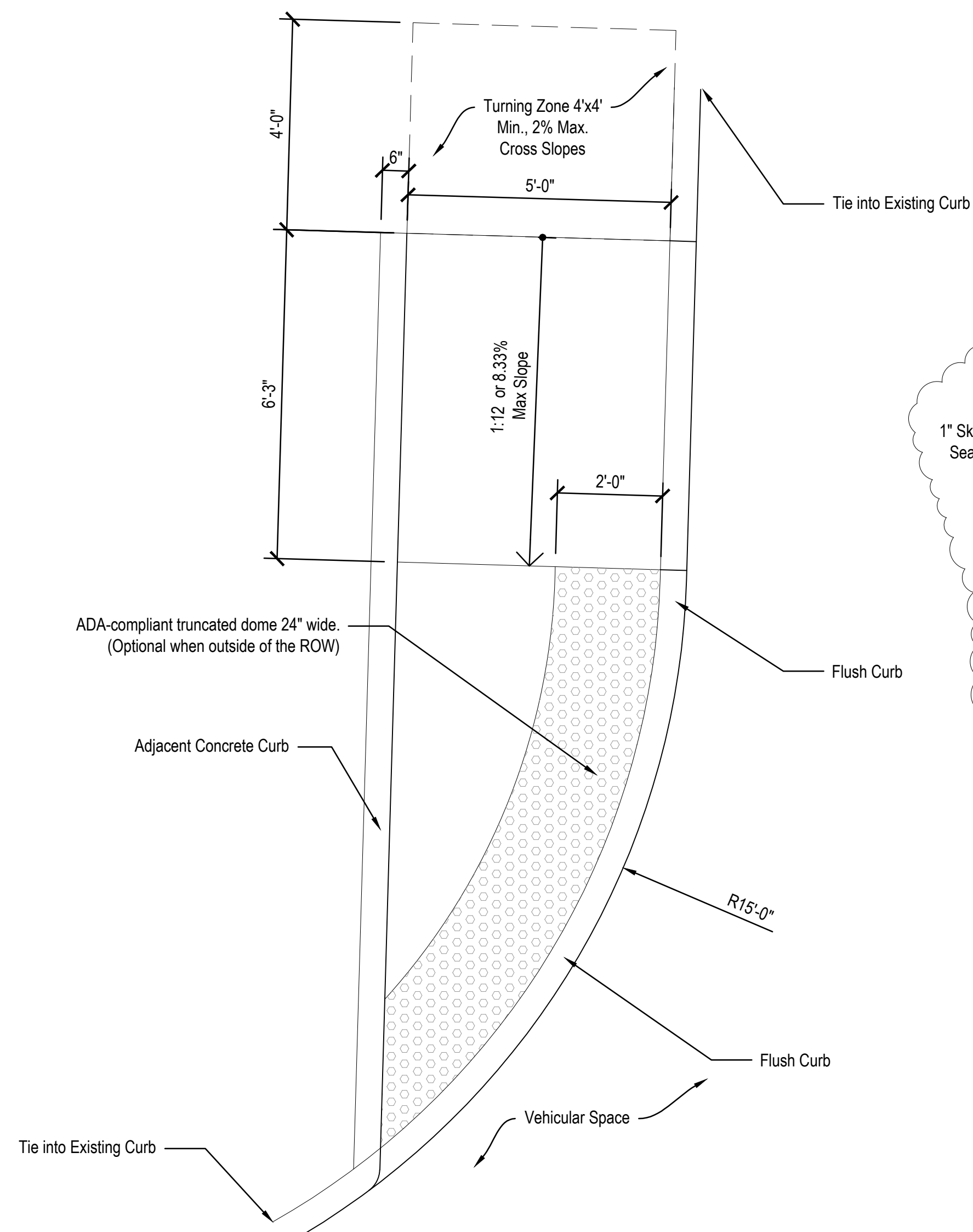
3 PRECAST SEATWALL - AREA 1 - PLAN
Scale: 1/4" = 1'-0"



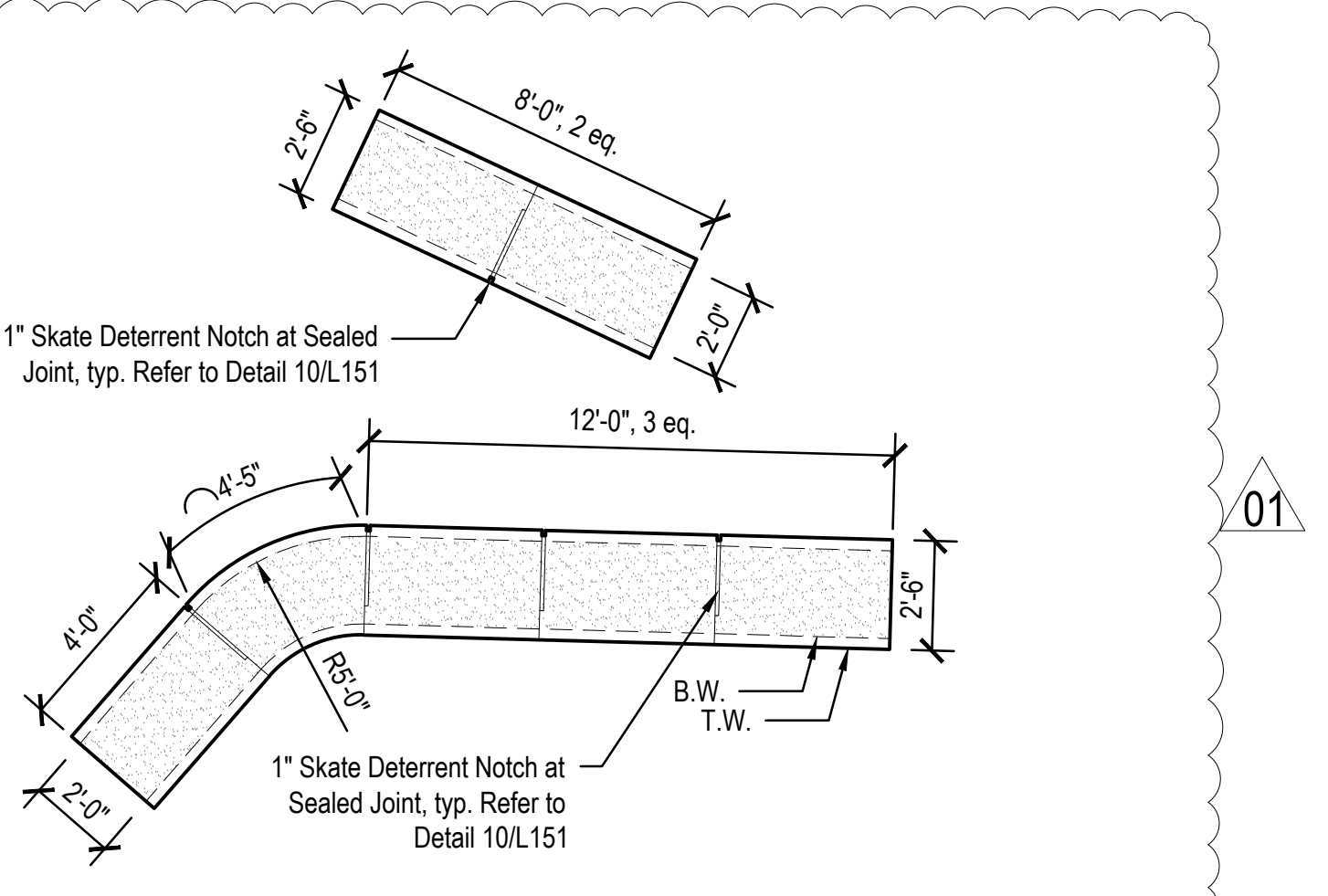
2 PRECAST SEAT WALL SECTION
Scale: 3/4" = 1'-0"



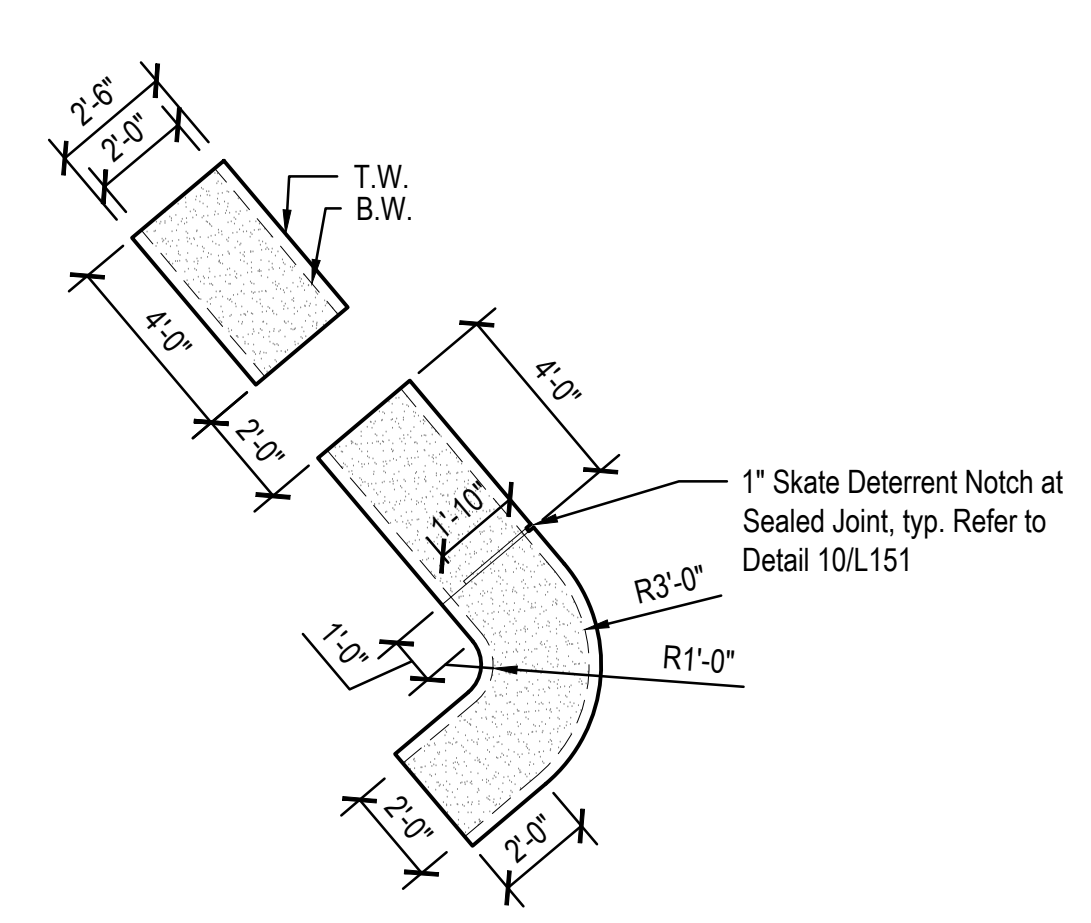
1 BIKE RACKS
Scale: 3/4" = 1'-0"



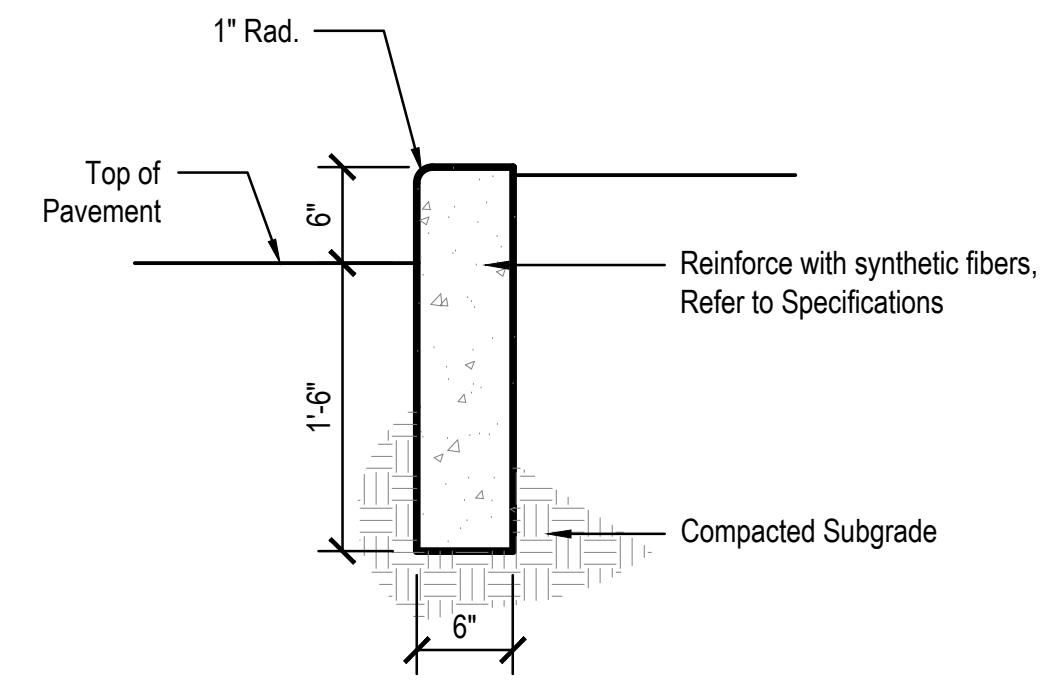
6 CURB RAMP, STRAIGHT
Scale: 1/2" = 1'-0"



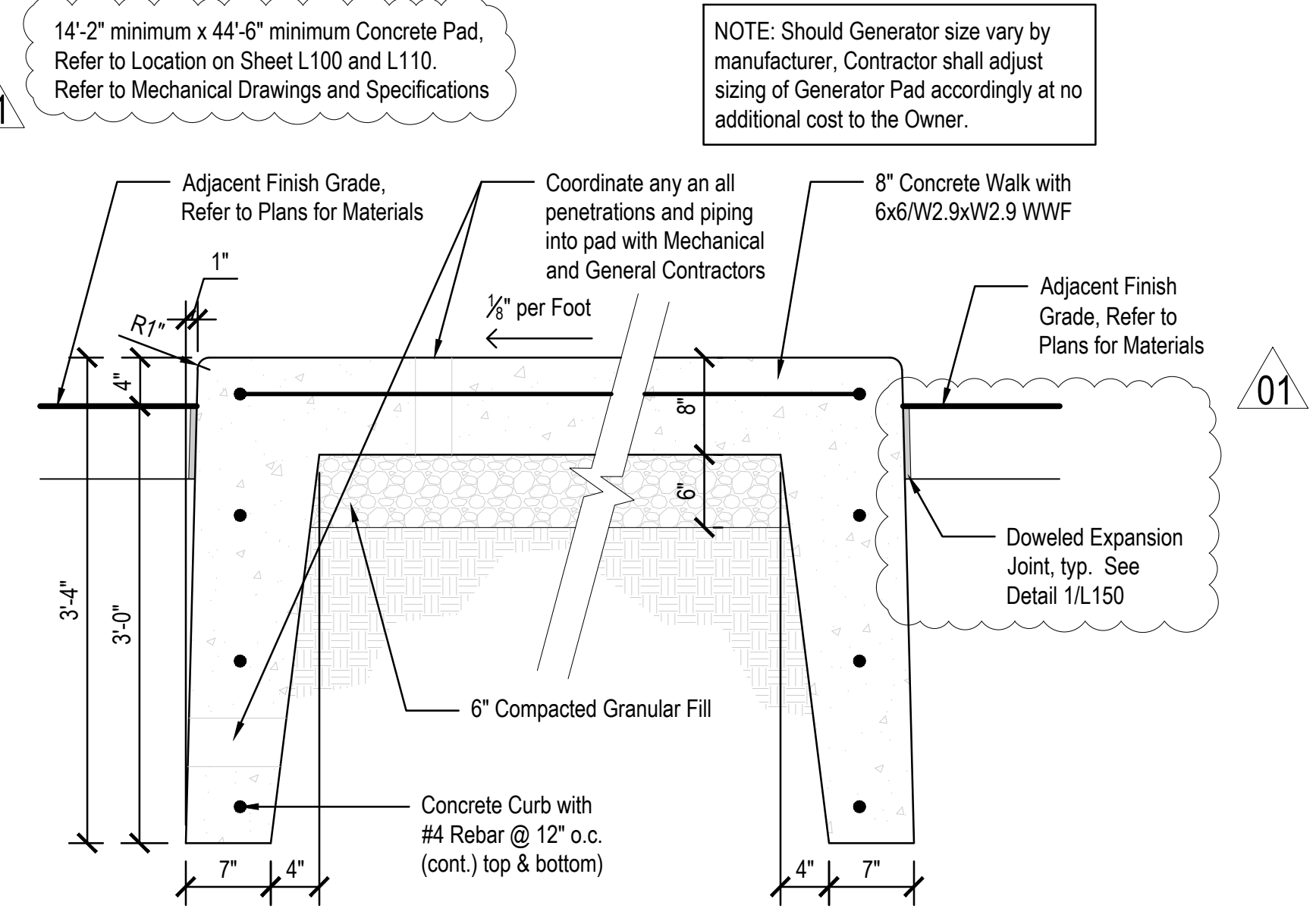
5 PRECAST SEATWALL - AREA 3 - PLAN
Scale: 1/4" = 1'-0"



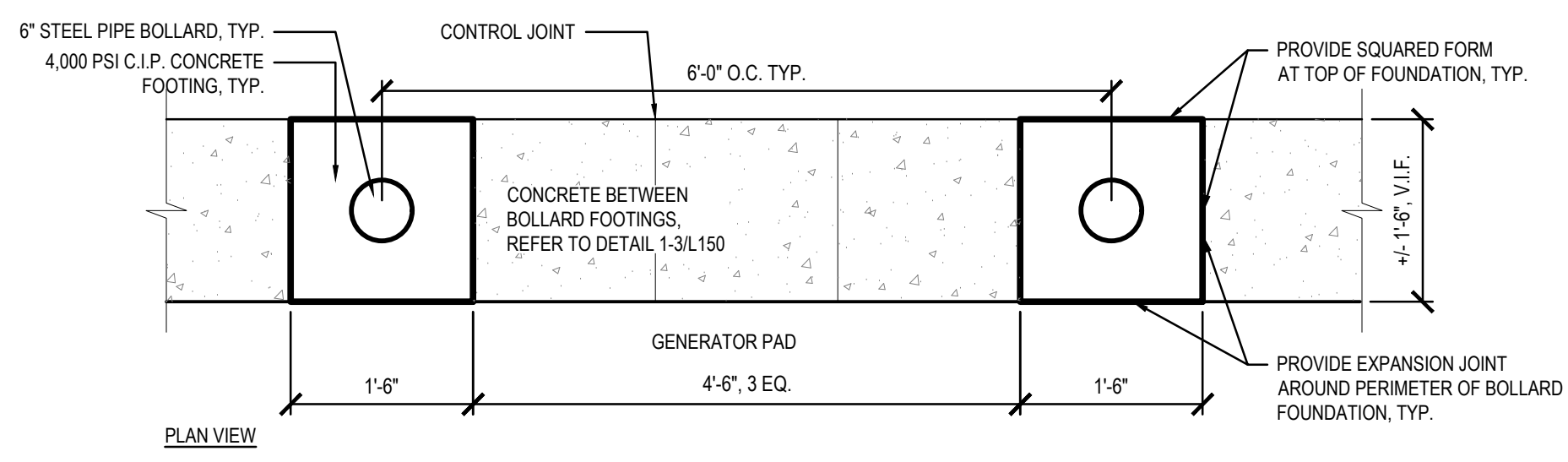
4 PRECAST SEATWALL - AREA 2 - PLAN
Scale: 1/4" = 1'-0"



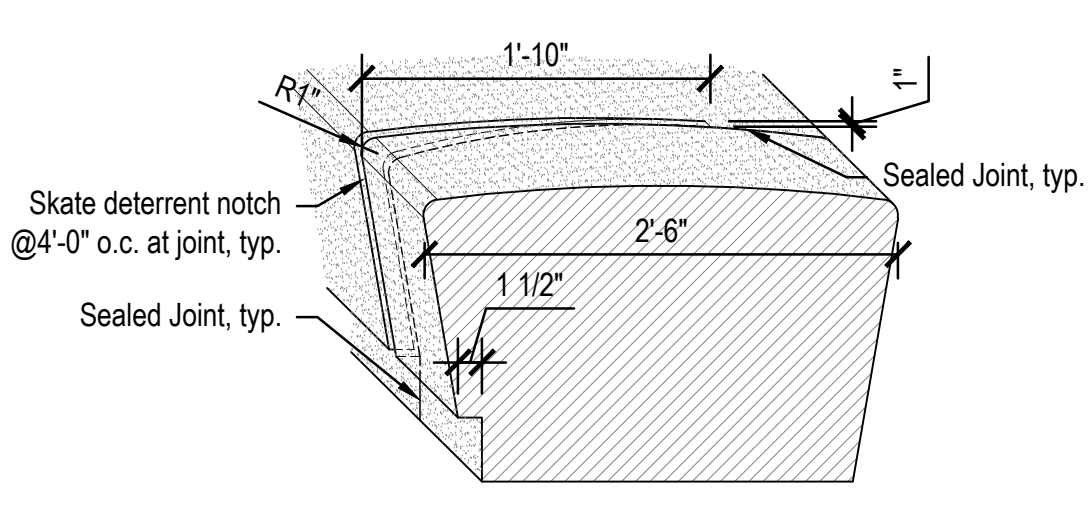
9 CONCRETE POST CURB
Scale: 1" = 1'-0"



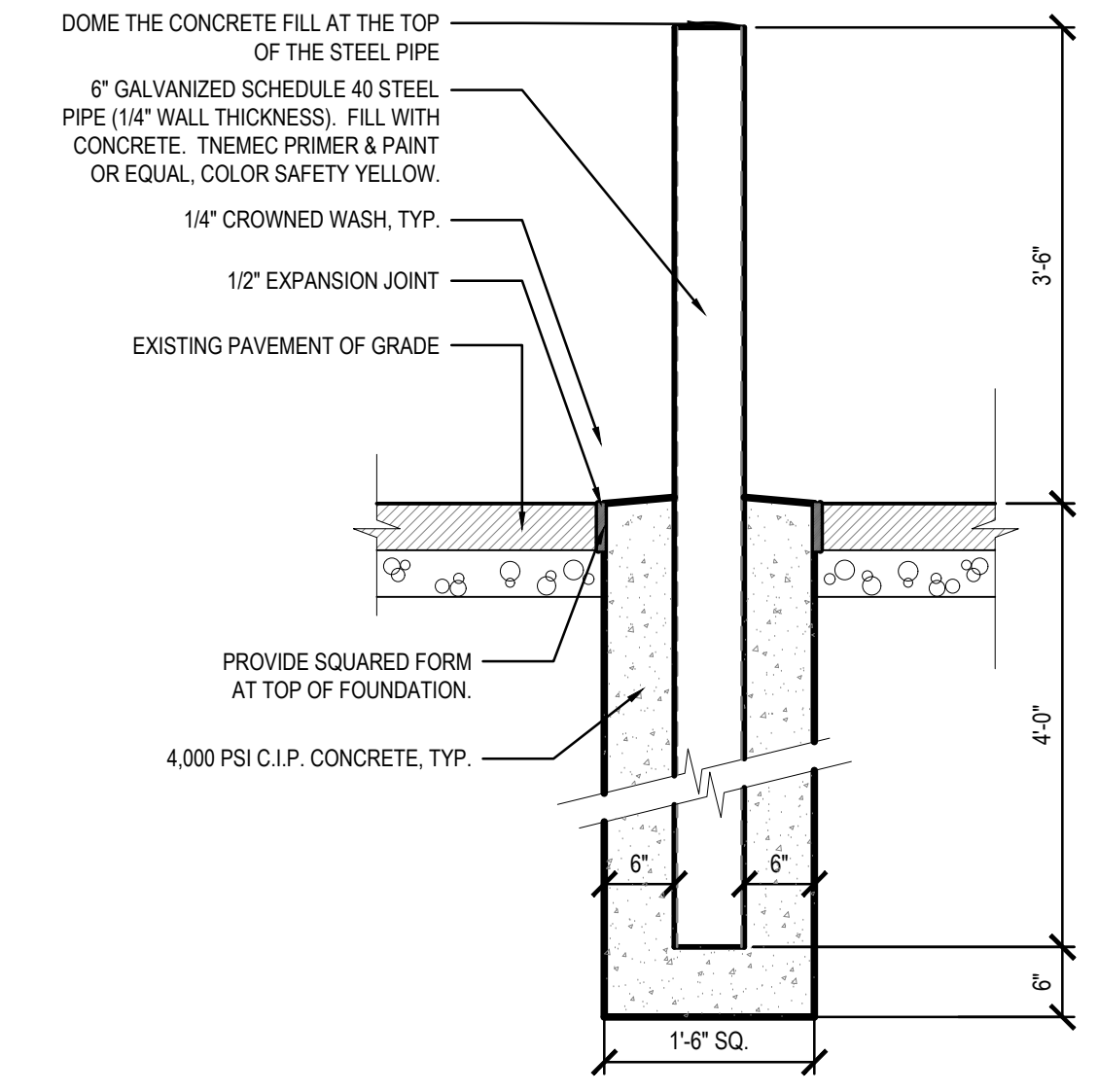
8 GENERATOR PAD
Scale: 1" = 1'-0"

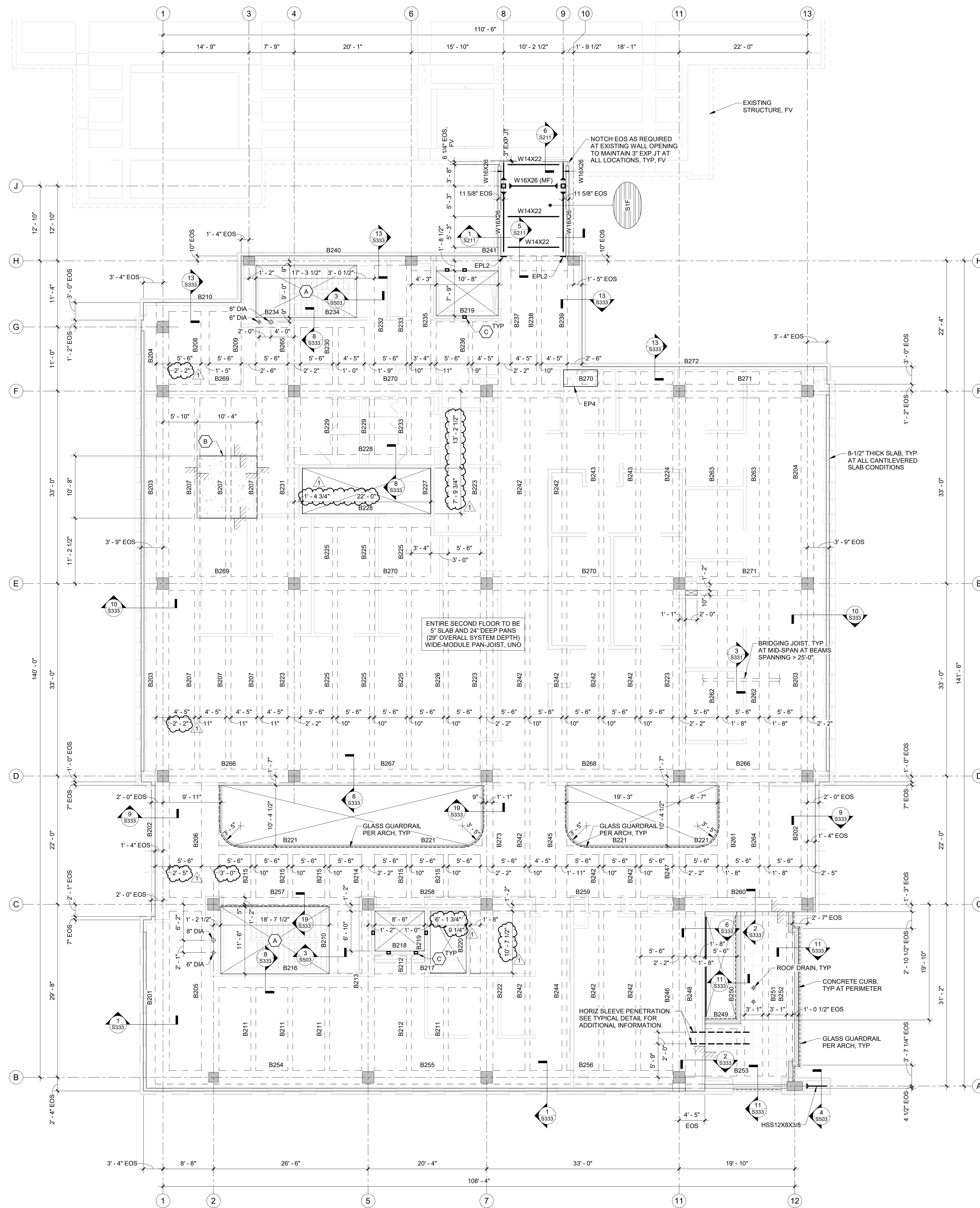


7 STEEL PIPE BOLLARD - 6"
Scale: 3/4" = 1'-0"



10 PRECAST SEATWALL - SKATE DETERRENT NOTCH
Scale: 1" = 1'-0"





1 SECOND FLOOR FRAMING PLAN

S102 1/8" = 1'-0"

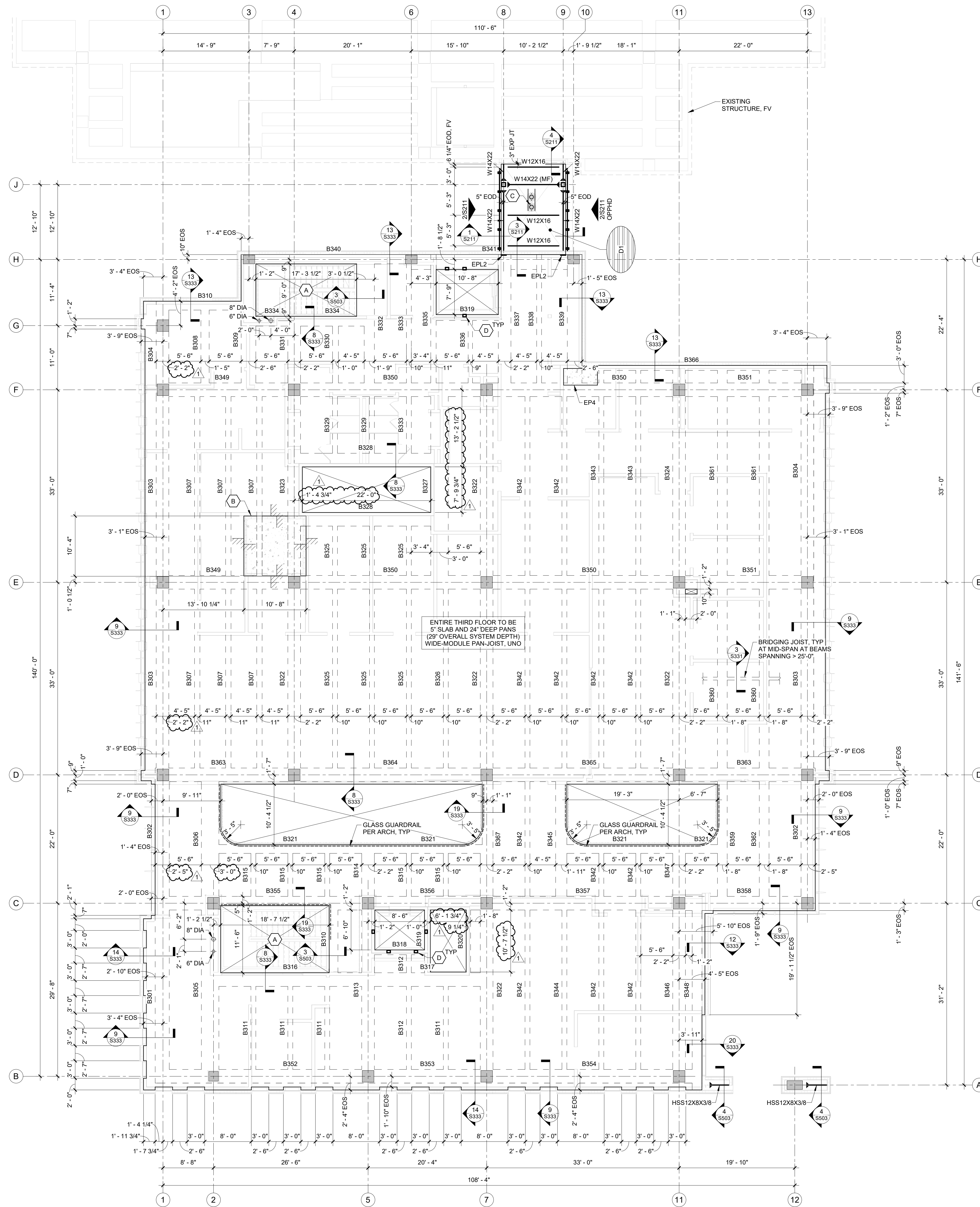
- GENERAL PLAN NOTES:**
- TOP OF SLAB (T/SLAB) ELEVATION = 115'-8" UNO.
 - TOP OF STEEL (T/STL) ELEVATION = 115'-1 1/2" UNO.
 - REFER TO STRUCTURAL GENERAL NOTES, LEGEND, SCHEDULES, TYPICAL DETAILS, AND SPECIAL INSPECTION REQUIREMENTS FOR ADDITIONAL INFORMATION.
 - SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND DIMENSIONS.
 - ALL WIDE FLANGE STEEL FLOOR FRAMING ON THIS PLAN IS COMPOSITE FRAMING WITH HEADED SHEAR STUDS, UNO. FOR WIDE FLANGE BEAMS WHERE STUD QUANTITY IS NOT LISTED, PROVIDE STUDS AT A MAXIMUM SPACING OF 1'-0" OC. WHERE "N/C" IS INDICATED AT WIDE-FLANGE BEAM, PROVIDE NON-COMPOSITE BEAM WITH NO SHEAR STUDS.
 - COORDINATE LOCATIONS OF ALL EMBEDS / OPENINGS WITH MEP, WALL SYSTEMS, ELEVATOR SUPPLIER, AND ALL OTHER AFFECTED TRADES PRIOR TO PLACING CONCRETE.
 - APPLY CONCRETE SEALER TO SURFACE OF THE ENTIRE ELEVATED CONCRETE SLAB.

- KEYED PLAN NOTES:**
- A** STEEL PAN STAIR PER SUPPLIER SUPPORTED FROM THE PRIMARY STRUCTURE. SEE PLANS AND DETAILS FOR ASSUMED LOCATION OF APPLIED STAIR LOAD. COORDINATED FINISHES WITH ARCH.
 - B** 2" SLAB RECESS. SEE "TYPICAL RECESSED SLAB DETAILS" FOR ADDITIONAL INFORMATION. COORDINATE EXACT SIZE AND LOCATION WITH ARCHITECTURAL DRAWINGS.
 - C** HSS7X5X1/2 SUPPLEMENTAL ELEVATOR GUIDE RAIL SUPPORT STEEL. SEE "TYPICAL ELEVATOR SUPPLEMENTAL GUIDE RAIL SUPPORTS" DETAIL. COORDINATE FINAL LOCATIONS WITH SELECTED ELEVATOR SUPPLIER.

⊕ INDICATES VERTICAL SLEEVE OR CORE. IF A SIZE IS DEFINED, A SLEEVE IS REQUIRED. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION. COORDINATE EXACT SIZE AND LOCATION WITH MEP DRAWINGS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING FINAL QUANTITIES, SIZES AND EXACT LOCATIONS OF PIPING, SLEEVES AND BLOCK OUTS AND COORDINATING WITH ALL TRADES. SLEEVE AND BLOCK OUT QUANTITIES, LOCATIONS, SIZES, AND DIMENSIONS SHOWN ON THIS DESIGN DOCUMENT THROUGH THE FLOOR STRUCTURE ARE PRESENTED TO ASSIST THE CONTRACTOR IN DETERMINING SLEEVE AND BLOCK OUT REQUIREMENTS. THE LOCATIONS AS SHOWN HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER. ANY CHANGES TO THESE LOCATIONS, SIZES, AND/OR QUANTITIES SHOWN SHALL BE REVIEWED AND APPROVED WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION.





THIRD FLOOR FRAMING PLAN
1/8" = 1'-0"

- GENERAL PLAN NOTES:**
- TOP OF SLAB (T/SLAB) ELEVATION = 131'-4" UNO.
 - TOP OF STEEL (T/STL) ELEVATION = 130'-7 1/2" UNO.
 - REFER TO STRUCTURAL GENERAL NOTES, LEGEND, SCHEDULES, TYPICAL DETAILS, AND SPECIAL INSPECTION REQUIREMENTS FOR ADDITIONAL INFORMATION.
 - SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND DIMENSIONS.
 - COORDINATE LOCATIONS OF ALL EMBEDS / OPENINGS WITH MEP, WALL SYSTEMS, ELEVATOR SUPPLIER, AND ALL OTHER AFFECTED TRADES PRIOR TO PLACING CONCRETE.
 - APPLY CONCRETE SEALER TO SURFACE OF THE ENTIRE ELEVATED CONCRETE SLAB.

- KEYED PLAN NOTES:**
- (A) STEEL PAN STAIR PER SUPPLIER SUPPORTED FROM THE PRIMARY STRUCTURE. SEE PLANS AND DETAILS FOR ASSUMED LOCATION OF APPLIED STAIR LOAD. COORDINATED FINISHES WITH ARCH.
 - (B) 2" SLAB RECESS. SEE "TYPICAL RECESSED SLAB DETAILS" FOR ADDITIONAL INFORMATION. COORDINATE EXACT SIZE AND LOCATION WITH ARCHITECTURAL DRAWINGS.
 - (C) ROOF DRAIN AND OVERFLOW DRAIN PER TYPICAL DETAIL. COORDINATE EXACT SIZE AND LOCATION WITH ARCHITECTURAL AND PLUMBING DRAWINGS.
 - (D) HSS7X5X1/2 SUPPLEMENTAL ELEVATOR GUIDE RAIL SUPPORT STEEL. SEE "TYPICAL ELEVATOR SUPPLEMENTAL GUIDE RAIL SUPPORTS" DETAIL. COORDINATE FINAL LOCATIONS WITH SELECTED ELEVATOR SUPPLIER.
- ⊕ INDICATES VERTICAL SLEEVE OR CORE. IF A SIZE IS DEFINED, A SLEEVE IS REQUIRED. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION. COORDINATE EXACT SIZE AND LOCATION WITH MEP DRAWINGS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING FINAL QUANTITIES, SIZES AND EXACT LOCATIONS OF PIPING, SLEEVES AND BLOCK OUTS AND COORDINATING WITH ALL TRADES. SLEEVE AND BLOCK OUT QUANTITIES, LOCATIONS, SIZES, AND DIMENSIONS SHOWN ON THIS DESIGN DOCUMENT THROUGH THE FLOOR STRUCTURE ARE PRESENTED TO ASSIST THE CONTRACTOR IN DETERMINING SLEEVE AND BLOCK OUT REQUIREMENTS. THE LOCATIONS AS SHOWN HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER. ANY CHANGES TO THESE LOCATIONS, SIZES, AND/OR QUANTITIES SHOWN SHALL BE REVIEWED AND APPROVED WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION.



Bradley G. Curtis

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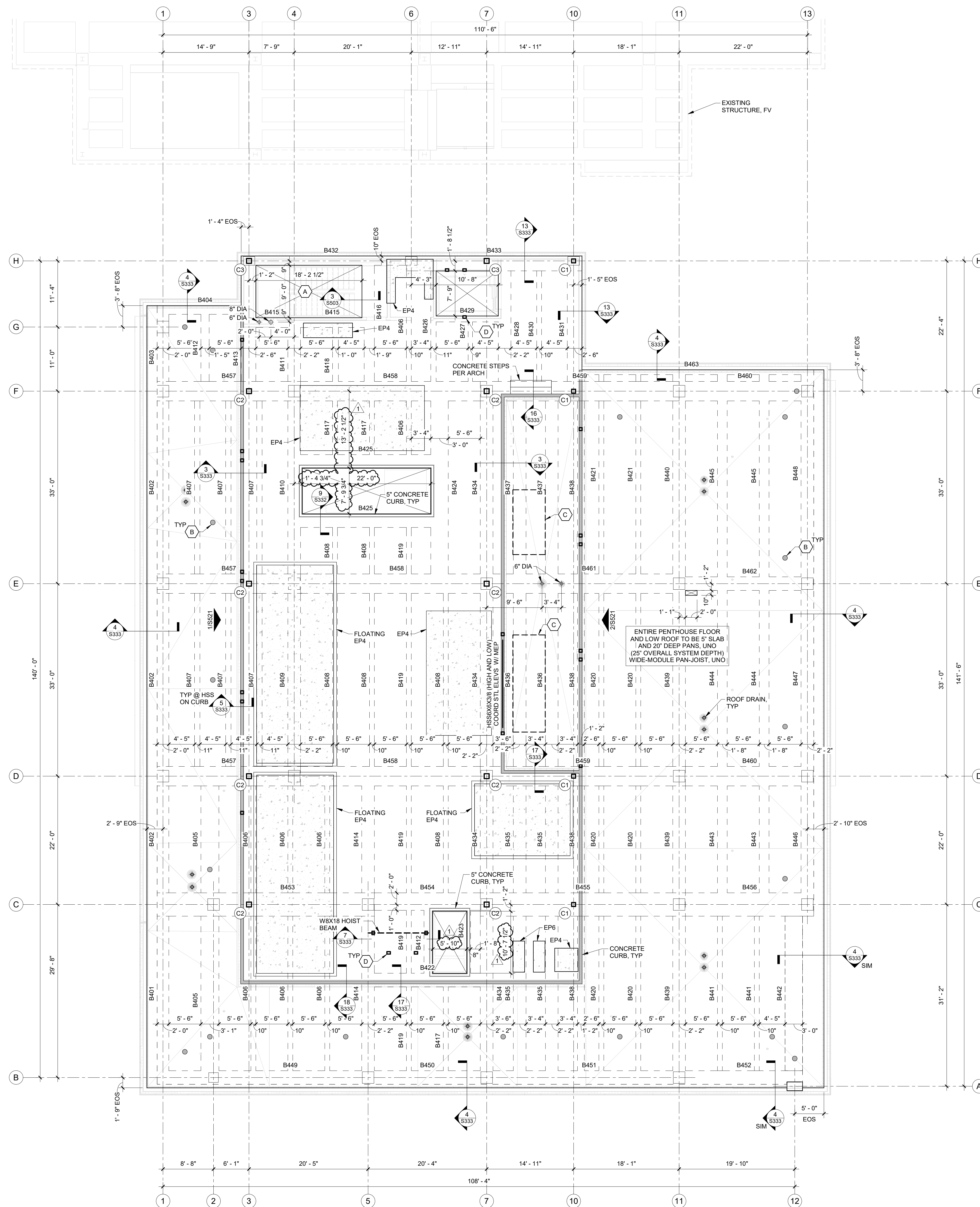
BID SET

REVISIONS:
1 11.08.2024 ADDENDUM 1

DATE:
10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276

DRAWING TITLE:
PENTHOUSE FLOOR AND LOW ROOF FRAMING PLAN

DRAWING NUMBER:
S104



1 S104 PENTHOUSE FLOOR AND LOW ROOF FRAMING PLAN

1/8" = 1'-0"

- GENERAL PLAN NOTES:**
- TOP OF SLAB (T/SLAB) ELEVATION = 148'-2" UNO.
 - REFER TO STRUCTURAL GENERAL NOTES, LEGEND, SCHEDULES, TYPICAL DETAILS, AND SPECIAL INSPECTION REQUIREMENTS FOR ADDITIONAL INFORMATION.
 - SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND DIMENSIONS.
 - COORDINATE LOCATIONS OF ALL EMBEDS / OPENINGS WITH MEP, WALL SYSTEMS, ELEVATOR SUPPLIER, AND ALL OTHER AFFECTED TRADES PRIOR TO PLACING CONCRETE.
 - APPLY CONCRETE SEALER TO SURFACE OF THE ENTIRE ELEVATED CONCRETE SLAB.

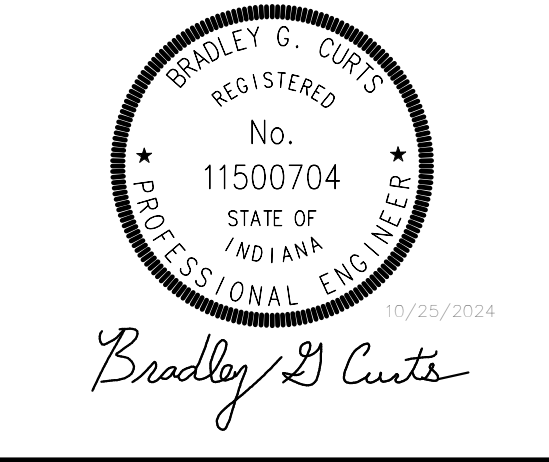
- KEYED PLAN NOTES:**
- (A) STEEL PAN STAIR PER SUPPLIER SUPPORTED FROM THE PRIMARY STRUCTURE. SEE PLANS AND DETAILS FOR ASSUMED LOCATION OF APPLIED STAIR LOAD. COORDINATED FINISHES WITH ARCH.
 - (B) ROOF ANCHOR PER TYPICAL DETAIL. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL DRAWINGS AND SUPPLIER.
 - (C) PREFABRICATED CURBS FOR RTU SUPPORT PER SUPPLIER. UNO. COORDINATE EXACT SIZE AND LOCATION WITH MECHANICAL CONTRACTOR. SEE "TYPICAL RTU SUPPORT DETAIL" FOR ADDITIONAL INFORMATION.
 - (D) HSS7X5X1/2 SUPPLEMENTAL ELEVATOR GUIDE RAIL SUPPORT STEEL. SEE "TYPICAL ELEVATOR SUPPLEMENTAL GUIDE RAIL SUPPORT" DETAIL. COORDINATE FINAL LOCATIONS WITH SELECTED ELEVATOR SUPPLIER.
- ⊕ INDICATES VERTICAL SLEEVE OR CORE. IF A SIZE IS DEFINED, A SLEEVE IS REQUIRED. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION. COORDINATE EXACT SIZE AND LOCATION WITH MEP DRAWINGS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING FINAL QUANTITIES, SIZES AND EXACT LOCATIONS OF PIPING, SLEEVES AND BLOCK OUTS AND COORDINATING WITH ALL TRADES. SLEEVE AND BLOCK OUT QUANTITIES, LOCATIONS, SIZES, AND DIMENSIONS SHOWN ON THIS DESIGN DOCUMENT THROUGH THE FLOOR STRUCTURE ARE PRESENTED TO ASSIST THE CONTRACTOR IN DETERMINING SLEEVE AND BLOCK OUT REQUIREMENTS. THE LOCATIONS AS SHOWN HAVE BEEN REVIEWED BY THE STRUCTURAL ENGINEER. ANY CHANGES TO THESE LOCATIONS, SIZES, AND/OR QUANTITIES SHOWN SHALL BE REVIEWED AND APPROVED WITH THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

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BID SET
REVISIONS:
1 11.08.2024 ADDENDUM 1

DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276

DRAWING TITLE:
CONCRETE BEAM SCHEDULE

DRAWING NUMBER:
S321

BEAM MARK	BEAM TYPE	SIZE WIDTH x DEPTH (IN)	LONGITUDINAL REINFORCEMENT						STIRRUPS				REMARKS
			CONT		ADDITIONAL		LOC	SIZE	TYPE	SPACING			
			T1	T2	B1	B2					B3		
B201	MULTI-SPAN	29X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B202	MULTI-SPAN	29X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B203	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B204	CANTILEVER	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B205	MULTI-SPAN	36X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B206	MULTI-SPAN	36X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B207	MULTI-SPAN	11X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B208	SINGLE SPAN	17X29	TOP	T1	-	T2	EA END	#4	A2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B209	SINGLE SPAN	30X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B210	SINGLE SPAN	18X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B211	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B212	MULTI-SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B213	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B214	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B215	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B216	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B217	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		

NOTES:
1. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL CONFIRM SPACING OF BEAM TOP AND BOTTOM BARS AND ALLOW FOR 1" CLEAR OR BAR DIAMETER (WHICHEVER IS GREATER) AT A MINIMUM. AT CONTRACTOR'S OPTION, BARS MAY BE ALIGNED TO STACK VERTICALLY AT LAP SPLICES.
3. SEE TYPICAL CONCRETE EDGE BEAM DETAIL FOR ADDITIONAL REINFORCEMENT WHERE EDGE CONDITION OCCURS. PROVIDE CLOSED STIRRUPS WHERE EDGE CONDITION OCCURS. MATCH EQUIVALENT NUMBER OF SCHEDULED LEGS, B2 MINIMUM.

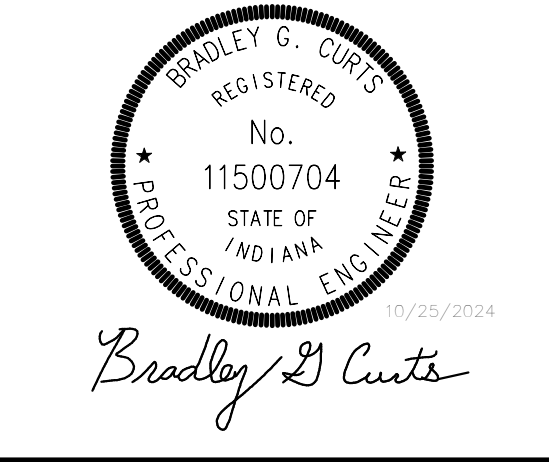
BEAM MARK	BEAM TYPE	SIZE WIDTH x DEPTH (IN)	LONGITUDINAL REINFORCEMENT						STIRRUPS				REMARKS
			CONT		ADDITIONAL		LOC	SIZE	TYPE	SPACING			
			T1	T2	B1	B2					B3		
B218	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #5 ADDED HORIZONTAL BAR EA FACE		
B219	SINGLE SPAN	12X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #5 ADDED HORIZONTAL BAR EA FACE		
B220	SINGLE SPAN	9-1/4X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B221	MULTI-SPAN	18X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B222	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B223	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B224	CANTILEVER	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B225	MULTI-SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B226	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B227	SINGLE SPAN	36X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B228	SINGLE SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B229	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B230	SINGLE SPAN	12X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B231	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B232	SINGLE SPAN	21X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	WIDEN BEAM PER PLAN AT STAIR, DETAIL LEDGE SIM. 9/13/31 (1) #5 ADDED HORIZONTAL BAR EA FACE		
B233	MULTI-SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B234	MULTI-SPAN	20X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		

BEAM MARK	BEAM TYPE	SIZE WIDTH x DEPTH (IN)	LONGITUDINAL REINFORCEMENT						STIRRUPS				REMARKS
			CONT		ADDITIONAL		LOC	SIZE	TYPE	SPACING			
			T1	T2	B1	B2					B3		
B235	SINGLE SPAN	11X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B236	SINGLE SPAN	9X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B237	SINGLE SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B238	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B239	SINGLE SPAN	30X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #5 ADDED HORIZONTAL BAR EA FACE		
B240	MULTI-SPAN	19X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B241	MULTI-SPAN	30.5X25	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B242	MULTI-SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B243	CANTILEVER	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B244	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B245	SINGLE SPAN	23X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B246	MULTI-SPAN	26X39	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B247	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B248	SINGLE SPAN	20X39	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(2) #5 ADDED HORIZONTAL BARS EA FACE		
B249	SINGLE SPAN	18X21	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B250	SINGLE SPAN	16X21	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE		
B251	SINGLE SPAN	12X21	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3", (12) @ 9"	(1) #4 ADDED HORIZONTAL BAR EA FACE		

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BID SET
 REVISIONS:
 1 11.08.2024 ADDENDUM 1

DATE:
10.25.2024
 arcDESIGN PROJECT NUMBER:
23176
 CLIENT PROJECT NUMBER:
20230276

DRAWING TITLE:
CONCRETE BEAM SCHEDULE

DRAWING NUMBER:
S322

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT				STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)	CONT		ADDITIONAL		LOC	SIZE	TYPE		SPACING
				T1	T2	B1	B2					
B252	SINGLE SPAN	12X21	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #10	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(2) #10	-	-	-						
B253	SINGLE SPAN	25X21	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(5) #8	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B254	CANTILEVER	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(5) #8	(1) #8	-	(1) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B255	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(5) #8	(1) #8	-	(1) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B256	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(5) #8	(1) #8	-	(1) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	(2) #8	-						
B257	CANTILEVER	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE NARROW SECTION TO 19" WIDTH AT STAIR OPENING	
			(3) #10	(3) #10	-	(2) #10	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	(1) #8						
B258	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #10	(2) #10	-	(2) #10	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(5) #8	-	-	-						
B259	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #10	(2) #10	-	(2) #10	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(5) #8	-	(1) #8	-						
B260	MULTI-SPAN	28X39	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(2) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #10	(2) #10	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(5) #8	-	-	-						
B261	MULTI-SPAN	20X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 9"		
			(3) #8	-	-	-						
B262	MULTI-SPAN	20X29	TOP	T1	-	T2	EA END	#4	A2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	-	-	-	EA END	#4	A2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A2	BAL @ 12"		
			(3) #8	-	-	-						
B263	CANTILEVER	20X29	TOP	T1	-	T2	EA END	#4	A2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	-	-	-	EA END	#4	A2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A2	BAL @ 12"		
			(3) #8	-	-	-						
B264	MULTI-SPAN	20X29	TOP	T1	-	T2	EA END	#4	A2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	-	-	-	EA END	#4	A2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A2	BAL @ 12"		
			(3) #8	-	-	-						
B265	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(6) #8	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 12"		
			(4) #8	-	-	-						
B266	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	(2) #9	-	(2) #9	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B267	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	(2) #9	-	(3) #9	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	(2) #8	-						
B268	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #9	(3) #9	-	(2) #9	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	(2) #8	-						

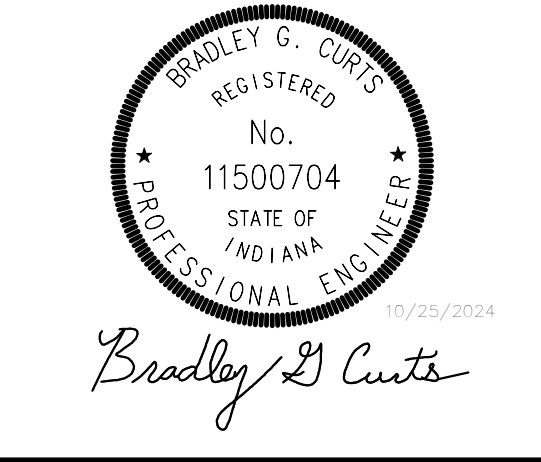
NOTES:
 1. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
 2. CONTRACTOR SHALL CONFIRM SPACING OF BEAM TOP AND BOTTOM BARS AND ALLOW FOR 1" CLEAR OR BAR DIAMETER (WHICHEVER IS GREATER) AT A MINIMUM. AT CONTRACTOR'S OPTION, BARS MAY BE ALIGNED TO STACK VERTICALLY AT LAP SPLICES.
 3. SEE TYPICAL CONCRETE EDGE BEAM DETAIL FOR ADDITIONAL REINFORCEMENT WHERE EDGE CONDITION OCCURS. PROVIDE CLOSED STIRRUPS WHERE EDGE CONDITION OCCURS. MATCH EQUIVALENT NUMBER OF SCHEDULED LEGS, B2 MINIMUM.

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT				STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)	CONT		ADDITIONAL		LOC	SIZE	TYPE		SPACING
				T1	T2	B1	B2					
B269	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #10	(1) #10	-	(3) #10	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 9"		
			(4) #9	-	-	-						
B270	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B4	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #10	(3) #10	-	(3) #10	EA END	#4	B4	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 9"		
			(4) #9	-	(2) #9	-						
B271	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #10	(3) #10	-	(1) #10	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 9"		
			(4) #9	-	-	-						
B272	SINGLE SPAN	10X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #5 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(2) #5	-	-	-						
B273	MULTI-SPAN	26X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE NARROW SECTION TO 22" WIDTH AT OPENING	
			(3) #8	(3) #8	-	(3) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT				STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)	CONT		ADDITIONAL		LOC	SIZE	TYPE		SPACING
				T1	T2	B1	B2					
B301	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 8"		
			(4) #8	-	-	-						
B302	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	-	-	(2) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 8"		
			(4) #8	-	-	-						
B303	MULTI-SPAN	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	(2) #8	-	(2) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 8"		
			(4) #8	-	-	-						
B304	CANTILEVER	28X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	(2) #8	-	(2) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 8"		
			(4) #8	-	-	-						
B305	MULTI-SPAN	36X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(6) #7	(2) #7	-	(2) #7	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 5"		
			(7) #8	-	-	-						
B306	MULTI-SPAN	36X29	TOP	T1	-	T2	EA END	#4	B2	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(6) #7	(2) #7	-	(2) #7	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 5"		
			(7) #8	-	-	-						
B307	MULTI-SPAN	11X29	TOP	T1	-	T2	EA END	#4	A1	(3) @ 3"	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #8	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3						



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 RENOVATION
 ADDRESSES VARY

BID SET

REVISIONS:
1 11.08.2024 ADDENDUM 1

DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276

DRAWING TITLE:
CONCRETE
BEAM
SCHEDULE

DRAWING NUMBER:
S323

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT				STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)	CONT		ADDITIONAL		LOC	SIZE	TYPE		SPACING
				T1	T2	B1	B2					
B318	SINGLE SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #5 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(2) #6	-	-	-						
B319	SINGLE SPAN	12X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #5 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(2) #7	-	-	-						
B320	SINGLE SPAN	8-11X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(2) #5	-	-	-						
B321	MULTI-SPAN	18X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #7	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 9"		
			(3) #8	-	-	-						
B322	MULTI-SPAN	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	(3) #8	-	(3) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B323	MULTI-SPAN	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	(3) #8	-	(3) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B324	CANTILEVER	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #8	(3) #8	-	(3) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 12"		
			(4) #8	-	-	-						
B325	MULTI-SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #10	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #10	-	-	-						
B326	SINGLE SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(3) #9	-	-	-						
B327	SINGLE SPAN	36X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(6) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 5"		
			(6) #9	-	-	-						
B328	SINGLE SPAN	28X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #6	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #8	-	-	-						
B329	SINGLE SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #5	-	-	-						
B330	SINGLE SPAN	12X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #5	-	-	-						
B331	MULTI-SPAN	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(6) #8	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 12"		
			(4) #8	-	-	-						
B332	SINGLE SPAN	21X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	WIDEN BEAM PER PLAN AT STAIR DETAIL LEDGE SIM. 5/1/23	
			(3) #6	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 9"	(1) #6 ADDED HORIZONTAL BAR EA FACE	
			(5) #8	-	-	-						
B333	MULTI-SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #7	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #7	-	-	-						
B334	MULTI-SPAN	20X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(2) #8	-	-	-						

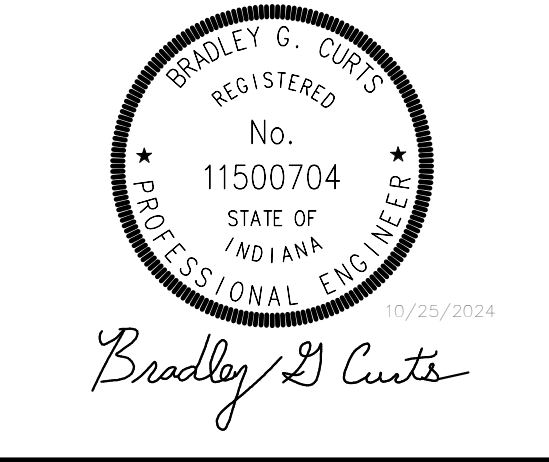
NOTES:
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 3. SEE TYPICAL CONCRETE EDGE BEAM DETAIL FOR ADDITIONAL REINFORCEMENT WHERE EDGE CONDITION OCCURS. PROVIDE CLOSED STIRRUPS WHERE EDGE CONDITION OCCURS. MATCH EQUIVALENT NUMBER OF SCHEDULED LEGS, B2 MINIMUM.

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT				STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)	CONT		ADDITIONAL		LOC	SIZE	TYPE		SPACING
				T1	T2	B1	B2					
B335	SINGLE SPAN	11X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 8"		
			(2) #6	-	-	-						
B336	SINGLE SPAN	9X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #5	-	-	-						
B337	SINGLE SPAN	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #6	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #7	-	-	-						
B338	SINGLE SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #7	-	-	-						
B339	SINGLE SPAN	30X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #5 ADDED HORIZONTAL BAR EA FACE	
			(4) #7	(2) #7	-	(2) #7	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(4) #6	-	-	-						
B340	MULTI-SPAN	19X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #8	-	-	(2) #8	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 9"		
			(4) #8	-	-	-						
B341	MULTI-SPAN	30.5X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(6) #5	(2) #8	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(6) #5	-	-	-						
B342	MULTI-SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #10	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #9	-	-	-						
B343	CANTILEVER	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #10	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #9	-	-	-						
B344	SINGLE SPAN	10X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(2) #5	-	-	-	EA END	#4	A1	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	A1	BAL @ 12"		
			(2) #10	-	-	-						
B345	SINGLE SPAN	23X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(3) #7	-	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"		
			(3) #8	-	-	-						
B346	MULTI-SPAN	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #7	(2) #7	-	(2) #7	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 12"		
			(4) #7	-	-	-						
B347	MULTI-SPAN	26X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE	
			(4) #7	(2) #7	-	-	EA END	#4	B2	(3) @ 3"		
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 12"		
			(4) #7	-	-	-						
B348	SINGLE SPAN	20X29	TOP									

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BID SET
REVISIONS:
1 11.08.2024 ADDENDUM 1

DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276

DRAWING TITLE:
CONCRETE BEAM SCHEDULE

DRAWING NUMBER:
S324

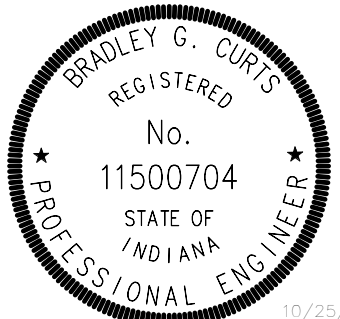
BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT						STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)		CONT		ADDITIONAL		STIRRUPS					
			W	D	1	2	1	2	LOC	SIZE	TYPE	SPACING		
B401	MULTI-SPAN	24X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE			
			(4) #6	-	-	(1) #6	EA END	#4	B2	(3) @ 3"				
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 8"				

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT						STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)		CONT		ADDITIONAL		STIRRUPS					
			W	D	1	2	1	2	LOC	SIZE	TYPE	SPACING		
B418	SINGLE SPAN	12X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING				
			(2) #5	-	-	-	EA END	#4	A2	(3) @ 3"				
			BOTTOM	B1	B2	B3	BAL	#4	A2	BAL @ 9"				

BEAM MARK	BEAM TYPE	SIZE	LONGITUDINAL REINFORCEMENT						STIRRUPS				REMARKS	
			WIDTH x DEPTH (IN)		CONT		ADDITIONAL		STIRRUPS					
			W	D	1	2	1	2	LOC	SIZE	TYPE	SPACING		
B435	MULTI-SPAN	26X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING				
			(4) #7	-	-	-	EA END	#4	A2	(3) @ 3"				
			BOTTOM	B1	B2	B3	BAL	#4	A2	BAL @ 9"				

NOTES:
 1. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
 2. CONTRACTOR SHALL CONFIRM SPACING OF BEAM TOP AND BOTTOM BARS AND ALLOW FOR 1" CLEAR OR BAR DIAMETER (WHICHEVER IS GREATER) AT A MINIMUM. AT CONTRACTOR'S OPTION, BARS MAY BE ALIGNED TO STACK VERTICALLY AT LAP SPLICES.
 3. SEE TYPICAL CONCRETE EDGE BEAM DETAIL FOR ADDITIONAL REINFORCEMENT WHERE EDGE CONDITION OCCURS. PROVIDE CLOSED STIRRUPS WHERE EDGE CONDITION OCCURS. MATCH EQUIVALENT NUMBER OF SCHEDULED LEGS, B2 MINIMUM.

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Bradley G. Curtis

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REVISIONS:
1 11.08.2024 ADDENDUM 1

DATE:
10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276

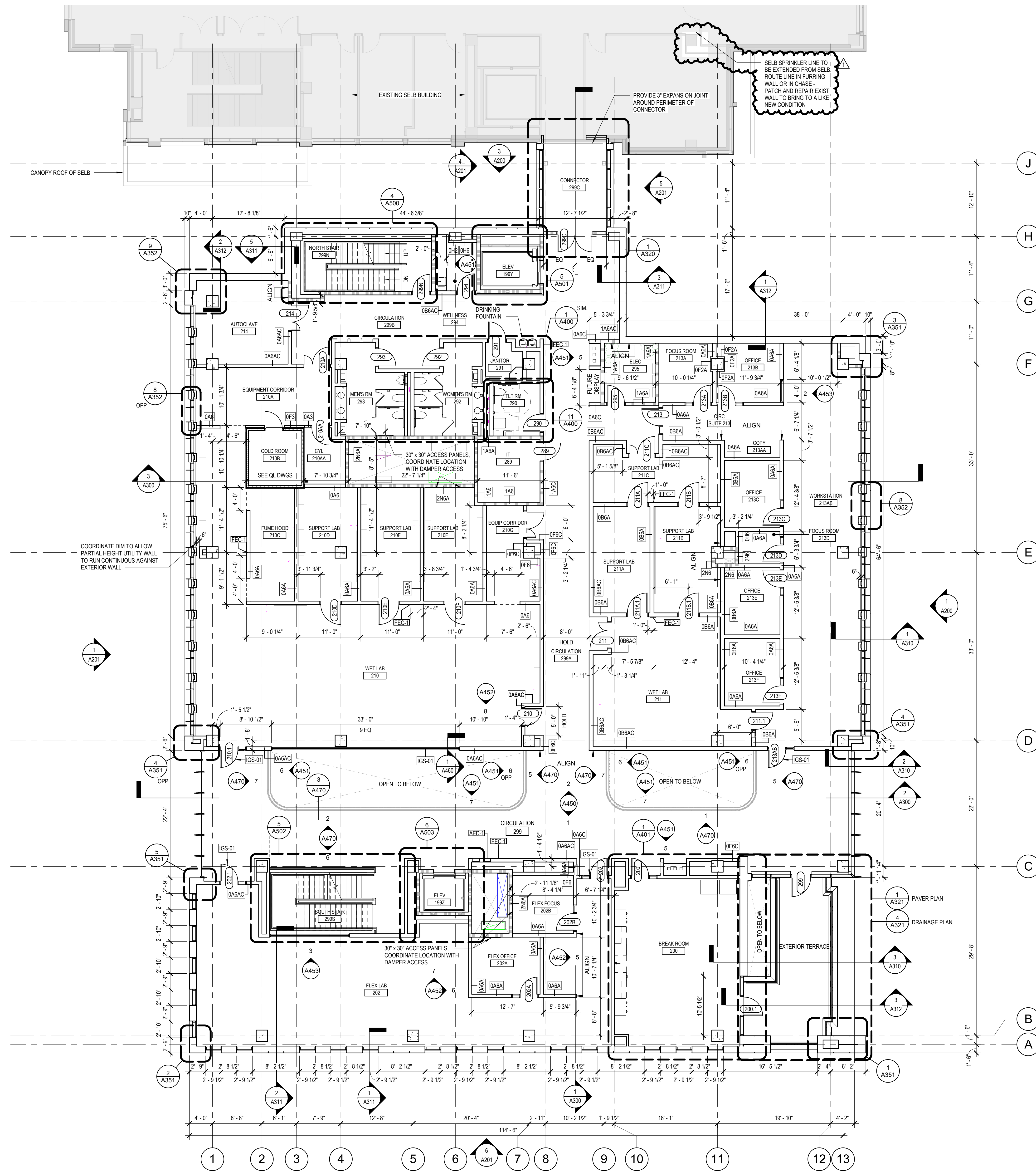
DRAWING TITLE:
CONCRETE
BEAM
SCHEDULE

DRAWING NUMBER:
S325

MILD REINFORCED CONCRETE BEAM SCHEDULE

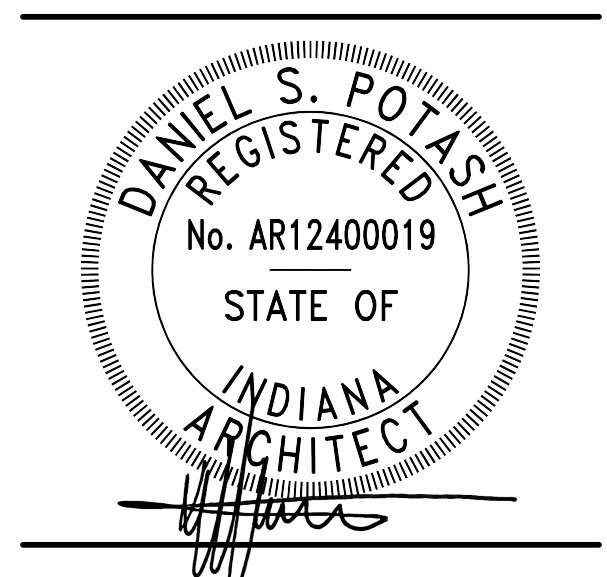
BEAM MARK	BEAM TYPE	SIZE WIDTH x DEPTH (IN)	LONGITUDINAL REINFORCEMENT				STIRRUPS				REMARKS
			CONT	ADDITIONAL			LOC	SIZE	TYPE	SPACING	
B452	MULTI-SPAN	28X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(4) #8	(2) #8	-	-	EA END	#4	B2	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"	
			(4) #7	-	-	-					
B453	CANTILEVER	48X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	-	-	(2) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 6"	
			(6) #10	-	(2) #10	-					
B454	MULTI-SPAN	36X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(2) #10	-	(2) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 5"	
			(6) #10	-	-	-					
B455	MULTI-SPAN	48X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(2) #10	-	(2) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 6"	
			(6) #10	-	(2) #10	-					
B456	MULTI-SPAN	48X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(2) #10	-	-	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 9"	
			(6) #10	-	-	-					
B457	MULTI-SPAN	40X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	-	-	(4) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 6"	
			(6) #10	-	(2) #10	-					
B458	MULTI-SPAN	40X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(4) #10	-	(4) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 6"	
			(6) #10	-	-	-					
B459	MULTI-SPAN	40X29	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(4) #10	-	(4) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 6"	
			(6) #10	-	(2) #10	-					
B460	MULTI-SPAN	40X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(4) #10	-	-	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 9"	
			(6) #10	-	-	-					
B461	MULTI-SPAN	40X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(6) #10	(4) #10	-	(2) #10	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 6"	
			(6) #10	-	(2) #10	-					
B462	MULTI-SPAN	28X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(4) #10	(2) #10	-	-	EA END	#4	B4	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B4	BAL @ 9"	
			(4) #10	-	-	-					
B463	SINGLE SPAN	10X25	TOP	T1	-	T2	LOC	SIZE	TYPE	SPACING	(1) #4 ADDED HORIZONTAL BAR EA FACE
			(2) #5	-	-	-	EA END	#4	B2	(3) @ 3"	
			BOTTOM	B1	B2	B3	BAL	#4	B2	BAL @ 6"	
			(2) #5	-	-	-					

NOTES:
 1. SEE TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
 2. CONTRACTOR SHALL CONFIRM SPACING OF BEAM TOP AND BOTTOM BARS AND ALLOW FOR 1" CLEAR OR BAR DIAMETER (WHICHEVER IS GREATER) AT A MINIMUM. AT CONTRACTOR'S OPTION, BARS MAY BE ALIGNED TO STACK VERTICALLY AT LAP SPLICES.
 3. SEE TYPICAL CONCRETE EDGE BEAM DETAIL FOR ADDITIONAL REINFORCEMENT WHERE EDGE CONDITION OCCURS. PROVIDE CLOSED STIRRUPS WHERE EDGE CONDITION OCCURS. MATCH EQUIVALENT NUMBER OF SCHEDULED LEGS, B2 MINIMUM.



FLOOR PLAN NOTES

- REFER TO G SERIES DRAWINGS FOR ADDITIONAL NOTES, SYMBOLS AND ABBREVIATIONS. REFER TO SHEETS A200, A201 & A202 FOR TYPICAL MOUNTING HEIGHTS AND ACCESSIBILITY DIAGRAM. STUD LOCATIONS ARE TO BE COORDINATED WITH THESE DIAGRAMS TO ENSURE PROPER LOCATION OF DEVICES, FIXTURES, AND ACCESSORIES.
- REFER TO SHEET A011 FOR TYPICAL INTERIOR GWB PARTITION TYPES AND STANDARD DETAILS. SEE GENERAL PARTITION NOTES ON A011 FOR TYPES OF GWB TO BE USED AT SHAFTS, WET AREAS AND TILED WALLS. REFER TO A015 FOR TYPICAL MASONRY PARTITION TYPES AND STANDARD DETAILS.
- ALL GWB NON FURRING WALLS TO BE TYPE A6A UON. ALL FURRING WALL TYPES TO BE F6A, UON. ALL WALL RATING REQUIREMENTS ARE AS FOLLOWS:
 - ALL MECH SHAFT, ENCLOSED STAIRWELLS AND ELEVATOR HOISTWAY TO BE 2 HR RATED
 - ALL TELECOM ROOMS TO BE 1 HR RATED
 - ELEVATOR MACHINE ROOM TO BE 2 HR RATED
 - MAIN ELEC & EMERGENCY POWER, HVAC & WATER ROOM TO BE 2 HR RATED
 - ELEC CLOSETS ON LEVELS 2, 3 & PENHOUSE TO BE 1 HR RATED
- TOP OF CONCRETE SLAB ON ALL LOWER THREE LEVELS TO MATCH ELEVATIONS AT SELB BUILDING. CONTRACTOR TO VERIFY ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION AND NOTIFY ARCHITECT OF DISCREPANCIES
- SEE "QL" DISCIPLINE FOR LABORATORY CASEWORK AND EQUIPMENT DRAWINGS.
- SEE SHEETS A010 FOR EXTERIOR WALL ASSEMBLY TYPES.
- INTERIOR LAYOUT DIMENSIONS ARE EITHER SHOWN TO CENTERLINE OF PARTITION COLUMN OR TO FINISHED FACE OF WALL.
- ALL EXPOSED METAL TO BE GALVANIZED UON. COORDINATE REQUIREMENTS WITH PROJECT MANUAL. ALL EXTERIOR STRUCTURAL STEEL EXPOSED TO THE WEATHER OR HUMIDITY TO RECEIVE A HIGH PERFORMANCE COATING
- CONTRACTOR SHALL VERIFY LOCATIONS AND QUANTITIES OF FIRE EXTINGUISHERS WITH FIRE MARSHAL AND/OR INSPECTOR.
- AT ALL ELECTRICAL/IDF/TELECOM ROOMS - PROVIDE 8'-0" TALL, 3/4" FRT PLYWOOD MOUNTED 2'-0" AFF. PAINT PLYWOOD WHITE - EXCEPT DO NOT PAINT OVER LABELS
- PROVIDE 2" SLAB DEPRESSION AT ALL COLD ROOMS. COORDINATE DIMENSIONS & FINAL DEPTH WITH APPROVED COLD ROOM MANUFACTURER
- ALL EXPOSED CONCRETE COLUMNS TO RECEIVE AN ARCHITECTURAL FINISH, AND TO BE SEALED. REFER TO SPEC SECTION 03000 FOR ADDITIONAL INFORMATION
- ALL ELEVATED CONCRETE SLABS ARE TO BE RATED 2 HRS. ALL PENETRATIONS TO BE SEALED OR SLEEVED TO MEET 2 HR REQUIREMENTS. FLOOR BOXES & POKE THRU'S TO BE APPROVED FOR FIRE RATED APPLICATIONS - IF DEEPER THAN SLAB, PROVIDE FIRE RATED ENCLOSURE UNDER DEVICE
- CONTRACTOR TO COORDINATE FINAL LOCATIONS AND PAD SIZES FOR MEP EQUIPMENT WITH FINAL SELECTION AND LAYOUT. SEE STRUCTURAL DRAWINGS FOR PAD THICKNESS, DETAILS AND CONCRETE CRITERIA
- ALL INTERIOR STOREFRONT / WINDOWS TO BE A HOLLOW METAL FRAME, EXCEPT WHERE DENOTED AS IGS-01. PROVIDE GL-20 TYPICAL THROUGHOUT, UNLESS OTHERWISE NOTED IN ELEVATION. PROVIDE CW-1 FOR ALL ENTRY VESTIBULE GLAZING.
- REFER TO SHEET A014 FOR TYPICAL BLOCKING DIAGRAMS. PROVIDE IN WALL BLOCKING OR STRAPPING FOR ALL DISPLAYS, ARTWORK, CASEWORK, RAILINGS, GRAB BARS AND SIGNAGE.
- REFER TO DETAIL 13A060 FOR TYPICAL GYP BOARD PARTITION TO CONCRETE COLUMN TERMINATIONS



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REVISIONS:
1 11.08.2024 Addendum #1

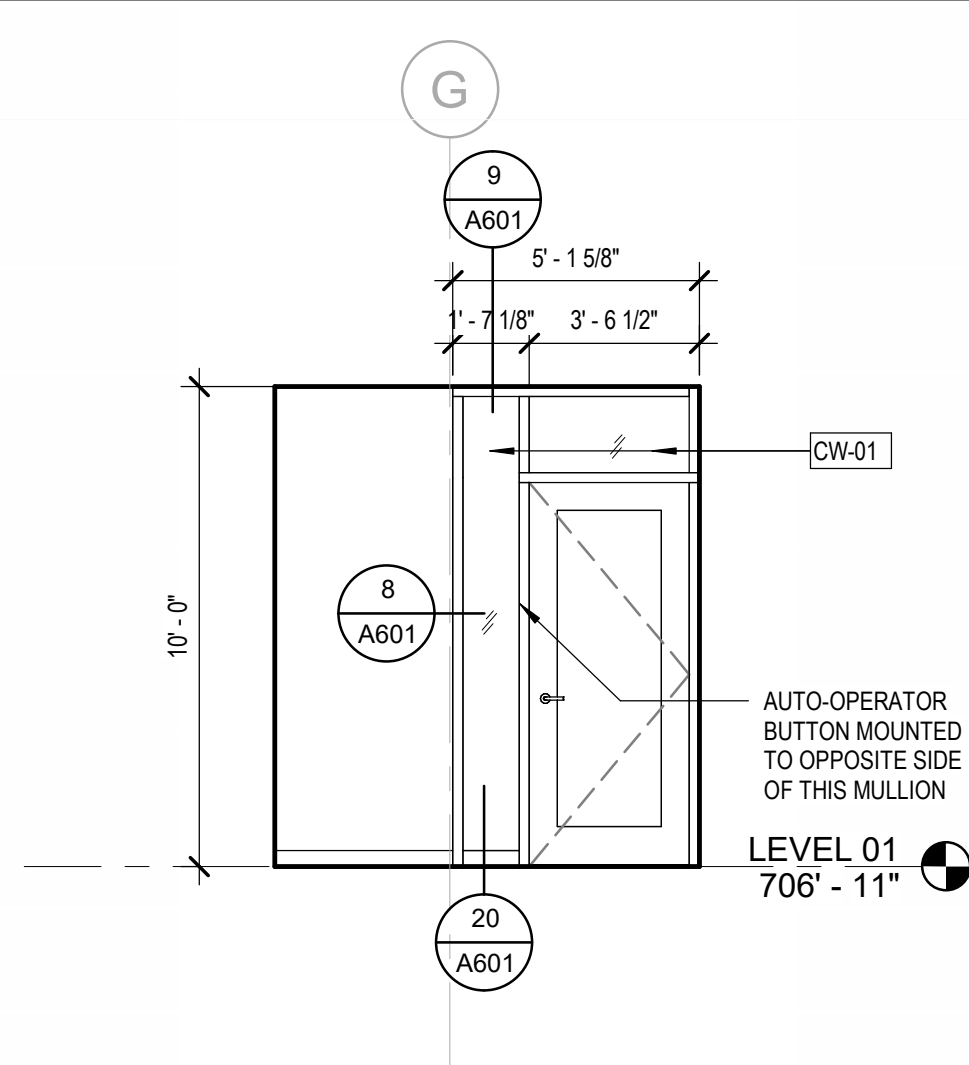
DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276

DRAWING TITLE:
FLOOR PLAN - LEVEL 2

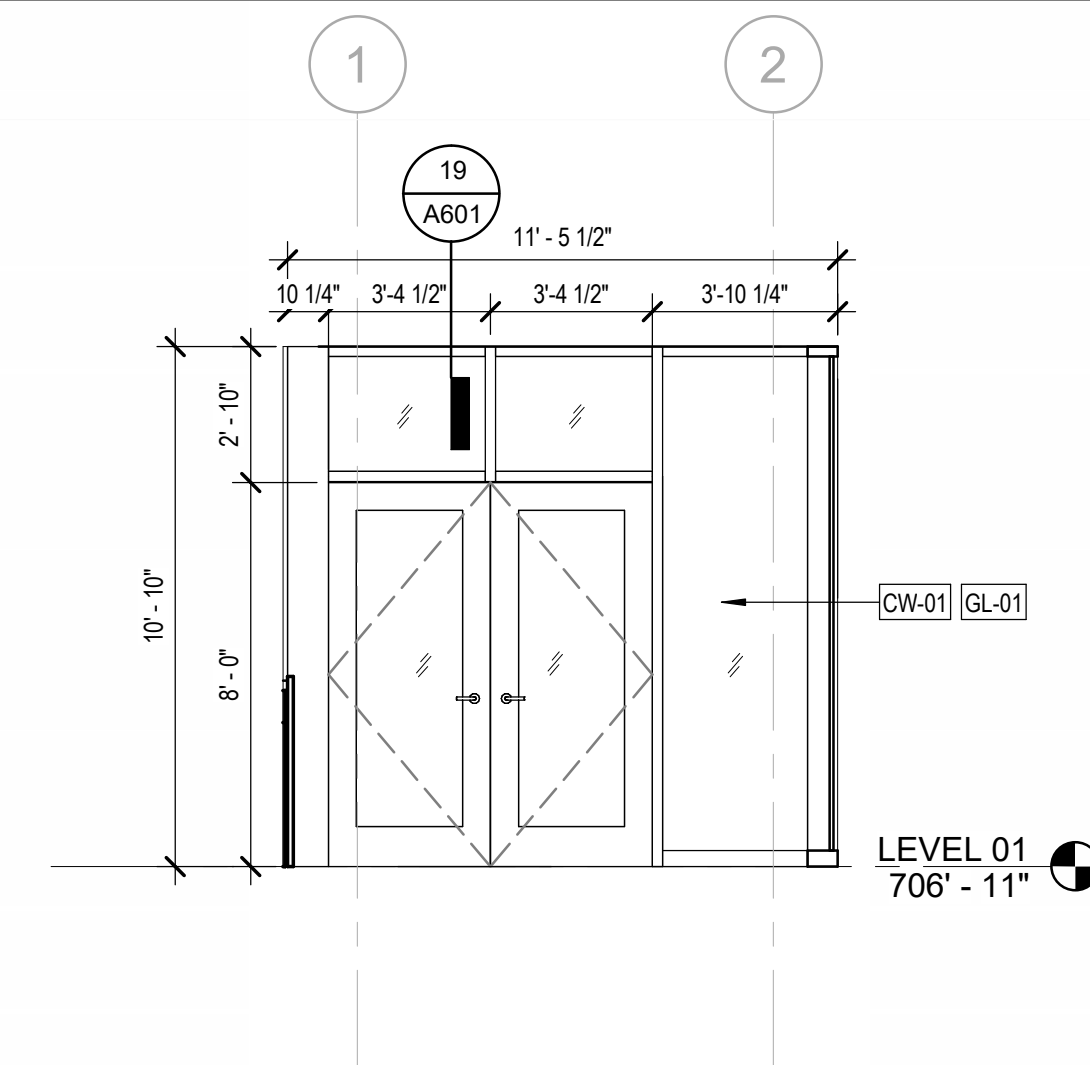
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A122

1 FLOOR PLAN - LEVEL 02
1/8" = 1'-0"

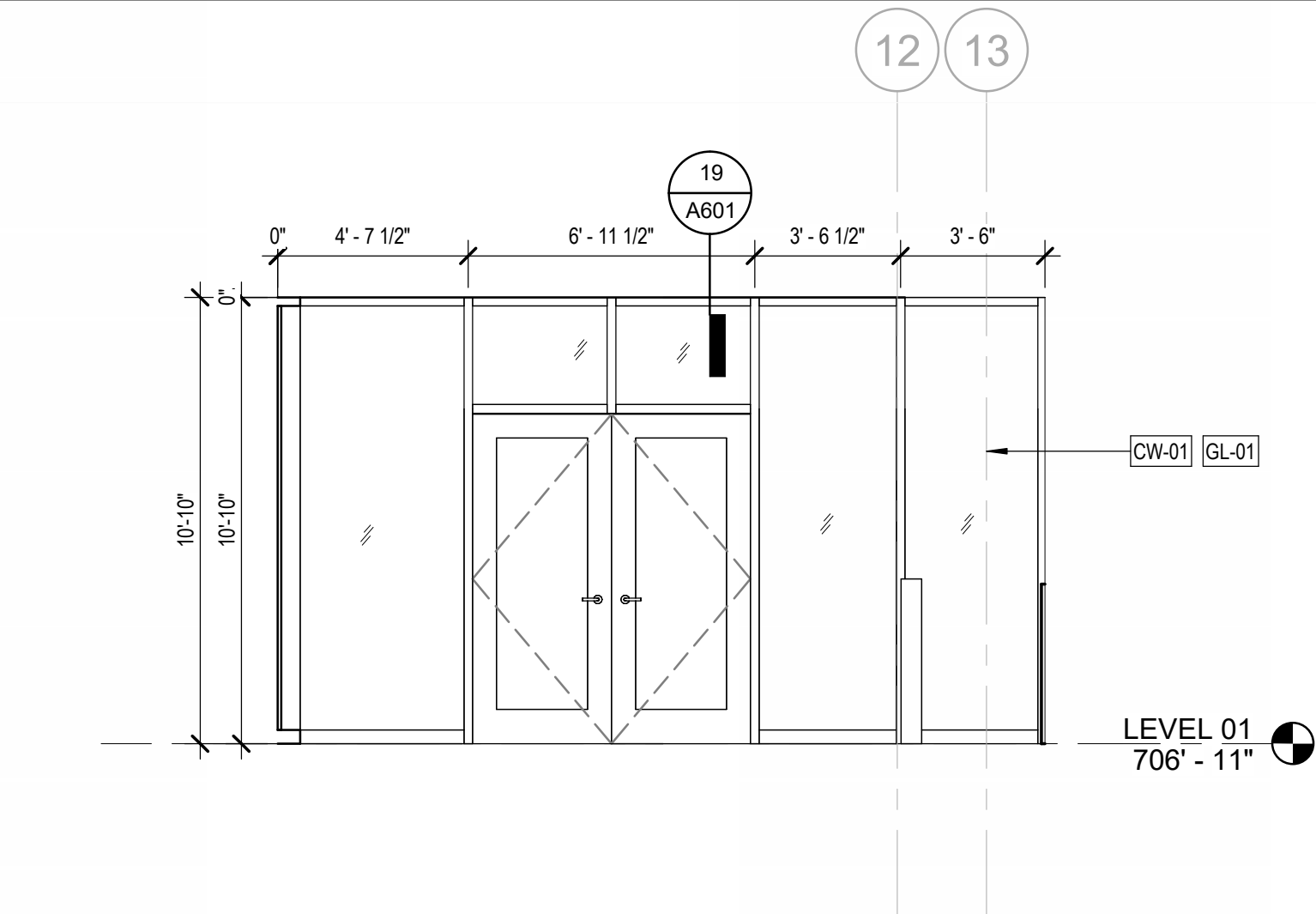




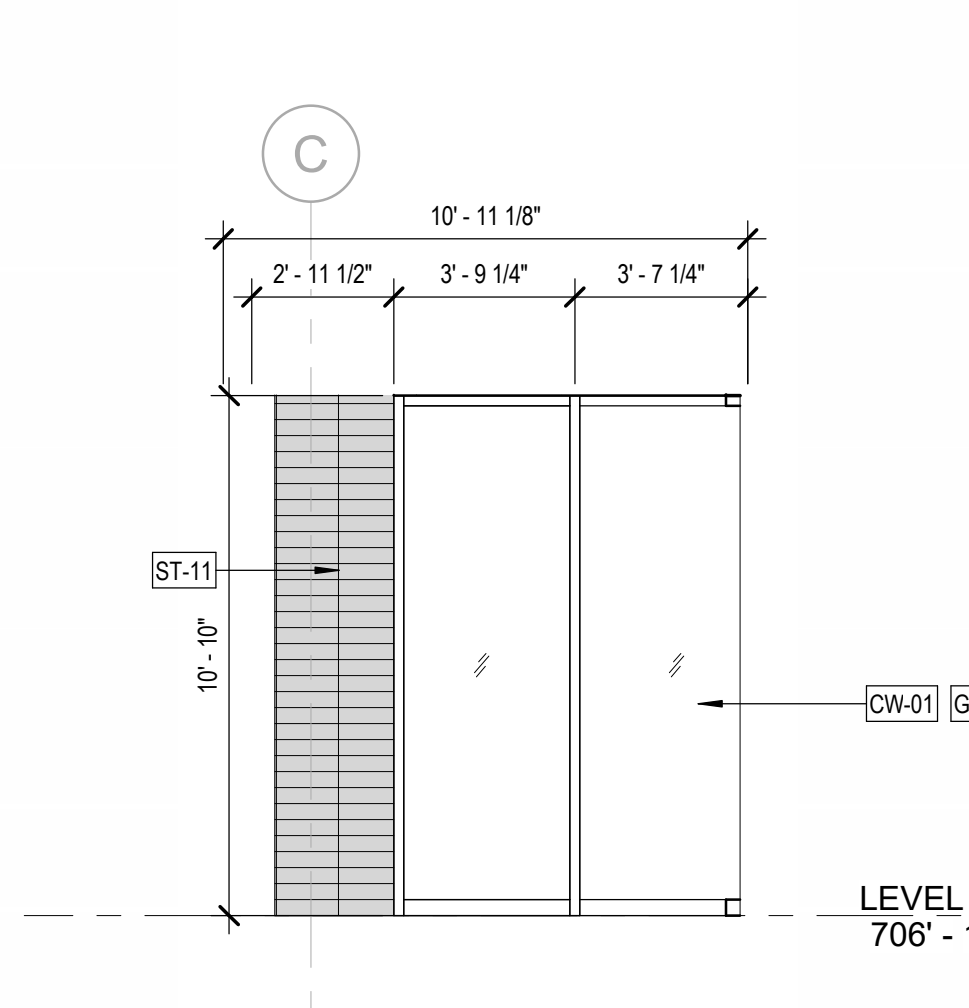
12 INT ELEV - NW VEST 199V - EAST
1/4" = 1'-0"



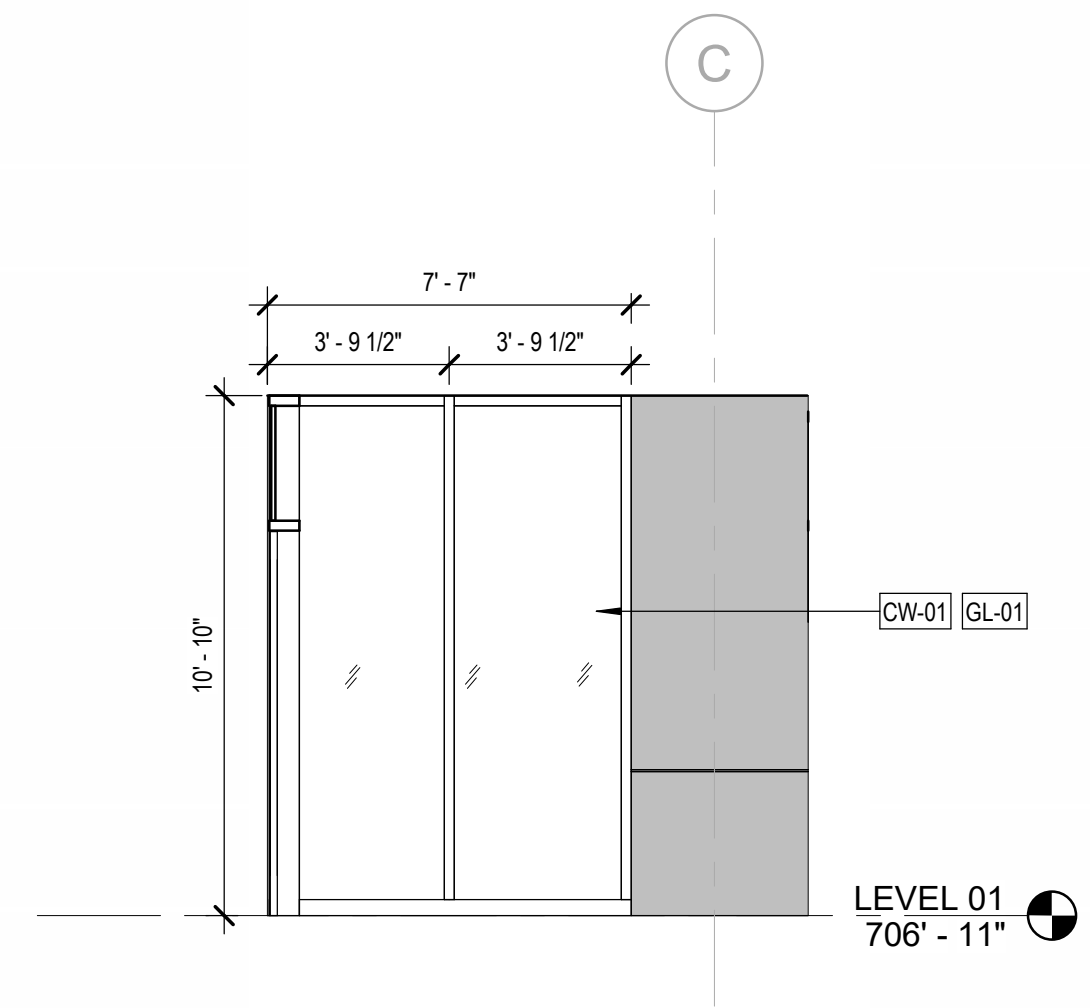
11 INT ELEV - SW VEST 199W - NORTH
1/4" = 1'-0"



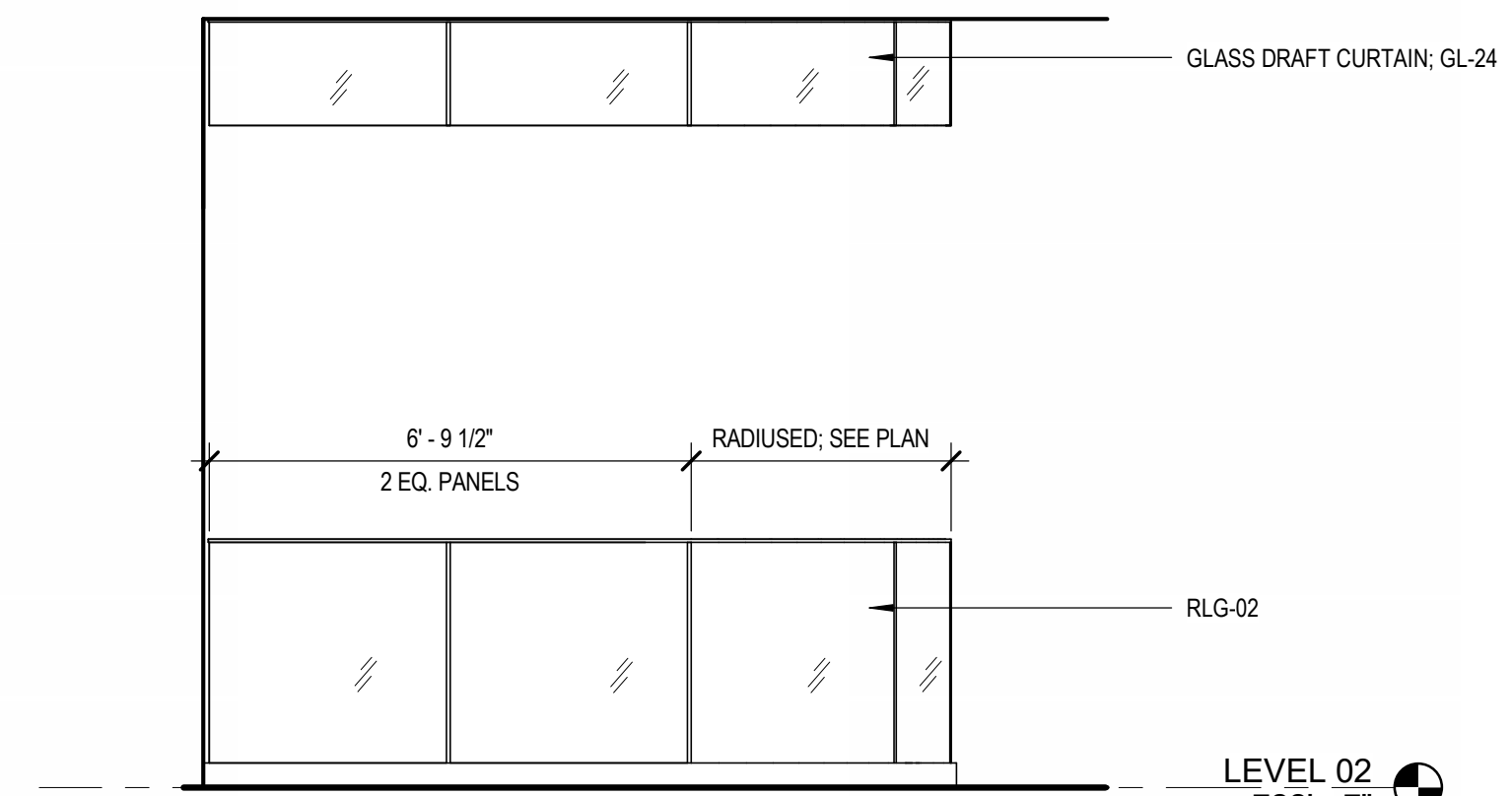
10 INT ELEV - SE VEST 199X - NORTH
1/4" = 1'-0"



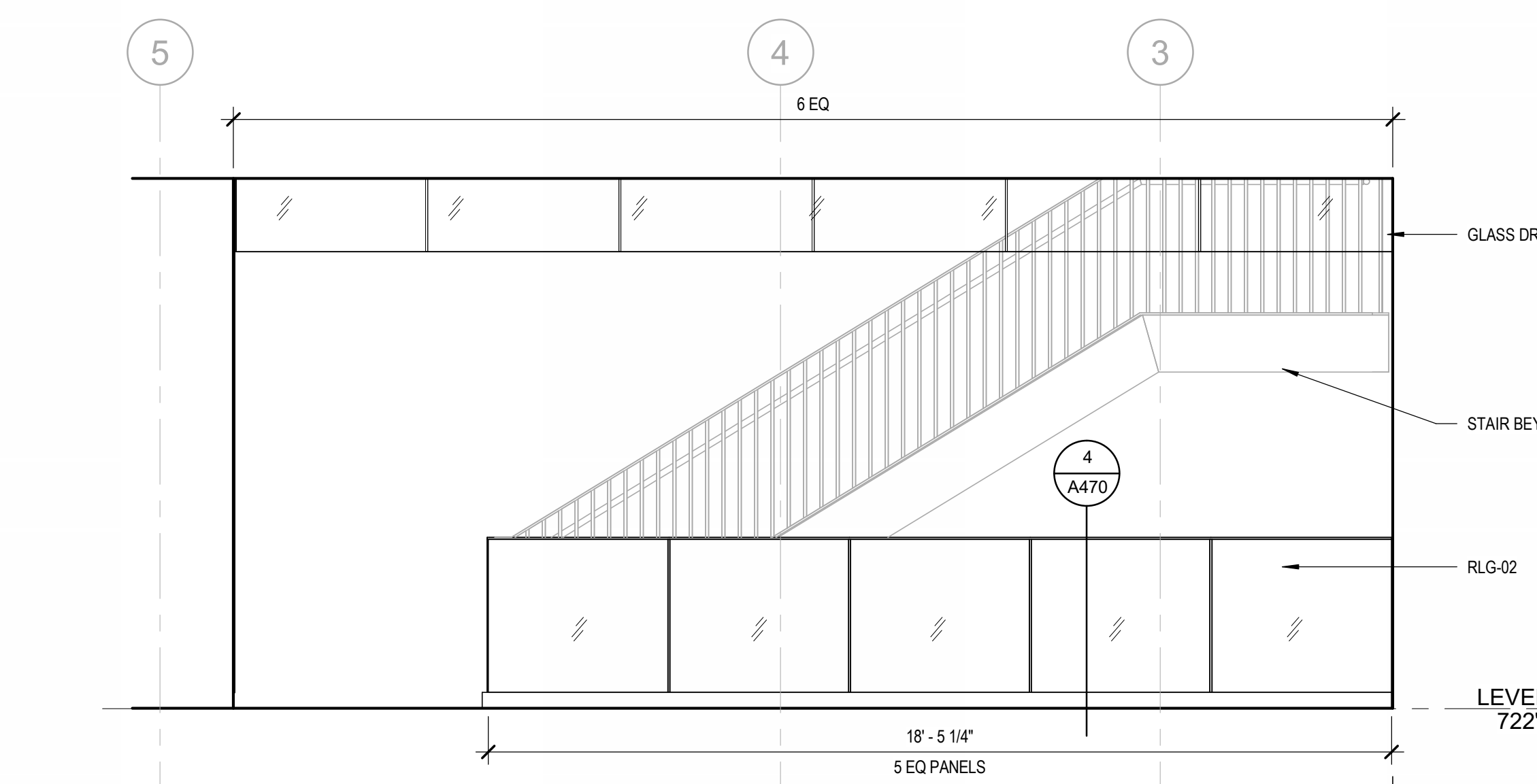
9 INT ELEV - SE VEST 199X - WEST
1/4" = 1'-0"



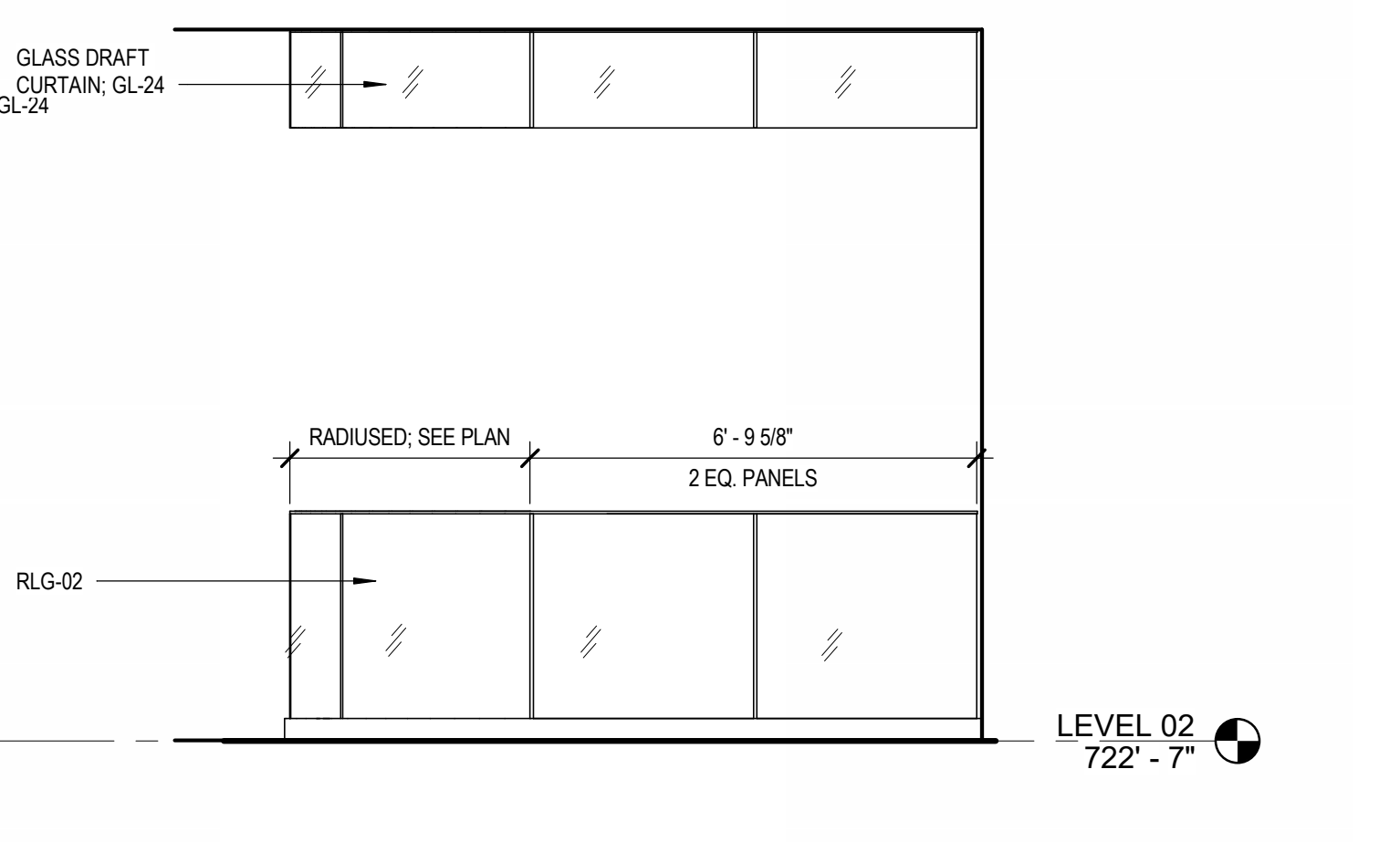
8 INT ELEV - SW VEST 199W - EAST
1/4" = 1'-0"



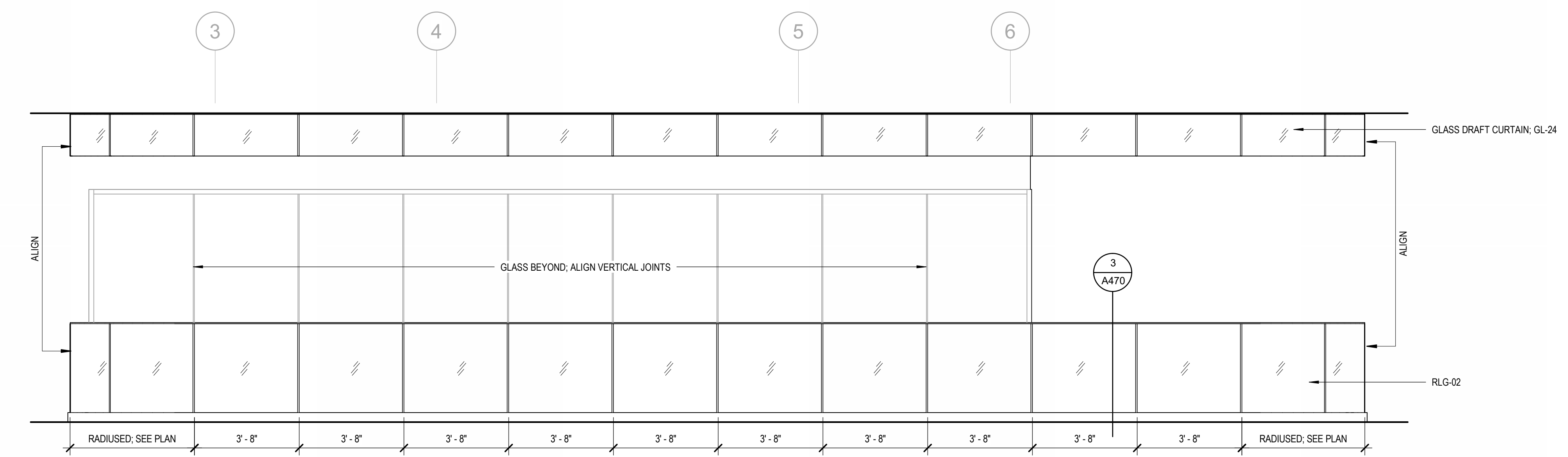
7 INT ELEV - TYP GUARDRAIL AND DRAFT CURTAIN
3/8" = 1'-0"



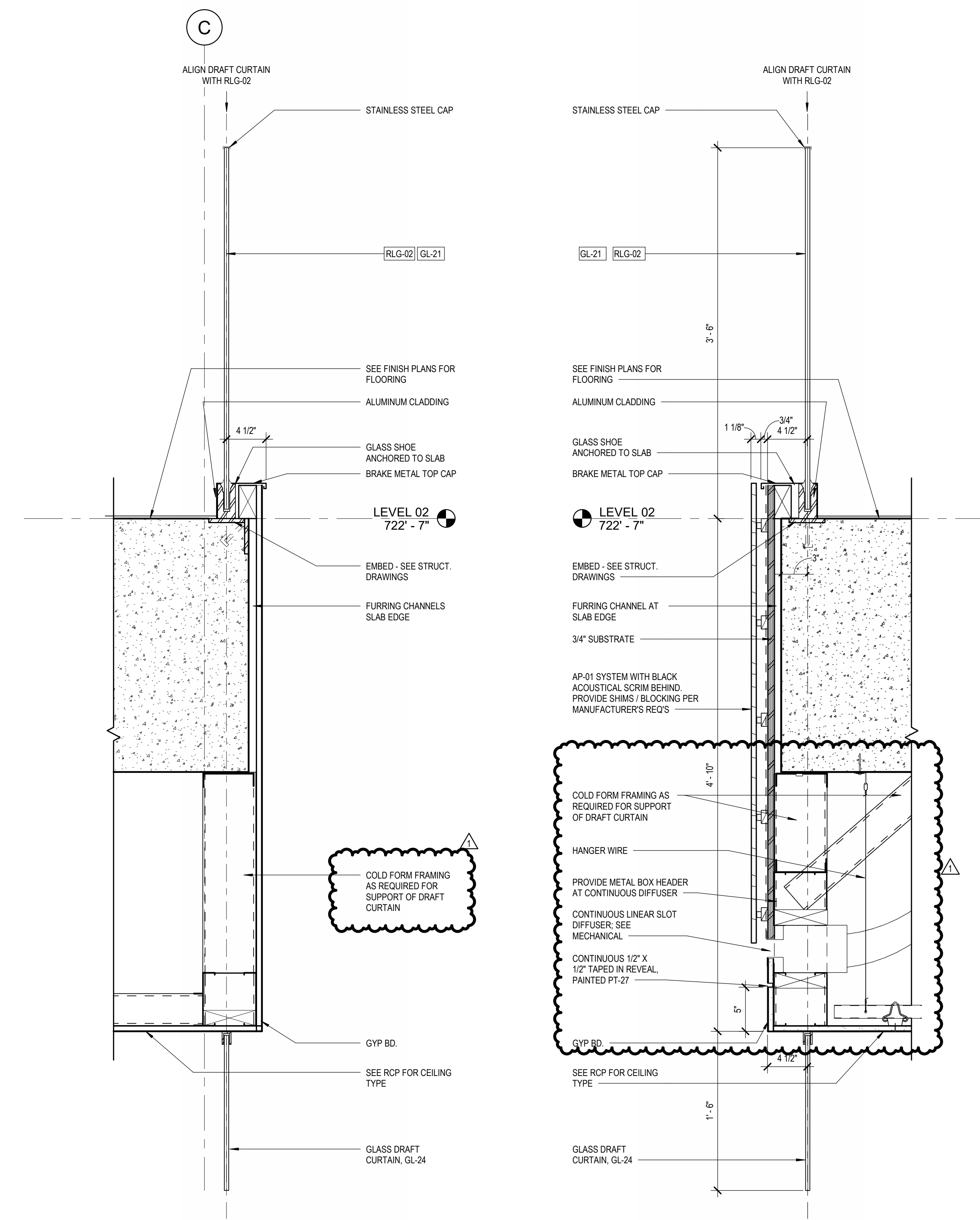
6 INT ELEV - NORTH STAIR GUARDRAIL
3/8" = 1'-0"



5 INT ELEV - TYP GUARDRAIL AND DRAFT CURTAIN
3/8" = 1'-0"

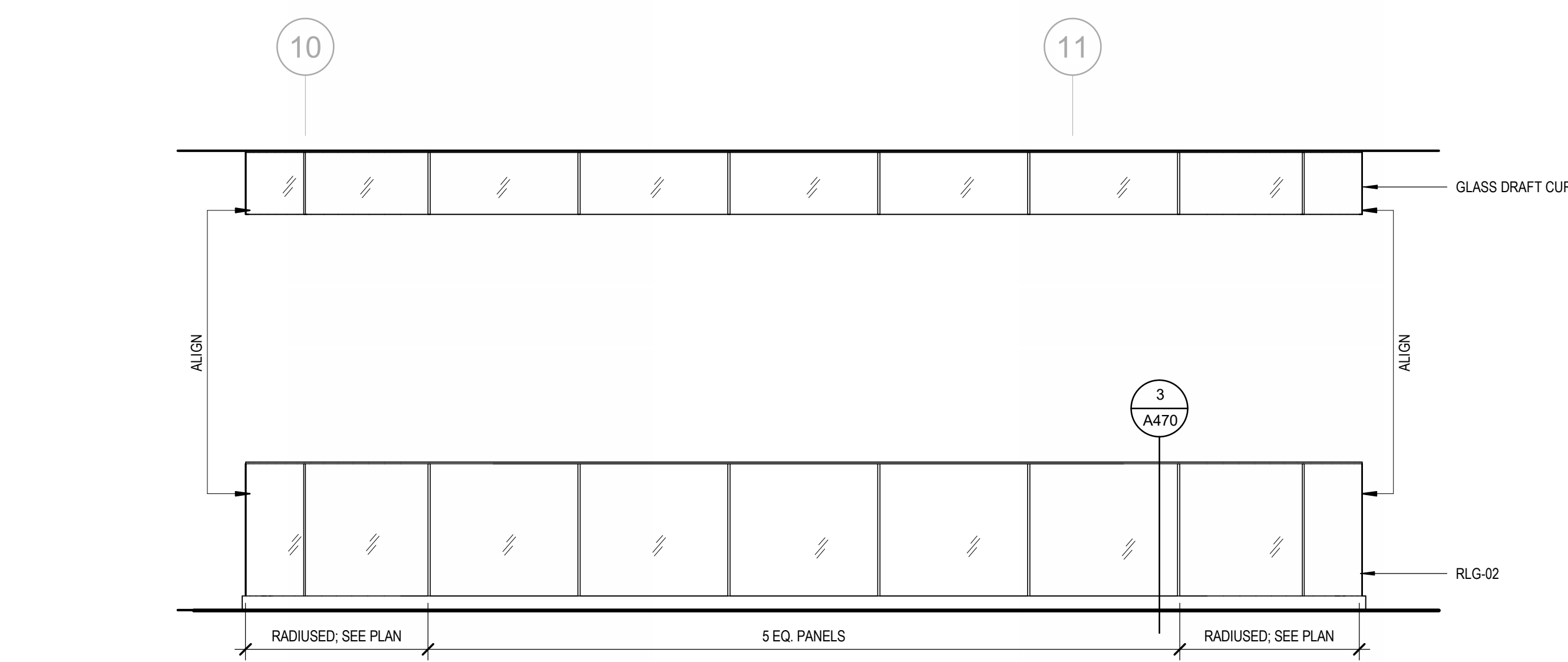


2 INT ELEV - TYP WEST GUARDRAIL AND DRAFT CURTAIN
3/8" = 1'-0"

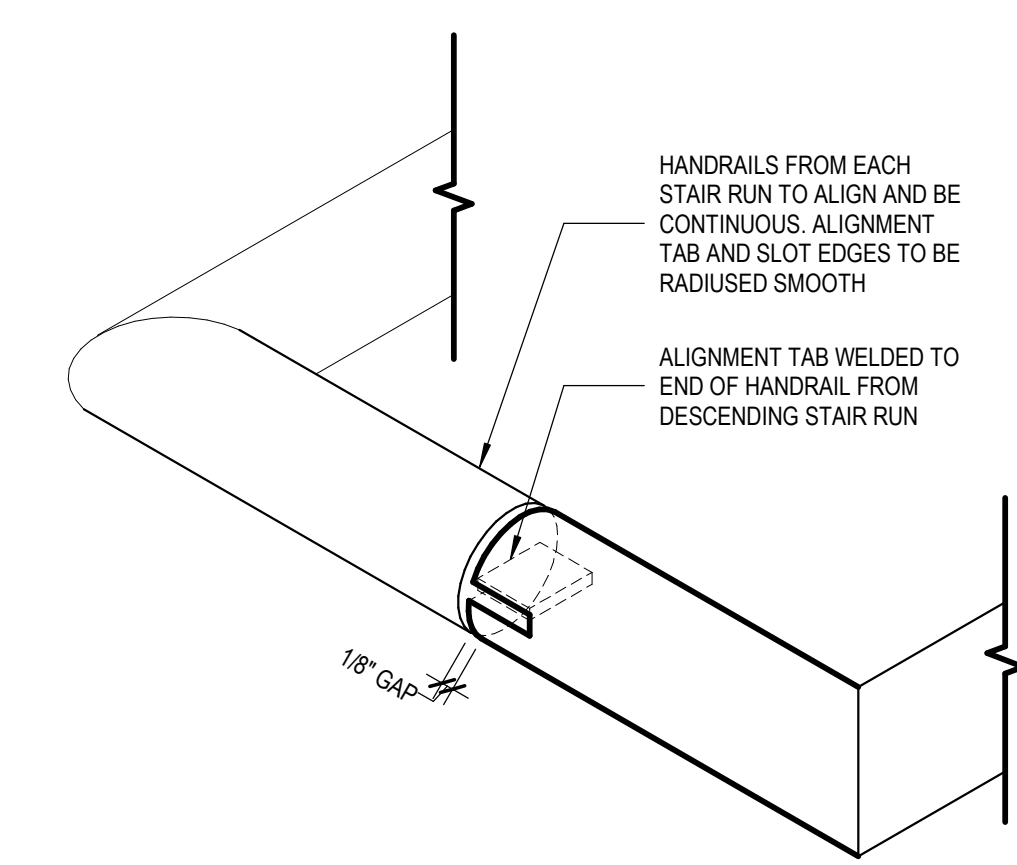


4 GUARDRAIL DETAIL @ SOUTH STAIR OPENING
1 1/2" = 1'-0"

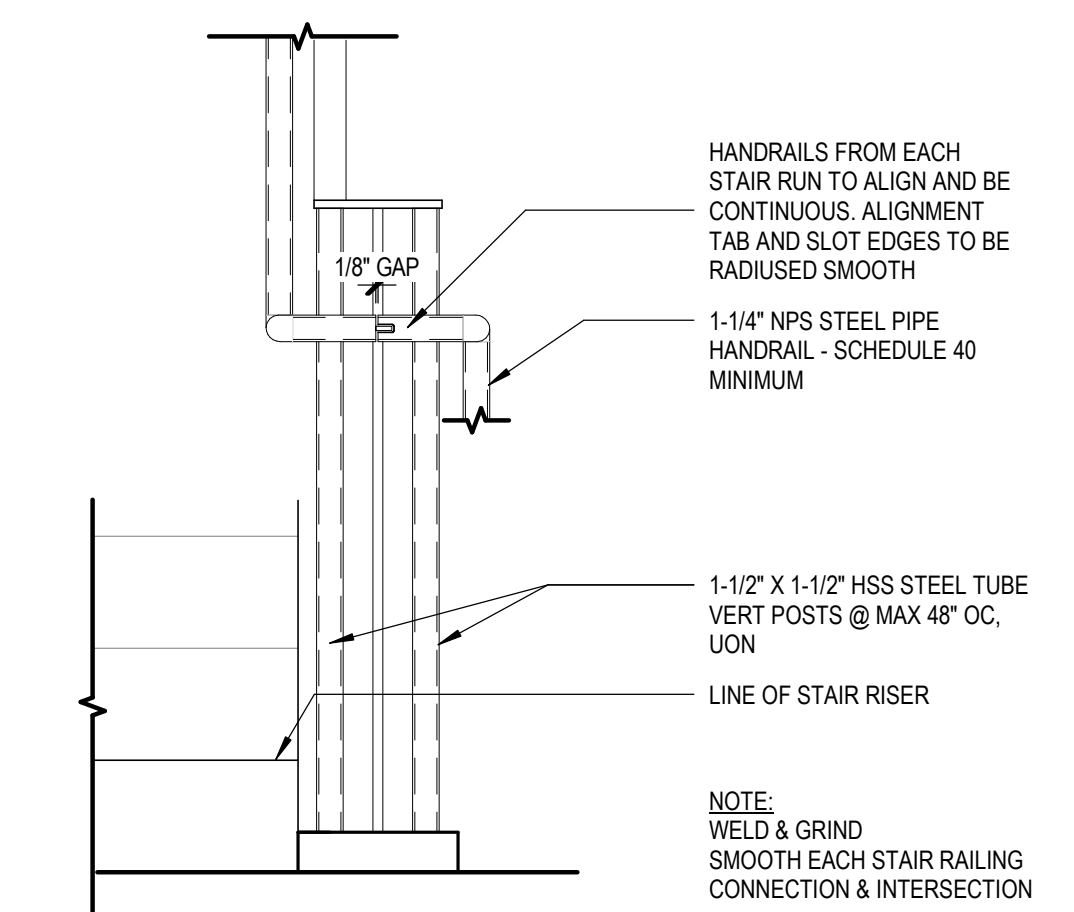
3 GLASS GUARDRAIL & DRAFT CURTAIN AT FLOOR OPENING
1 1/2" = 1'-0"



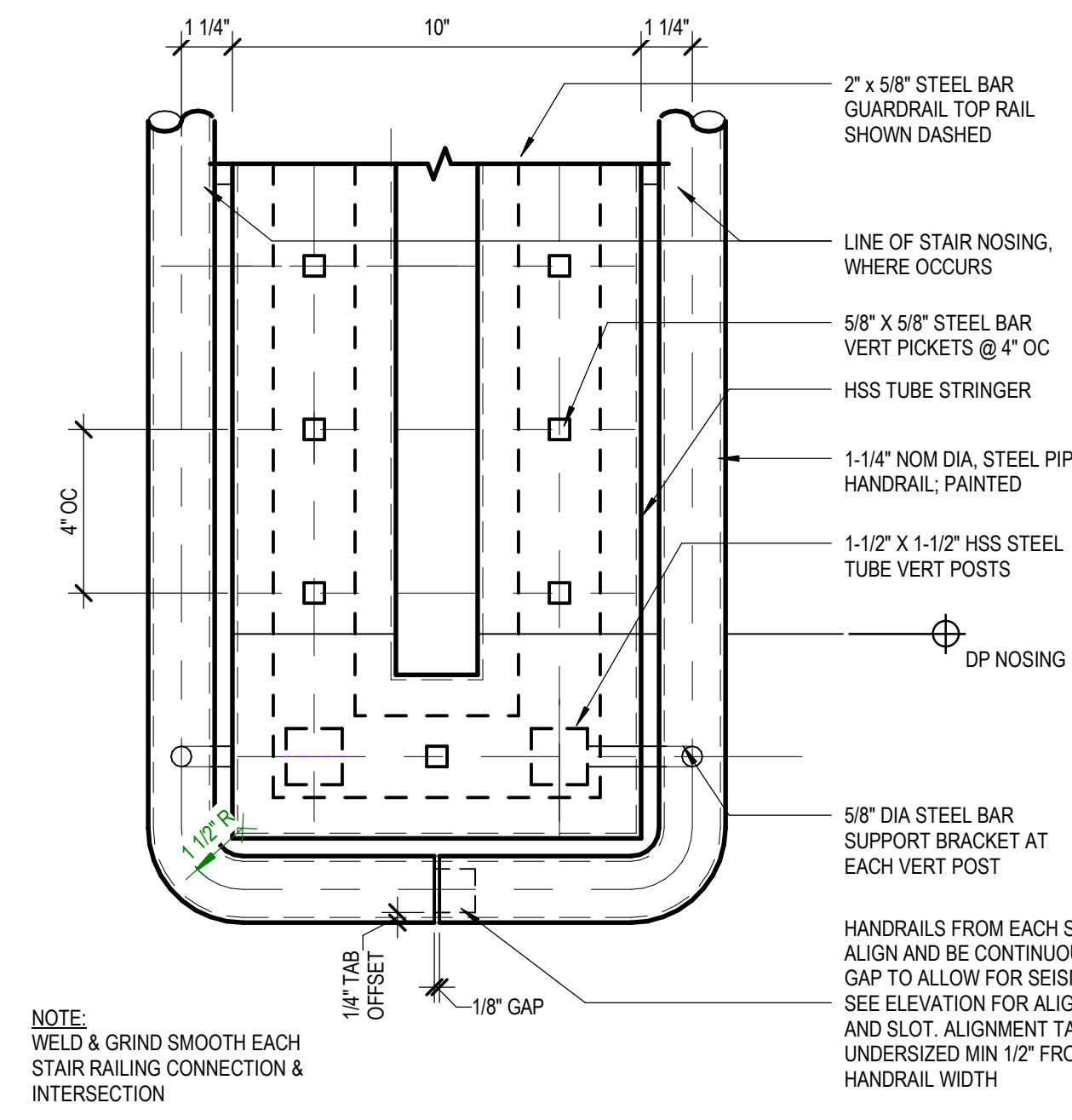
1 INT ELEV - TYP EAST GUARDRAIL AND DRAFT CURTAIN
3/8" = 1'-0"



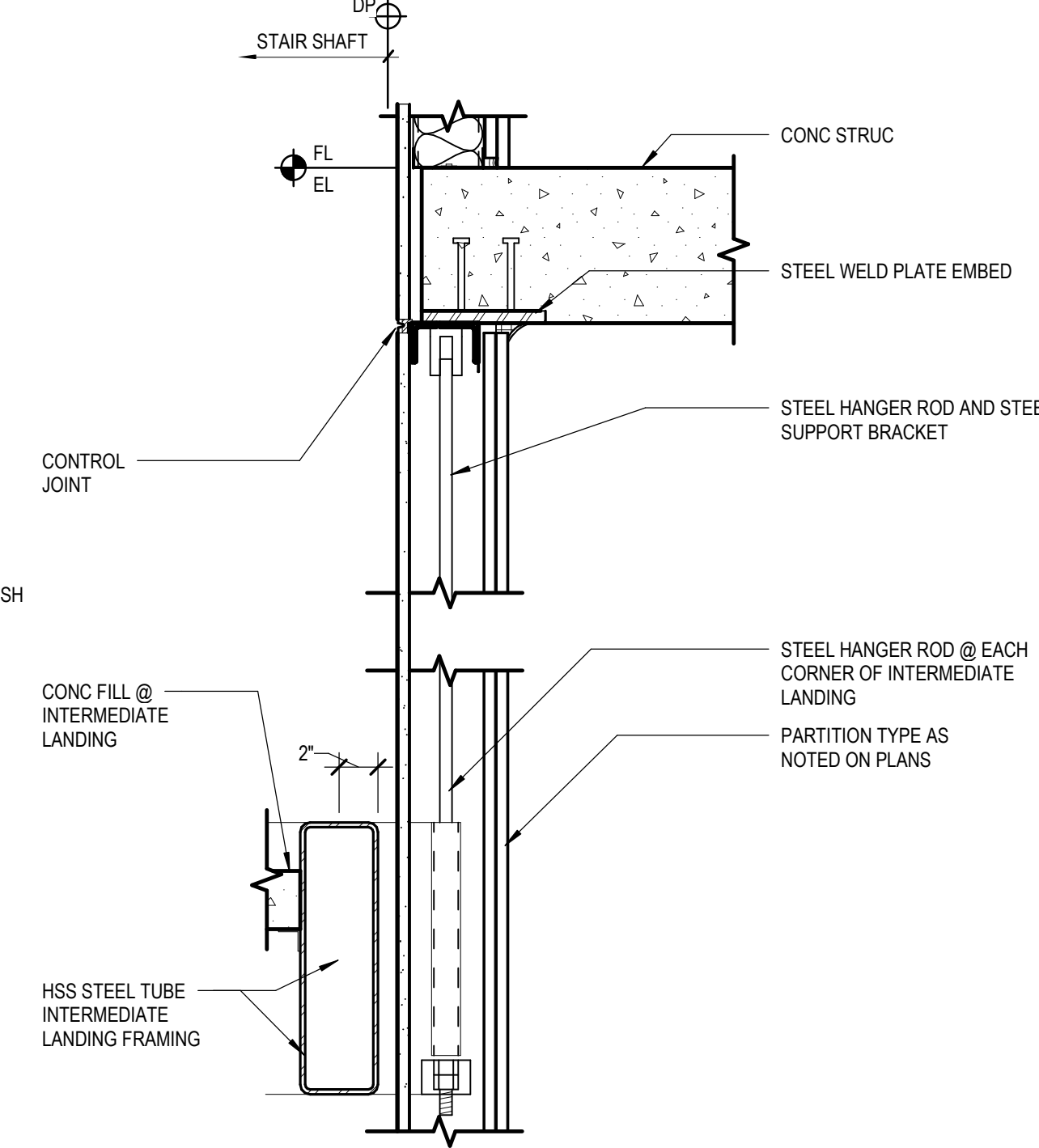
4 HANDRAIL ALIGNMENT TAB
6" = 1'-0"



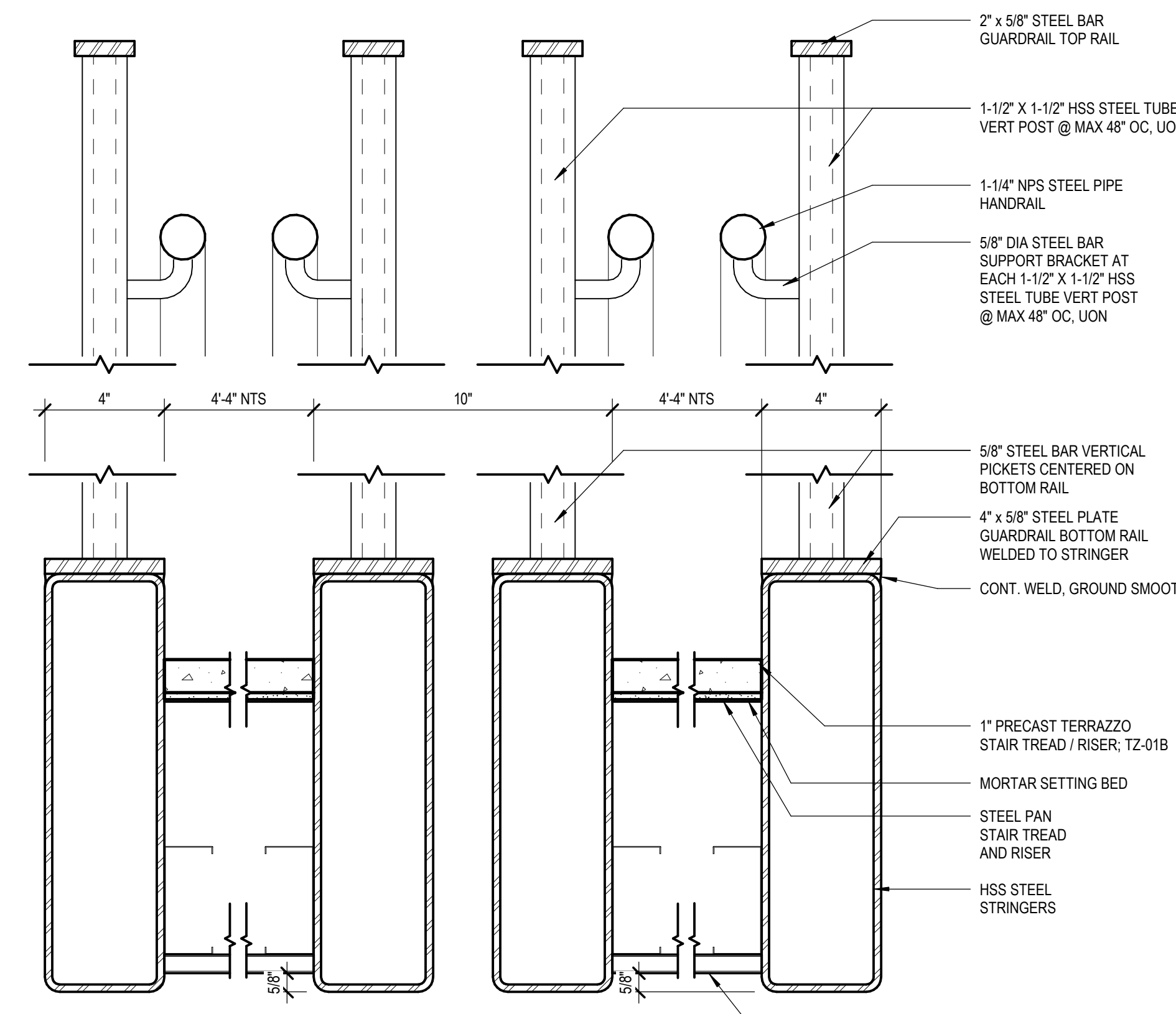
3 SOUTH STAIR RAILING TRANSITION AT LANDINGS
1" = 1'-0"



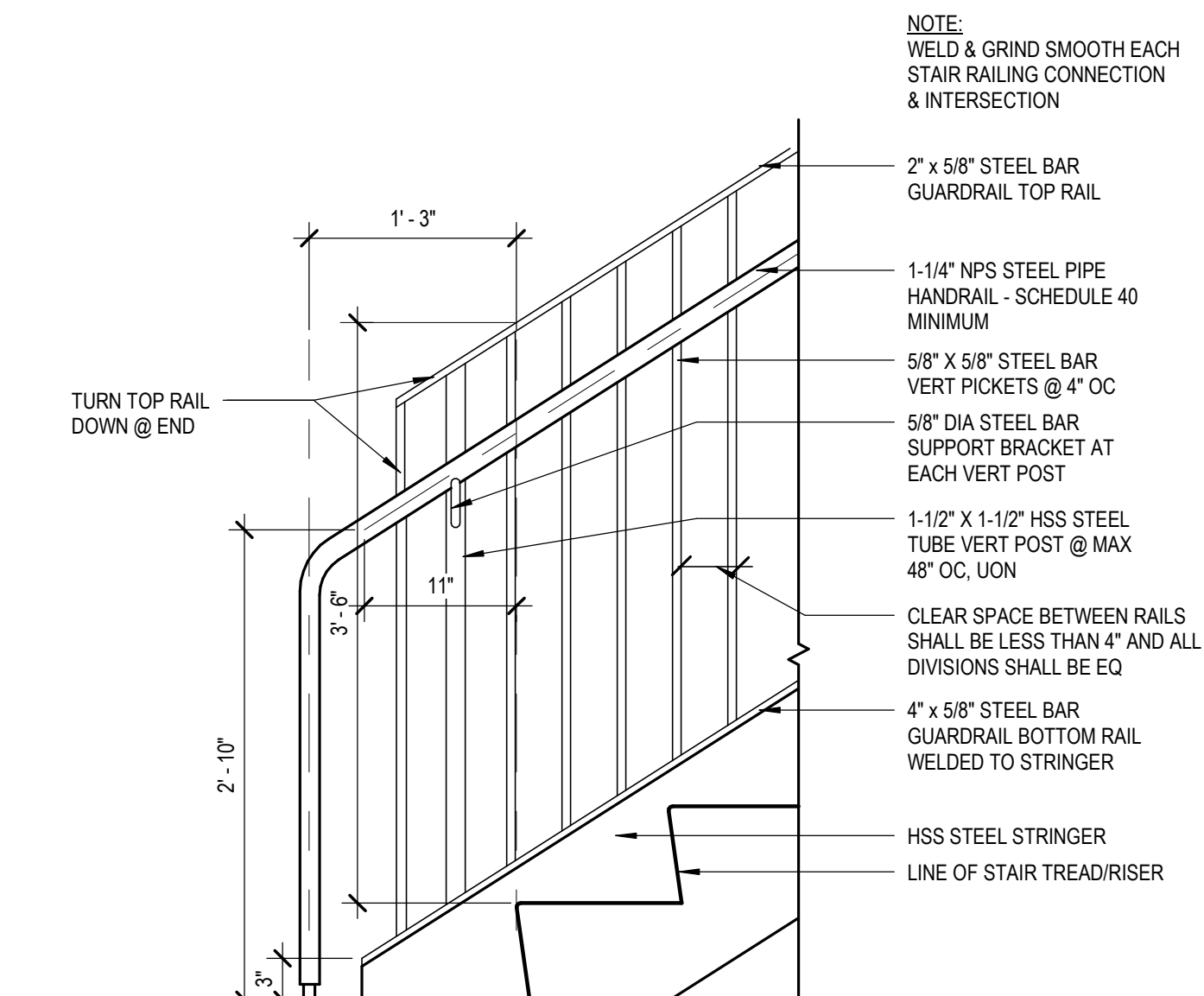
7 SOUTH STAIR RAILING TRANSITION @ LANDING
3" = 1'-0"



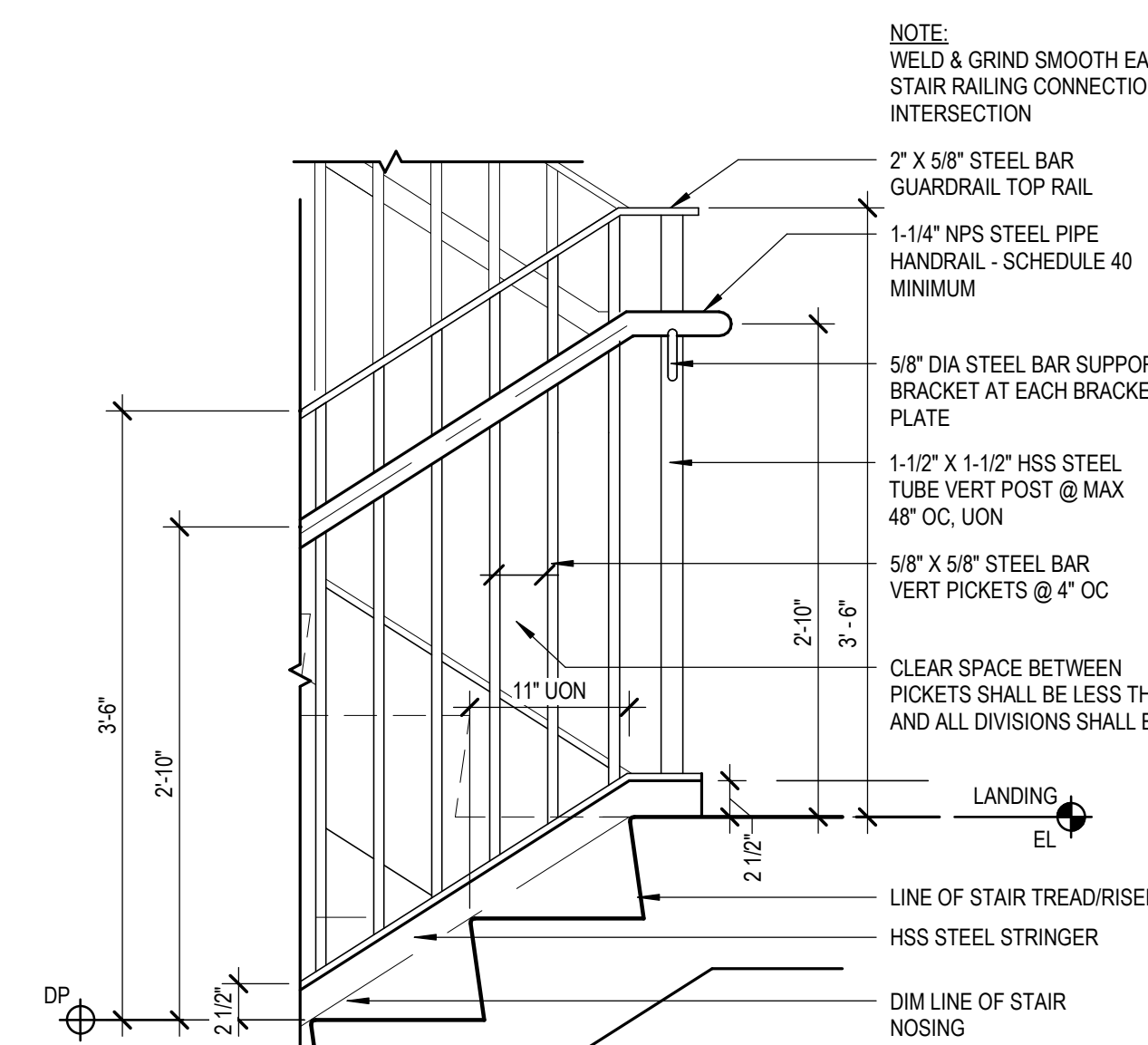
10 HANGER ROD AT INTERMEDIATE LANDING
1 1/2" = 1'-0"



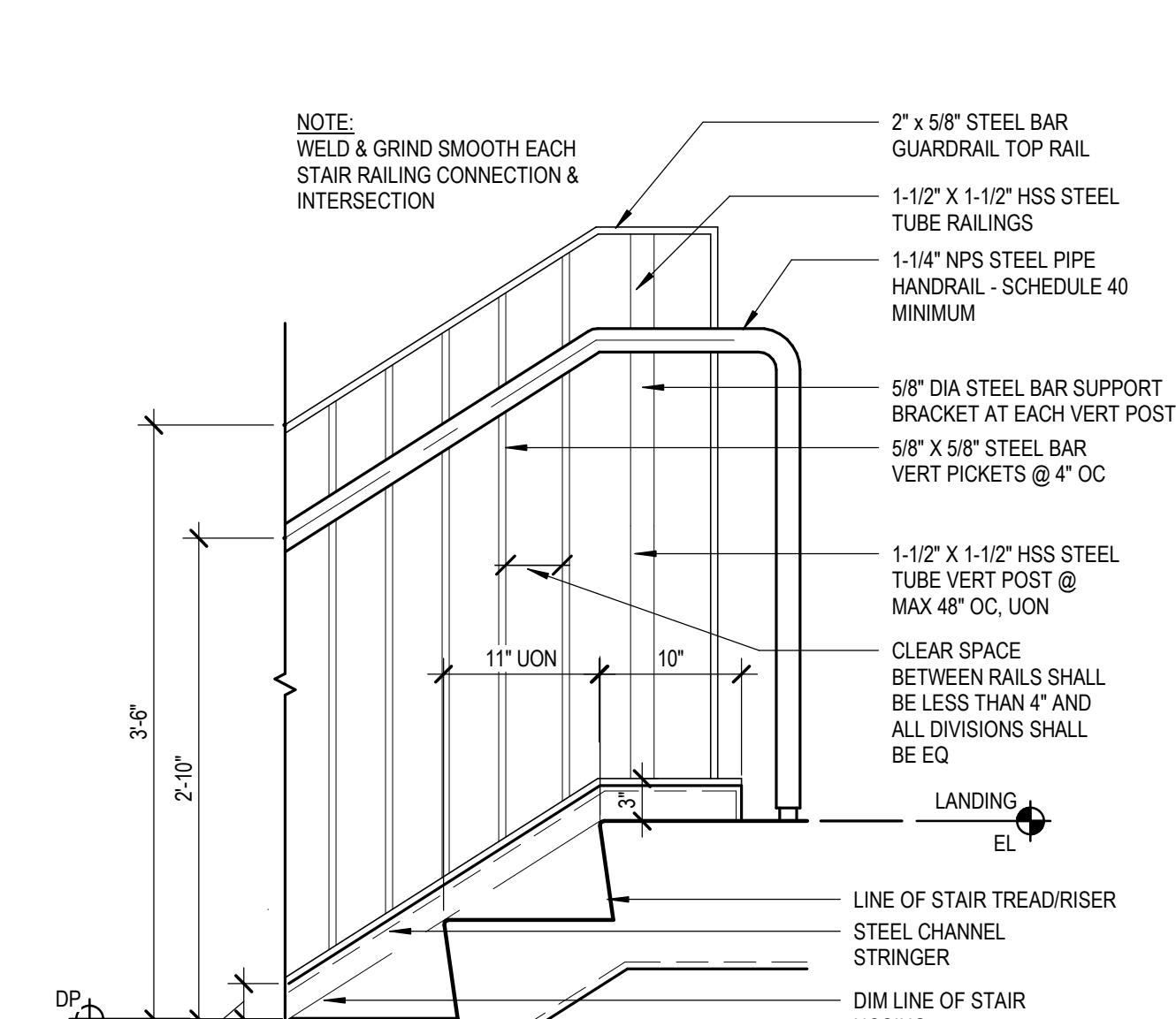
12 SOUTH STAIR CROSS SECTION
3" = 1'-0"



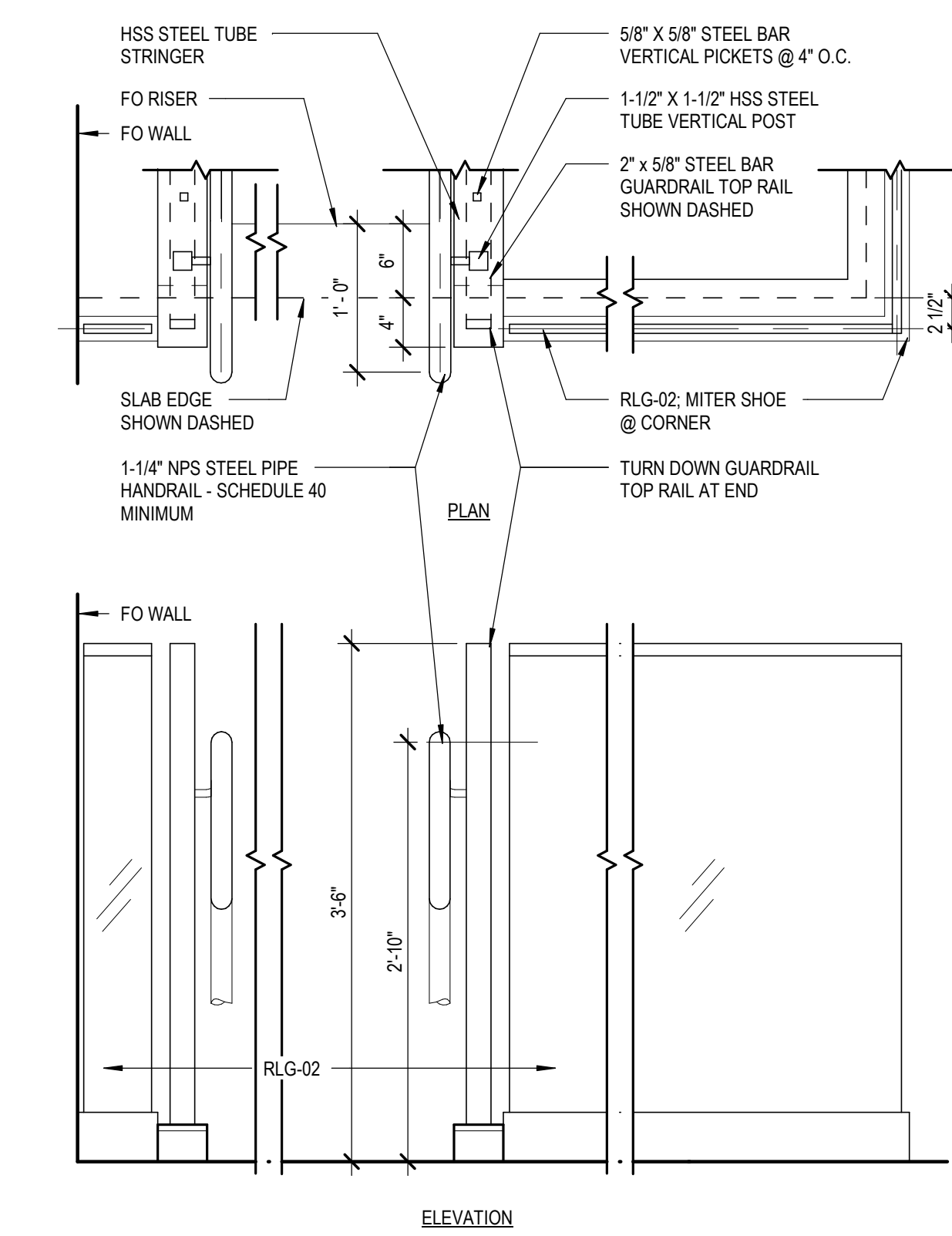
2 SOUTH STAIR @ BOT LANDING
1" = 1'-0"



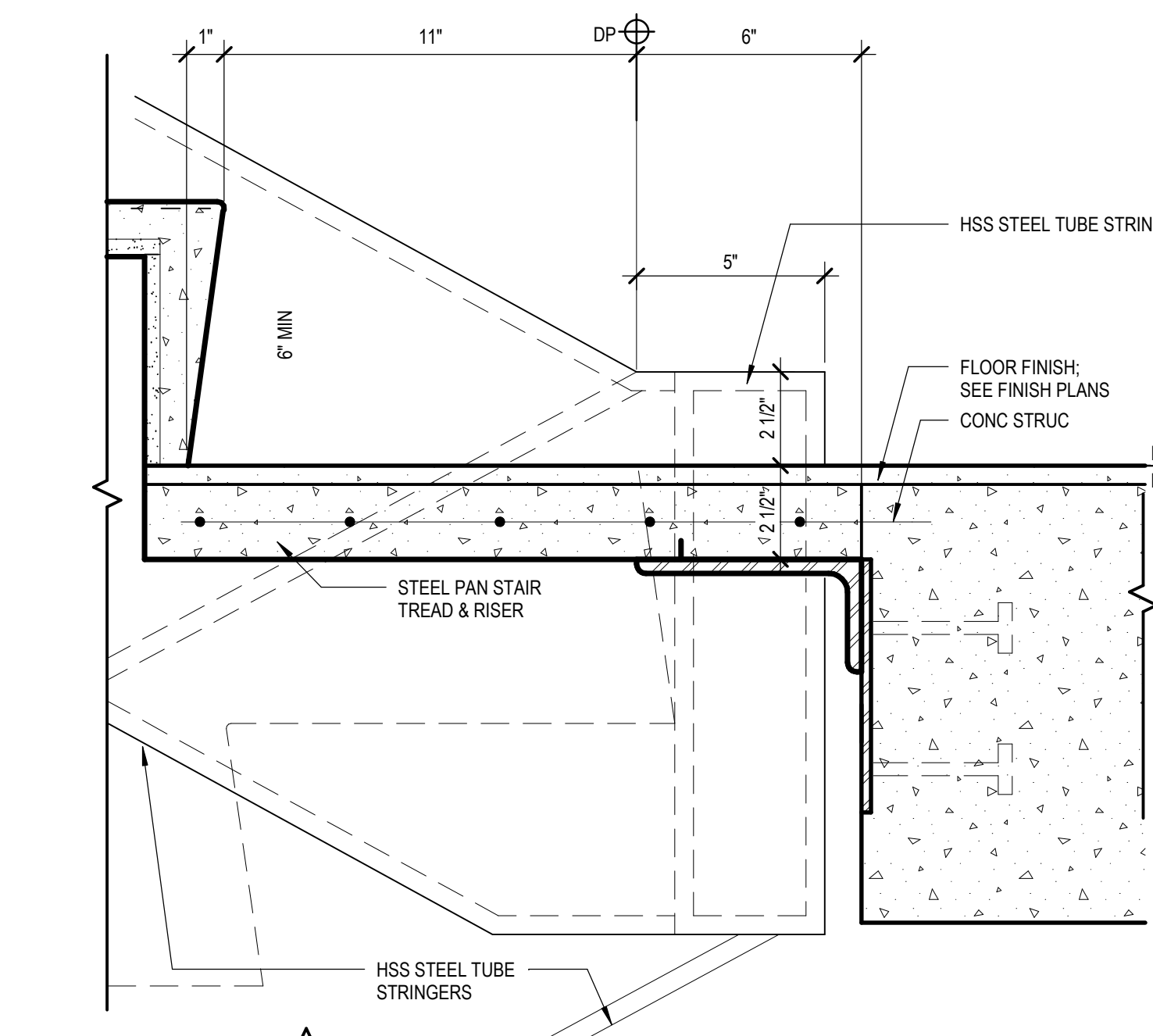
6 SOUTH STAIR AT INT LANDINGS
1" = 1'-0"



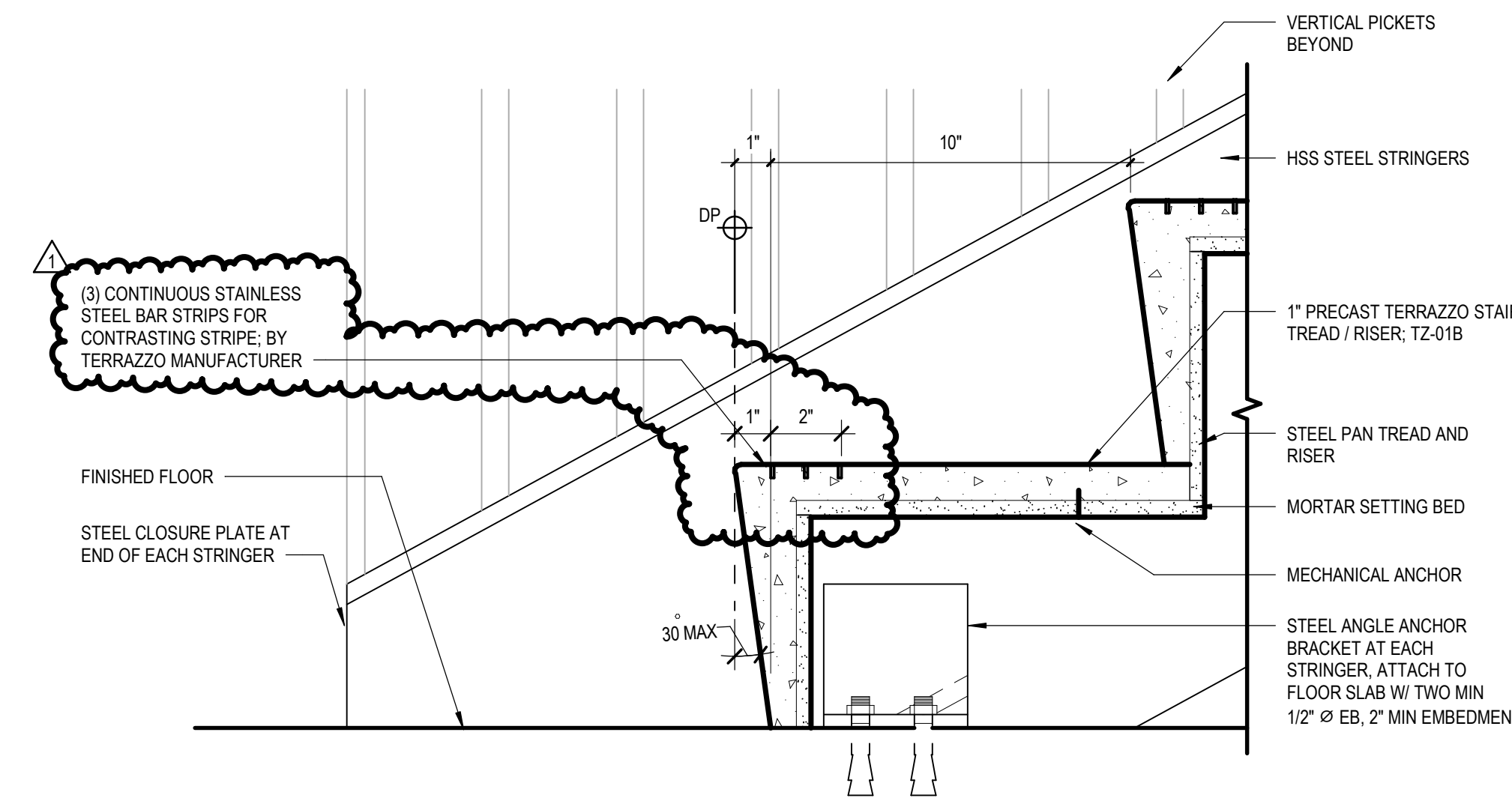
9 STAIR RAILING TRANSITION AT TOP LANDINGS
1" = 1'-0"



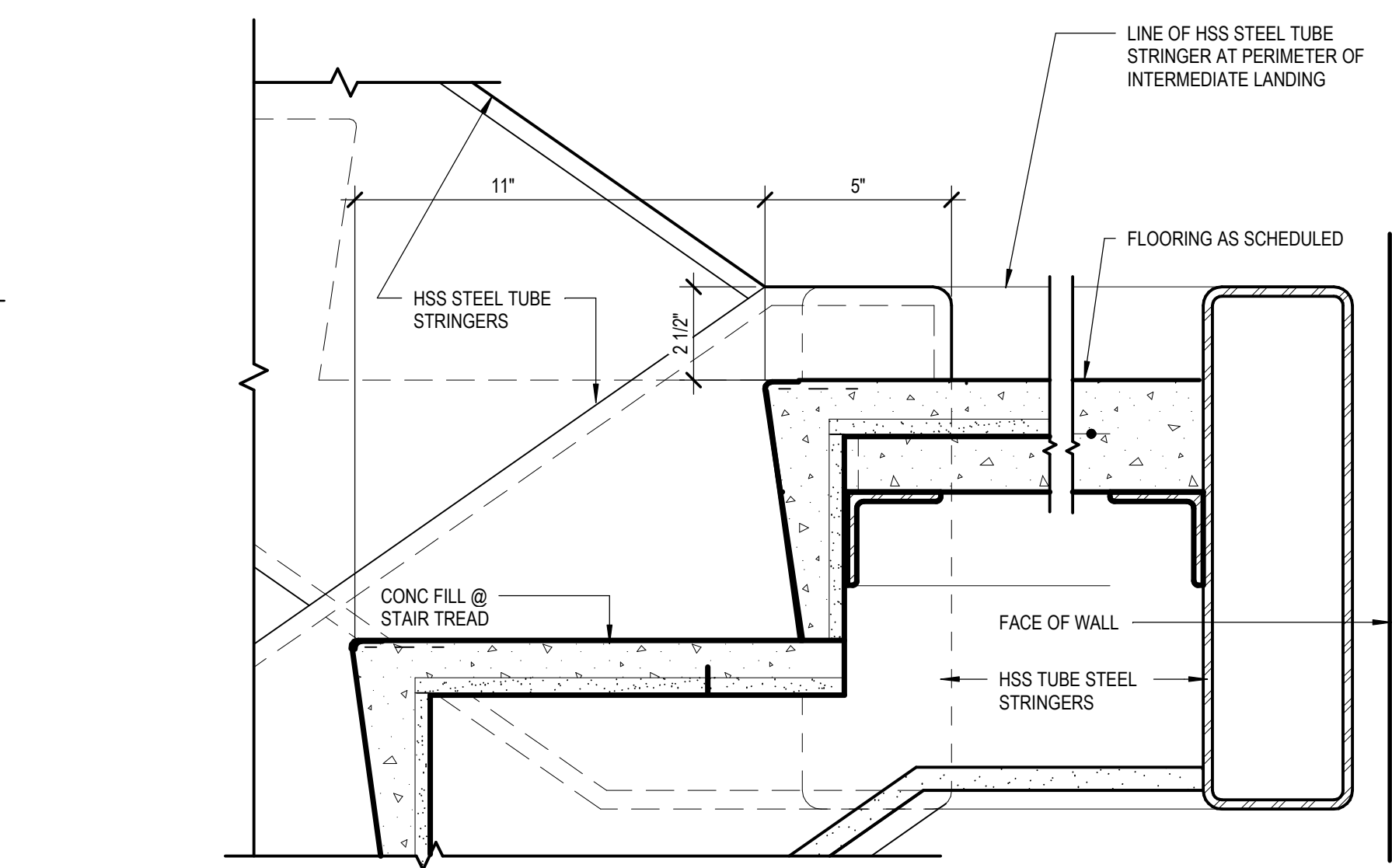
11 STAIR RAIL TERMINATION @ TOP LANDING
1" = 1'-0"



5 SOUTH STAIR AT FLOOR SLAB
3" = 1'-0"



8 SOUTH STAIR AT FLOOR SLAB
3" = 1'-0"



1 SOUTH STAIR AT INTERMEDIATE LANDING
3" = 1'-0"

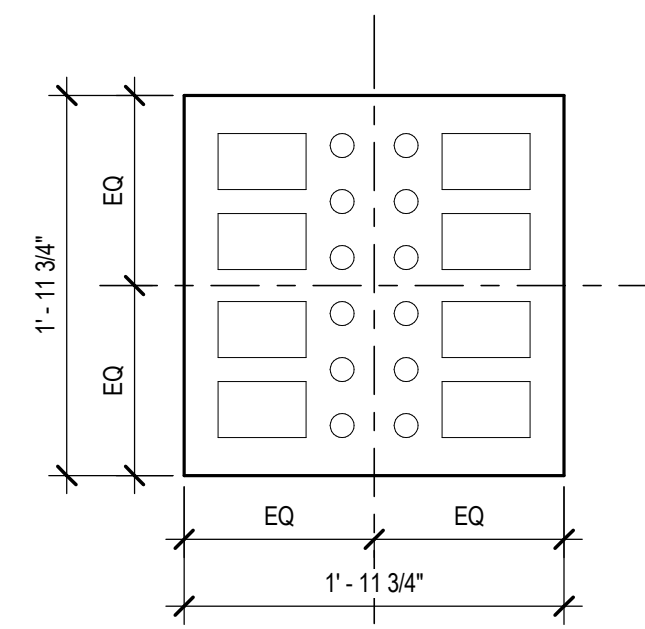
Mark	Fixture	Manufacturer	Model	Link	Comments
S-1	Wall Hung Handwash Sink	Elkay	ELV2219	https://www.elkay.com/products/details/ELV2219	
S-2	Drop in Lab Epoxy Sink	Durcon	D55	https://static.wilsonart.com/sites/durcon/files/docs/resources/Durcon-Sink_List-Imperial-2019.pdf	Drop in Sink, 25"x15"x10", black onyx
S-3	Drop in Lab Epoxy Sink - ADA	Durcon	A55	https://static.wilsonart.com/sites/durcon/files/docs/resources/Durcon-Sink_List-Imperial-2019.pdf	Drop in Sink, 25"x15"x4.75", black onyx
S-4	Fume Hood Sink	Durcon	D06C	https://static.wilsonart.com/sites/durcon/files/docs/resources/Durcon-Sink_List-Imperial-2019.pdf	Drop in sink, 12x12x12, black onyx
S-5	Double Basin Scullery Sink w/Left and Right Drainboard	Elkay	Dependabilt ESC24x24-2-24x	https://www.elkay.com/products/details/ESC24x24-2-24x	Autoclave Room
CS	Standard Cup Sink	Durcon	TS12	https://static.wilsonart.com/sites/durcon/files/docs/resources/Durcon-Sink_List-Imperial-2019.pdf	Oval, 8.88x2.63x5.75, black onyx

Mark	Fixture	Manufacturer	Model	Link	Comments
HCW1	Hot and Cold Water Faucet, Deck Mounted	Watersaver	L2224VB	https://wsflab.com/product/l2224vb/	Vacuum Breaker
HCW2	Hot and Cold, Handwashing Sink Fixture	Kohler	Acdiv	https://www.kohler.com/en/products/commercial/shop-commercial-faucets/acdiv-touchless-single-hole-lavatory-faucet-less-drain-0-5-0pm-103a36-sbna-7skuldc103a36-sbna-cp	AC Power Supply
RO1	RO Water Faucet, Deck Mounted	Water Saver	L7833MSC-VB	https://wsflab.com/product/l7833/	Toggle style lever handle, combination manual/ self closing control/vacuum breaker
HCW3	Hot and Cold Water, Scullery Fixture	T&S Brass	S-0133-A12-B	https://www.tbrass.com/products/lever-steel-stainless-steel-lever-steel-pre-mise-units/S-0133-A12-B	vacuum breaker
RO2	RO Water Faucet, Panel Mounted	Water Saver	L7840MSC-VB	https://wsflab.com/product/l7840/	Toggle style lever handle, combination manual/ self closing control/vacuum breaker
VAC1	Vacuum, Deck Mounted	Watersaver	L4200-131WSA	https://wsflab.com/product/l4200-131wsa/	
VAC2	Vacuum, Wall Mounted	Watersaver	L4200-158FT	https://wsflab.com/product/l4200-158ft/	
VAC3	Vacuum, Frame Mounted	Watersaver	L4200	https://wsflab.com/product/l4200/	
CA1	Compressed Air, Deck Mounted	Watersaver	L4200-131WSA	https://wsflab.com/product/l4200-131wsa/	
CA2	Compressed Air, Wall Mounted	Watersaver	L4200-158FT	https://wsflab.com/product/l4200-158ft/	
CA3	Compressed Air, Frame Mounted	Watersaver	L4200	https://wsflab.com/product/l4200/	
1SG1	Specialty Gas Outlet, Deck Mounted	Water Saver	L4200-131WSA	https://wsflab.com/product/l4200-131wsa/	Served by specialty gas line 1
1SG2	Specialty Gas Outlet, Wall Mounted	Watersaver	L4200-158FT	https://wsflab.com/product/l4200-158ft/	Served by specialty gas line 1
1SG3	Specialty Gas Outlet, Frame Mounted	Watersaver	L4200	https://wsflab.com/product/l4200/	Served by specialty gas line 1
ZSG1	Specialty Gas Outlet, Deck Mounted	Water Saver	L4200-131WSA	https://wsflab.com/product/l4200-131wsa/	Served by specialty gas line 2
ZSG2	Specialty Gas Outlet, Wall Mounted	Watersaver	L4200-158FT	https://wsflab.com/product/l4200-158ft/	Served by specialty gas line 2
ZSG3	Specialty Gas Outlet, Frame Mounted	Watersaver	L4200	https://wsflab.com/product/l4200/	Served by specialty gas line 2
CO2	CO2, Wall Mounted	Watersaver	L4203-364EL-179FT	https://wsflab.com/product/l4203-364el-179ft/	
SS	Safety Shower	Watersaver	ESBF643 AP250-200 PCC	https://wsflab.com/product/esbf643/	Electric flashing light and alarm horn, polished chrome plated brass construction
EW	Eyewash/Drench hose unit	Watersaver	EW1022, FSH, HB, VB	https://wsflab.com/product/ew1022/	8ft flexible stainless steel hose, hose guide bracket, in line vacuum breaker
EWA	Barrier free, eyewash, deck mounted	Watersaver	EWBF849	https://wsflab.com/product/ewbf849/	
PCW	Process Chilled Water	Watersaver	L4303	https://wsflab.com/product/l4303/	
FHVAC	Vacuum, Fume Hood Fixture	Watersaver	L022WSA	https://wsflab.com/product/l022wsa/	
FHCA	Compressed Air, Fume Hood Fixture	Watersaver	L4285VLB	https://wsflab.com/product/l4285vlb/	
FHSG	Specialty Gas, Fume Hood Fixture	Watersaver	L022WSA	https://wsflab.com/product/l022wsa/	
FHCA	Compressed Air, Fume Hood Valve	Watersaver	L4285VLB	https://wsflab.com/product/l4285vlb/	
FHSG	Specialty Gas, Fume Hood Valve	Watersaver	L4285VLB	https://wsflab.com/product/l4285vlb/	
FHCA	Compressed Air, Fume Hood Valve	Watersaver	L084VB-WSA	https://wsflab.com/product/l084vb-wsa/	
FHCA	Cold Water, Fume Hood Valve	Watersaver	L4285VLB	https://wsflab.com/product/l4285vlb/	
FHRO	RO Water, Fume Hood Fixture	Watersaver	L071VB-WSA	https://wsflab.com/product/l071vb-wsa/	
FHRO	RO Water, Fume Hood Valve	Watersaver	L4285VLB	https://wsflab.com/product/l4285vlb/	

Color Legend:	Handle	Disc
Compressed Air	Blue	Yellow
Cold Water	Green	Blue
Hot Water	Green	Red
RO	Blue	White
Vacuum	Gray	Black
Nitrogen	Blue	Green
Argon	Blue	Gray
CO2	Blue	Black

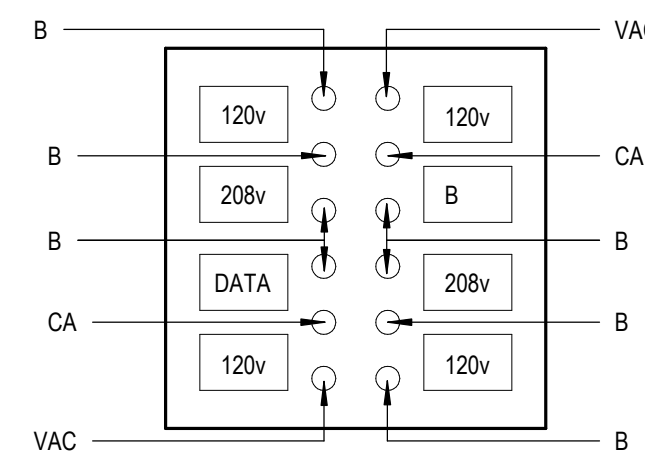
CEILING INTERFACE PANEL LEGEND

120v: NEMA L14-20 DUAL CIRCUIT TWIST LOCK, 20AMP
 208v: TWIST LOCK 208V CONNECTION
 DATA: DATA/COMM OUTLET (2 PORTS PER OUTLET)
 CA: COMPRESSED AIR OUTLET
 VAC: VACUUM OUTLET
 1SG: SPECIALTY GAS TYPE 1
 2SG: SPECIALTY GAS TYPE 2
 EP1: 120V EMERGENCY POWER
 EP2: 208V EMERGENCY POWER
 B: BLANK

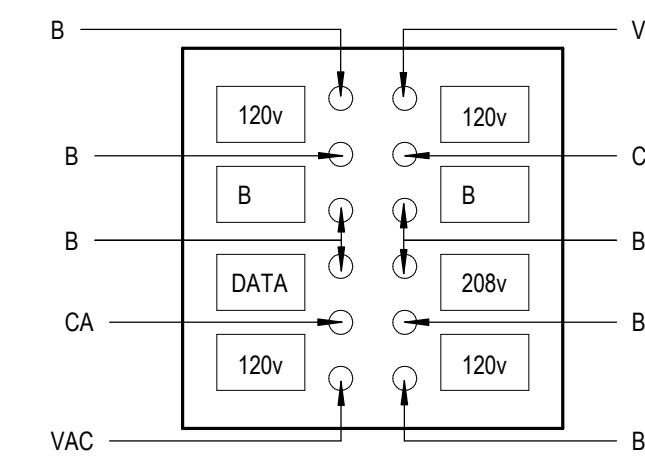


* REFER TO A141, A142, & A143 REFLECTED CEILING PLANS FOR CEILING INTERFACE PANEL LOCATIONS

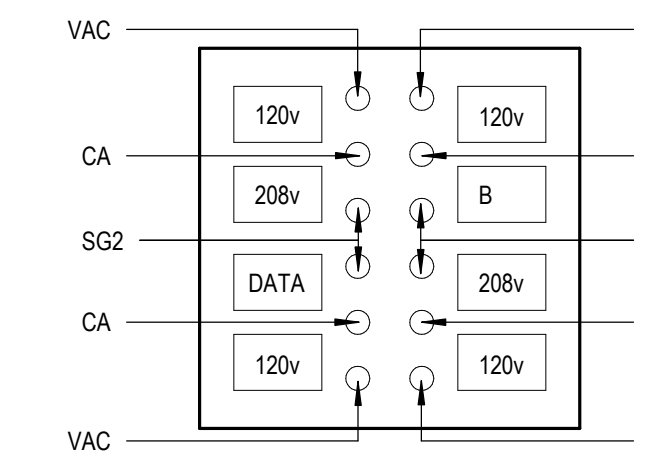
PANEL TYPE A:



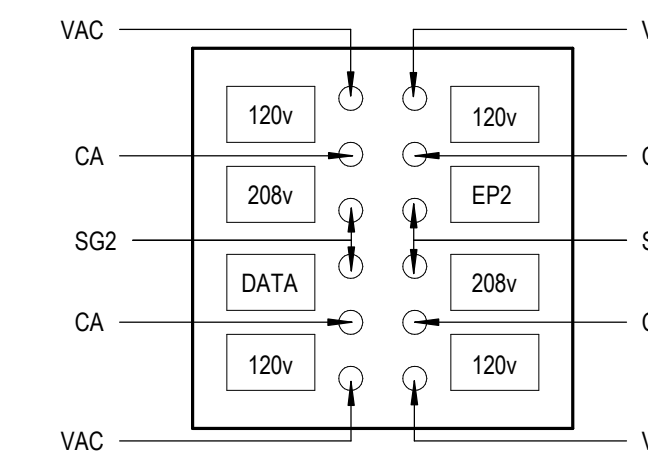
PANEL TYPE B:



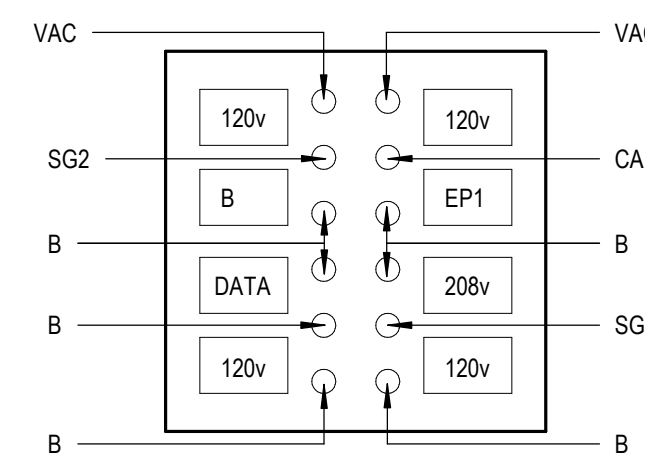
PANEL TYPE C:



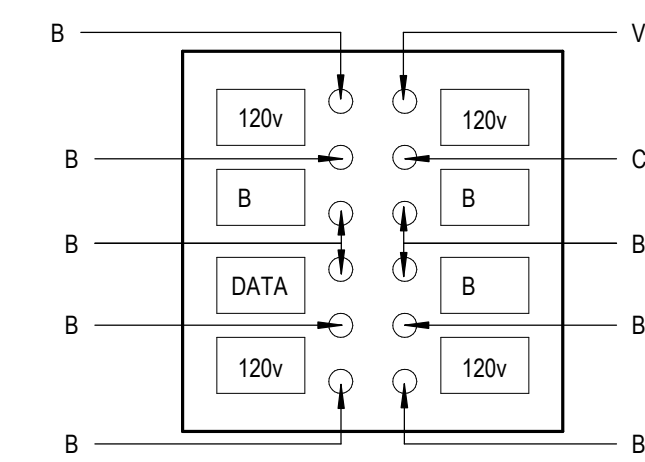
PANEL TYPE D:



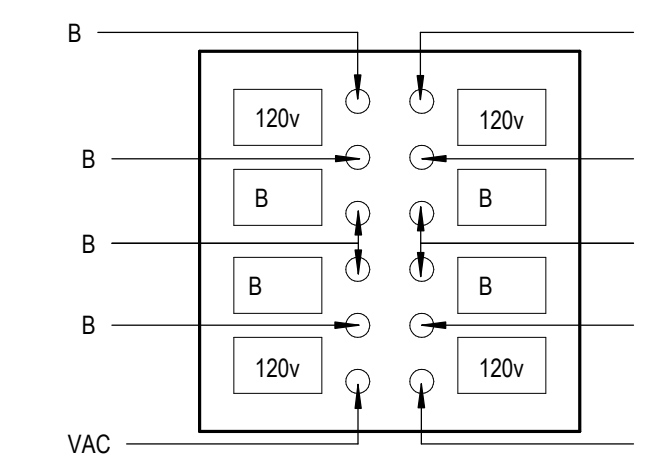
PANEL TYPE E:



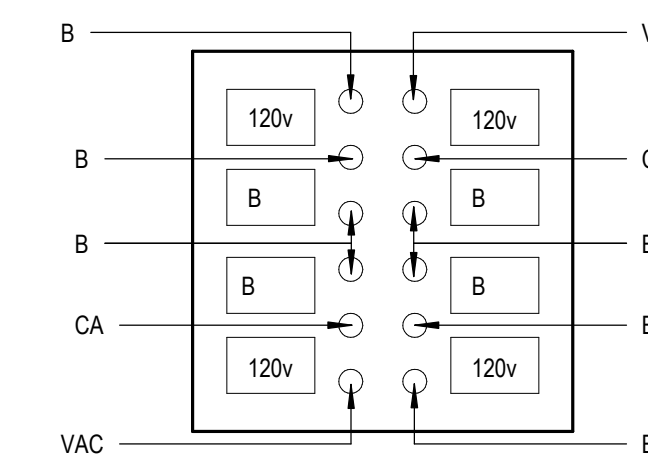
PANEL TYPE F:



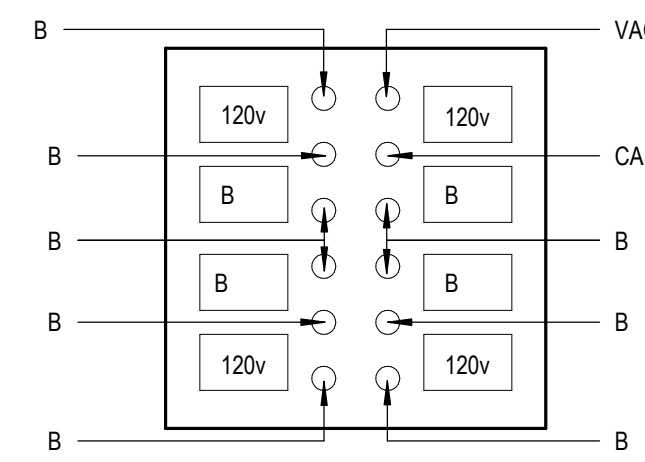
PANEL TYPE G:



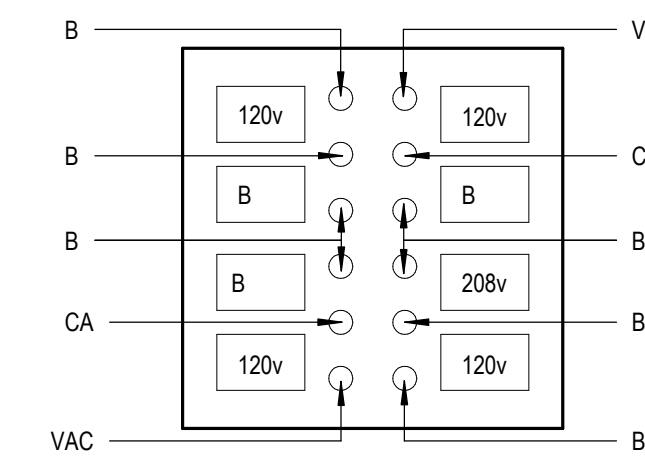
PANEL TYPE H:



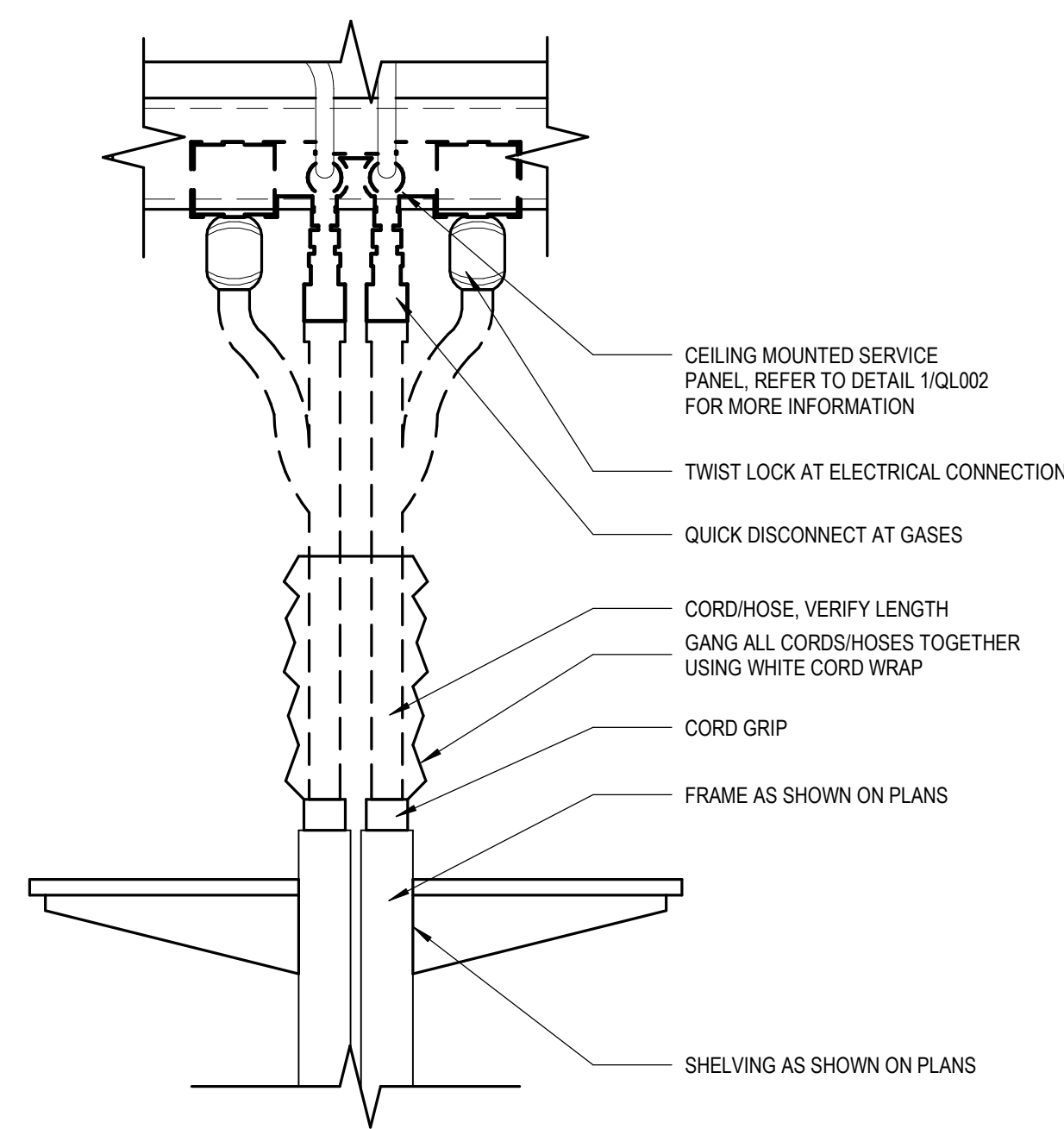
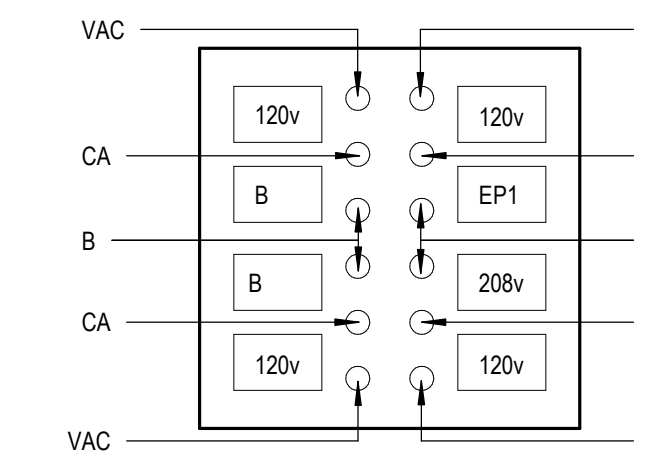
PANEL TYPE J:



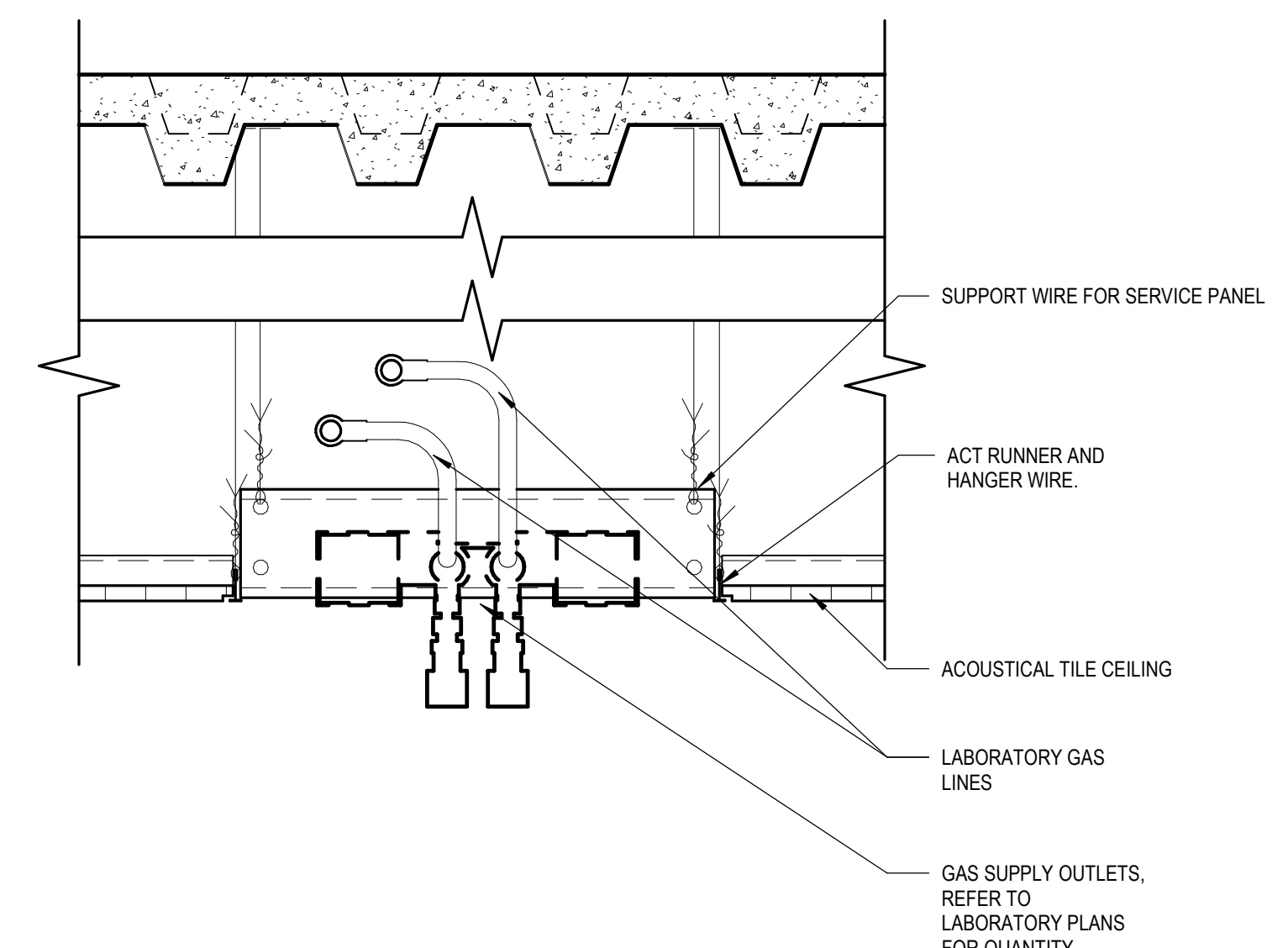
PANEL TYPE K:



PANEL TYPE L:



2 GAS CONNECTIONS TO ADAPTABLE CASEWORK TYPICAL
 1 1/2" = 1'-0"



1 LAY IN CEILING SERVICE PANEL TYPICAL
 1 1/2" = 1'-0"



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REVISIONS:
 1 11.08.2024 Addendum #1

DATE:
 10.25.2024
 arcDESIGN PROJECT NUMBER:
 23176
 CLIENT PROJECT NUMBER:
 20230276

DRAWING TITLE:

CIP, SINK, &
 FIXTURE
 SCHEDULES, CIP
 DETAILS

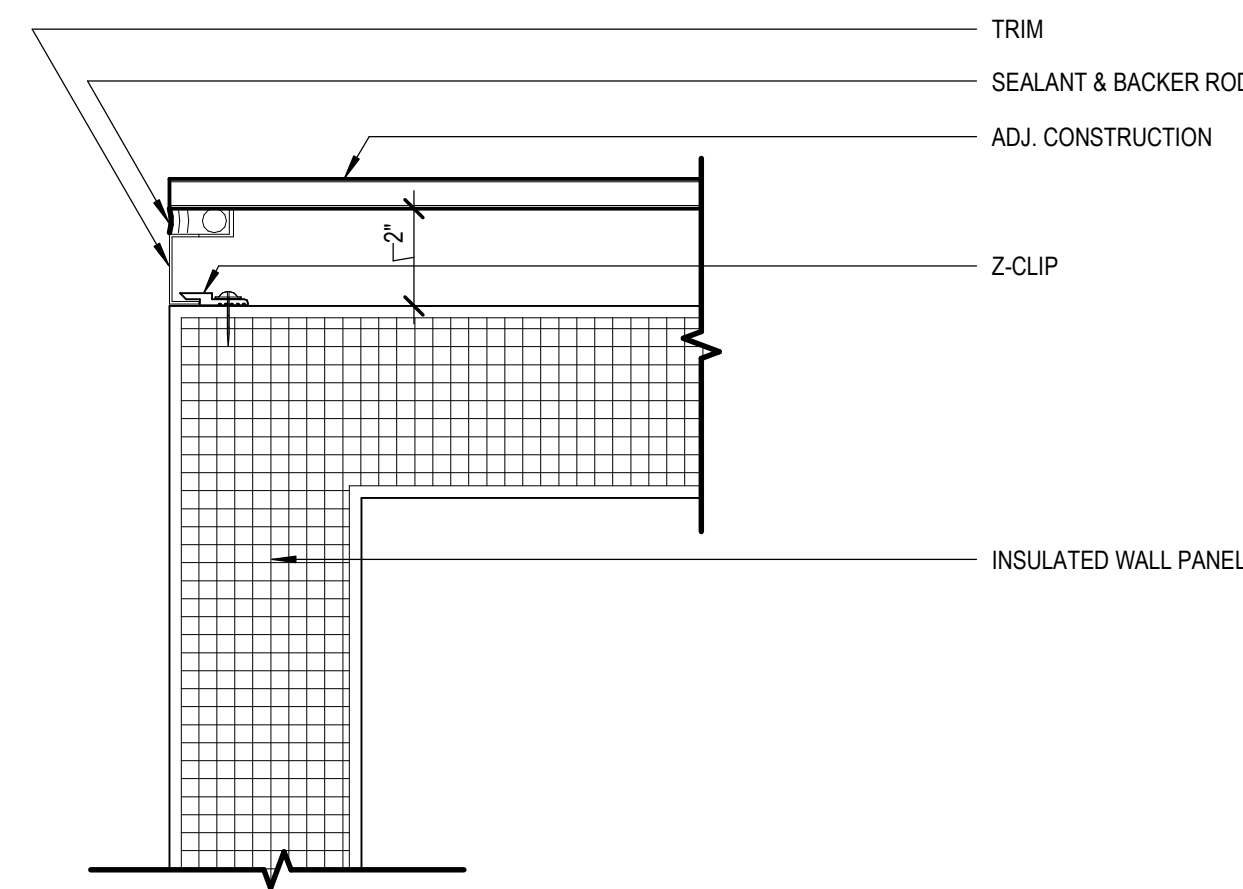
DRAWING NUMBER:

QL002

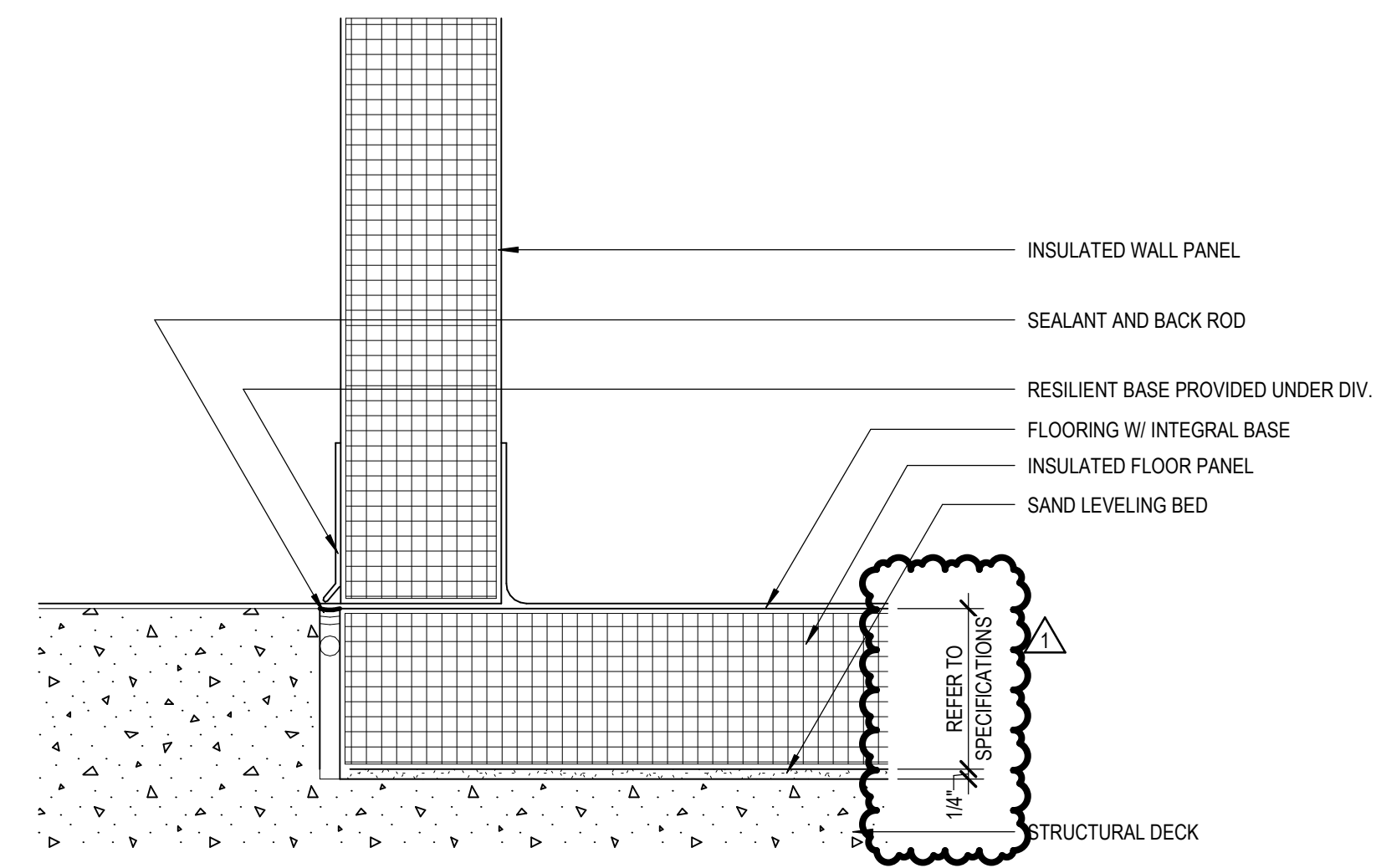


FUME HOOD SCHEDULE													
FLOOR	LOCATION (ROOM NAME)	LOCATION (ROOM NUMBER)	HOOD TYPE	HOOD WIDTH	HOOD DEPTH	SASH ORIENTATION	FPM	SERVICES - RIGHT COLUMN	SERVICES - LEFT COLUMN	SINK TYPE	SCHEDULED BASE CABINETS	DISTILLATION RACK	Comments
LEVEL 01	PREP LAB	110AA	BENCH	72"	33"	VERTICAL	80	CW, RO	CA, VAC, SG1, SG2	S-4	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 01	PREP LAB	110AA	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 01	BIOFABRICATION PRINTING 2	110BB	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 02	FUME HOOD	210C	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	YES	
LEVEL 02	FUME HOOD	210C	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-36" ACID, 1-24" ACID, 1-12" SINK	NO	
LEVEL 02	SUPPORT LAB	210D	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	YES	
LEVEL 02	SUPPORT LAB	210E	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	FUTURE HOOD LOCATION, PROVIDE SERVICES
LEVEL 02	SUPPORT LAB	210F	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	FUTURE HOOD LOCATION, PROVIDE SERVICES
LEVEL 02	WET LAB	211	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 02	SUPPORT LAB	211B	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	FUTURE HOOD LOCATION, PROVIDE SERVICES
LEVEL 03	FLEX WET LAB	300	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	YES	
LEVEL 03	FLEX SUPPORT LAB	300A	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 03	WET LAB	310	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 03	WET LAB	310	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 03	WET LAB	310	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 03	SUPPORT LAB	310B	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 03	FUME HOOD	310C	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	YES	
LEVEL 03	FUME HOOD	310C	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-36" ACID, 1-24" ACID, 1-12" SINK	NO	
LEVEL 03	SUPPORT LAB	310E	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	
LEVEL 03	SUPPORT LAB	310F	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	FUTURE HOOD LOCATION, PROVIDE SERVICES
LEVEL 03	SUPPORT LAB	310G	BENCH	72"	33"	VERTICAL	80	CW	CA, VAC, SG1, SG2	CS	1-24" FLAMMABLE, 1-36" ACID, 1-12" SINK	NO	FUTURE HOOD LOCATION, PROVIDE SERVICES

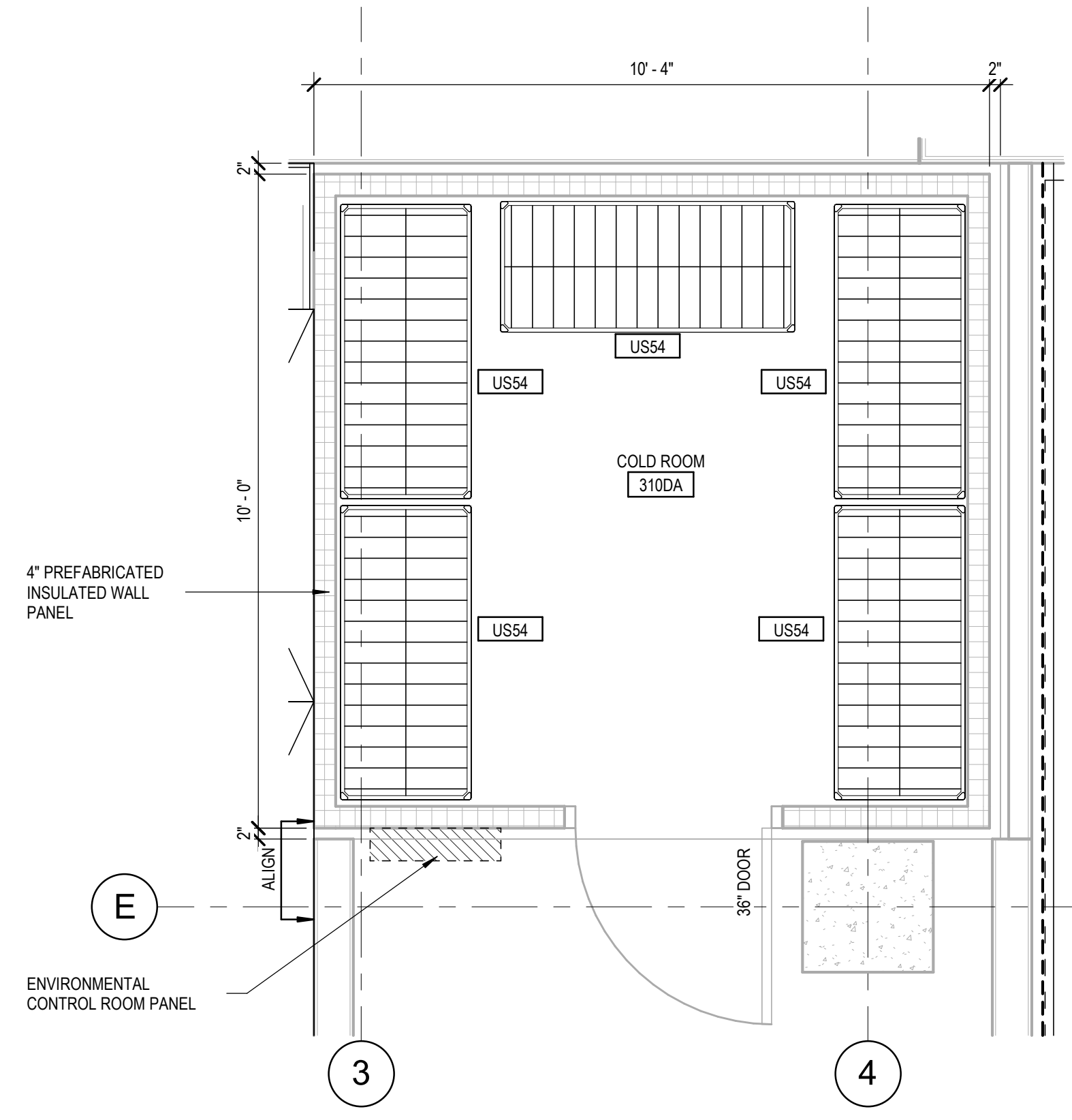
LABORATORY EQUIPMENT SCHEDULE *DIMENSIONS IN INCHES																												
FLOOR	EQUIPMENT	NUMBER	LOCATION (ROOM NAME)	LOCATION (ROOM NUMBER)	MANUFACTURER	MODEL	MOUNTING LOCATION	WEIGHT	WIDTH	DEPTH	HEIGHT	CLEARANCE - BACK	CLEARANCE - FRONT	CLEARANCE - LEFT	CLEARANCE - RIGHT	PURCHASED BY	INSTALLED BY	POWER	EMERGENCY POWER	DATA	COMPRESSED AIR	VACUUM	WATER	STEAM	DRAIN/WASTE	EXHAUST	COMMENTS	
LEVEL 02	UC ICEFLAKER	EQ-003	WET LAB	210	SCOTSMAN	UF2020	UNDER COUNTER	129	20	24	34	4	0	1	1	ONWER	CONTRACTOR	120v 1PH										
LEVEL 02	MEDIUM AUTOCLAVE	EQ-001	AUTOCLAVE	213	BETASTAR	262639	FLOOR	1,750	47	45	81	6	90	0	28	CONTRACTOR	CONTRACTOR	2-120v 1PH, 2-208v 3PH			X	X	HW, RO	X	X		INTEGRAL STEAM GENERATOR	
LEVEL 02	MEDIUM AUTOCLAVE	EQ-001	AUTOCLAVE	213	BETASTAR	262639	FLOOR	1,750	47	45	81	6	90	0	28	CONTRACTOR	CONTRACTOR	2-120v 1PH, 2-208v 3PH			X	X	HW, RO	X	X		INTEGRAL STEAM GENERATOR	
LEVEL 02	TALL GLASSWARE WASHER	EQ-002	AUTOCLAVE	214	GETINGE LANCER	910 LX	FLOOR	315	22	30	59	0	0	0	0	OWNER	CONTRACTOR	120v 1PH					RO, HW, CW	X				
LEVEL 03	UC ICEFLAKER	EQ-003	WET LAB	310	SCOTSMAN	UF2020	UNDER COUNTER	129	20	24	34	4	0	1	1	ONWER	CONTRACTOR	120v 1PH							X			
LEVEL 03	UC ICEFLAKER	EQ-003	FLEX WET LAB	300	SCOTSMAN	UF2020	UNDER COUNTER	129	20	24	34	4	0	1	1	ONWER	CONTRACTOR	120v 1PH							X			



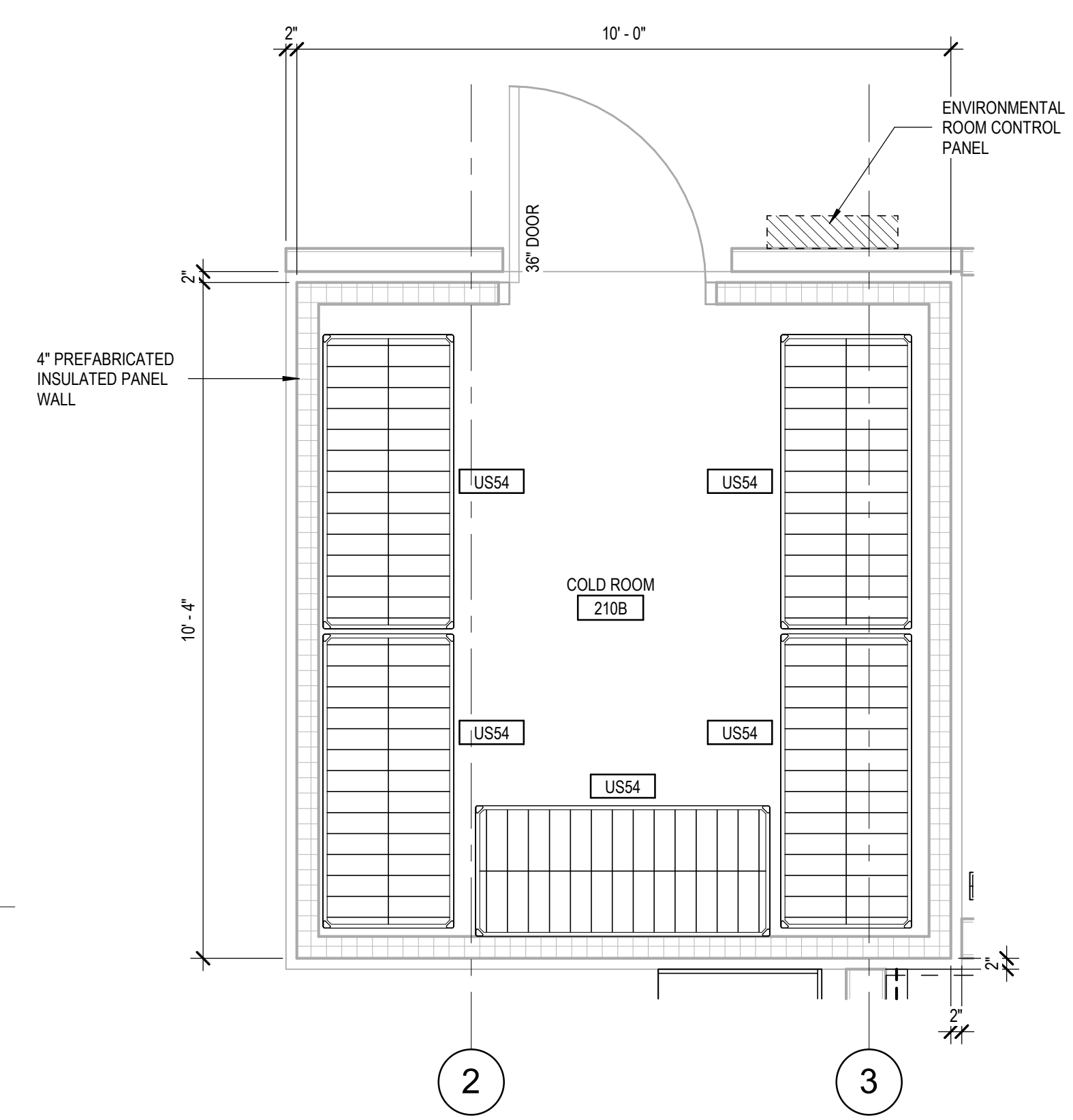
4 CONTROLLED ENVIRONMENTAL ROOM - PLAN DETAIL
3" = 1'-0"



3 CONTROLLED ENVIRONMENTAL ROOM - RECESSED SLAB / DECK DETAIL
3" = 1'-0"



2 ENLARGED LABORATORY FLOOR PLAN - LEVEL 03 COLD ROOM
1/2" = 1'-0"



1 ENLARGED FLOOR PLAN - LEVEL 02 COLD ROOM
1/2" = 1'-0"

ENVIRONMENTAL ROOM SCHEDULE															
LEVEL	ROOM NAME	ROOM NUMBER	OVERALL DIMENSIONS	DOOR SIZE	CEILING HEIGHT	TEMPERATURE SET POINT	TEMPERATURE RANGE	HUMIDITY RANGE	TEMPERATURE VARIATION	RAMP	EQUIPMENT LOCATION	ELECTRICAL IN ROOM	AIR COOLED	WATER COOLED	COMMENTS
LEVEL 02	COLD ROOM	210B	10'-4" X 10'-0"	36"	8' - 0"	4 DEG C	2 TO 10 DEG C	50% +/-2%	+/- 1 DEG C	NO	REMOTE - PENTHOUSE			X	
LEVEL 03	COLD ROOM	310DA	10'-4" X 10'-0"	36"	8' - 0"	4 DEG C	2 TO 10 DEG C	50% +/-2%	+/- 1 DEG C	NO	REMOTE - PENTHOUSE			X	

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1 11.08.2024 Addendum #1

DATE: 10.25.2024
 arcDESIGN PROJECT NUMBER: 23176
 CLIENT PROJECT NUMBER: 20230276

DRAWING TITLE:
 SCHEDULES, COLD ROOM DETAILS

DRAWING NUMBER:
 QL003



GENERAL NOTES

- THESE NOTES APPLY EQUALLY TO THE FULL SET OF DOCUMENTS.
- SITE VISIT(S) SHALL BE AS OUTLINED IN PROJECT SPECIFICATIONS.
- THE CONTRACTORS SHALL REFER TO ALL SPECIFICATION SECTIONS AND PLANS ON DRAWINGS FOR DETAILS OF BUILDING CONSTRUCTION TO ENSURE PROPER ARRANGEMENT FOR THEIR WORK. THE VARIOUS DRAWINGS EACH CONTRACTOR SHALL REFER TO THE GENERAL REQUIREMENTS OF THE CONTRACT. THE NOTES AND SYMBOLS INDICATED ON THE DRAWINGS ARE FOR THE GUIDANCE OF ALL TRADES INVOLVED IN THE PROJECT AND MUST BE FOLLOWED TO EXECUTE THE WORK AS INTENDED. IF DISCREPANCIES OCCUR, CONTACT THE PROJECT ARCHITECT THRU THE GENERAL CONTRACTOR FOR CLARIFICATION BEFORE PROCEEDING.
- IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR THE CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. SEE SPECIFICATIONS FOR MORE SPECIFIC DETAILS ON RESPONSIBILITIES.
- ALL WORK MUST BE COORDINATED WITH THE GENERAL CONTRACTOR TO MAINTAIN OPERATION OF THE STANDARDS.
- EACH CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF OTHERS. HE SHALL KEEP HIMSELF INFORMED OF THE PROGRESS AND DETAIL DEVELOPMENT OF THE WORK OF OTHERS AND SHALL BE RESPONSIBLE FOR COORDINATING AND EXPEDITING HIS WORK WITH OTHERS SO THAT THE PROGRESS OF THE TOTAL WORK SHALL BE KEPT ON SCHEDULE.
- ALL WORK SHALL BE PERFORMED IN COMPLETE COMPLIANCE WITH ALL GOVERNING CODES AND STANDARDS.
- EACH CONTRACTOR AND/OR TRADE, FITTING OR PLACING HIS WORK INTO OR ON THE WORK OF OTHERS DOES SO WITH THE UNDERSTANDING THAT THE INSTALLATION OF HIS WORK CONSTITUTES HIS ACCEPTANCE OF THE SUITABILITY OF THE WORK IN PLACE. IF THE WORK OF OTHERS IS NOT ACCEPTABLE, HE SHALL NOTIFY THE PROJECT ARCHITECT AND SUCH WORK WILL BE CORRECTED. ANY NEW WORK INSTALLED IN UNSUITABLE EXISTING CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR TRADE INSTALLING THE NEW WORK. NO CLAIMS FOR ADDITIONAL COMPENSATION FOR CORRECTING WORK INSTALLED IN UNSUITABLE EXISTING CONDITIONS WILL BE CONSIDERED.
- ANNULAR SPACE OF ALL PIPE, CONDUIT, DUCT & OTHER SIMILAR PENETRATIONS OF FIRE RATED ASSEMBLIES SHALL BE FIRESTOPPED. IN ADDITION, PENETRATIONS THROUGH 0- HOUR RATED WALLS & FLOORS SHALL BE FIRESTOPPED TO RETARD PASSAGE OF FIRE & SMOKE.
- ALL PIPING, DUCTS, CONDUITS, ETC. IN FINISHED ROOMS, CORRIDORS, ETC. SHALL BE CONCEALED ABOVE THE SUSPENDED CEILING. IN GENERAL, KEEP DUCT AND PIPING MAINS NEXT TO UNDERSIDE OF STRUCTURE.
- THE FIRST FIGURE OF DUCT SIZE INDICATES DIMENSION OF FACE SHOWN OR INDICATED. DUCT SIZES ARE NET INSIDE DIMENSIONS.
- TOTAL STATIC PRESSURE NOTED IN THE SCHEDULES INCLUDES DUCT SYSTEM, TERMINAL UNITS, FILTERS, COILS, ETC.
- FOR TYPICAL WATER AND STEAM PIPING CONNECTIONS TO EQUIPMENT, SEE STANDARD DETAILS AND PIPING SCHEMATICS.
- DIFFUSER SIZES SHOWN ON FLOOR PLANS ARE NECK SIZES. REGISTER AND GRILLE SIZES SHOWN ARE FACE SIZES.
- WATER PIPE CONNECTIONS TO AIR HEATING AND COOLING COILS SHALL BE MADE TO PROVIDE COUNTER FLOW BETWEEN WATER AND AIR.
- ALL PRESSURES LISTED ARE GAGE PRESSURE UNLESS OTHERWISE NOTED.
- THE CONTRACT DRAWINGS ARE NOT INTENDED TO SHOW EVERY VERTICAL OR HORIZONTAL OFFSET WHICH MAY BE NECESSARY TO COMPLETE THE SYSTEMS. COORDINATE WORK IN ADVANCE WITH ALL OTHER TRADES AND REPORT IMMEDIATELY ANY DIFFICULTIES WHICH CAN BE ANTICIPATED.
- ALL CUTTING AND PATCHING REQUIRED FOR THIS PROJECT SHALL BE INCLUDED IN THE CONTRACT. UNLESS OTHERWISE INDICATED ALL PATCHING SHALL BE ACCOMPLISHED BY THE CONTRACTOR WHO REMOVES AN ITEM RESULTING IN NECESSARY PATCHING. PATCH OPENINGS WITH LIKE MATERIALS AND FLUSH WITH ADJACENT SURFACES. TOOTH MASONRY AS REQUIRED. FINISH PATCH SURFACES TO MATCH ADJACENT SURFACE.
- RUNOUT PIPING TO TERMINAL UNITS SHALL BE 0.75" SIZE UNLESS OTHERWISE NOTED. REFER TO AIR TERMINAL UNIT SCHEDULE(S).
- ALL INSULATED DUCTWORK AND PIPING SHALL HAVE DAMPER/VANES HANDLE EXTENSIONS.
- REFER TO SPECIFICATIONS SECTION 23.05 FOR CONDUIT SCHEDULE(S).
- HVAC CONTRACTOR SHALL STUDY APPROVED INSTALLATION DOCUMENTS FOR DUCT AND VENTS INSTALLATION REQUIREMENTS AHEAD OF ANY FABRICATION. INSTALLATION SHALL COMPLY WITH LAB MANUFACTURERS REQUIREMENTS.

ABBREVIATIONS

AC	- AIR COMPRESSOR OR AIR CONDITIONER	ID	- INSIDE DIAMETER
ACCU	- AIR COOLED CONDENSING UNIT	INV	- INVERT ELEVATION
AD	- ACCESS DOOR OR AREA DRAIN	IN	- INCHES
ADJ	- ADJUSTABLE	KEC	- KITCHEN EQUIPMENT CONTRACTOR
AFF	- ABOVE FINISHED FLOOR	L	- LENGTH
AFG	- ABOVE FINISHED GRADE	LAT	- LEAVING AIR TEMPERATURE
AFMS	- AIR FLOW MEASURING STATION	LAV	- LAVATORY
ALT	- ALTERNATE	LBS	- POUNDS
AP	- ACCESS PANEL	LPC	- LOW PRESSURE CONDENSATE RETURN
APPROX	- APPROXIMATE	LPS	- LOW PRESSURE STEAM SUPPLY
ARCH	- ARCHITECT OR ARCHITECTURAL	LWT	- LEAVING WATER TEMPERATURE
ASSY	- ASSEMBLY	MAX	- MAXIMUM
ATC	- AUTOMATIC TEMPERATURE CONTROL (SYNONYMOUS WITH BAS)	MD	- MOTORISED DAMPER
BAS	- BUILDING AUTOMATION SYSTEM	MEZZ	- MEZZANINE
BDD	- BACK DRAFT DAMPER	MFR	- MANUFACTURER
BFP	- BACKFLOW PREVENTER	MH	- MANHOLE
BLDG	- BUILDING	MIN	- MINIMUM OR MINUTE
BOB	- BOTTOM OF BEAM	MISC	- MISCELLANEOUS
BOG	- BOTTOM OF GULLY	MOUNT	- MOUNTING
BOE	- BOTTOM OF EQUIPMENT	MPC	- MEDIUM PRESSURE CONDENSATE RETURN
BOF	- BOTTOM OF FOOTING	MPS	- MEDIUM PRESSURE STEAM SUPPLY
BOG	- BOTTOM OF GRILLE	MU	- WATER MAKE-UP
BOP	- BOTTOM OF PIPE	NIC	- NORMALLY CLOSED
BOT	- BOTTOM	NIC	- NOT IN CONTRACT
BTU	- BRITISH THERMAL UNIT PER HOUR	NIO	- NORMALLY OPEN
BTUH	- BRITISH THERMAL UNIT PER HOUR	NOM	- NOMINAL
CB	- COUNTER BALANCED BACKDRAFT DAMPER	NPT	- NATIONAL PIPE THREAD
CBP	- CONTRACTOR FURNISHED COMPONENT INSTALLED	NTS	- NOT TO SCALE
CFM	- CUBIC FEET PER MINUTE	OA	- OUTDOOR AIR
CHR	- CHILLED WATER SUPPLY	OD	- OUTSIDE DIAMETER
CHOR	- CHILLED WATER GLYCOL SOLUTION RETURN	OFPI	- OWNER FURNISHED CONTRACTOR INSTALLED
CHOS	- CHILLED WATER GLYCOL SOLUTION RETURN	OFDI	- OWNER FURNISHED OWNER INSTALLED
CLG	- CEILING	P	- PROPANE GAS
CMU	- CONCRETE MASONRY UNIT	PC	- PLUMBING CONTRACTOR (DIVISION 22) OR PLUMBER CONDENSATE RETURN
CO	- CLEAN OUT	PLBG	- PLUMBING
CO2	- CARBON DIOXIDE	PRESS	- PRESSURE
CONN	- CONNECT OR CONNECTION	PRV	- PRESSURE REGULATING VALVE
CONTR	- CONTRACTOR	PS	- POUNDS PER SQUARE FOOT
CTR	- CENTER	PSI	- POUNDS PER SQUARE INCH
CW	- COPPER	PSIG	- POUNDS PER SQUARE INCH GAUGE
CW	- COLD WATER	RA	- RETURN AIR
CWR	- CONDENSER WATER RETURN	RAD	- RADIANT
CWS	- CONDENSER WATER SUPPLY	REF	- REFLECTED CEILING PLAN
D	- DRAIN LINE	RD	- ROOF DRAIN
DB	- DRY BUB	REC	- RECESSED
DDC	- DIRECT DIGITAL CONTROLS	REQ	- REQUIRED
DI	- DEIONIZED WATER	RI	- ROUGH IN
DIA	- DIAMETER	RIR	- REFRIGERANT LIQUID RETURN
DM	- DIMENSION	ROS	- REVERSE OSMOISIS WATER SUPPLY
DWG	- DRAWING	ROR	- REVERSE OSMOISIS WATER RETURN
EA	- EACH OR EXHAUST AIR	RPM	- REVOLUTIONS PER MINUTE
EAT	- ENTERING AIR TEMPERATURE	RS	- REFRIGERANT SUCTION
EC	- ELECTRICAL CONTRACTOR (DIVISION 26)	S	- SPRINKLER (WET)
EJ	- EXPANSION JOINT	SA	- SUPPLY AIR
ELEC	- ELECTRICAL	SAN	- SANITARY OR SANITARY DRAIN
ELEV	- ELEVATOR	SCH	- SCHEDULE
EQUIP	- EQUIPMENT	SCW	- SOFT COLD WATER
ET	- EXPANSION TANK	SHT	- SHEET
ETR	- EXISTING TO REMAIN	SPEC	- SPECIFICATIONS
EOS	- EQUIPMENT SUPPLIER	SQ	- SQUARE
EWT	- ENTERING WATER TEMPERATURE	SR	- SUPPLY RISER
EXH	- EXHAUST	SRV	- SAFETY RELIEF VALVE
EXP	- EXPANSION	SS	- STAINLESS STEEL
EXT	- EXTERIOR	STD	- STANDARD
EX	- EXISTING	STM	- STORM OR STORM DRAINAGE
FD	- FLOOR DRAIN	STRUC	- STRUCTURAL OR STRUCTURE
FF	- FINISHED FLOOR ELEVATION	SUTC	- SITE UTILITY CONTRACTOR
FLR	- FLOOR	TEMP	- TEMPERATURE
FOB	- FLAT ON BOTTOM	TOB	- TOP OF BEAM
FOF	- FUEL OIL FLOW	TOD	- TOP OF DUCT
FOG	- FUEL OIL GAUGE	TOE	- TOP OF EQUIPMENT
FOR	- FUEL OIL RETURN	TOF	- TOP OF FOOTING
FOS	- FUEL OIL SUPPLY	TJU	- TOP OF JOIST
FOT	- FLAT ON TOP	TOP	- TOP OF PIPE
FPM	- FEET PER MINUTE	TOS	- TOP OF SLAB OR TOP OF STEEL
FSC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)	TYP	- TYPICAL
FT	- FEET	UNO	- UNLESS NOTED OTHERWISE
FT	- FOOTING	V	- VENT
G	- GAS OR NATURAL GAS	VAC	- VACUUM
GA	- GAUGE	VEL	- VELOCITY
GAL	- GALLON	VFD	- VARIABLE FREQUENCY DRIVE
GALV	- GALVANIZED	VOL	- VOLUME
GC	- GENERAL TRADES CONTRACTOR	VTR	- VENT THROUGH ROOF
GPM	- GALLONS PER MINUTE	VR	- VENT RISER
HB	- HOSE BIBB	W	- WITH
HC	- HVAC CONTRACTOR (DIVISION 23)	W/O	- WITHOUT
HD	- HUB DRAIN	WB	- WET BULL
HE	- HEATING HOT WATER SUPPLY	WCO	- WALL CLEANOUT
HG	- HORSEPOWER		
HPC	- HIGH PRESSURE CONDENSATE RETURN		
HPS	- HIGH PRESSURE STEAM SUPPLY		
HR	- HOUR		
HT	- HEAT TRACE		
HTR	- HEATER		
HVAC	- HEATING, VENTILATING, AND AIR CONDITIONING		
HW	- HOT WATER		
HWR	- HEATING HOT WATER RETURN		
HWS	- HEATING HOT WATER SUPPLY		

GENERAL FLOOR PLAN NOTES

(3)	PLAN NOTE: APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.
(3)	DETAIL NOTE: APPLIES ONLY TO THE ASSOCIATED DETAIL.
A1	EQUIPMENT, DEVICE OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.
(H1) OR H1	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.
(2)	RISER OR STACK NUMBER
(B H2)	DETAIL: B = DETAIL DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED
(1 H2)	SECTION: 1 = SECTION DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED
(A1)	"UP TO" SYMBOL (ITEM ON FLOOR ABOVE)
TOE: 3'-0"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE
BOE: 0'-6"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE
10" ELEV: 8'-0"	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF DUCTWORK, UNLESS NOTED OTHERWISE
20x20 100: 8'-10"	DOOR UNDERCUT: X = HEIGHT OF UNDERCUT IN INCHES: 0.75 INCH UNDERCUT IF NO HEIGHT IS NOTED. COORDINATE WITH GC.
20x20 800: 7'-2"	DOOR LOUVER: 1 = SQUARE FEET OF LOUVER.
DL-X	CONNECT TO EXISTING
DL-1	DEMOLISH TO POINT INDICATED

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		BOTTOM CONNECTION (45°)
		BOTTOM CONNECTION (90°)
		DIRECTION OF PITCH
		DROP
		ELBOW DOWN
		ELBOW UP
		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
		FLOW DIRECTION DESIGNATION
		PIPE RISER
		PUMP
		RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

HVAC PIPING DESIGNATIONS

CHS	- CHILLED WATER SUPPLY PIPE
CHR	- CHILLED WATER RETURN PIPE
CWS	- CONDENSER WATER SUPPLY PIPE
CWR	- CONDENSER WATER RETURN PIPE
CHGS	- CHILLED WATER GLYCOL SOLUTION SUPPLY PIPE
CHGR	- CHILLED WATER GLYCOL SOLUTION RETURN PIPE
D	- DRAIN LINE, PITCH IN DIRECTION INDICATED
HWR	- HEATING HOT WATER RETURN PIPE
HWS	- HEATING HOT WATER SUPPLY PIPE
MU	- WATER MAKE-UP PIPE
V	- VENT PIPE
ET	- EXPANSION TANK PIPE
HG	- REFRIGERANT HOT GAS LINE
RL	- REFRIGERANT LIQUID LINE
RS	- REFRIGERANT SUCTION LINE
10	- STEAM SUPPLY PIPE - NUMBER INDICATES P.S.I.G.
HPC	- HIGH PRESSURE CONDENSATE RETURN PIPE
HPS	- HIGH PRESSURE STEAM SUPPLY PIPE
LPC	- LOW PRESSURE CONDENSATE RETURN PIPE
LPS	- LOW PRESSURE STEAM SUPPLY PIPE
MPC	- MEDIUM PRESSURE CONDENSATE RETURN PIPE
MPS	- MEDIUM PRESSURE STEAM SUPPLY PIPE
PC	- PUMPED CONDENSATE RETURN PIPE

VALVES AND FITTINGS

	CHECK VALVE
	SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
	COMBINATION SHUTOFF AND BALANCING VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS)
	CONCENTRIC PIPE REDUCER
	ECCENTRIC PIPE REDUCER
	PRESSURE GAUGE
	TEMPERATURE GAUGE OR THERMOMETER
	UNION
	CLEANOUT
	STRAINER
	STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION
	DRAIN VALVE WITH HOSE END CONNECTION
	AUTOMATIC FLOW CONTROLLER WITH PIT PLUG IN AND OUT
	EXPANSION JOINT
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	PRESSURE REDUCING VALVE
	MODULATING 2 PORT AUTOMATIC CONTROL VALVE
	MODULATING 3 PORT AUTOMATIC CONTROL VALVE
	AUTOMATIC PRESSURE INDEPENDENT CONTROL VALVE
	QUICK OPENING MANUAL VALVE
	SAFETY RELIEF VALVE FOR HYDRONIC SYSTEMS PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE. FOR STEAM SYSTEMS PIPE DISCHARGE TO OUTDOORS.
	VACUUM BREAKER
	NEEDLE VALVE
	PRESSURE AND TEMPERATURE TEST PLUG
	VACUUM GAUGE WITH STOP
	END CAP
	GLOBE VALVE
	SHUTOFF VALVE AND BOX
	SHUTOFF VALVE ON RISER
	SOLENOID VALVE
	WATER METER
	FLOW METER
	BI-METALLIC STEAM TRAP AND DRIP ASSEMBLY
	THERMODYNAMIC STEAM TRAP AND DRIP ASSEMBLY
	INVERTED BUCKET STEAM TRAP AND DRIP ASSEMBLY
	FLOAT AND THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
	THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY
	PRESSURE GAUGE WITH COCK AND SIPHON LOOP

MISC SYMBOLS

(C)	CARBON DIOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(CO)	CARBON MONOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(DP)	DIFFERENTIAL PRESSURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(H)	HUMIDITY SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(S)	TEMPERATURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(S)	TEMPERATURE SENSOR MOUNTED IN CEILING PLENUM.
(SP)	STATIC PRESSURE SENSOR.
(T)	SPACE TEMPERATURE SENSOR / THERMOSTAT. WHEN WALL MOUNTED, MOUNTING HEIGHT 46" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT.
(E)	EMERGENCY SHUTOFF STATION. 46" MOUNTING HEIGHT UNLESS NOTED OTHERWISE.

DUCTWORK SYMBOLS

RECTANGULAR	ROUND / OVAL	
		ROUND BRANCH DUCTWORK
		RECTANGULAR BRANCH DUCTWORK
		SQUARE TEE WITH TURNING VANES
		NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND / OVAL DUCTWORK SHALL BE PROVIDED WITH TURNING VANES. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
		RADIUS'D TEE
		RADIUS'D BRANCH
		UNLESS NOTED OTHERWISE ON DRAWINGS, 15" MAX FOR DIVERGING, 30" MAX FOR CONVERGING TRANSITION.
		EXISTING DUCTWORK TO REMAIN
		EXISTING DUCTWORK TO BE REMOVED
		RETURN AIR, RELIEF AIR, OR TRANSFER AIR DUCTWORK. (UP AND DOWN) RADIUS'D OR SQUARE WITH TURNING VANES. SUPPLY AIR OR OUTDOOR AIR DUCTWORK (UP AND DOWN) RADIUS'D OR SQUARE WITH TURNING VANES.
		EXHAUST AIR DUCTWORK. (UP AND DOWN) RADIUS'D OR SQUARE WITH TURNING VANES.
		RECTANGULAR AND ROUND / OVAL DUCTWORK RISE / DROP WITH 90° RADIUS'D OR SQUARE ELBOWS AND TURNING VANES.
		RADIUS ELBOW
		90° SQUARE ELBOW (WITH TURNING VANES) NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND DUCTWORK SHALL BE PROVIDED WITH TURNING VANES.
		SQUARE THROAT / RADIUS HEEL FITTINGS NOT ACCEPTABLE
		ACCESS DOOR OR PANEL
		DUCTWORK RISE IN DIRECTION OF AIR FLOW
		DUCTWORK DROP IN DIRECTION OF AIR FLOW
		FLEXIBLE DUCTWORK
		DUCTWORK WITH ACOUSTICAL LINER. LISTED DUCT SIZES ARE INSIDE CLEAR DIMENSIONS.
		FLEXIBLE CONNECTION
		DUCTWORK CONSTRUCTED OF SPECIAL MATERIAL AS NOTED
		DIRECTION OF PITCH
		RECTANGULAR DUCTWORK DIMENSIONS (W x H)
		ROUND DUCTWORK DIMENSIONS (DIA)
		OVAL DUCTWORK DIMENSIONS (W x H)

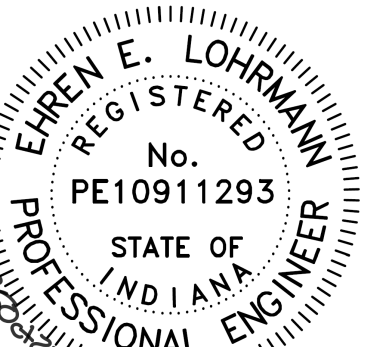
DUCTWORK DEVICE SYMBOLS

	AIR DEVICE. A3 = DESIGNATION (REFER TO FLOOR PLANS AND AIR DEVICE SCHEDULE FOR VARIOUS DESIGNATIONS). 10x = NECK SIZE (IN INCHES). 300 = REQUIRED CFM. ALL AIR DEVICE DISCHARGE 4-WAY UNLESS NOTED WITH FLOW ARROWS. AIR DEVICE SHOWN IS 2-WAY SIDE THROW. METHOD OF IDENTIFICATION ALSO APPLIES TO OTHER CEILING MOUNTED AIR DEVICES.
	WALL OR DUCTWORK MOUNTED AIR DEVICE. SGT = DESIGNATION (REFER TO AIR DEVICE SCHEDULE). 20x12 = DUCT CONNECTION SIZE (IN INCHES). 300 = REQUIRED CFM. 9'-0" = MOUNTING HEIGHT FROM FLOOR TO BOTTOM OF GRILLE.
	MANUAL BALANCING DAMPER WITH LOCKING DEVICE
	BDD = BACK DRAFT DAMPER CBD = COUNTER-BALANCED BACK DRAFT DAMPER

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PROJECT NO. 2023-06075



E. E. Lohrman

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REVISIONS:

1	11.08.24	ADDENDUM 1
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DATE: 10.25.2024
 arcDESIGN PROJECT NUMBER: 23176
 CLIENT PROJECT NUMBER: 20230276
 DRAWN BY: JPF
 DRAWING TITLE:

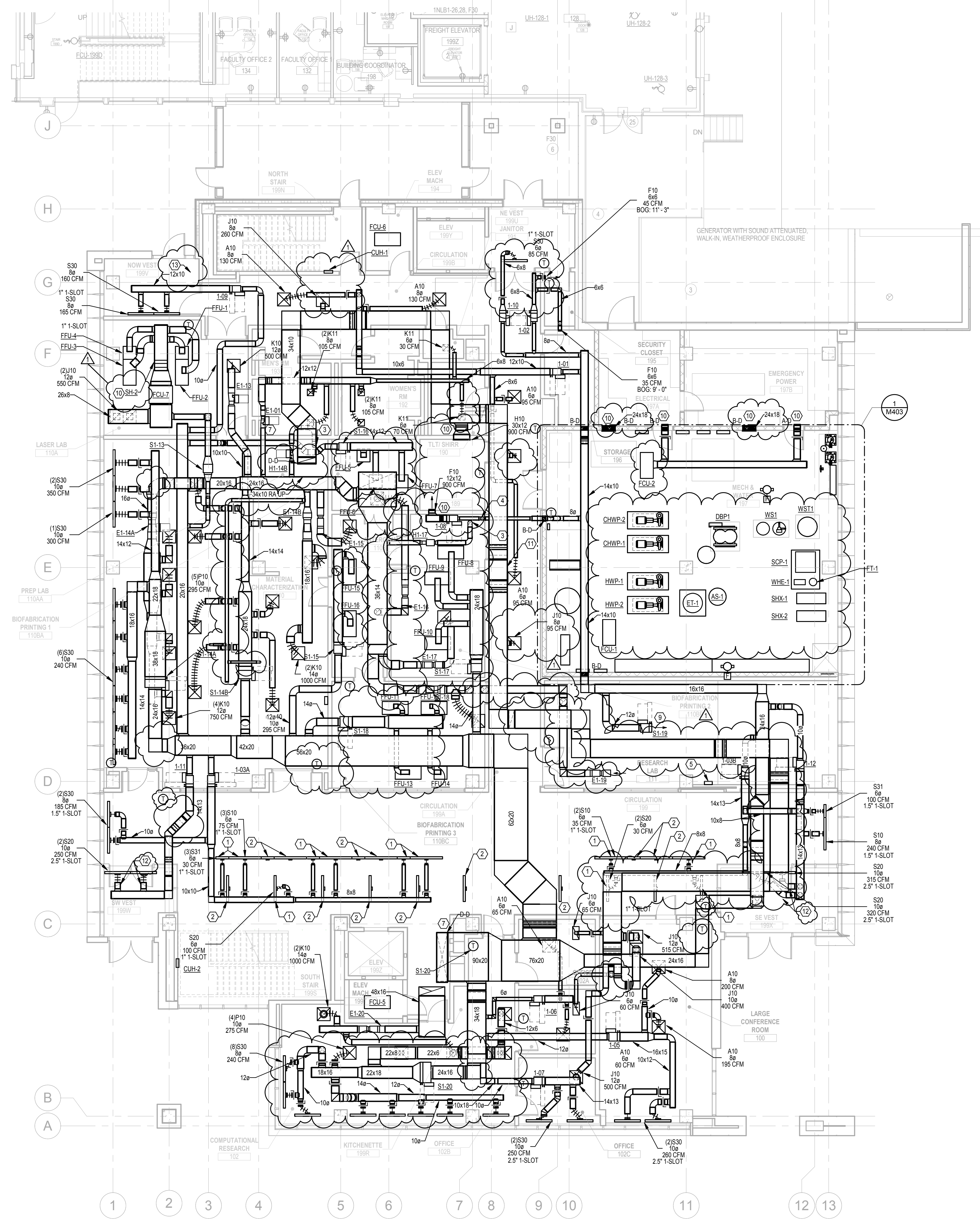
FIRST FLOOR
 MECHANICAL
 DUCTWORK
 PLAN

DRAWING NUMBER:
M121
 NEW BUILDING



PLAN NOTES

- PROVIDE CONTINUOUS SLOT DIFFUSER ALONG LENGTH OF WALL. PROVIDE ACTIVE AIR DIFFUSER AND PLENUM AS SHOWN. AIR BALANCE CONTRACTOR TO SETUP AIR DEVICES FOR DOWNWARD VERTICAL THROW DURING BALANCE.
- PROVIDE BACK COVER TO BACK OF INACTIVE SLOT DIFFUSER SECTION. MC SHALL PAINT BLACK FOR CONSISTENT APPEARANCE.
- CONNECT TO FUME HOOD.
- OFFSET DUCT BETWEEN STRUCTURE AND CEILING.
- PROVIDE EBD-WALL-6 TERMINATION AND (6) EBD-C-50 NON-RATED SHIELDED PLENUM RATED WIRE WITH END AS MANUFACTURER BY YOUNG REGULAR OR APPROVED EQUAL FOR AIR TERMINAL BOX 1-50B. CONTRACTOR TO LABEL DAMPER ON TERMINATION COVER. DIVISION 23 CONTRACTOR TO COORDINATE FINAL LOCATION WITH GENERAL CONTRACTOR.
- PROVIDE EBD-WALL-12 TERMINATION AND (12) EBD-C-50 NON-RATED SHIELDED PLENUM RATED WIRE WITH END AS MANUFACTURER BY YOUNG REGULAR OR APPROVED EQUAL FOR AIR TERMINAL BOX 1-50B. CONTRACTOR TO LABEL DAMPER ON TERMINATION COVER & LABEL INACTIVE TERMINALS. DIVISION 23 CONTRACTOR TO COORDINATE FINAL LOCATION WITH GENERAL CONTRACTOR.
- PROVIDE A FIRE DAMPER AT THE LEVEL 2 SLAB PENETRATION. REFER TO SHEET M122 FOR ACCESS DOOR LOCATION.
- PROVIDE A FIRE DAMPER AT THE LEVEL 2 SLAB PENETRATION. FIRE DAMPER SHALL BE MOUNTED BY THE MFG. REFER TO SHEET M122 FOR ACCESS DOOR LOCATION.
- SL-19 SHALL DISCHARGE INTO SHELL SPACE.
- STAINLESS STEEL DUCTWORK 12" UPSTREAM AND 48" DOWNSTREAM OF HUMIDIFIER DISPERSION TUBES.
- ROUTE 34"x14" RETURN AIR DUCT BENEATH STRUCTURAL JOIST. THE REMAINDER DUCT RUN SHALL BE TIED CLOSE TO THE DECK AS POSSIBLE.
- AIR BALANCING DAMPERS NOT REQUIRED FOR VESTIBULE AIR DEVICES.
- TEMPERATURE SENSOR IN CEILING. SETPOINT ADJUSTABLE BY BAS ONLY.



1 FIRST FLOOR MECHANICAL DUCTWORK PLAN
 SCALE: 1/8" = 1'-0"

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1 11.08.24 ADDENDUM 1

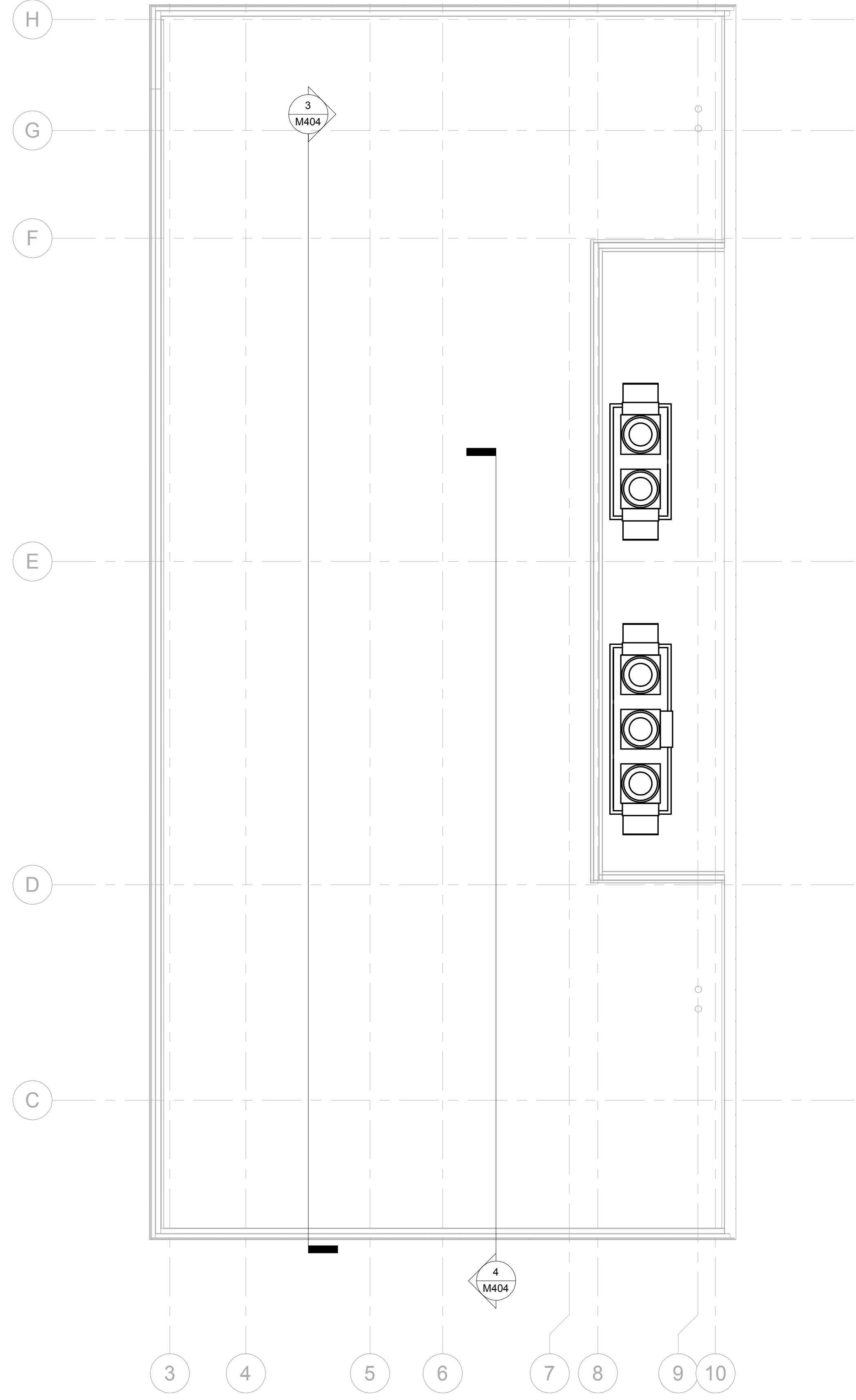
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PENTHOUSE AND ROOF FLOOR MECHANICAL DUCTWORK PLAN
PLAN NUMBER: M124
NEW BUILDING

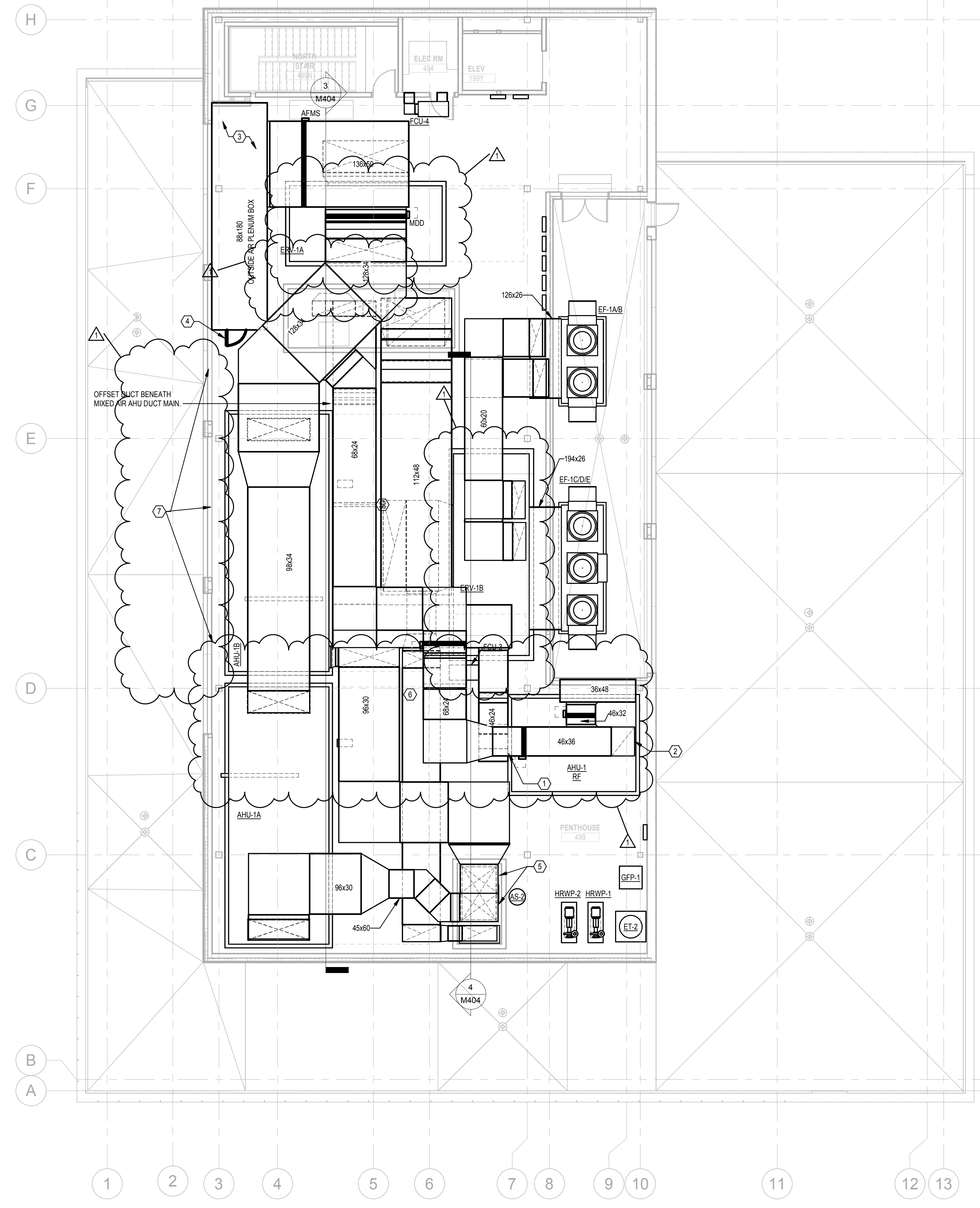


○ PLAN NOTES

- 48x36 EXHAUST DOWN TO 48x36 EXHAUST CONNECTION AT TOP OF RETURN FAN HOUSING.
- 50x34 RETURN DOWN TO 48x36 RETURN CONNECTION AT TOP OF RETURN FAN HOUSING.
- DIVISION 23 CONTRACTOR TO PROVIDE A DOUBLE-WALL SHEET METAL PLENUM OFF THE BACK OF THE OUTSIDE AIR INTAKE LOUVER. THE PLENUM SHALL BE SLOPED AND SHALL HAVE THE ABILITY TO BE DRAINED.
- DIVISION 23 CONTRACTOR TO PROVIDE MAN ACCESS DOOR INTO OUTSIDE AIR INTAKE PLENUM.
- PROVIDE A 2-WAY DUCT SPLIT ON THE VERTICAL DUCT. THE DUCT SPLIT SHALL BE 45"x60" FOR EACH DUCT OPENING. PROVIDE DUCT TRANSITIONS AS REQUIRED.
- PROVIDE A MOTOR OPERATED RELIEF VALVE ON THE VERTICAL RELIEF AIR DUCT. DAMPER SHALL HAVE CLEAR ACCESS FOR MAINTENANCE.
- PROVIDE 2" THICK INSULATED BLANKOFF PANELS AT UNUSED LOUVER SECTIONS. MINIMUM R-10 INSULATION.



1 PENTHOUSE ROOF MECHANICAL PLAN
SCALE: 1/8" = 1'-0"



2 PENTHOUSE AND ROOF MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

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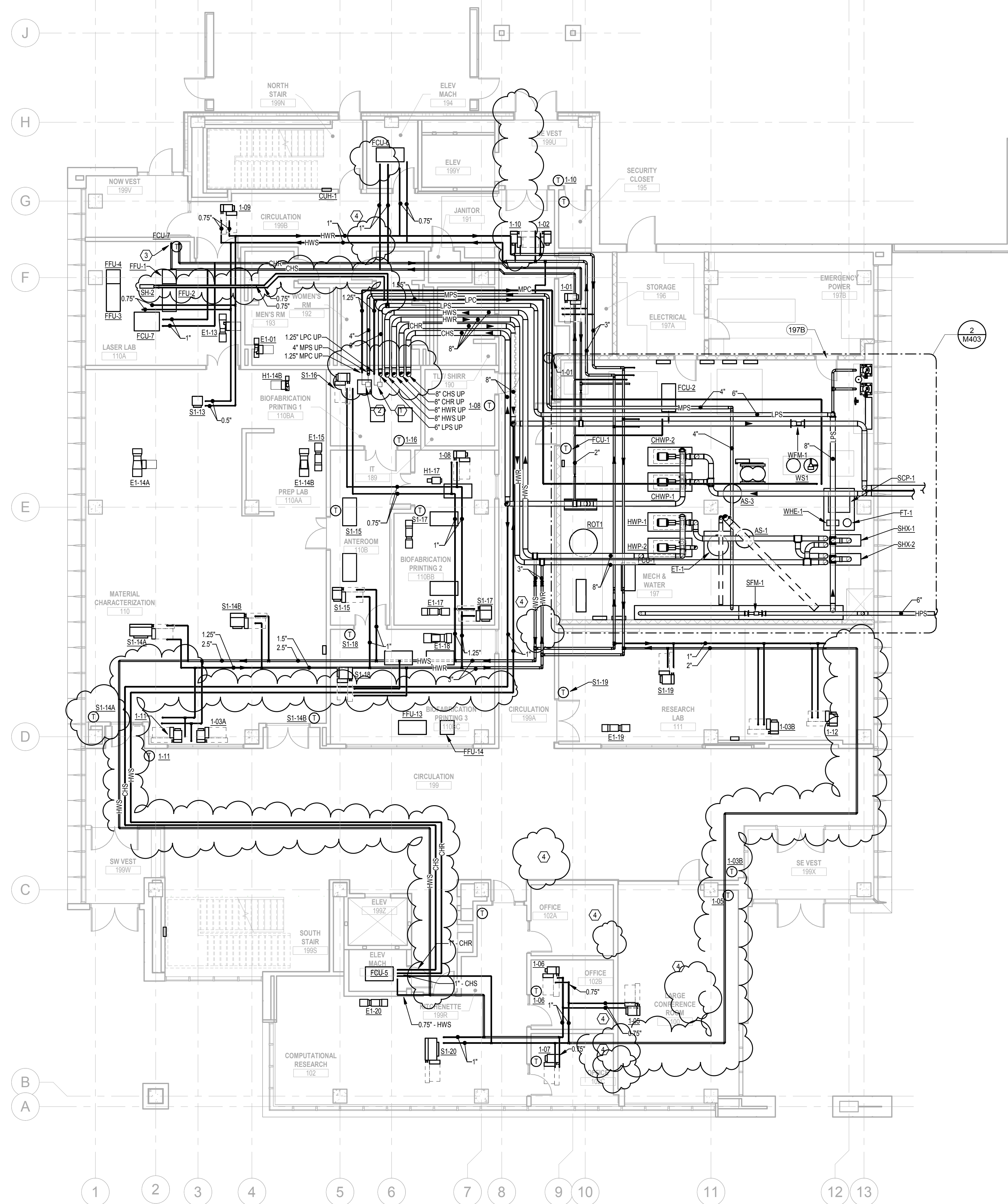
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10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276
DRAWN BY:
JPF
DRAWING TITLE:

**FIRST FLOOR
MECHANICAL
PIPING PLAN**

DRAWING NUMBER:
M221
NEW BUILDING

PLAN NOTES

1. LOW PRESSURE END OF MAIN DRIP AT BOTTOM OF RISER. LOCATE STEAM EQUIPMENT ABOVE RESTROOM CEILING FOR ACCESS.
2. HIGH PRESSURE END OF MAIN DRIP AT BOTTOM OF RISER. LOCATE STEAM EQUIPMENT ABOVE RESTROOM CEILING FOR ACCESS.
3. CHECK FOR OCCUPANCY SENSORS PROVIDED IN THIS SPACE.
4. COORDINATE DISPERSION TUBE SIZE, INCLUDING HEADER DIMENSIONS AND MOUNTING REQUIREMENTS PRIOR TO ORDERING. VERIFY ADEQUATE MOUNTING HEIGHT TO ACCOMMODATE STEAM TRAP AND CONDENSATE DISCHARGE.



1 FIRST FLOOR MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"



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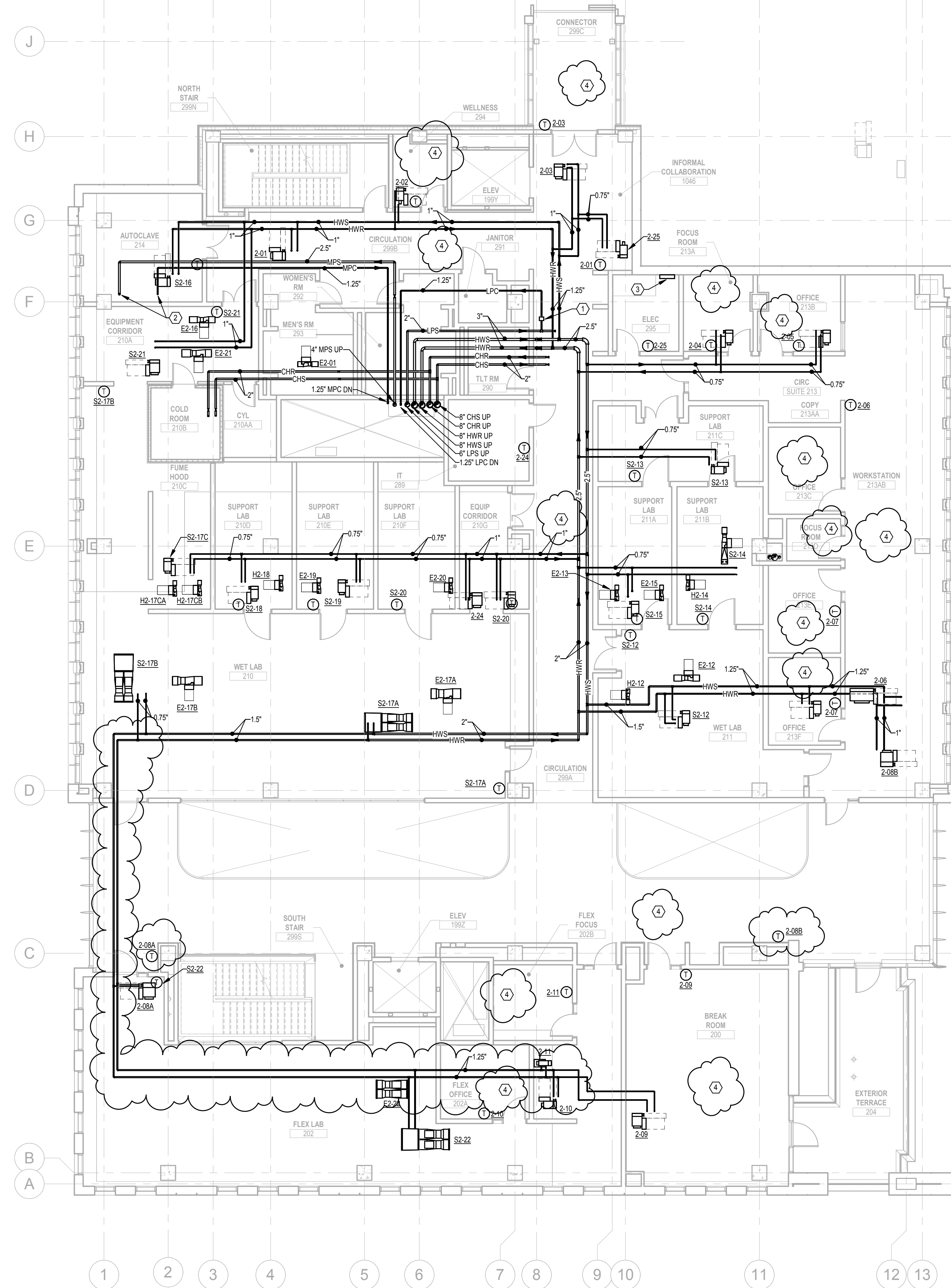
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DRAWN BY: JPF
DRAWING TITLE:

SECOND FLOOR MECHANICAL PIPING PLAN

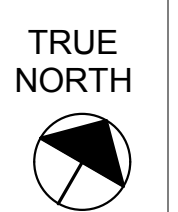
DRAWING NUMBER:
M222
NEW BUILDING

PLAN NOTES

1. LOW PRESSURE END OF MAIN BRIP
2. HIGH PRESSURE END OF MAIN BRIP
3. BAS CONTROL PANEL FURNISHED BY OWNER, INSTALLED BY CIC
4. BAS TO MONITOR OCCUPANCY SENSORS PROVIDED IN THIS SPACE.

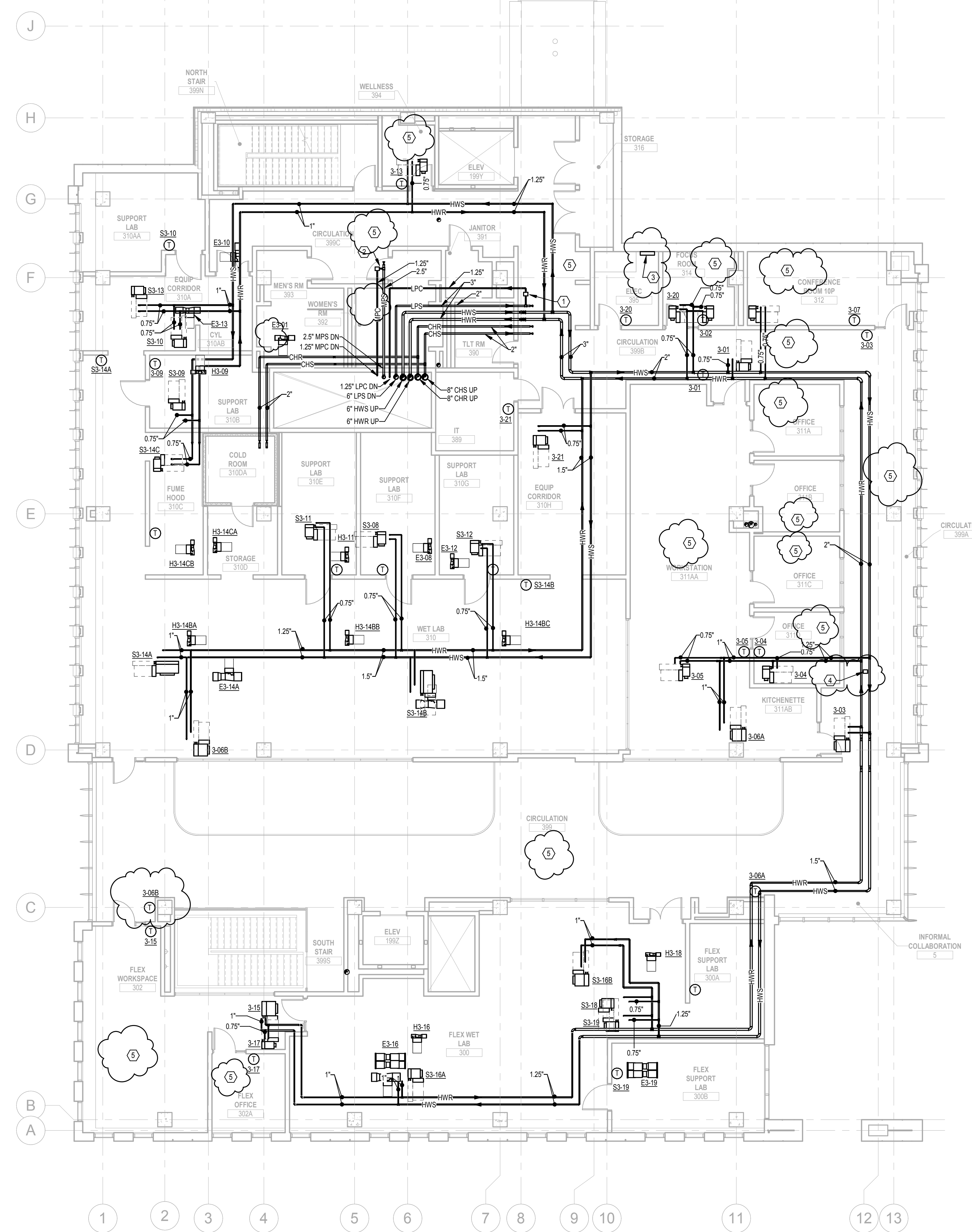


1 SECOND FLOOR MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"



PLAN NOTES

1. LOW PRESSURE END OF MAIN DRP.
2. HIGH PRESSURE END OF MAIN DRP.
3. BAS CONTROL PANEL FURNISHED BY OWNER, INSTALLED BY C.C.
4. PUMP DIFFERENTIAL PRESSURE SENSOR, FURNISHED BY OWNER, INSTALLED BY H.C. WIRED BY C.C.
5. BAS TO MONITOR OCCUPANCY SENSORS PROVIDED IN THIS SPACE.



1 THIRD FLOOR MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

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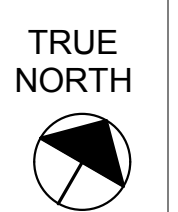
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DATE: **10.25.2024**
 arcDESIGN PROJECT NUMBER: **23176**
 CLIENT PROJECT NUMBER: **20230276**
 DRAWN BY: **JPF**
 DRAWING TITLE:

THIRD FLOOR MECHANICAL PIPING PLAN

DRAWING NUMBER:
M223
 NEW BUILDING



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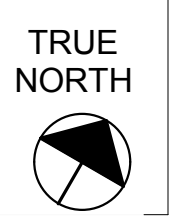
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DRAWING TITLE:

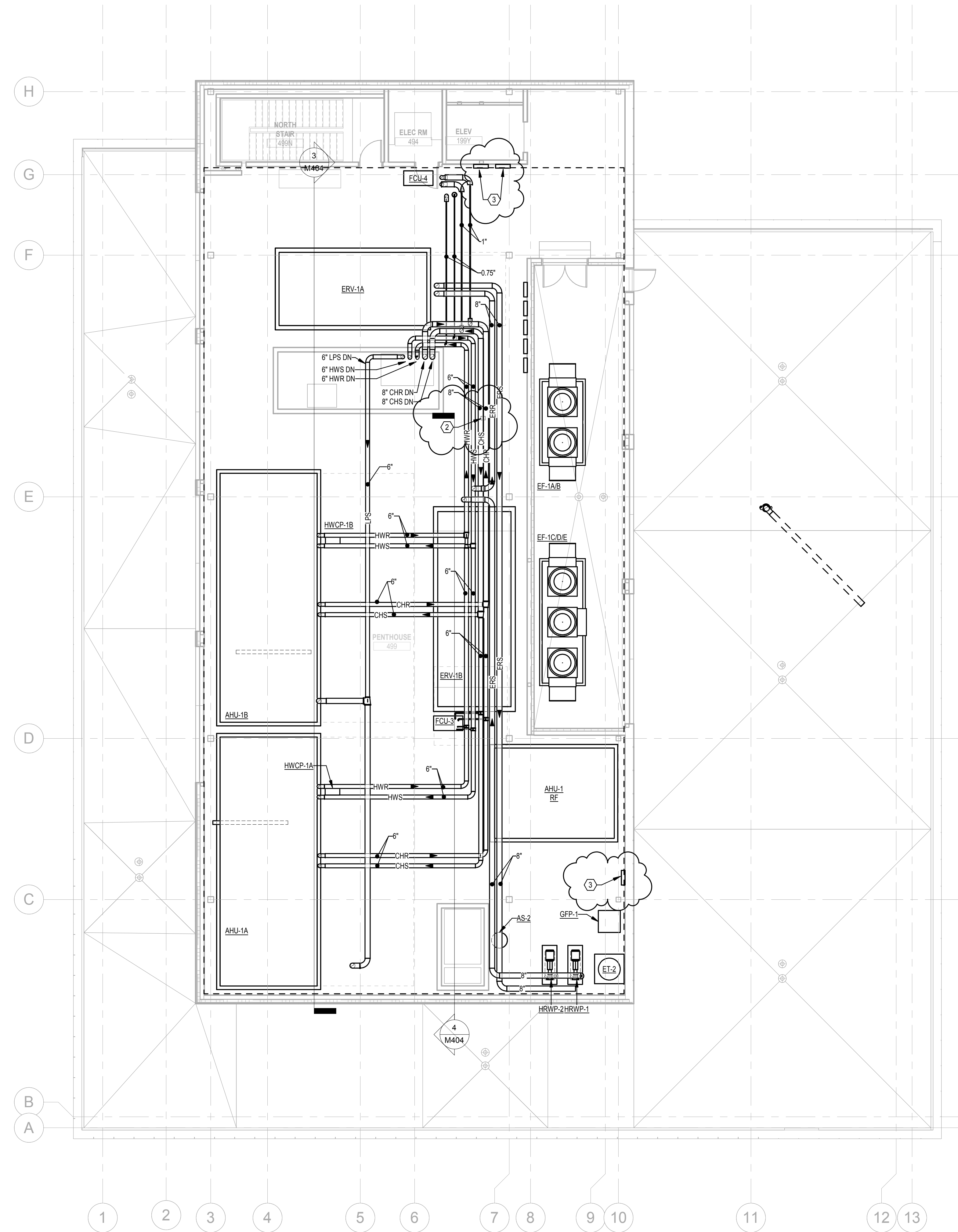
PENTHOUSE AND ROOF MECHANICAL PIPING PLAN

DRAWING NUMBER:
M224
NEW BUILDING

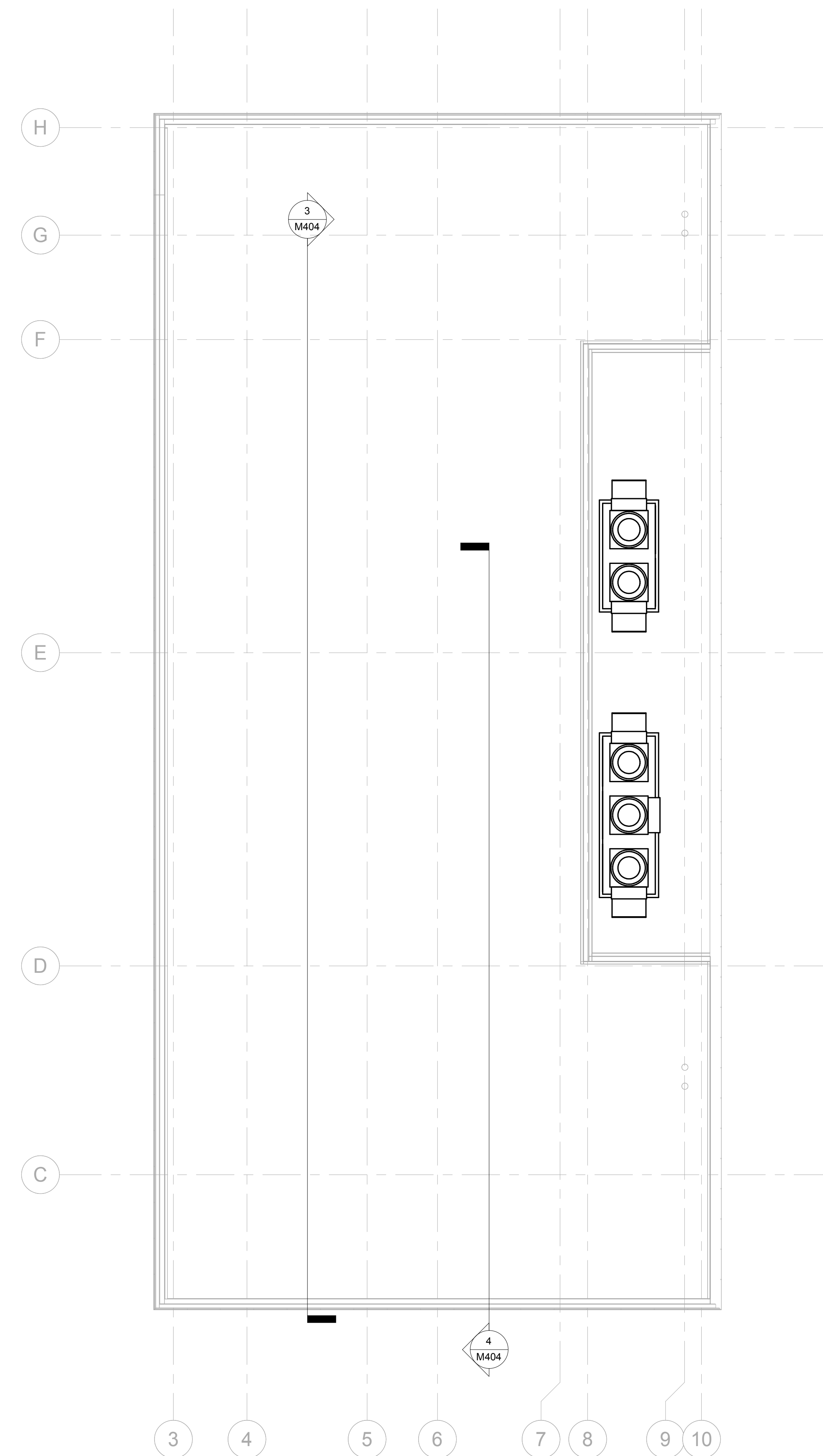


PLAN NOTES

1. LOW PRESSURE END OF MAIN DRIP.
2. PUMP DIFFERENTIAL PRESSURE SENSOR, FURNISHED BY OWNER, INSTALLED BY HC. WIRED BY CC.
3. BAS CONTROL PANEL FURNISHED BY OWNER, INSTALLED BY CC.



1 PENTHOUSE AND ROOF MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"



2 PENTHOUSE ROOF MECHANICAL PIPING PLAN
SCALE: 1/8" = 1'-0"

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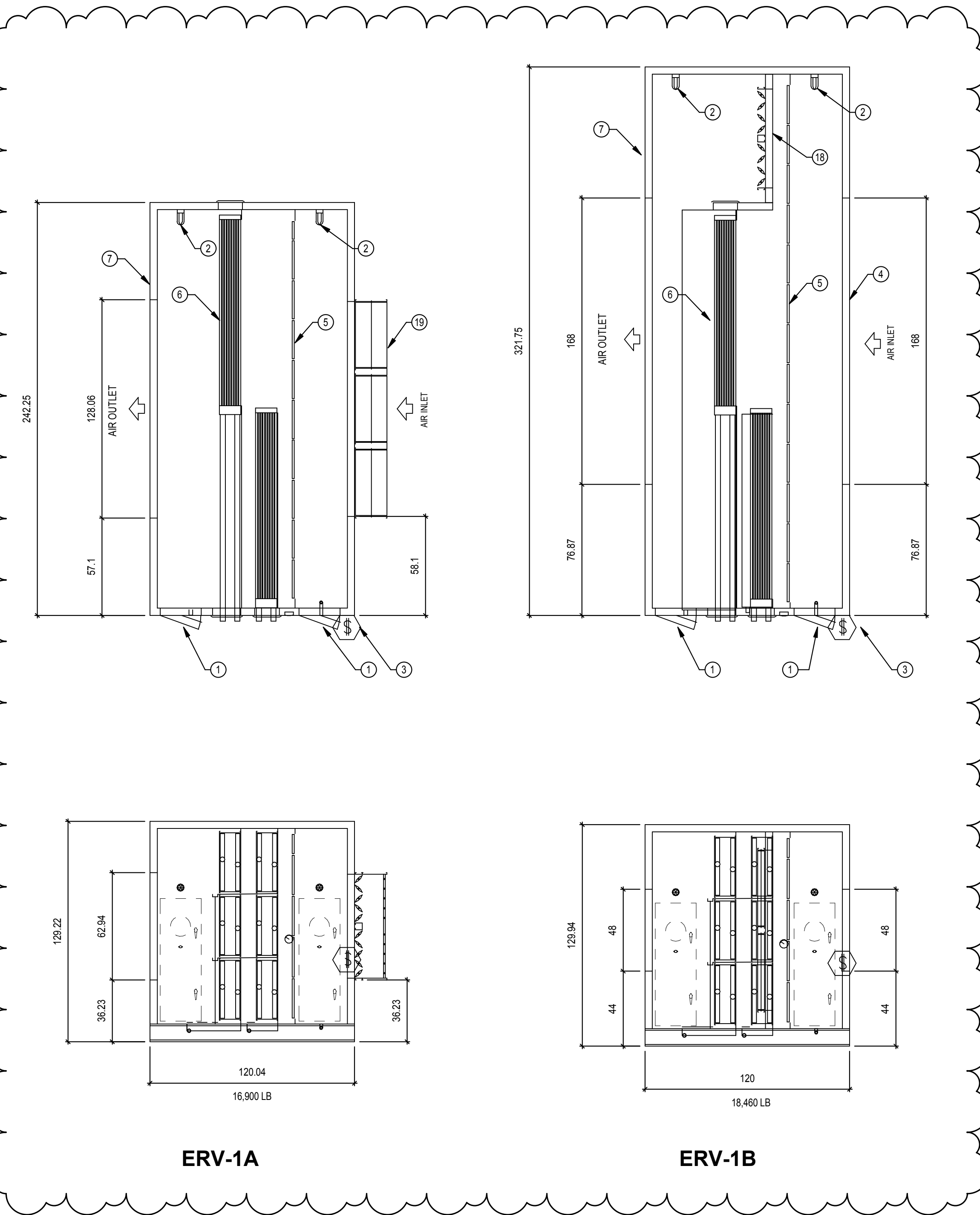
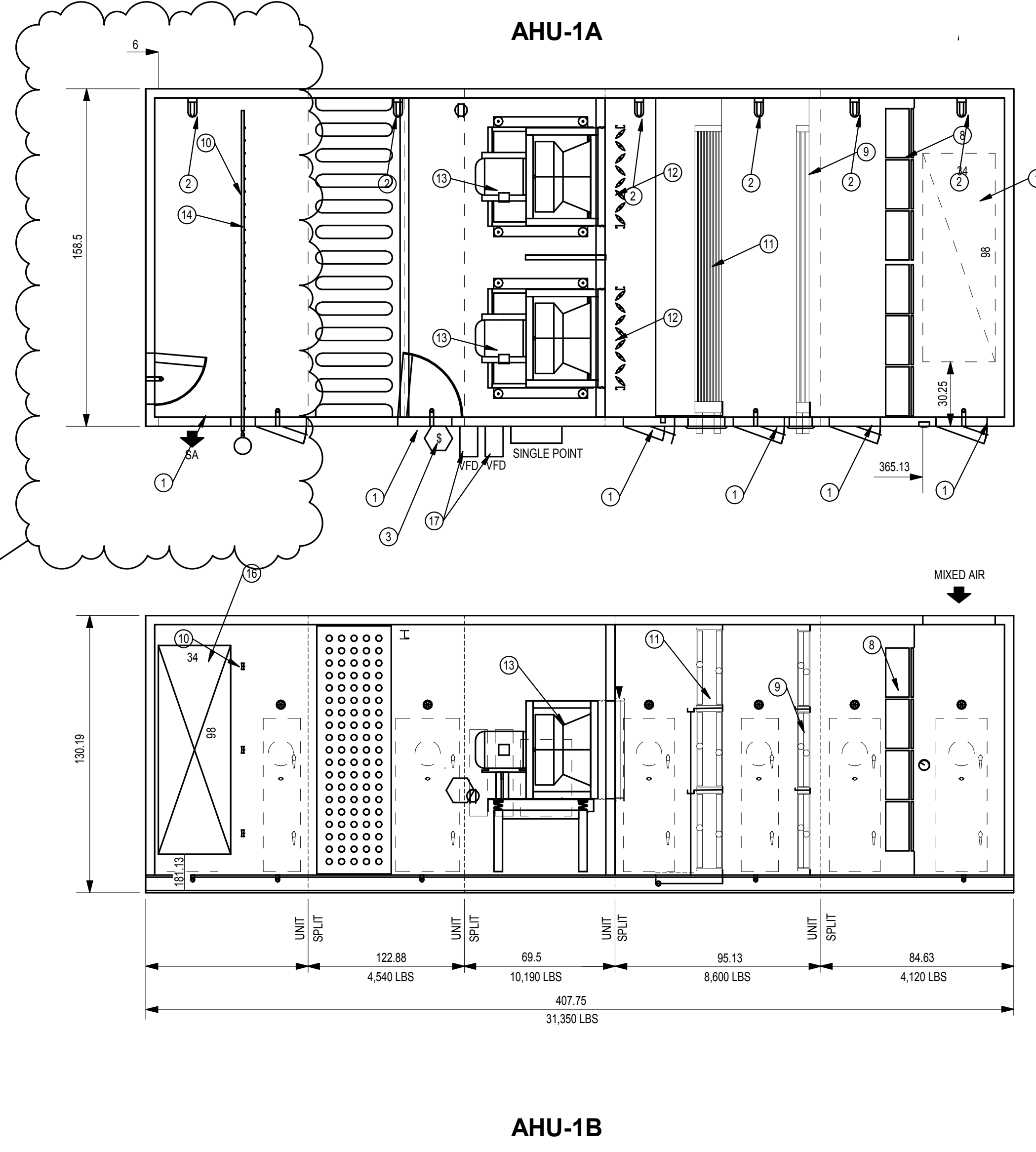
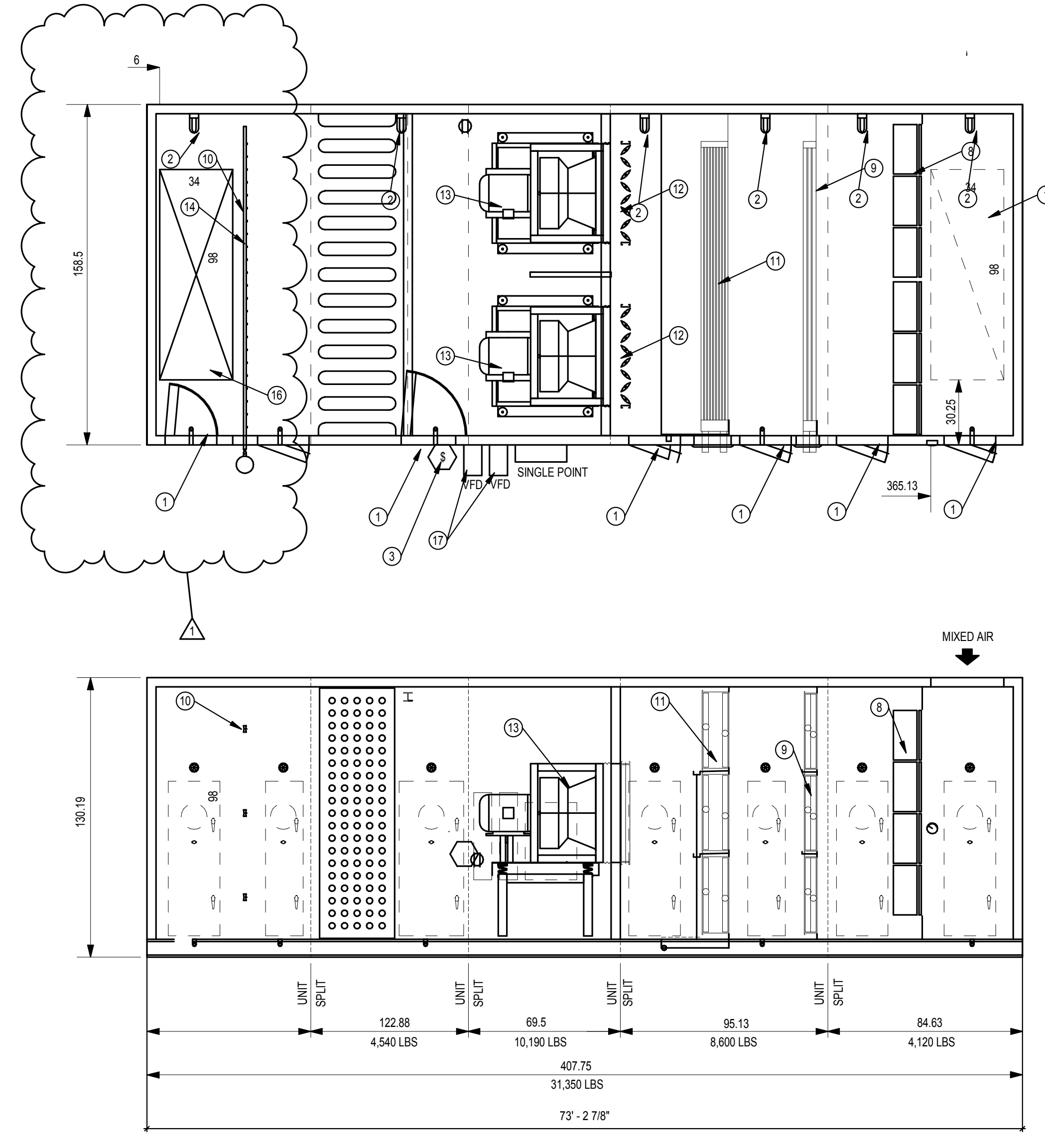
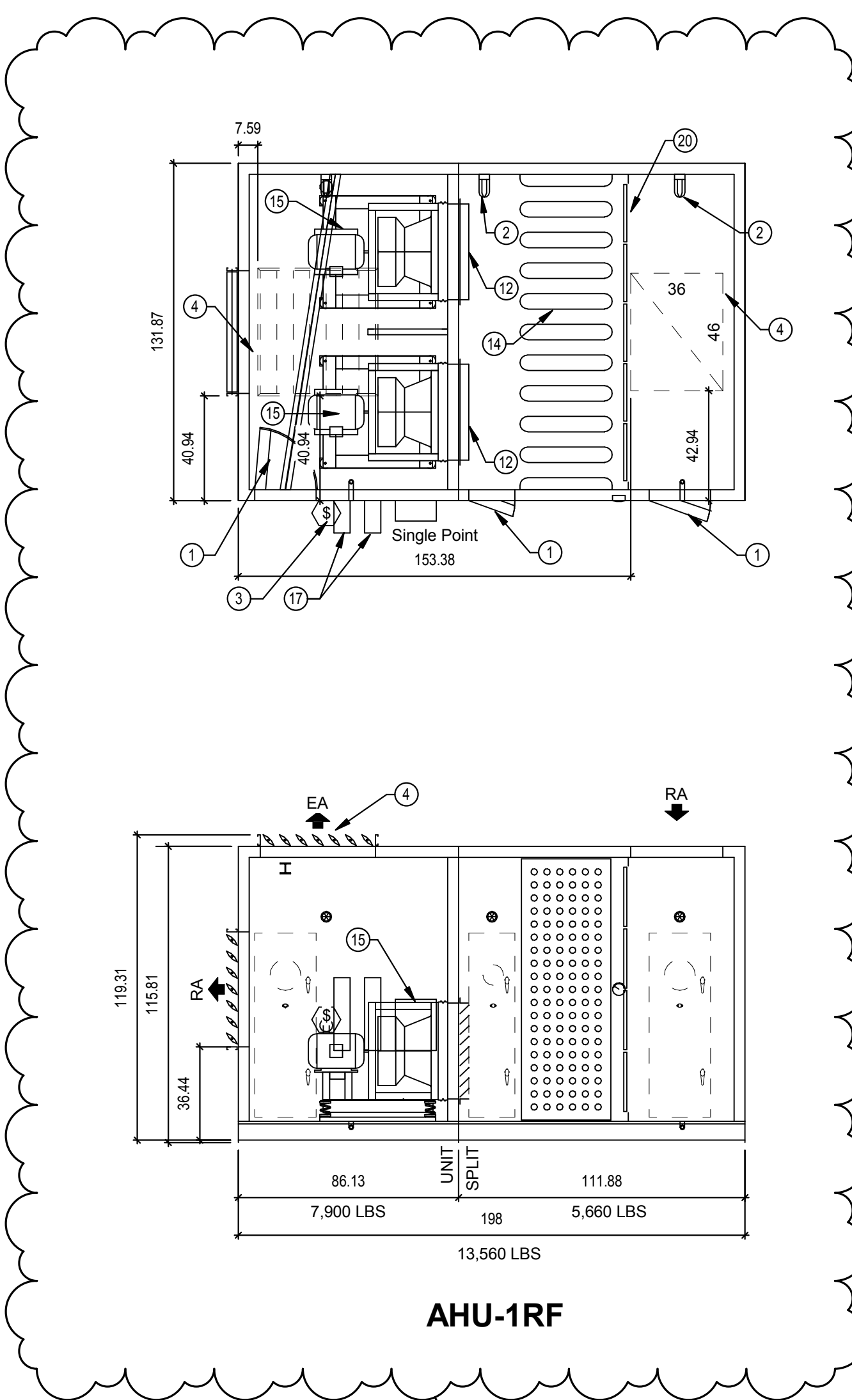
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CLIENT PROJECT NUMBER: 20230276
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DRAWING TITLE: MECHANICAL DETAILS

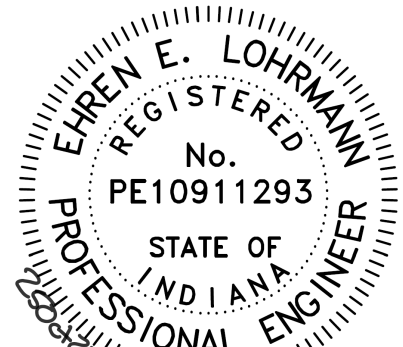
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NOTES

1. ACCESS DOOR.
2. LIGHT.
3. LIGHT SWITCH.
4. DUCT INLET.
5. PREFILTER.
6. ENERGY RECOVERY COIL.
7. DUCT OUTLET.
8. PREFILTER AND FINAL FILTER.
9. HEATING COIL.
10. HUMIDIFIER.
11. COOLING COIL.
12. MOTOR OPERATED FAN ISOLATION DAMPERS.
13. SUPPLY FANS.
14. SOUND ATTENUATOR.
15. RETURN FAN.
16. RETURN OUTLET ON INSIDE. AHU-1A OUTLET ON TOP.
17. VFD.
18. BYPASS DAMPER.
19. OUTSIDE AIR DAMPER.
20. FILTER.





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DRAWING TITLE:

MECHANICAL
SCHEDULES

DRAWING NUMBER:
M603

FAN FILTER CEILING MODULES

GENERAL NOTES:
 A. ELECTRIC SERVICE - SINGLE POINT POWER SERVICE CONNECTION TO UNIT BY ELECTRICAL CONTRACTOR. COORDINATE WITH DIV 26 AND UNIT SUPPLIER. COST FOR INCREASE OR CHANGE OF ELECTRICAL SERVICE FOR EQUIPMENT SELECTED SHALL BE BORNE BY HVAC CONTRACTOR.
 B. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL. INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.
 C. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.

NOTES:
 1. FAN SHALL BE CAPABLE OF SPECIFIED AIRFLOW THRU MODULE AND FILTERS FOR LIFE OF FILTER(S).
 2. BACKET FLOW CONTROLLER INTEGRATE TO BAS.
 3. CONSTANT TORQUE MOTOR.
 4. 10" ROUND INLET.
 5. 12" ROUND INLET.

MARK	MODULE SIZE			MTG	FAN MOTOR		FILTER	ELECTRICAL SERVICE				BASIS OF DESIGN		SEISMIC RESTRAINTS		SEE NOTE		
	Z FT X 2 FT	Z FT X 4 FT	4 FT X 4 FT		LAY-IN	CFM		WATTS	THICKNESS / MERV	MAX CLEAN AIR PRESSURE DROP (IN W.C.)	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	MINIMUM SCOR (AMPS)		MANUFACTURER	MODEL
FFU-1	2	4	4	-	210	65	2" / HEPA	115V-1P	3.2				5,000	PRICE	FFU	-	-	1,2,3,4
FFU-2	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-3	2	4	4	-	210	65	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,4
FFU-4	2	4	4	-	210	65	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,4
FFU-5	2	4	4	-	210	65	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,4
FFU-6	2	4	4	-	210	65	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,4
FFU-7	2	4	4	-	210	65	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,4
FFU-8	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-9	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-10	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-11	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-12	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-13	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-14	2	4	4	-	210	65	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-15	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5
FFU-16	2	4	4	-	480	60	2" / HEPA	115V-1P	2.9				5,000	PRICE	FFU	-	-	1,2,3,5

ELECTRIC UNIT HEATERS

GENERAL NOTES:
 A. HEATING CAPACITY BASED ON 70°F ENT. AIR.
 B. ELECTRIC SERVICE - SINGLE POINT POWER CONNECTION WITH INTEGRAL CONTROLS TRANSFORMER. ADEQUACY OF LISTED CIRCUIT SIZE MUST BE VERIFIED BY H.C. AND UNIT SUPPLIER. COST FOR INCREASE OR CHANGE OF ELECTRICAL SERVICE FOR EQUIPMENT SELECTED SHALL BE BORNE BY H.C.
 C. ELECTRICAL SERVICE TO 3-PHASE UNITS SHALL BE 3-WIRE UNLESS NOTED OTHERWISE.
 D. 3-PHASE COIL LOADS SHALL BE DIVIDED EVENLY ACROSS EACH PHASE.
 E. VERIFY / COORDINATE CABINET DIMENSIONS, MOUNTING & RECESS REQUIREMENTS PRIOR TO ORDERING.
 F. RECESSED UNITS SHALL HAVE FOUR(4) SIDE OVERLAP UNLESS NOTED OTHERWISE.
 G. COORDINATE UNITS IN MASONRY WALLS FOR FULL & SEMI-RECESSED UNIT WALL OPENINGS.
 H. IF EC MOTORS ARE INDICATED OR SPECIFIED, EACH MOTOR SHALL BE PROVIDED WITH FACTORY DISCONNECTING MEANS, INTERNAL OVERLOAD PROTECTION, FIELD ADJUSTABLE SPEED CONTROL, AND REMOTE ANALOG SPEED CONTROL. INPUT WHEN REMOTE CONTROL IS SPECIFIED, COORDINATED WITH THE BUILDING AUTOMATION SYSTEM.
 I. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR VIBRATION ISOLATOR TYPES AND SEISMIC RESTRAINT REQUIREMENTS.

NOTES:
 1. MOUNTING HEIGHT TO BOTTOM OF UNIT, UNLESS NOTED OTHERWISE ON FLOOR PLANS.
 2. PROVIDE WITH FACTORY CONTROLS. CIC TO PROVIDE THERMOSTAT AND INTEGRATE INTO BAS TO MONITOR STATUS AND ALARMS.

MARK	DESCRIPTION	MOUNTING	CFM	FAN MOTOR		HEATING	ELECTRICAL SERVICE				APPROX. CABINET DIMENSIONS				SEISMIC RESTRAINTS		THERMOSTAT		SEE NOTE				
				MOTOR (HP / WATTS)	ELECTRONICALLY COMMUTATED		KW (MIN)	KW (MAX)	STAGES	VOLTAGE - PHASE	FULL LOAD AMPS (FLA)	MIN CIRCUIT AMPS (MCA)	MAX OVER CURRENT PROTECTION (MOCP)	MINIMUM SCOR (AMPS)	INTEGRAL DISCONNECT	WIDTH	DEPTH	HEIGHT		RECESS	MOUNTING HEIGHT (AFF. NOTE 1)	VIBRATION ISOLATOR TYPE	REQUIRED
CUH-1	CABINET UNIT HEATER	RECESSED	100	-	16.378	4.8	4.8	1	208V-3P	23.1			5000	16"	5.25"	19.25"	3.75"	1'-4"	-	-	-	-	2
CUH-2	CABINET UNIT HEATER	RECESSED	100	-	16.378	4.8	4.8	1	208V-3P	23.1			5000	16"	5.25"	19.25"	3.75"	1'-4"	-	-	-	-	2

STEAM HUMIDIFIERS - DIRECT BUILDING STEAM

GENERAL NOTES:
 A. STEAM SERVICE TO HUMIDIFIER VALVE ASSEMBLY IS 15 PSIG SATURATED STEAM.
 B. REFER TO PIPING DIAGRAM FOR ADDITIONAL REQUIREMENTS, INCLUDING STEAM CONDENSATE TRAPS.
 C. PROVIDE INTEGRAL MODULATING CONTROL VALVE, AIR PROVING SWITCH, HIGH RH LIMIT, SPACE HUMIDITY SENSOR / STAT, AND OTHER ACCESSORIES PER THE SPECIFICATIONS.
 D. STEAM JACKETED HUMIDIFIERS SHALL INCLUDE AUTO ISOLATION VALVE FUNCTION TO STOP STEAM TO JACKET WHEN THERE IS NO CALL FOR HUMIDITY.
 E. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.

NOTES:
 1. SIZES ARE APPROXIMATE. FIELD VERIFY EXACT DIMENSIONS.

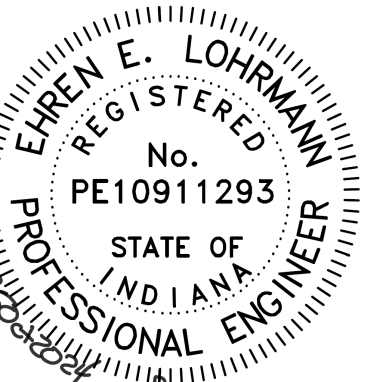
MARK	DESCRIPTION	SERVICE	PERFORMANCE				DISPERSION DEVICE				MISC.		SEISMIC RESTRAINTS		BASIS OF DESIGN		SEE NOTE									
			ENTERING AIR TEMPERATURE (DB / °SRH)	LEAVING AIR TEMPERATURE (DB / °SRH)	MINIMUM CFM	MAXIMUM CFM	VERTICAL TUBES	HORIZONTAL TUBES	STEAM JACKETED	INSULATED	MIN. NUMBER OF DISTRIBUTION TUBES	MAX. DISPERSION DISTANCE	MAXIMUM AIR PRESSURE DROP (IN W.C.)	DUCT / CASING WIDTH (SEE NOTE 1)	DUCT / CASING HEIGHT (SEE NOTE 1)	STEAM SERVICE PIPE SIZE		CONDENSATE RETURN PIPE SIZE	REQUIRED	IMPORTANCE FACTOR	MANUFACTURER	MODEL				
SH-1A	HUMIDIFIER	AHU-1A	70 / 40%	62.5 / 6%	65 / 47%	10,000	50,000	1208	1208	-	-	-	28	28	9"	9"	0.05"	123"	130"	2"	0.75"	-	-	DRISTEEM	XV	1
SH-1B	HUMIDIFIER	AHU-1B	70 / 40%	62.5 / 6%	65 / 47%	10,000	50,000	1208	1208	-	-	-	28	28	9"	9"	0.05"	123"	130"	2"	0.75"	-	-	DRISTEEM	XV	1
SH-2	HUMIDIFIER	LASER LAB	70 / 50%	54.3 / 5.7%	55 / 85%	1,500	1,500	21	21	-	-	-	2	2	9"	9"	0.0"	24"	16"	1.5"	0.75"	-	-	DRISTEEM	XV	1

FLOW METERS

GENERAL NOTES:
 A. METERS SHALL BE PROVIDED WITH 120V-1PH POWER CONNECTION. PROVIDE TRANSFORMER IF REQUIRED.
 B. PROVIDE REQUIRED UPSTREAM AND DOWNSTREAM STRAIGHT PIPE LENGTHS PER MANUFACTURER'S INSTRUCTIONS.
 C. MEASUREMENTS / READINGS SHALL BE OUTPUT TO THE ION SYSTEM. COORDINATE SIGNAL TYPE AND UNITS WITH THE OWNER.
 D. REFER TO FLOW METER DETAIL FOR ADDITIONAL INFORMATION.

NOTES:
 1. BTU METER IS A SEPARATE BUT COORDINATED ACCESSORY TO THE FLOW METER. COORDINATE POWER AND PIPING REQUIREMENTS FOR BTU METER, ALL PER MANUFACTURER'S REQUIREMENTS, INCLUDING SUPPLY AND RETURN TEMPERATURE SENSORS.
 2. BTU METER IS AN INTEGRAL COMPONENT OF THE FLOW METER. COORDINATE POWER AND PIPING REQUIREMENTS FOR BTU METER, ALL PER MANUFACTURER'S REQUIREMENTS, INCLUDING SUPPLY AND RETURN TEMPERATURE SENSORS.

MARK	SYSTEM	ROOM NAME	LOCATION	METER TYPE	INSTALLATION TYPE	DUTY FLOW RATE				BASIS OF DESIGN				SEE NOTE								
						GPM	LBS / HR	BI-DIRECTIONAL	MIN. SERVICE TEMP (°F)	MAX. SERVICE TEMP (°F)	MAX. SERVICE PRESSURE (PSIG)	MAX. PRESSURE DROP (PSI)	PIPE SIZE		METER SIZE	REMOTE BTU METER (NOTE 1)	INTEGRAL BTU METER (NOTE 2)	MANUFACTURER	MODEL			
SFM-1	STEAM	MECH & WATER	MECH & WATER	197	-	-	17000	-	450	500	70	150	8"	6"	-	-	ABB	PROVIM F 200	PROCESS MASTER REV#2	1		
WFM-1	CHILLED WATER	MECH & WATER	MECH & WATER	197	-	-	900	-	17000	-	450	500	70	150	8"	6"	-	-	ABB	PROVIM F 200	PROCESS MASTER REV#2	1



El Lohrman

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MECHANICAL
SCHEDULES

DRAWING NUMBER:
M604

DUCT CONSTRUCTION, SEALING, AND INSULATION

GENERAL NOTES:
A. REFER TO SPECIFICATIONS FOR DUCT CONSTRUCTION: SHEET METAL DUCT; INTERIOR LINING; EXTERIOR INSULATION; ETC.
B. DUCT CONSTRUCTION AND SEALING SHALL BE PER LATEST S.M.A.C.N.A. STANDARDS.
NOTES:
1. ROUND SHEET METAL RUN-OUTS TO AIR DEVICES DOWNSTREAM OF VAV BOXES SHALL BE EXTERNALLY INSULATED.
2. RETURN DUCTWORK WITHIN 15' OF AIR HANDLING UNIT SHALL BE INTERNALLY LINED.
3. STAINLESS STEEL DUCTWORK.
4. WATERTIGHT SEAL.
5. CONCEALED ROUND RUNOUT DUCTS TO AIR DEVICES MAY BE 1" S.P. CLASS.
6. REFER TO SPECIFICATION 23 31 19 AIR PLENUM CASINGS.
7. INSULATE THROUGH ROOF OR FLOOR BACKDRAFT / ISOLATION DAMPER TO PENETRATION OF WALL / ROOF.
8. DUCT SYSTEM SHALL BE LEAK TESTED AT 4" S.P., MAX 5% OF DESIGN AIR FLOW LEAKAGE ALLOWED.
9. FLEXIBLE DUCT NOT PERMITTED.

DUCT SYSTEM	S.M.A.C.N.A. CLASS		LEAKAGE CLASS		INTERNAL LINED	EXTERNAL INSULATION	DOUBLE WALL INSULATED	NOT INSULATED	SEE NOTE
	S.P. CONSTRUCT.	SEAL CLASS	RECT	RND					
SUPPLY DUCTWORK UPSTREAM OF VAV BOXES AND AIR CONTROL VALVES	+4"	A	8	4					8
SUPPLY DUCTWORK DOWNSTREAM OF VAV BOXES AND AIR CONTROL VALVES	+1"	A	16	8					1
AHU RETURN DUCTWORK IN MECHANICAL ROOMS	-2"	A	16	8					2.5
AHU RETURN DUCTWORK	-2"	A	16	8					2.5
FAN COIL SUPPLY DUCTWORK	+1"	A	16	8					1
FAN COIL RETURN DUCTWORK	-1"	A	16	8					
EXHAUST DUCTWORK UPSTREAM OF AIR CONTROL VALVES	+2"	A	16	8					3.5,9
RELIEF AIR DUCTWORK AND PLENUMS	-1"	A	16	8		NOTE 7			
OUTSIDE AIR DUCTWORK	-1"	A	16	8					4
OUTSIDE AIR PLENUM	-2"	A	16	8					4,8
EXHAUST DUCTWORK DOWNSTREAM OF AIR CONTROL VALVES	-6"	WELDED							3.5,8

HVAC DESIGN DATA

GENERAL NOTES:
A. OUTDOOR DESIGN CONDITIONS:
82° DB SUMMER
74° WB SUMMER
1° F DB WINTER
B. DESIGN ALTITUDE: 850 FT.

NOTES:
1. LISTED RH IS MAXIMUM ANTICIPATED AT LISTED DB TEMPERATURE.
2. REFER TO ATC SEQUENCES FOR ACTUAL ROOM SETPOINTS.
3. "FLOATING" MEANS THERE IS NO ACTIVE CONTROL.

SPACE NAME / TYPE	INTERIOR DESIGN DATA				SEE NOTE
	SUMMER		WINTER		
	°F DB	% RH (NOTE 1)	°F DB	% RH	
OFFICES	74	55	72	FLOATING	2,3
LABS	74	55	72	FLOATING	3
DATA CLOSETS	78	50	68	FLOATING	3
MECHANICAL ROOMS	80	55	65	FLOATING	3
ALL OTHER SPACES	74	55	72	FLOATING	3

AIR TERMINAL UNITS - HOT WATER HEAT

GENERAL NOTES:
A. TYPES: "V.V." - VARIABLE VOLUME; "V.V.R." - VARIABLE VOLUME REHEAT; "C.V.E." - CONSTANT VOLUME EXHAUST; "V.V.E." - VARIABLE VOLUME EXHAUST; "C.V.E." - CONSTANT VOLUME EXHAUST.
B. 0.35" MAX. S.P. DROP THRU UNIT & COIL AT MAX. CFM.
C. REHEAT COIL CAPACITIES BASED ON HEATING MAX. CFM, 55° F ENT. AIR & 140° F ENT. WATER, AND MAX. 10 FT. HD. W.P.D.
D. AUTO VALVES SHALL BE 2-WAY TYPE UNLESS NOTED OTHERWISE.
E. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.
F. WHEN P.I.P. IS INDICATED, MINIMUM REQUIRED INLET PRESSURE SHALL NOT EXCEED 5 P.S.I.G.
G. IF REHEAT COIL IS FURNISHED SEPARATELY FROM TERMINAL UNIT, PROVIDE DUCT TRANSITION AS REQUIRED BETWEEN TERMINAL UNIT AND COIL.

NOTES:
1. PROVIDE 3-WAY CONTROL VALVE.

MARK	TYPE	DIAMETER	INLET SIZE	HEIGHT	CFM		REHEAT COIL		AUTO CONTROL VALVE	SEISMIC RESTRAINTS	REFER TO NOTE	
					COOLING MAXIMUM	DEAD BAND MINIMUM	REHEAT MAXIMUM	HEATING MAXIMUM				
1-01	V.V.R.	8"			450	115	225	225	6.2	0.7	0.5"	
1-02	V.V.R.	6"			115	25	60	105	4	0.4	0.5"	
1-03A	V.V.R.	10"			785	245	395	395	10.8	1.1	0.5"	
1-03B	V.V.R.	10"			470	150	235	235	6.4	0.7	0.5"	
1-05	V.V.R.	12"			915	185	460	460	16.3	1.7	0.5"	
1-06	V.V.R.	6"			125	45	65	65	1.8	0.2	0.5"	
1-07	V.V.R.	10"			500	100	250	375	12.1	1.3	0.5"	
1-08	V.V.R.	6"			900	180	450	450	12.3	1.3	0.5"	
1-09	V.V.R.	8"			325	65	165	325	12.4	1.3	0.5"	1
1-10	V.V.R.	6"			85	20	45	85	3.3	0.4	0.5"	
1-11	V.V.R.	10"			500	100	250	500	18.8	1.9	0.5"	
1-12	V.V.R.	10"			635	130	320	635	24.2	2.5	0.5"	
2-01	V.V.R.	10"			610	155	305	305	9.5	1.0	0.875"	
2-02	V.V.R.	4"			45	15	25	45	1.6	0.2	0.875"	
2-03	V.V.R.	10"			700	140	350	700	26.6	2.7	0.875"	
2-04	V.V.R.	6"			90	35	45	45	1.3	0.2	0.875"	
2-05	V.V.R.	6"			75	15	40	75	2.7	0.3	0.875"	1
2-06	V.V.R.	24" 16"			2,240	450	1,120	1,235	45.4	4.6	0.875"	
2-07	V.V.R.	6"			220	80	110	110	3	0.3	0.875"	
2-08A	V.V.R.	14"			1,095	270	550	660	25	2.5	0.875"	1
2-08B	V.V.R.	14"			1,150	285	575	1,150	43	4.3	0.875"	1
2-09	V.V.R.	12"			705	145	355	355	13.5	1.4	0.875"	
2-10	V.V.R.	6"			65	25	35	35	1	0.1	0.875"	
2-11	V.V.R.	6"			90	35	45	45	1.3	0.2	0"	
2-24	V.V.R.	12"			900	180	450	450	12.3	1.3	0.875"	
2-25	V.V.R.	4"			45	15	25	25	0.7	0.1	0.875"	
3-01	V.V.R.	10"			595	145	285	315	12	1.2	0.5"	
3-02	V.V.R.	6"			105	40	55	55	1.5	0.2	0.5"	
3-03	V.V.R.	14"			1,755	355	880	1,495	55.4	5.6	0.875"	
3-04	V.V.R.	6"			255	90	130	130	3.6	0.4	0.5"	
3-05	V.V.R.	6"			410	195	295	295	6.6	0.6	0.5"	
3-06A	V.V.R.	14"			1,675	395	840	1,175	44.5	4.5	0.875"	
3-06B	V.V.R.	14"			1,845	370	925	1,295	48.8	4.9	0.875"	
3-07	V.V.R.	6"			260	80	130	210	8	0.8	0.5"	
3-13	V.V.R.	6"			930	815	815	815	22.2	2.3	0.5"	
3-15	V.V.R.	18"			1,915	385	960	960	28.1	2.7	0.875"	
3-17	V.V.R.	6"			305	65	155	155	5.6	0.6	0.875"	1
3-20	V.V.R.	6"			45	10	25	30	1	0.2	0.5"	
3-21	V.V.R.	12"			900	180	450	450	12.3	1.3	0.875"	

WATER-TO-WATER HEAT EXCHANGERS

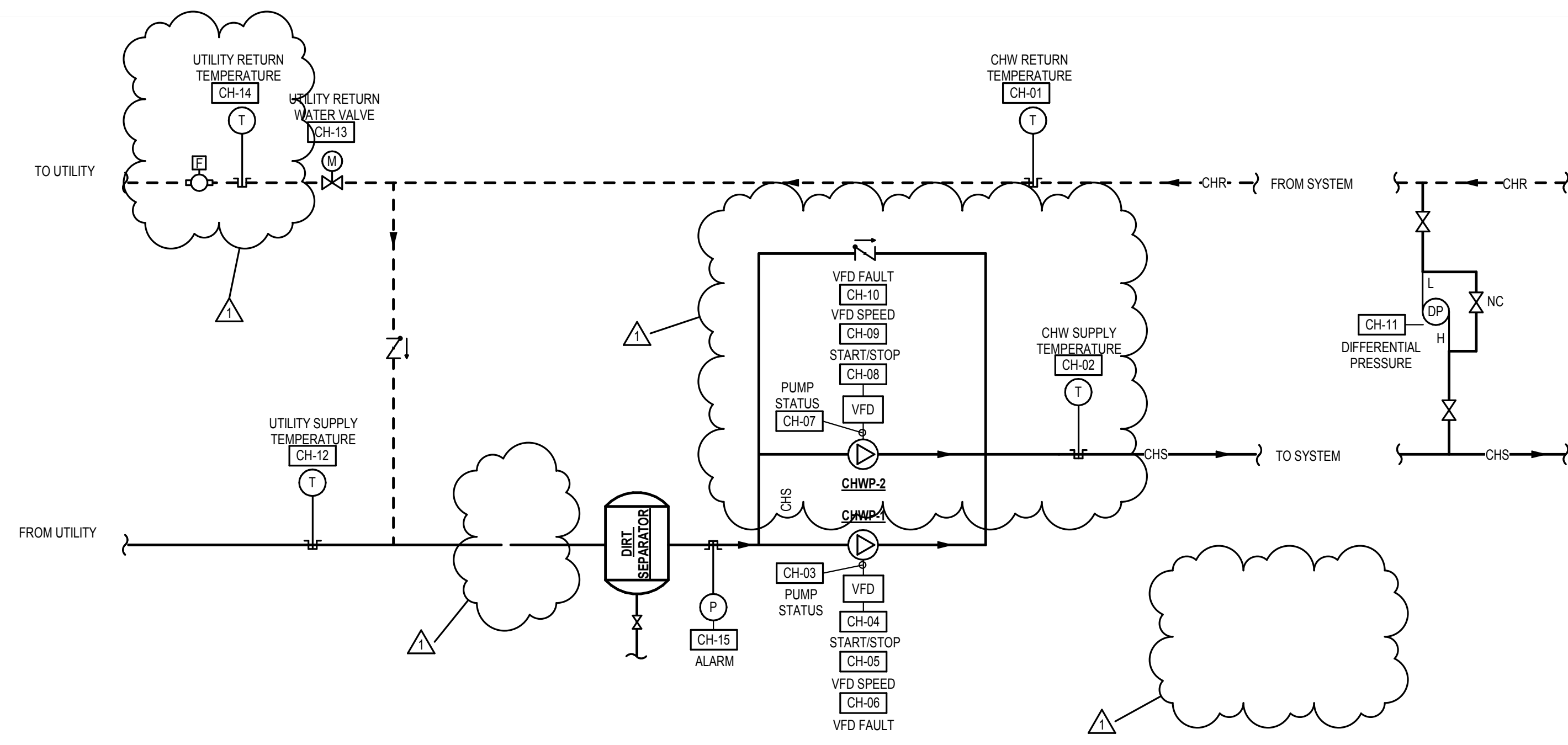
GENERAL NOTES:
A. PLATE & FRAME HEAT EXCHANGERS SHALL PERFORM AT PART LOAD CONDITIONS DOWN TO 10% WITHOUT LAMINAR FLOW.
B. WHEN APPLICABLE, REFER TO SPECIFICATIONS FOR SEISMIC RESTRAINT REQUIREMENTS.
NOTES:
1.

MARK	SERVICE	TYPE	PLANT-SIDE CONDITIONS				BUILDING-SIDE CONDITIONS				MISC.	SEISMIC RESTRAINTS	BASIS OF DESIGN			
			ENTERING WATER TEMPERATURE (°F)	LEAVING WATER TEMPERATURE (°F)	GPM	MAX. WATER PRESS. DROP (FT. HD.)	ENTERING WATER TEMPERATURE (°F)	LEAVING WATER TEMPERATURE (°F)	GPM	MAX. WATER PRESS. DROP (FT. HD.)			MANUFACTURER	MODEL	SEE NOTE	
WHE-1	HOT WATER CONDENSATE	PLATE AND FRAME	120	190	45	3	212	140	45	3						

AIR DISTRIBUTION DEVICES

GENERAL NOTES:
A. ALL LAY-IN AIR DEVICES SHALL FIT IN 24"x24" LAY-IN CLG SYSTEM. VERIFY GRID TYPE AND COORDINATE AIR DEVICE COMPATIBILITY.
B. FINISH KEY: "W.B.E." - WHITE BAKED ENAMEL; "E.C.L." - ETCHED CLEAR LACQUER OR ANODIZED; "C.C.B.A." - CUSTOM COLOR SELECTED BY ARCHITECT.
C. SUPPLY AIR DIFFUSERS SHALL BE 4-WAY BLOW, UNLESS INDICATED OTHERWISE ON DRAWINGS.
D. PROVIDE AUX. FRAMES FOR AIR DEVICES IN PLASTER, GYPSUM BOARD, TILE OR OTHER HARD SURFACES.
NOTES:
1. INSIDE OF PLENUM SHALL BE PAINTED BLACK BY HC.
2. 48" LENGTH.
3. 24" LENGTH.
4. HORIZONTAL BLADES.

MARK	DESCRIPTION	MOUNTING TYPE		MATERIAL	FINISH	BASIS OF DESIGN		
		LAY-IN SURFACE DUCT	SPUNE			MANUFACTURER	MODEL	SEE NOTE
A10	STANDARD SQ. PLAQUE CEILING DIFFUSER - ROUND NECK - 24 X 24			ALUMINUM	W.B.E.	TITUS	OMNI	
F10	SIDEWALL SUPPLY GRILLE			ALUMINUM	W.B.E.	TITUS	3 FLFS	4
H10	SIDEWALL RETURN GRILLE			ALUMINUM	W.B.E.	TITUS	23 RL/S	
J10	STANDARD SQ. CONE CEILING DIFFUSER RND. NECK			ALUMINUM	W.B.E.	TITUS	50F - 24"x24"	
K10	EGGCRATE CEILING GRILLE, EXHAUST			ALUMINUM	W.B.E.	TITUS	50F - 24"x24"	
K11	EGGCRATE CEILING GRILLE, EXHAUST			ALUMINUM	W.B.E.	TITUS	50F - 12"x12"	
P10	PERFORATED FACE CRITICAL ENVIRONMENT RADIAL AIR PATTERN DIFFUSER			ALUMINUM	W.B.E.	TITUS	TRITEC	
S10	ARCHITECTURAL SLOT DIFFUSER			ALUMINUM	W.B.E.	TITUS	FL-10HT	1
S20	ARCHITECTURAL SLOT DIFFUSER			ALUMINUM	W.B.E.	TITUS	FL-20HT	1
S30	ARCHITECTURAL SLOT DIFFUSER			ALUMINUM	W.B.E.	TITUS	FL-30-JT-1	1.2
S31	ARCHITECTURAL SLOT DIFFUSER			ALUMINUM	W.B.E.	TITUS	FL-30-JT-1 3'SLOT	1.3



CHILLED WATER SYSTEM POINTS LIST SCHEDULE															
GENERAL NOTES: A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IF NOT THE INTENT TO SHOW ALL REQUIRED POINTS OR WHEN ADDITIONAL POINTS ARE REQUIRED TO FULFILL THE SEQUENCE OF CONTROL DESCRIBED, SOME POINTS SHALL ALSO BE PROVIDED.															
NOTES: 1. STATUS FROM CONTACT ON VFD. 2. LOCATE DIFFERENTIAL PRESSURE SENSOR AS SHOWN ON FLOOR PLANS.															
POINT NO.	CH-01	CH-02	CH-03	CH-04	CH-05	CH-06	CH-07	CH-08	CH-09	CH-10	CH-11	CH-12	CH-13	CH-14	CH-15
POINT NAME	CHILLED WATER RETURN TEMPERATURE	CHILLED WATER SUPPLY TEMPERATURE	CHILLED WATER PUMP (CHMP-1) STATUS	CHILLED WATER PUMP (CHMP-1) START/STOP	CHILLED WATER PUMP (CHMP-2) VFD SPEED	CHILLED WATER PUMP (CHMP-2) VFD FAULT	CHILLED WATER PUMP (CHMP-2) STATUS	CHILLED WATER PUMP (CHMP-2) START/STOP	CHILLED WATER PUMP (CHMP-2) VFD SPEED	CHILLED WATER PUMP (CHMP-2) VFD FAULT	CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE	UTILITY CHILLED WATER SUPPLY TEMPERATURE	UTILITY RETURN WATER VALVE	UTILITY CHILLED WATER RETURN TEMPERATURE	PRESSURE SENSOR
TYPE	AI	AI	BI	BO	AO	BI	BI	BO	AO	BI	AI	AI	AO	AI	AI
ALARM	HIGH/LOW	HIGH/LOW	ON FAILURE			ON TRIP	ON FAILURE			ON TRIP	HIGH/LOW	HIGH/LOW	HIGH/LOW	HIGH/LOW	HIGH/LOW
NOTES			1				1				2				

CHILLED WATER SYSTEM ATC DIAGRAM
SCALE: NONE

CHILLED WATER SYSTEM CONTROL SEQUENCE

- A. SYSTEM DESCRIPTION
- THE CHILLED WATER SYSTEM CONSISTS OF TWO (2) VARIABLE SPEED PUMPS WITH VARIABLE FREQUENCY DRIVES AND CHILLED WATER PROVIDED BY UTILITY. REFER TO THE DRAWINGS FOR DETAILS.
 - THE UTILITY RETURN WATER VALVE SHALL MODULATE BASED ON THE FOLLOWING:
 - MAINTAIN MINIMUM CHW RETURN TEMPERATURE SETPOINT OF 54 DEG F (ADJUSTABLE). WHEN CHW RETURN TEMPERATURE IS BELOW SETPOINT THE VALVE SHALL MODULATE CLOSED.
 - MAINTAIN MAXIMUM CHW SUPPLY TEMPERATURE SETPOINT OF 44 DEG F (ADJUSTABLE). WHEN CHW SUPPLY TEMPERATURE IS ABOVE SETPOINT THE VALVE SHALL MODULATE OPEN. CHW SUPPLY TEMPERATURE SETPOINT SHALL BE A PRIORITY OVER CHW RETURN TEMPERATURE SETPOINT.
 - PUMP CONTROL
 - TWO (2) CHILLED WATER PUMPS SHALL OPERATE IN A LEAD-STANDBY STRATEGY. EACH PUMP IS SIZED FOR 100 PERCENT OF THE BUILDING LOAD. WHEN BUILDING COOLING LOAD IS LOW BOTH CHILLED WATER PUMPS SHALL BE OFF AND CHILLED WATER FLOW BASED ON THE PRESSURE FROM THE UTILITY.
 - WHEN THE DIFFERENTIAL PRESSURE SENSOR HAS BEEN BELOW SETPOINT FOR 5 MINUTES AND THE LEAD PUMP IS OFF, START THE LEAD PUMP. THE LEAD PUMP SHALL START FIRST. THE STANDBY PUMP SHALL BE START WHEN THE LEAD PUMP'S VFD SPEED REACHES 60 HZ FOR 5 MINUTES, AND THE PUMPS SHALL BE CONTROLLED IN PARALLEL. WHEN PARALLEL PUMPS ARE OPERATING AT 40 HZ OR LESS FOR MORE THAN 10 MINUTES, STOP THE STANDBY PUMP. WHEN THE LEAD PUMP HAS BEEN OPERATING BELOW 30 HZ FOR 5 MINUTES STOP THE LEAD PUMP. PROVIDE A MINIMUM OFF TIME OF 10 MINUTES BEFORE ALLOWING A RESTART OF THE STANDBY PUMP. ON FLOW FAILURE OF THE LEAD PUMP, START THE STANDBY PUMP. STOP THE FAILED PUMP AND SEND AN ALARM TO THE BAS.
 - PROVIDE A SOFTWARE PROGRAM TO AUTOMATICALLY ROTATE THE DESIGNATED LEAD PUMP EVERY 500 RUN HOURS. START THE NEWLY DESIGNATED LEAD PUMP PRIOR TO STOPPING THE CURRENT LEAD PUMP.
- CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE CONTROL AND RESET
- MODULATE THE SECONDARY CHILLED WATER PUMP(S) VFD(S) TO MAINTAIN THE CHILLED WATER DIFFERENTIAL PRESSURE (DP) SETPOINT AS SENSED BY A DP SENSOR TRANSMITTER LOCATED IN THE PIPING SYSTEM AS SHOWN ON THE DRAWINGS. THE VFD'S MINIMUM SPEED SHALL NOT DROP BELOW 20 HZ (AT WHICH TIME THE PUMP SHALL RIDE THE PUMP CURVE IF THERE IS A CONTINUED DECREASE IN DEMAND FOR CHILLED WATER). VERIFY THE MINIMUM VFD AND MOTOR SPEED REQUIREMENTS WITH THE PUMP MANUFACTURER.
 - THE DP SET POINT SHALL BE MODULATED BETWEEN A MAXIMUM SET POINT OF 15 PSID AND A MINIMUM SET POINT OF 3 PSID BASED ON CHILLED WATER COIL CONTROL VALVE PERCENT OF SCALE OF OUTPUT COMMAND SIGNALS. MONITOR ALL MODULATING CHILLED WATER COIL CONTROL VALVE PERCENT OF SCALE OF OUTPUT COMMAND SIGNALS EVERY 10 MINUTES (DO NOT INCLUDE POSITIONAL SEASONAL OR ISOLATION VALVES) AND RESET THE DP SETPOINT DOWNWARD UNTIL ANY ONE VALVE IS 90 PERCENT OF SCALE OF OUTPUT COMMAND SIGNAL (BUT NO LESS THAN A 3 PSID SET POINT). THE 15 PSID SET POINT SHALL BE VERIFIED DURING TAB TO MEET THE REQUIREMENTS OF ACTUAL FIELD CONDITIONS.

1 CHILLED WATER

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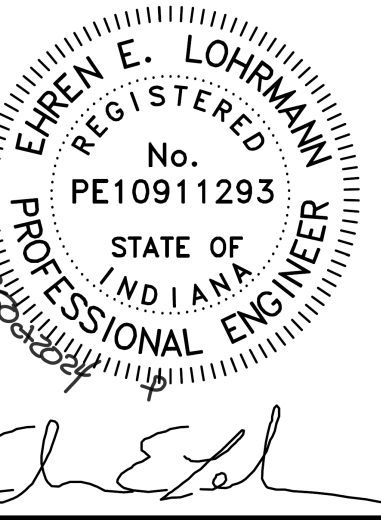
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DRAWN BY:
JPF
DRAWING TITLE:
MECHANICAL CONTROL SCHEMATICS

DRAWING NUMBER:
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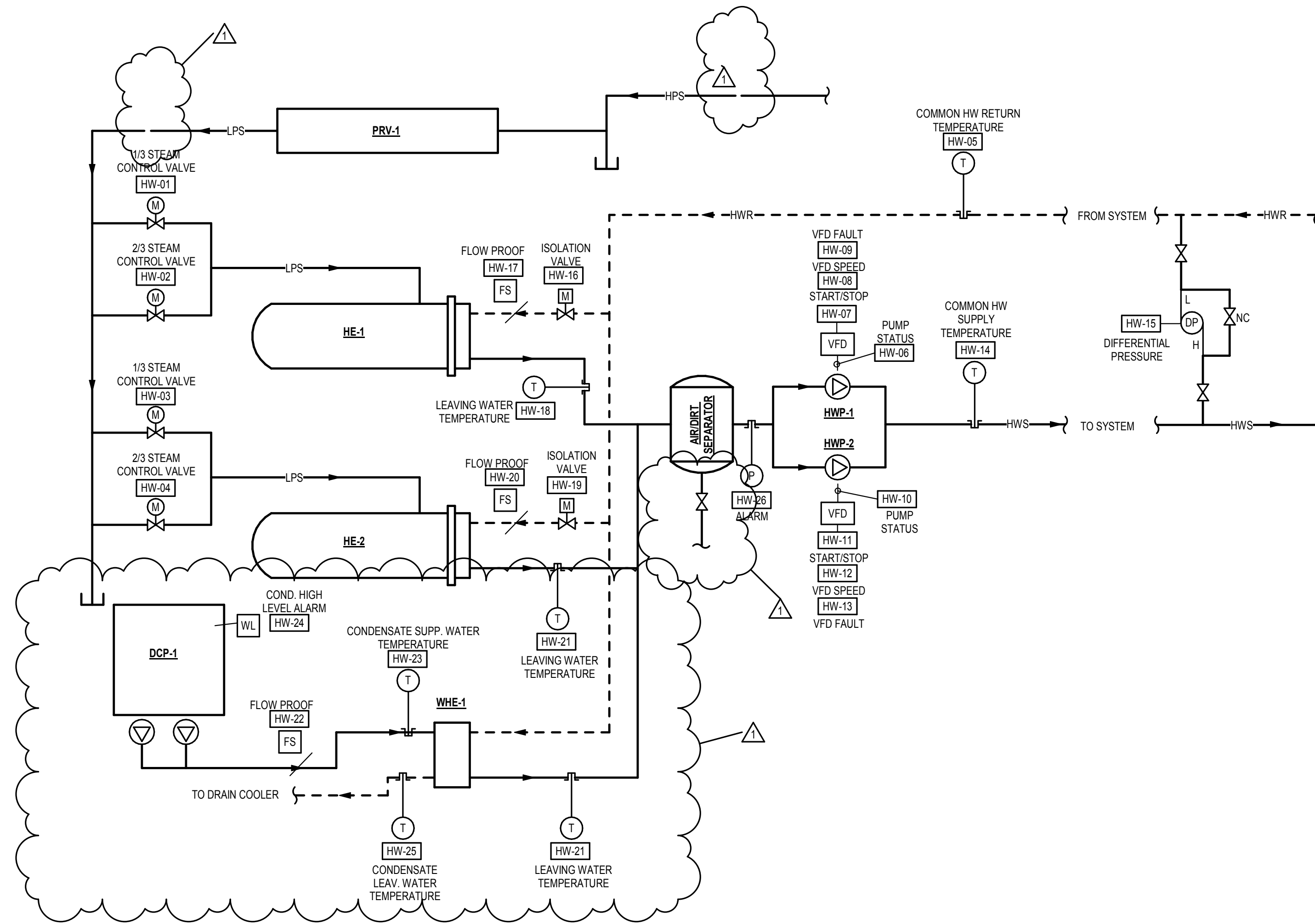
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HOT WATER CONVERTER SYSTEM CONTROL SEQUENCES

- A. SYSTEM DESCRIPTION**
- THE STEAM TO HEATING HOT WATER CONVERTERS SYSTEM CONSISTS OF TWO (2) CONVERTERS LEAD AND STANDBY WITH DEDICATED STEAM CONTROL VALVES AND HOT WATER ISOLATION VALVES. TWO (2) HOT WATER PUMPS WITH DEDICATED VARIABLE FREQUENCY DRIVES. REFER TO THE DRAWINGS FOR DETAILS.
- B. SYSTEM ENABLE CONDITIONS:**
- EACH OF THE TWO (2) CONVERTERS IS SIZED FOR 100 PERCENT OF THE BUILDING LOAD AND SHALL OPERATE AS LEAD AND STANDBY. THE LEAD CONVERTER SHALL BE ENABLED CONTINUOUSLY.
 - PROVIDE A SOFTWARE PROGRAM TO AUTOMATICALLY ROTATE THE DESIGNATED LEAD CONVERTER EVERY 500 RUN HOURS. ENABLE THE NEWLY DESIGNATED LEAD CONVERTER PRIOR TO DISABLING THE CURRENT LEAD CONVERTER.
- C. HOT WATER PUMP LEAD-LAG OPERATION:**
- THE TWO (2) HOT WATER PUMPS SHALL OPERATE IN A LEAD-STANDBY STRATEGY. EACH PUMP IS SIZED FOR 100 PERCENT OF THE BUILDING LOAD. HOT WATER PUMP LEAD-STANDBY OPERATION SEQUENCE SHALL BE ENABLED WHEN THE CONVERTER SYSTEM IS ENABLED. THE LEAD PUMP SHALL BE ENABLED FIRST. THE STANDBY PUMP SHALL BE ENABLED WHEN THE LEAD PUMPS VFD SPEED REACHES 60 HZ FOR 5 MINUTES. AND THE PUMPS SHALL BE CONTROLLED IN PARALLEL. WHEN PARALLEL PUMPS ARE OPERATING AT 40 HZ OR LESS FOR MORE THAN 15 MINUTES, STOP THE STANDBY PUMP. PROVIDE A MINIMUM OFF TIME OF 10 MINUTES BEFORE ALLOWING A RESTART OF THE STANDBY PUMP. ON FLOW FAILURE OF AN ENABLED PUMP, ENABLE THE STANDBY PUMP, DISABLE THE FAILED PUMP, AND SEND AN ALARM TO THE BAS.
 - PROVIDE A SOFTWARE PROGRAM TO AUTOMATICALLY ROTATE THE DESIGNATED LEAD PUMP EVERY 500 RUN HOURS. START THE NEWLY DESIGNATED LEAD PUMP PRIOR TO DISABLING THE CURRENT LEAD PUMP.
- D. HOT WATER SYSTEM DIFFERENTIAL PRESSURE CONTROL AND RESET:**
- MODULATE THE HOT WATER PUMP(S) VFD(S) TO MAINTAIN THE HOT WATER DIFFERENTIAL PRESSURE (DP) SETPOINT AS SENSED BY A DP SENSOR. TRANSMITTER LOCATED IN THE PIPING SYSTEM AS SHOWN ON THE DRAWINGS. THE VFD'S MINIMUM SPEED SHALL NOT DROP BELOW 15 HZ (AT WHICH TIME THE PUMP SHALL RIDE THE PUMP CURVE IF THERE IS A CONTROLLED DECREASE IN DEMAND FOR HOT WATER). VERIFY THE MINIMUM VFD AND MOTOR SPEED REQUIREMENTS WITH THE PUMP MANUFACTURER.
 - THE DP SET POINT SHALL BE MODULATED BETWEEN A MAXIMUM SET POINT OF 15 PSID (PSI DIFFERENTIAL) AND A MINIMUM SET POINT OF 3 PSID BASED ON HOT WATER COIL CONTROL VALVE PERCENT OF SCALE OF OUTPUT COMMAND SIGNALS. MONITOR ALL MODULATING HOT WATER COIL CONTROL VALVE PERCENT OF SCALE OF OUTPUT COMMAND SIGNALS EVERY 10 MINUTES (DO NOT INCLUDE 2-POSITIONAL, SEASONAL, OR ISOLATION VALVES) AND RESET THE DP SETPOINT DOWNWARD UNTIL ANY ONE VALVE IS 90 PERCENT OF SCALE OF OUTPUT COMMAND SIGNAL (BUT NO LESS THAN A 3 PSID SET POINT). THE 15 PSID SET POINT SHALL BE VERIFIED DURING TAB TO MEET THE REQUIREMENTS OF ACTUAL FIELD CONDITIONS.
- E. HOT WATER SUPPLY TEMPERATURE SETPOINT AND RESET:**
- THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET BASED ON OUTSIDE AIR TEMPERATURE: 30 DEG F OUTSIDE AND COLDER - 140 DEG F HEATING HOT WATER SUPPLY SET POINT 60 DEG F OUTSIDE AND WARMER - 110 DEG F HEATING HOT WATER SUPPLY SET POINT. LINEAR RESET BETWEEN 30 AND 60 DEG F OUTSIDE.
- F. STEAM AUTOMATIC CONTROL VALVES:**
- EACH CONVERTER SHALL BE FITTED WITH A .33 AND .87 CONTROL VALVE ARRANGEMENT. REFER TO DRAWINGS FOR DETAILS AND CAPACITY REQUIREMENTS.
 - THE STEAM CONTROL VALVES FOR THE ASSOCIATED ENABLED CONVERTER SHALL NOT BE OPENED UNTIL A FLOW SWITCH MOUNTED IN THE LEAVING HOT WATER SIDE OF THE CONVERTER PROVES FLOW. AFTER FLOW IS PROVEN, MODULATE THE TWO (2) STEAM VALVES IN SEQUENCE TO MAINTAIN THE HOT WATER SUPPLY SETPOINT (SENSOR MOUNTED IN COMMON HOT WATER SUPPLY PIPE). THE .33 VALVE SHALL BE THE LEAD VALVE. IF SET POINT CANNOT BE MAINTAINED FOR 5 MINUTES, MODULATE OPEN THE .87 VALVE TO MAINTAIN SET POINT AND CLOSE THE .33 VALVE. IF THE SET POINT CANNOT BE MAINTAINED AFTER 5 MINUTES, MODULATE OPEN THE .33 VALVE AND OPERATE THE TWO (2) VALVES IN PARALLEL. IF THE VALVES ARE OPEN 20 PERCENT OR LESS BASED ON OUTPUT SIGNAL FOR 15 MINUTES, CLOSE THE .33 VALVE. IF THE REMAINING .87 VALVE IS OPEN 33 PERCENT OF LESS FOR 15 MINUTES, MODULATE OPEN THE .33 VALVE TO MAINTAIN SET POINT AND CLOSE THE .87 VALVE.
 - IF AFTER 30 MINUTES THE LEAD CONVERTER IS UNABLE TO MAINTAIN THE HOT WATER SUPPLY TEMPERATURE SET POINT, THE STANDBY CONVERTER SHALL BE ENABLED AND SHALL OPERATE IN PARALLEL WITH THE LEAD CONVERTER TO MAINTAIN HOT WATER SUPPLY TEMPERATURE SETPOINT, AND AN ALARM SHALL BE GENERATED TO THE BAS.
 - WHEN A CONVERTER IS DISABLED, THE STEAM CONTROL VALVES SHALL CLOSE FIRST, AND THE ENABLED HOT WATER PUMPS SHALL CONTINUE TO RUN FOR A MINIMUM OF 5 MINUTES BEFORE STOPPING AND CLOSING THE CONVERTER'S HOT WATER AUTO ISOLATION VALVE.



HOT WATER CONVERTER SYSTEM POINTS LIST SCHEDULE																												
GENERAL NOTES: A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCE OR CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.																												
NOTES: 1. STATUS CONTACT FROM VFD. 2. LOCATE DIFFERENTIAL PRESSURE SENSOR AS SHOWN ON FLOOR PLANS. 3. POINT AVAILABLE FROM EQUIPMENT.																												
NOTES: 4. CONTROL VALVE SHALL BE NORMALLY OPEN. 5. CONTROL VALVE SHALL BE NORMALLY CLOSED.																												
POINT NO.	HW-01	HW-02	HW-03	HW-04	HW-05	HW-06	HW-07	HW-08	HW-09	HW-10	HW-11	HW-12	HW-13	HW-14	HW-15	HW-16	HW-17	HW-18	HW-19	HW-20	HW-21	HW-22	HW-23	HW-24	HW-25	HW-26	HW-27	HW-28
POINT NAME	HEAT EXCHANGER (HE-1) - 1/3 STEAM CONTROL VALVE	HEAT EXCHANGER (HE-1) - 2/3 STEAM CONTROL VALVE	HEAT EXCHANGER (HE-2) - 1/3 STEAM CONTROL VALVE	HEAT EXCHANGER (HE-2) - 2/3 STEAM CONTROL VALVE	COMMON HOT WATER RETURN TEMPERATURE	HOT WATER SYSTEM PUMP (HWP-1) STATUS	HOT WATER SYSTEM PUMP (HWP-1) START/STOP	HOT WATER SYSTEM PUMP (HWP-1) VFD SPEED	HOT WATER SYSTEM PUMP (HWP-1) VFD FAULT	HOT WATER SYSTEM PUMP (HWP-2) STATUS	HOT WATER SYSTEM PUMP (HWP-2) START/STOP	HOT WATER SYSTEM PUMP (HWP-2) VFD SPEED	HOT WATER SYSTEM PUMP (HWP-2) VFD FAULT	COMMON HOT WATER SUPPLY TEMPERATURE	HOT WATER SYSTEM DIFFERENTIAL PRESSURE	CONVERTER (HE-1) HOT WATER ISOLATION CONTROL VALVE	CONVERTER (HE-2) HOT WATER ISOLATION CONTROL VALVE	CONVERTER (HE-1) LEAVING HOT WATER TEMPERATURE	CONVERTER (HE-2) LEAVING HOT WATER TEMPERATURE	CONVERTER (HE-2) HOT WATER FLOW PROOF	CONVERTER (HE-1) LEAVING CONDENSATE SUPPLY WATER TEMPERATURE	CONDENSATE SUPPLY WATER TEMPERATURE	CONDENSATE RECEIVER HIGH LEVEL ALARM	CONDENSATE LEAVING WATER TEMPERATURE	CONDENSATE LEAVING WATER TEMPERATURE	CONDENSATE LEAVING WATER TEMPERATURE	PRESSURE SENSOR	
TYPE	AO	AO	AO	AO	AI	BI	BO	AO	BI	BI	BO	AO	BI	AI	AI	BO	BI	AI	BO	BI	AI	BI	AI	AI	BI	AI	AI	
ALARM					HIGH LOW	ON FAILURE			ON TRIP	ON FAILURE		ON TRIP	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	HIGH LOW	ON TRIP	HIGH LOW	HIGH LOW	HIGH LOW	
NOTES	5	4	5	4		1				1					2									4				

HOT WATER CONVERTER SYSTEM CONTROL SCHEMATIC

SCALE: NONE

1 HOT WATER CONVERTER
SCALE: NONE

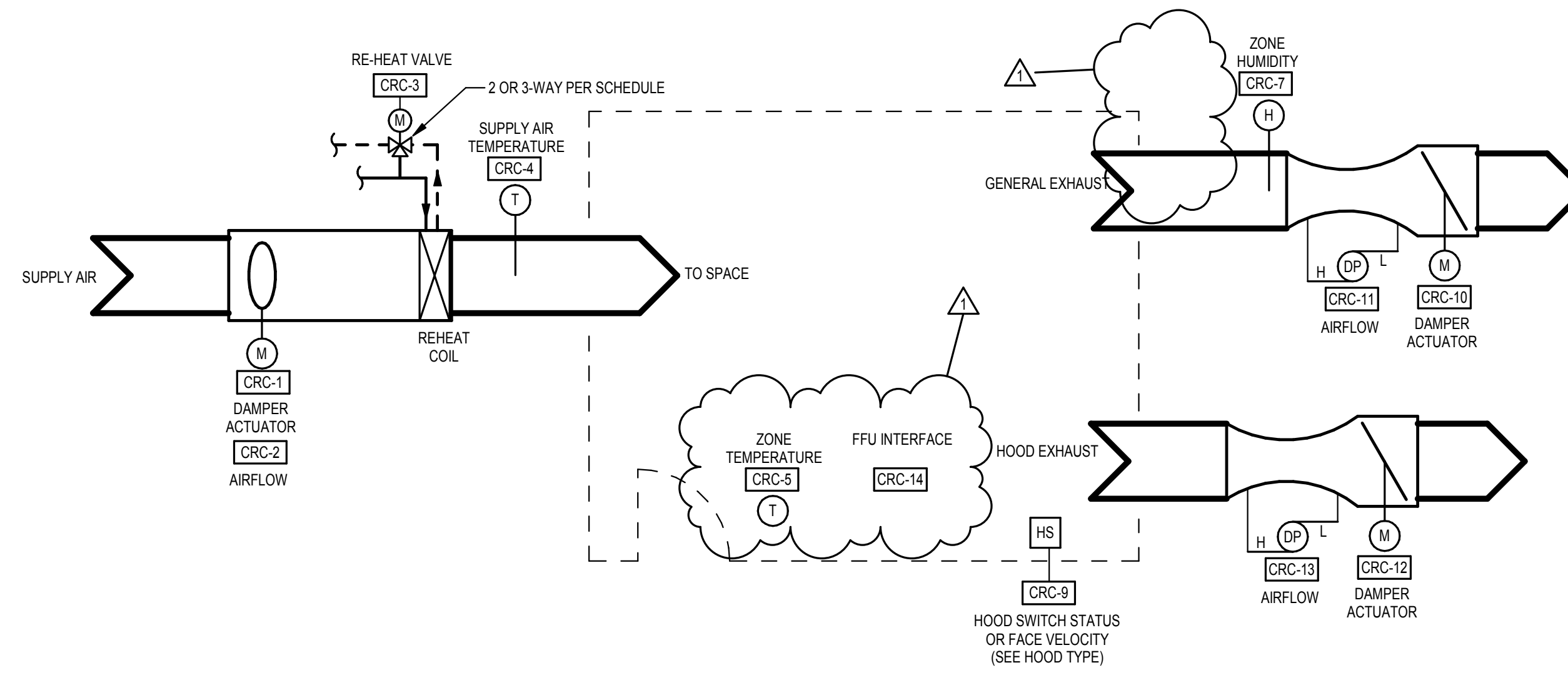
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DRAWN BY:
JPF
DRAWING TITLE:

MECHANICAL
CONTROL
SCHEMATICS

DRAWING NUMBER:
M703



LAB ROOM CONTROL DIAGRAM

SCALE: NONE

LAB ROOM CONTROL - POINTS LIST SCHEDULE														
GENERAL NOTES: A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE BUILDING AUTOMATION SYSTEM IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.														
NOTES: 1. CONNECT DP FLOW SENSOR PROVIDED WITH AIR TERMINAL UNIT. 2. PROVIDE CONTROLS FOR QUANTITY OF TERMINALS AS SCHEDULED. 3. PROVIDE FOR QUANTITY OF HOODS AS SCHEDULED. COORDINATE SWITCH WITH HOOD MANUFACTURER. ONLY A SINGLE SWITCH SHALL BE USED. A CURRENT TRANSDUCER ON HOOD FAN MAY BE PROVIDED IN LIEU OF MONITORING THE SWITCH.														
POINT NO.	CRC-1	CRC-2	CRC-3	CRC-4	CRC-5	CRC-6	CRC-7	CRC-8	CRC-9	CRC-10	CRC-11	CRC-12	CRC-13	CRC-14
POINT NAME	SUPPLY DAMPER ACTUATOR	SUPPLY AIR FLOW	REHEAT COIL CONTROL VALVE	SUPPLY AIR TEMPERATURE	ZONE TEMPERATURE	ZONE TEMPERATURE SETPOINT	ZONE HUMIDITY	ROOM PRESSURE	HOOD SWITCH	GENERAL EXHAUST RETURN DAMPER ACTUATOR	GENERAL EXHAUST RETURN AIRFLOW	HOOD EXHAUST RETURN DAMPER ACTUATOR	HOOD EXHAUST RETURN AIRFLOW	FFU INTERFACE
TYPE	AO	AI	AO	AI	AI	AI	AI	AI	BI	AO	AI	AO	AI	INTERFACE
ALARM					HIGH TEMP @ 89°F		HIGH RH @ 65%	HIGH PRESSURE LOW PRESSURE						
NOTES	2	1,2							3	2	1,2	2		

1 CRITICAL ROOM CONTROLS

LAB ROOM CONTROL SEQUENCES

- DESCRIPTION
 - THE CRITICAL ROOM CONTROL SYSTEM CONSISTS OF A COMBINATION OF AIR VALVES (SUPPLY EXHAUST), FUME HOODS, AND A SUPPLY REHEAT COIL. THESE DEVICES SHALL BE SEQUENCED TO PROVIDE OPERATOR SAFETY, ROOM CFM OFFSET, TEMPERATURE CONTROL, AND OPERATOR INTERFACE.
 - ALL CONTROLS ASSOCIATED WITH THE CRITICAL ROOM CONTROL SHALL BE PROVIDED BY A SINGLE CONTROLLER VENDOR AND BE COMPLETELY CONFIGURABLE VIA THE WALL MOUNTED DISPLAY.
- MULTI-ROOM MONITOR REQUIREMENTS
 - FOR ALL SPACES AS NOTED IN THE SCHEDULE, PROVIDE INFORMATION ON A MULTI-ROOM MONITOR IN THE LOCATION SHOWN ON THE DRAWINGS. EACH ROOM SHOULD BE DISPLAYED ON MONITOR HOME SCREEN. PROVIDE QUANTITY OF MONITORS AS REQUIRED FOR NUMBER OF ROOMS SPECIFIED.
- LAB ROOM CONTROL SEQUENCE
 - MODES
 - OCCUPIED MODE: THE LAB SHALL CONTROL TO THE OCCUPIED MODE SETPOINTS.
 - UNOCCUPIED MODE: THE LAB SHALL HAVE NO UNOCCUPIED MODE. DISABLE MODE OR WRITE OCCUPIED SETPOINTS TO UNOCCUPIED VALUES TO PREVENT INADVERTENT CHANGE IN MODE.
 - TEMPERATURE CONTROL
 - ROOM TEMPERATURE SHALL BE MEASURED BY WALL SENSOR TO ENSURE PROPER MEASUREMENT OF SPACE CONDITIONS.
 - A COOLING AND HEATING SETPOINT SHALL BE USED TO CONTROL SPACE TEMPERATURE.
 - COOLING SHALL BE PROVIDED BY MEETING THE HIGHER REQUIRED CFM.
 - MODULATING BETWEEN THE MINIMUM AND MAXIMUM SUPPLY AIR FLOW TO MEET TEMPERATURE REQUIREMENT. WHEN SPACE TEMPERATURE IS BETWEEN COOLING AND HEATING SETPOINT SUPPLY AIRFLOW SHALL BE AT MINIMUM.
 - CFM OFFSET BASED ON EXHAUST FLOW.
 - HEATING SHALL BE PROVIDED BY FIRST MODULATING THE REHEAT COIL CAPACITY CONTROL. AFTER MAXIMUM DISCHARGE AIR TEMPERATURE HAS BEEN ACHIEVED, MODULATE FROM MINIMUM TO MAXIMUM SUPPLY AIR FLOW (IF APPLICABLE).
 - ROOM PRESSURE CONTROL
 - ROOM PRESSURE SHALL BE MAINTAINED BY A FIXED OFFSET BETWEEN TOTAL SUPPLY AND TOTAL EXHAUST AIR.
 - DURING INITIAL TAB, OFFSET SHALL BE ADJUSTED TO FIELD CONDITIONS AS REQUIRED.
 - AIRFLOW CONTROL
 - SUPPLY AIRFLOW CONTROL:
 - SUPPLY AIRFLOW SETPOINT SHALL VARY BETWEEN THE SCHEDULED MINIMUM AND MAXIMUM VALUES. CONTROLLING SETPOINT SHALL BE DETERMINED FROM BOTH ROOM PRESSURE OFFSET AND TEMPERATURE CONTROL ALGORITHMS.
 - GENERAL EXHAUST CONTROL:
 - GENERAL EXHAUST AIRFLOW SHALL VARY BETWEEN THE SCHEDULED MINIMUM AND MAXIMUM VALUES. CONTROLLING SET POINT SHALL BE DETERMINED FROM THE ROOM PRESSURE OFFSET ALGORITHM.
 - CONTAINMENT HOOD CONTROL:
 - HOOD STATUS SHALL BE DETERMINED BY MONITORING A SASH SENSOR. PROVIDE RELAYS AS REQUIRED.
 - WHEN HOOD HAS PROVIDED ON, PROVIDE SPECIFIED MAXIMUM AIRFLOW.
 - WHEN HOOD IS PROVIDED OFF, PROVIDE SPECIFIED MINIMUM AIRFLOW.
- CONTROLLER LOCATION
 - MODULATE EACH VENTURI VALVE DAMPER POSITION TO MAINTAIN EFFECTIVE AIRFLOW SETPOINT.
- FAN FILTER UNIT
 - FAN FILTER SHALL BE SETUP FOR CONSTANT TORQUE OPERATION TO OVERCOME FILTER PRESSURE DROP.
 - MONITOR CFM OUTPUT, MOTOR RPM AND STATUS, MOTOR HOURS, AND FILTER STATUS AND PRESSURE DROP THROUGH BACNET INTERFACE.

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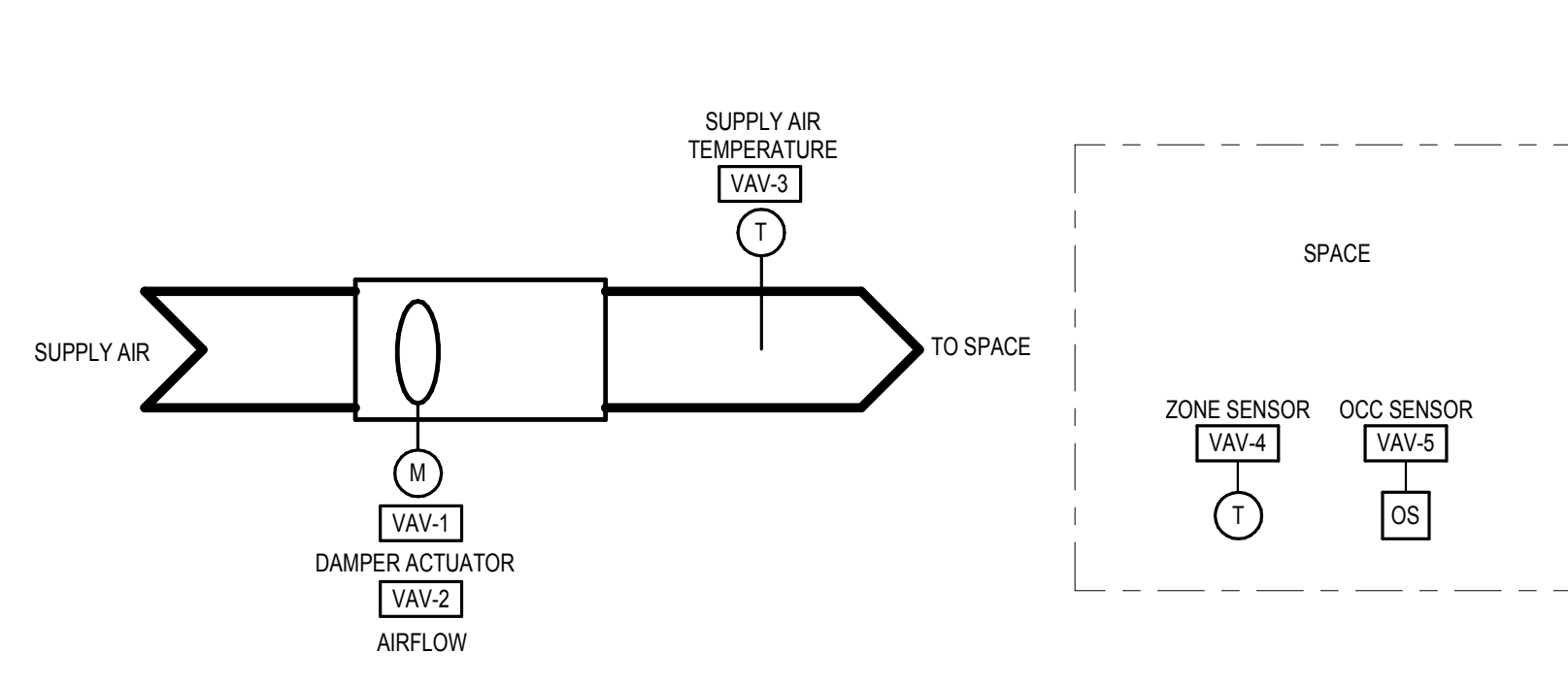
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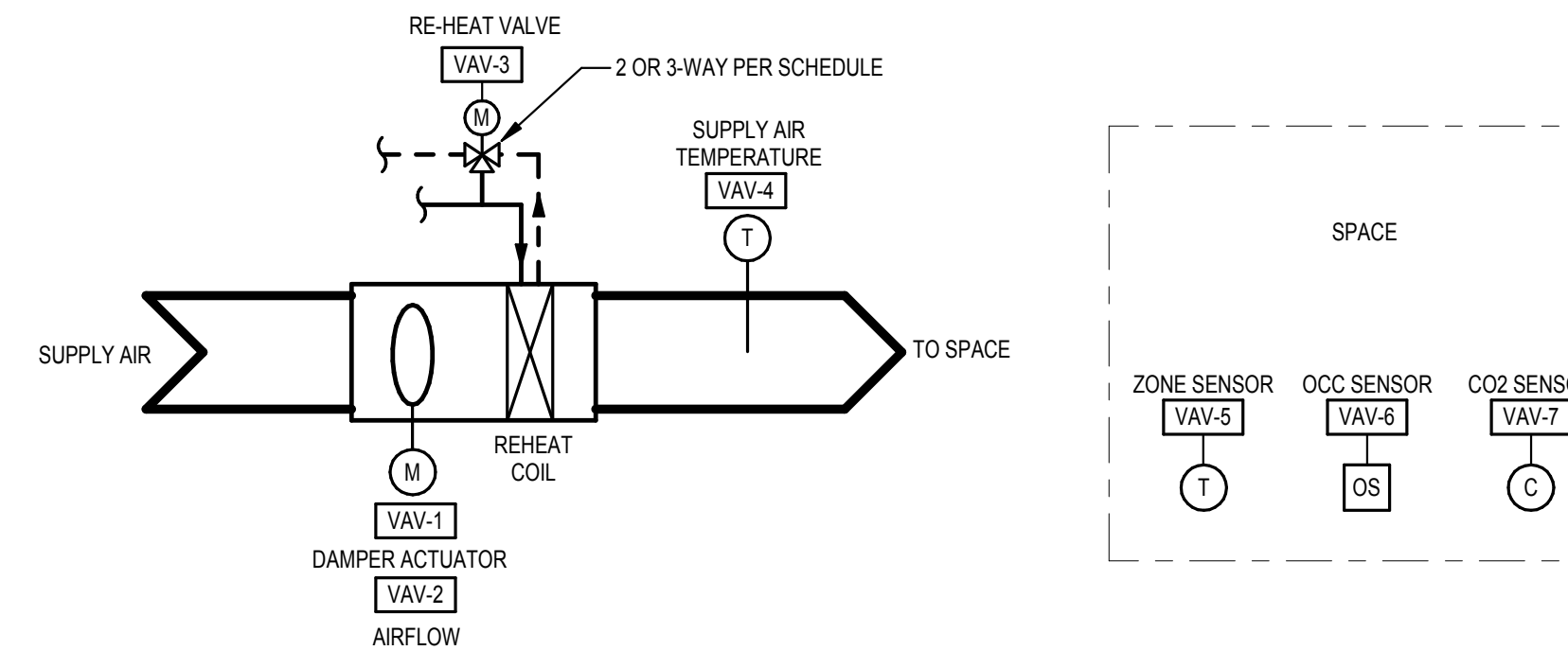
AIR TERMINAL UNIT SEQUENCES

THIS SEQUENCE APPLIES TO SUPPLY AIR TERMINALS IN THE AIR TERMINAL UNIT SCHEDULE. SUPPLY AIR TERMINALS LISTED IN THE AIR CONTROL UNITS SCHEDULE SHALL CONTROL PER THE CRITICAL ROOM CONTROL SEQUENCE.

- A. ZONE HEATING AND COOLING SETPOINTS
 - a. "OCCUPIED" ZONE COOLING SETPOINT, AS DEFINED ON DRAWINGS.
 - b. "UNOCCUPIED" ZONE COOLING SETPOINT: 7 DEG F ABOVE "OCCUPIED" ZONE COOLING SETPOINT BUT NO WARMER THAN 52 DEG F.
 - c. "OCCUPIED" ZONE HEATING SETPOINT, AS DEFINED ON DRAWINGS.
 - d. "UNOCCUPIED" ZONE HEATING SETPOINT: 10 DEG F BELOW "OCCUPIED" ZONE HEATING SETPOINT BUT NO LOWER THAN 55 DEG F.
- B. THE AIR TERMINAL UNIT MANUFACTURER SHALL PROVIDE THE BOX WITH VELOCITY SENSOR AND AIR FLOW TAPS FOR USE IN THE TEMPERATURE CONTROLS. PROVIDE ALL OTHER CONTROL COMPONENTS. REHEAT BOXES SHALL BE PROVIDED WITH A MODULATING HOT WATER VALVE AS INDICATED ON THE DRAWINGS, AND A DISCHARGE AIR TEMPERATURE SENSOR MOUNTED MINIMUM 24" DOWNSTREAM OF THE REHEAT COIL (BUT BEFORE ANY BRANCH TAKE-OFFS). ALSO REFER TO DRAWINGS FOR LISTED CFM SET POINTS AND LISTED DISCHARGE AIR TEMPERATURE SET POINTS AS DESCRIBED BELOW. PROVIDE AUTO ZEROING FUNCTION TO ADJUST THE ZERO CALIBRATION POINT OF THE PRESSURE OR VELOCITY TRANSDUCER. AIR TERMINAL UNIT CONTROL SEQUENCES SHALL BE ACTIVE WHEN THE ASSOCIATED AHU SUPPLY FAN IS "ON".
- C. VAV SHUTOFF (COOLING-ONLY) CONTROL - IF THE SPACE TEMPERATURE IS BELOW SETPOINT, THE AIR TERMINAL UNIT DAMPER SHALL BE AT THE LISTED DEAD BAND MINIMUM CFM. IF SPACE TEMPERATURE RISES ABOVE THE COOLING SETPOINT, THE CONTROL SHALL MODULATE THE AIR TERMINAL UNIT DAMPER BETWEEN THE LISTED DEAD BAND MINIMUM CFM AND THE LISTED COOLING MAXIMUM CFM TO SATISFY THE SPACE COOLING SETPOINT. AIR TERMINAL UNIT VAV SHUTOFF CONTROLS SHALL REVERSE ACTION DURING "WARM UP" CYCLES.
- D. VAV HOT WATER REHEAT AND HEATING CONTROL
 - a. FIXED SET POINTS (ADJUSTABLE):
 - COOLING MAXIMUM CFM - REFER TO AIR TERMINAL UNIT SCHEDULE FOR SPECIFIED COOLING MAXIMUM CFM SET POINT.
 - DEADBAND MINIMUM CFM - REFER TO AIR TERMINAL UNIT SCHEDULE FOR SPECIFIED DEADBAND MINIMUM CFM. (NOTE: UNLESS NOTED OTHERWISE ON THE DRAWINGS, DEAD BAND MINIMUM CFM SHALL BE SET TO THE SCHEDULED VALUE EVEN IF BELOW MANUFACTURER'S MINIMUM BOX CFM.)
 - HEATING MAXIMUM CFM - REFER TO AIR TERMINAL UNIT SCHEDULE FOR SPECIFIED HEATING MAXIMUM CFM.
 - b. ACTIVE SET POINTS (ADJUSTABLE):
 - SUPPLY AIR CFM SET POINT.
 - MAXIMUM DISCHARGE AIR TEMPERATURE LIMITS: HEATING MODE DISCHARGE AIR TEMPERATURE SHALL BE LIMITED TO 90 DEG F.
 - c. AIR TERMINAL UNIT DAMPER CONTROL - MODULATE DAMPER POSITION TO MAINTAIN CURRENT SUPPLY AIR CFM SET POINT.
 - d. COOLING SEQUENCE - IF SPACE TEMPERATURE RISES ABOVE THE COOLING SETPOINT, RESET THE SUPPLY AIR CFM SET POINT BETWEEN THE LISTED DEAD BAND MINIMUM CFM AND THE LISTED COOLING MAXIMUM CFM TO SATISFY THE SPACE COOLING SETPOINT.
 - e. DEADBAND MODE - IF THE SPACE TEMPERATURE IS IN THE DEAD BAND BETWEEN HEATING AND COOLING SET POINTS, THE SUPPLY AIR CFM SET POINT SHALL BE SET TO THE LISTED DEAD BAND MINIMUM CFM.
 - f. REHEAT HEATING SEQUENCE - WHEN SPACE TEMPERATURE DROPS BELOW THE HEATING SETPOINT, AND HEATING HOT WATER IS AVAILABLE, THE AIR TERMINAL UNIT SHALL CONTROL AS FOLLOWS:
 - 1ST STAGE OF REHEAT - HEATING SHALL BE TO ACTIVATE A DISCHARGE AIR TEMPERATURE CONTROL SEQUENCE AND RESET AN ACTIVE DISCHARGE AIR TEMPERATURE SET POINT TO MAINTAIN THE SPACE HEATING SET POINT, WITH THE REHEAT OR HEATING DISCHARGE AIR TEMPERATURE HIGH LIMIT DEFINED ABOVE. SUPPLY AIR CFM SET POINT SHALL REMAIN AT DEADBAND MINIMUM CFM DURING THIS 1ST STAGE SEQUENCE.
 - 2ND STAGE OF REHEAT - HEATING SHALL BE TO RESET THE SUPPLY AIR CFM SET POINT BETWEEN THE MINIMUM DEADBAND CFM AND THE MAXIMUM HEATING CFM WHILE MAINTAINING THE ACTIVE DISCHARGE AIR TEMPERATURE HIGH LIMIT.
 - REVERSE THE SEQUENCE WHEN SPACE HEATING SETPOINT IS REACHED. WHEN IN A "WARM UP" CYCLE, THE AIR TERMINAL UNIT CONTROLS SHALL FUNCTION AS IN HEATING MODE.
 - HOT WATER VALVE CONTROL - MODULATE THE VALVE POSITION TO MAINTAIN THE ACTIVE DISCHARGE AIR TEMPERATURE SETPOINT WHILE IN THE HEATING MODE ONLY. OTHERWISE, THE VALVE SHALL BE CLOSED.
 - WHEN HOT WATER IS NOT AVAILABLE, THE AIR TERMINAL UNITS SHALL ACT AS SHUTOFF (COOLING ONLY) BOXES.
 - g. CONSTANT VOLUME HOT WATER REHEAT CONTROL - SAME AS FOR VAV HOT WATER REHEAT AND HEATING CONTROL SEQUENCES ABOVE EXCEPT THAT THE SUPPLY AIR CFM SET POINT SHALL BE HELD CONSTANT AT THE SCHEDULED CFM.
 - f. CARBON DIOXIDE (CO₂) OVER-RIDE - PROVIDE A WALL-MOUNTED CO₂ SENSOR FOR EACH HIGH OCCUPANCY SPACE AS NOTED ON THE DRAWINGS. IF MEASURED CO₂ LEVEL RISES ABOVE A HIGH LIMIT OF 700 PPM (ADJUSTABLE) FOR 5 MINUTES, INCREASE THE ASSOCIATED BOX SUPPLY AIR FLOW SET POINT BY 10 PERCENT. FOR EVERY 5 MINUTES THE CO₂ LEVEL IS ABOVE THE HIGH LIMIT, INCREASE BOX SUPPLY AIR FLOW SET POINT AN ADDITIONAL 10 PERCENT. DO NOT EXCEED THE LISTED COOLING MAXIMUM CFM. ONCE THE MEASURED CO₂ LEVEL IS BELOW 600 PPM FOR 10 MINUTES, CANCEL THE OVER-RIDE SEQUENCE. IF A SPACE CO₂ LEVEL RISES ABOVE 1200 PPM AN ALARM SHALL BE ISSUED THRU THE BAS SYSTEM.
 - g. ENERGY MANAGEMENT - EACH AIR TERMINAL UNIT SHALL HAVE ITS OWN TIME OF DAY SCHEDULE FOR "OCCUPIED" AND "UNOCCUPIED" CONTROL. USE THE OCCUPANCY SENSORS ASSOCIATED WITH THE LIGHTING CONTROLS TO OVERRIDE THE "UNOCCUPIED" SCHEDULE FOR A FIXED (PROGRAMMABLE) TIME. THE DDC SYSTEM SHALL TRACK, LOG AND REPORT ON THE AMOUNT OF TIME EACH AIR TERMINAL UNIT WAS OVERRIDDEN AS WELL AS ASSOCIATED DISCHARGE AIR TEMPERATURE.



AIR TERMINAL UNIT ATC DIAGRAM - SHUTOFF
SCALE: NONE



AIR TERMINAL UNIT ATC DIAGRAM - H.W. REHEAT
SCALE: NONE

AIR TERMINAL UNIT - SHUTOFF POINTS LIST SCHEDULE

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

NOTES:
1. CONNECT DP FLOW SENSOR PROVIDED WITH AIR TERMINAL UNIT.
2. LOCATE SENSOR MINIMUM 24" DOWNSTREAM FROM AIR TERMINAL UNIT DISCHARGE (BUT PRIOR TO FIRST DUCT BRANCH).
3. APPLIES TO AIR TERMINAL UNITS AS NOTED IN SCHEDULE. ROOM OCCUPANCY SENSOR PROVIDED WITH LIGHTING CONTROLS.

POINT NO.	VAV-1	VAV-2	VAV-3	VAV-4	VAV-5
POINT NAME	DAMPER ACTUATOR	AIRFLOW	VAV SUPPLY AIR TEMPERATURE	ZONE SENSOR	ROOM OCCUPANCY SENSOR
TYPE	AO	AI	AI	AI	BI
ALARM			HIGHT TEMP @ 80°F LOW TEMP @ 50°F		
NOTES	1	2		3	

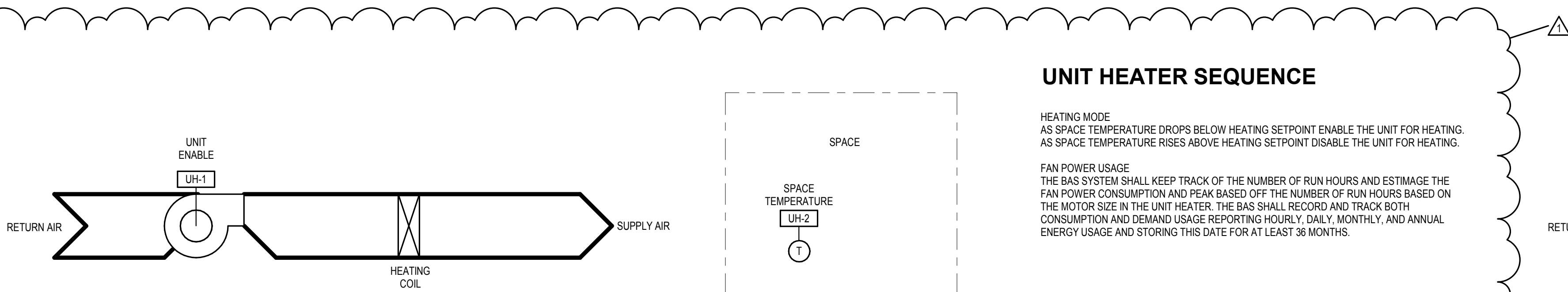
AIR TERMINAL UNIT - H.W. REHEAT POINTS LIST SCHEDULE

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

NOTES:
1. CONNECT DP FLOW SENSOR PROVIDED WITH AIR TERMINAL UNIT.
2. LOCATE SENSOR MINIMUM 24" DOWNSTREAM FROM AIR TERMINAL UNIT DISCHARGE (BUT PRIOR TO FIRST DUCT BRANCH).
3. APPLIES TO AIR TERMINAL UNITS AS NOTED IN SCHEDULE. ROOM OCCUPANCY SENSOR PROVIDED WITH LIGHTING CONTROLS.
4. APPLIES TO AIR TERMINAL UNITS SERVING HUDDLE, MEETING, GROUP, FOCUS, AND CONFERENCE ROOMS.

POINT NO.	VAV-1	VAV-2	VAV-3	VAV-4	VAV-5	VAV-6	VAV-7
POINT NAME	DAMPER ACTUATOR	AIRFLOW	REHEAT COIL CONTROL VALVE	VAV SUPPLY AIR TEMPERATURE	ZONE SENSOR	ROOM OCCUPANCY SENSOR	CARBON DIOXIDE SENSOR
TYPE	AO	AI	AO	AI	AI	BI	AI
ALARM				HIGHT TEMP @ 80°F LOW TEMP @ 50°F			
NOTES	1		2		3	4	

1 AIR TERMINAL UNITS DIAGRAM



UNIT HEATER SEQUENCE

UNIT HEATER ATC DIAGRAM
SCALE: NONE

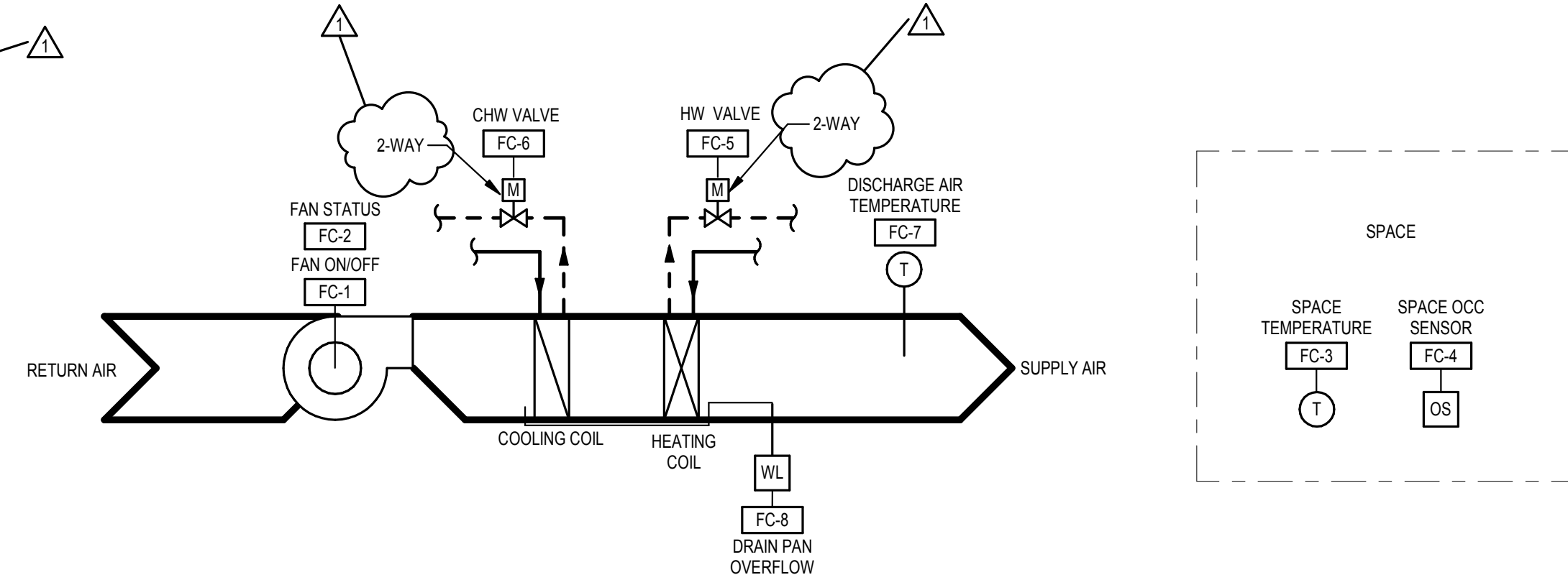
UNIT HEATER POINTS LIST

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

NOTES:
1. ENABLE UNIT THROUGH DRY CONTACTS.

POINT NO.	FC-1	UH-2
POINT NAME	UNIT ENABLE	SPACE TEMPERATURE
TYPE	BO	AI
ALARM		BELOW 40°F
NOTES	1	

3 UNIT HEATER CONTROL DIAGRAM
SCALE: 1/2" = 1'-0"



FAN COIL UNIT ATC DIAGRAM
SCALE: NONE

FAN COIL UNIT POINTS LIST

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

NOTES:
1. CURRENT SENSOR.
2. LOCATE SENSOR MINIMUM 24" DOWNSTREAM FROM REHEAT COIL (BUT PRIOR TO FIRST DUCT BRANCH).

POINT NO.	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8
POINT NAME	FAN ON/OFF	FAN STATUS	SPACE TEMPERATURE	SPACE OCCUPANCY SENSOR	HOT WATER CONTROL VALVE	CHILLED WATER CONTROL VALVE	DISCHARGE AIR TEMPERATURE	DRAIN PAN OVERFLOW
TYPE	BO	BI	AI	BI	AO	AO	AI	BI
ALARM		ON FAULT	BELOW 40°F					UPON OVERFLOW
NOTES	1						2	

2 (4 PIPE) FAN COIL UNIT CONTROL DIAGRAM

FAN COIL UNIT SEQUENCE

EACH ROOM FAN COIL UNIT HAS AN INTEGRAL HOT WATER HEATING COIL AND A SEPARATE CHILLED WATER COOLING COIL. THE UNIT FAN SHALL CYCLE WITH ROOM LOAD. PROVIDE A WALL MOUNTED THERMOSTAT FOR EACH UNIT AND A MODULATING TWO WAY CONTROL VALVE FOR EACH COIL FOR INSTALLATION IN THE PIPING. CONTROL OF THE VALVES BY THE THERMOSTAT SHALL INCORPORATE AN INACTIVE RANGE (5 DEG F ADJUSTABLE) TO ENSURE NO OVERLAP BETWEEN HEATING AND COOLING.

PROVIDE A WALL MOUNTED THERMOSTAT. INCLUDE CONTROL WIRING FROM STAT TO MOTOR.

COOLING MODE:
AS SPACE TEMPERATURE RISES ABOVE COOLING SETPOINT CYCLE THE FAN ON AND OPEN THE TWO WAY COOLING COIL VALVE. AS SPACE TEMPERATURE FALLS BELOW COOLING SETPOINT CLOSE THE TWO WAY COOLING COIL VALVE AND CYCLE THE FAN OFF.

HEATING MODE:
AS SPACE TEMPERATURE DROPS BELOW HEATING SETPOINT CYCLE THE FAN ON AND OPEN THE TWO WAY HEATING COIL VALVE. AS SPACE TEMPERATURE RISES ABOVE HEATING SETPOINT CLOSE THE TWO WAY HEATING COIL VALVE AND CYCLE THE FAN OFF.

LASER LAB FAN COIL UNIT SEQUENCE

THE LASER LAB FAN COIL UNIT HAS AN INTEGRAL HOT WATER HEATING COIL AND A SEPARATE CHILLED WATER COOLING COIL. THE UNIT FAN IS TO RUN CONTINUOUSLY. PROVIDE A WALL MOUNTED ROOM THERMOSTAT FOR EACH UNIT AND A MODULATING TWO WAY CONTROL VALVE FOR EACH COIL FOR INSTALLATION IN THE PIPING. PRECISE ROOM TEMPERATURE CONTROL IS REQUIRED IN THIS ROOM.

PRECISION CONTROL
ROOM TEMPERATURE SHALL BE CONTROLLED TO MAINTAIN ROOM TEMPERATURE SETPOINT +/- 1 DEG F.

COOLING MODE
AS SPACE TEMPERATURE RISES ABOVE SPACE SETPOINT MODULATE THE TWO WAY COOLING COIL VALVE TO MAINTAIN SPACE TEMPERATURE. AS SPACE TEMPERATURE FALLS BELOW COOLING SETPOINT CLOSE THE TWO WAY COOLING COIL VALVE AND CYCLE THE FAN OFF.

HEATING MODE
AS SPACE TEMPERATURE DROPS BELOW HEATING SETPOINT OPEN THE TWO WAY HEATING COIL VALVE. AS SPACE TEMPERATURE RISES ABOVE HEATING SETPOINT CLOSE THE TWO WAY HEATING COIL VALVE AND CYCLE THE FAN OFF.

PRECISION CONTROL
ROOM HUMIDITY SHALL BE CONTROLLED TO MAINTAIN ROOM HUMIDITY SETPOINT +/- .5% RH.

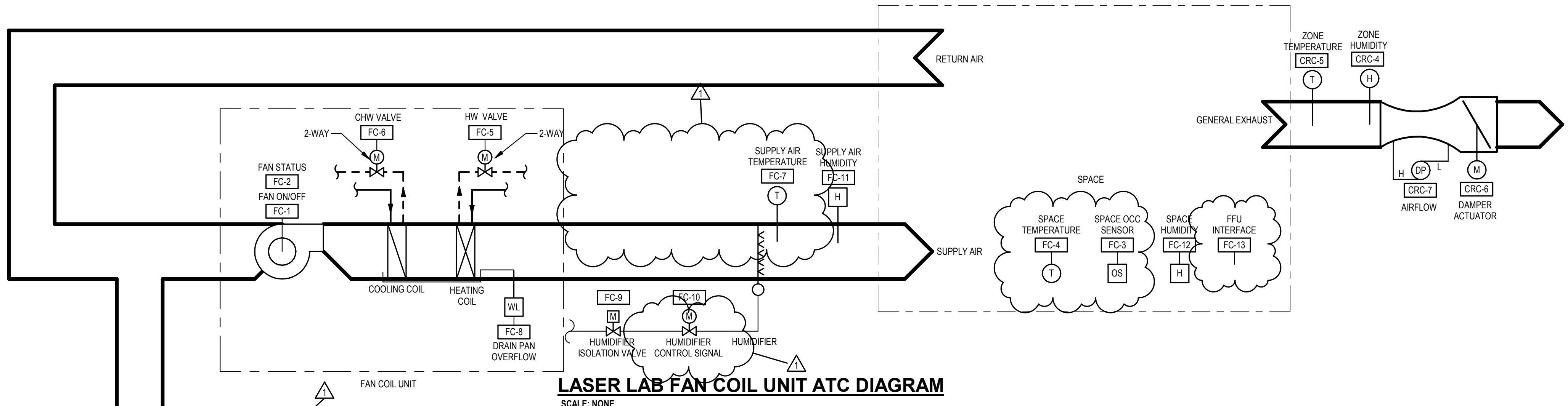
HUMIDIFICATION MODE
WHEN OUTSIDE AIR DEWPOINT DROPS BELOW 50 DEGREES F THE HUMIDIFIER ISOLATION VALVE SHALL OPEN. WHEN OUTSIDE AIR DEWPOINT RISES ABOVE 52 DEGREES F THE HUMIDIFIER ISOLATION VALVE SHALL CLOSE.

DEHUMIDIFICATION MODE
THE HUMIDIFIER CONTROL VALVE SHALL BE CLOSED WHILE IN DEHUMIDIFICATION MODE. AS SPACE HUMIDITY RISES ABOVE 2.5% RH ABOVE HUMIDITY SETPOINT THE COOLING COIL VALVE SHALL GO FULL OPEN AND THE HEATING COIL VALVE SHALL MODULATE TO MAINTAIN ROOM TEMPERATURE SETPOINT.

LAB ROOM CONTROLS
ROOM PRESSURE CONTROL
A. ROOM PRESSURE SHALL BE MAINTAINED BY A FIXED OFFSET BETWEEN TOTAL SUPPLY AND TOTAL EXHAUST AIR.
B. DURING INITIAL TAB, OFFSET SHALL BE ADJUSTED TO FIELD CONDITIONS AS REQUIRED.

AIRFLOW CONTROL
A. SUPPLY AIR CONTROL
- SUPPLY AIRFLOW SETPOINT SHALL BE CONSTANT VOLUME.
- GENERAL EXHAUST AIRFLOW SHALL BE CONSTANT VOLUME.

FAN FILTER UNIT
A. FAN FILTER SHALL BE SETUP FOR CONSTANT TORQUE OPERATION TO OVERCOME FILTER PRESSURE DROP.
B. MONITOR CFM OUTPUT, MOTOR RPM AND STATUS, MOTOR HOURS, AND FILTER STATUS AND PRESSURE DROP THROUGH BACNET INTERFACE.



LASER LAB FAN COIL UNIT ATC DIAGRAM
SCALE: NONE

LASER LAB FAN COIL UNIT POINTS LIST

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS, IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

NOTES:
1. CURRENT SENSOR
2. LOCATE SENSOR MINIMUM 24" DOWNSTREAM FROM REHEAT COIL (BUT PRIOR TO FIRST DUCT BRANCH).
3. LOCATE DOWNSTREAM OF HUMIDIFIER DISPERSION TUBES PER MANUFACTURER REQUIREMENTS.

POINT NO.	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8	FC-9	FC-10	FC-11	FC-12	FC-13
POINT NAME	FAN ON/OFF	FAN STATUS	SPACE TEMPERATURE SENSOR	SPACE HUMIDITY SENSOR	CHILLED WATER CONTROL VALVE	DISCHARGE AIR TEMPERATURE	DRAIN PAN OVERFLOW	HUMIDIFIER ISOLATION VALVE	HUMIDIFIER CONTROL SIGNAL	SUPPLY AIR HUMIDITY	SPACE HUMIDITY	FFU BACNET INTERFACE	
TYPE	BO	BI	AI	AO	AO	AI	BI	BO	AO	AI	AI	AI	INTERFACE
ALARM		ON FAULT					UPFLOW OVERFLOW					RECYCLE WASTE	
NOTES	1						2		2	3			

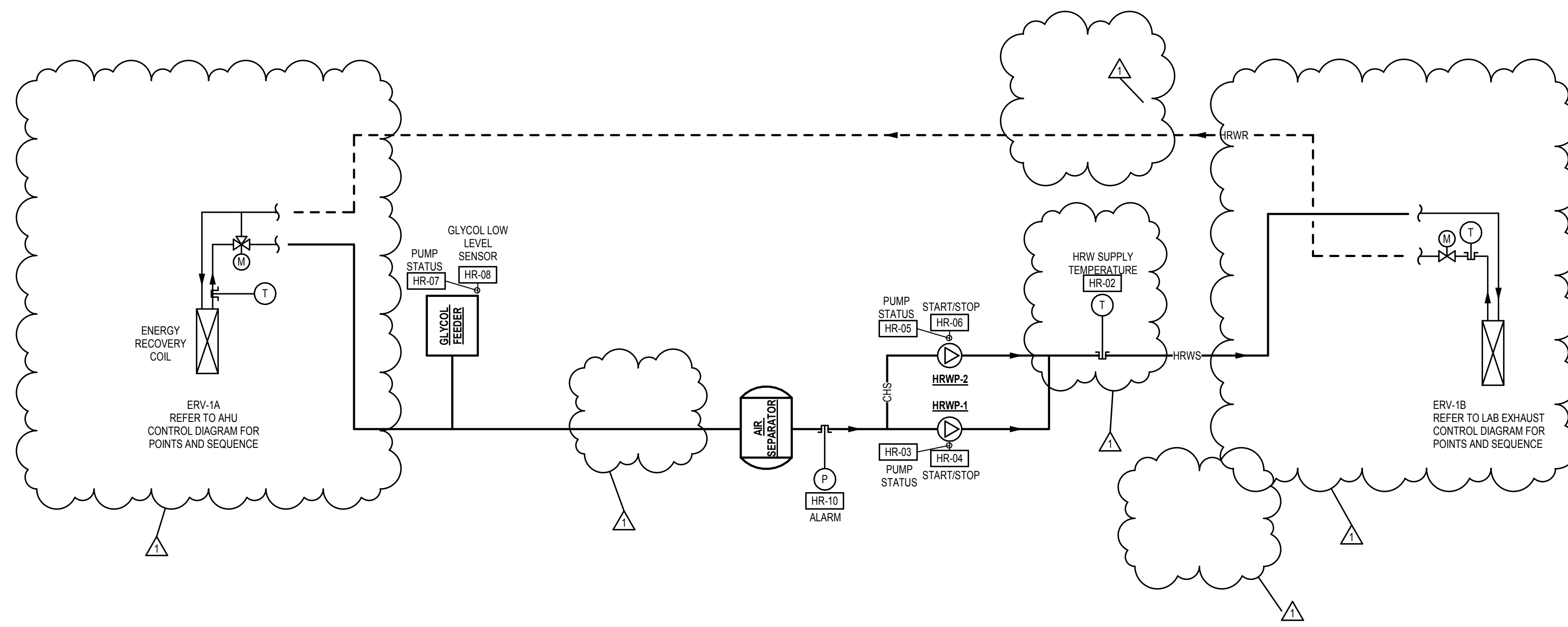
LAB ROOM CONTROL - POINTS LIST SCHEDULE

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE BUILDING AUTOMATION SYSTEM IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS, IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

NOTES:
1. CONNECT FLOW SENSOR PROVIDED WITH AIR TERMINAL UNIT.
2. PROVIDE CONTROLS FOR QUANTITY OF TERMINALS AS SCHEDULED.

POINT NO.	CRC-1	CRC-2	CRC-4	CRC-5	CRC-6	CRC-7							
POINT NAME	SUPPLY DAMPER ACTUATOR	SUPPLY AIRFLOW	ZONE HUMIDITY	ZONE TEMPERATURE	GENERAL EXHAUST / RETURN DAMPER ACTUATOR	GENERAL EXHAUST / RETURN AIRFLOW							
TYPE	AO	AI	AI	AI	AO	AI							
ALARM													
NOTES	2	1,2			2	1,2							

① **LASER LAB FAN COIL UNIT CONTROL DIAGRAM**



GLYCOL ENERGY RECOVERY SYSTEM POINTS LIST SCHEDULE

GENERAL NOTES:
A. THE FOLLOWING LIST SHALL BE THE MINIMUM POINTS REQUIRED OF THE DIRECT DIGITAL CONTROL SYSTEM (BUILDING AUTOMATION SYSTEM). IT IS NOT THE INTENT TO SHOW ALL REQUIRED POINTS. IF OR WHEN ADDITIONAL POINTS ARE REQUIRED TO ACCOMPLISH THE SEQUENCES OF CONTROL SPECIFIED, THOSE POINTS SHALL ALSO BE PROVIDED.

- NOTES:
1. CURRENT SENSORS
2. PROVIDE WITH DRY SET OF CONTACTS FOR BAS MONITORING FOR LOW LEVEL ALARM

POINT NO.	HR-01	HR-02	HR-03	HR-04	HR-05	HR-06	HR-07	HR-08	HR-09	HR-10
POINT NAME	CHILLED WATER RETURN TEMPERATURE	CHILLED WATER SUPPLY TEMPERATURE	CHILLED WATER PUMP (CHWP-1) STATUS	CHILLED WATER PUMP (CHWP-1) START/STOP	CHILLED WATER PUMP (CHWP-2) STATUS	CHILLED WATER PUMP (CHWP-2) START/STOP	GLYCOL PUMP FEEDER STATUS	GLYCOL LOW LEVEL SENSOR	OUTDOOR AIR TEMPERATURE	PRESSURE SENSOR
TYPE	AI	AI	BI	BO	BI	BO	BI	BI	AI	AI
ALARM	HIGH/LOW	HIGH/LOW	ON FAILURE	ON FAILURE				HIGH/LOW		HIGH/LOW
NOTES			1		1			2		

GLYCOL ENERGY RECOVERY SYSTEM ATC DIAGRAM
SCALE: NONE

GLYCOL ENERGY RECOVERY SYSTEM CONTROL SEQUENCE

- A. SYSTEM DESCRIPTION
- THE GLYCOL ENERGY RECOVERY WATER SYSTEM CONSISTS OF TWO (2) CONSTANT SPEED PUMPS. REFER TO THE DRAWINGS FOR DETAILS.
 - THE TWO (2) GLYCOL ENERGY RECOVERY WATER PUMPS SHALL OPERATE IN A LEAD-STANDBY STRATEGY. EACH PUMP IS SIZED FOR 100 PERCENT OF THE BUILDING LOAD. THE LEAD PUMP SHALL START FIRST. ON A CALL FOR ENERGY RECOVERY (REFER TO AHU SEQUENCE) THE LEAD PUMP SHALL START. ON FLOW FAILURE OF THE LEAD PUMP, START THE STANDBY PUMP, STOP THE FAILED PUMP, AND SEND AN ALARM TO THE BAS.
 - THE LEAD PUMP SHALL STOP WHEN ENERGY RECOVERY IS OFF (REFER TO AHU SEQUENCE).
 - PROVIDE A SOFTWARE PROGRAM TO AUTOMATICALLY ROTATE THE DESIGNATED LEAD PUMP EVERY 500 RUN HOURS. START THE NEWLY DESIGNATED LEAD PUMP PRIOR TO STOPPING THE CURRENT LEAD PUMP.

1 GLYCOL ENERGY RECOVERY SYSTEM ATC DIAGRAM

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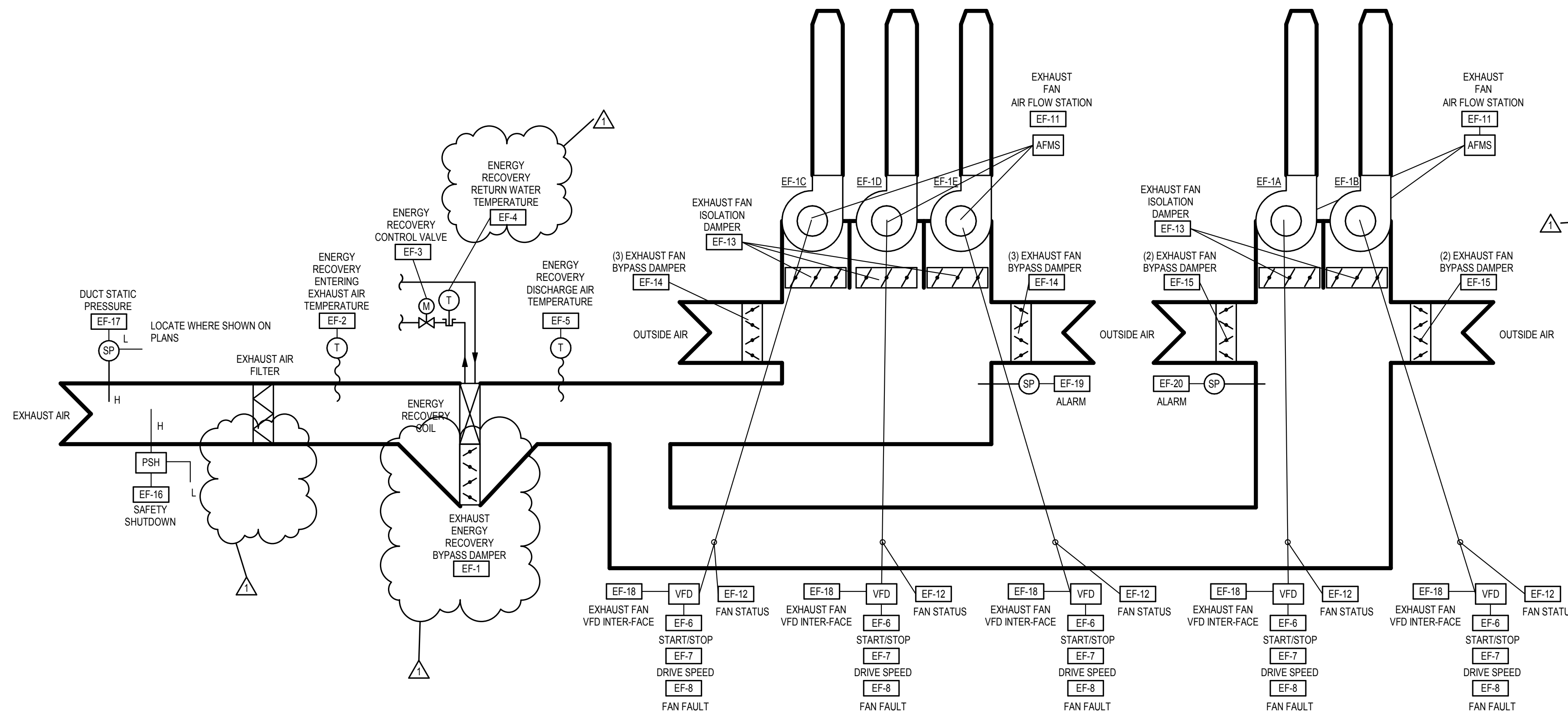
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LAB EXHAUST FAN SEQUENCES

- A. CONFIGURATION
1. THE LAB EXHAUST FAN SYSTEM CONSISTS OF FIVE EXHAUST FANS CONFIGURED TO OPERATE AS A SINGLE EXHAUST UNIT.
- B. EXHAUST FAN SYSTEM CONTROL
1. A MANUAL "HAND-OFF-AUTO" SELECTOR ON THE FACE OF VFD SHALL SELECT MODE OF OPERATION. WHEN THE SELECTOR SWITCH IS INDEXED TO THE "OFF" POSITION, THE ASSOCIATED FAN SYSTEM SHALL STOP. WHEN THE SELECTOR SWITCH IS INDEXED TO THE "ON" POSITION AND ALL SAFETIES ARE NORMAL, THE ASSOCIATED FAN SYSTEM SHALL START AND RUN CONTINUOUSLY. WHEN THE SELECTOR SWITCH IS INDEXED TO THE "AUTO" POSITION AND ALL SAFETIES ARE NORMAL, THE CONTROL SYSTEM SHALL START AND STOP THE ASSOCIATED FAN FAN SHALL OPERATE CONTINUOUSLY. REFER TO 23.0000 FOR FAN MOTOR CONTROLLERS FOR VFD REQUIREMENTS.
2. EACH EXHAUST FAN SHALL BE SETUP TO HAVE THREE SPEED SETPOINTS AS DETERMINED BY AIR BALANCE. ONE SETPOINT FOR NORMAL OPERATION, ONE SETPOINT FOR FAILED FAN OPERATION, AND ONE SETPOINT FOR ENERGY RECOVERY ECONOMIZER OPERATION.
- A. NORMAL OPERATION
a. EACH FAN SHALL OPERATE IN THE NORMAL OPERATION WHEN THERE IS NO FAN STATUS FAULT. AIRFLOW OF EACH FAN UNDER NORMAL OPERATION SHALL BE APPROXIMATELY 14,000 CFM.
- B. FAILED FAN OPERATION
a. WHEN A FAN IS COMMANDED TO RUN AND ITS STATUS IS OFF THE EXHAUST FANS SHALL OPERATE AT THE FAILED FAN SPEED. AIRFLOW OF EACH FAN UNDER FAILED FAN OPERATION SHALL BE APPROXIMATELY 7,500 CFM.
- C. ENERGY RECOVERY ECONOMIZER OPERATION
a. EACH FAN SHALL OPERATE IN THE ENERGY RECOVERY ECONOMIZER OPERATION WHEN THERE IS NO FAN STATUS FAULT AND THE ENERGY RECOVERY BYPASS DAMPER IS OPEN. AIRFLOW OF EACH FAN UNDER NORMAL OPERATION SHALL BE APPROXIMATELY 14,000 CFM.
- C. BYPASS DAMPER CONTROL
1. THERE SHALL BE TWO SETPOINTS FOR LEAD LAG DAMPER ARRANGEMENT.
2. THERE ARE TWO SETS OF BYPASS DAMPERS INTENDED TO BYPASS THE FULL FLOW OF A FAN WHEN COMBINED. THE BYPASS DAMPERS ASSOCIATED WITH THE HIGHEST ACTIVE (STATUS ON) LAG FAN SHALL BE ARRANGED IN A LEAD-LAG CONFIGURATION. THE OTHER BYPASS DAMPER SET SHALL BE CLOSED.
3. THE LEAD BYPASS DAMPER FOR THE HIGHEST ACTIVE LAG FAN SHALL BE MODULATED TO MAINTAIN THE EXHAUST DUCT STATIC PRESSURE (INITIALLY SET TO 0.75" W.G.). WHEN THE LEAD DAMPER IS 100% OPEN THE LAG DAMPER ASSOCIATED WITH THE HIGHEST ACTIVE LAG FAN SHALL BE MODULATED TO MAINTAIN THE EXHAUST DUCT STATIC PRESSURE SETPOINT. REFER TO DRAWINGS FOR DP SENSOR LOCATION.
4. THE BAS SYSTEM SHALL TOTAL ALL THE CFM SETPOINTS OF ALL THE EXHAUST AIR VALVES TO DETERMINE EXHAUST CFM SETPOINT. WHEN DUCT STATIC PRESSURE IS MAINTAINED AND EXHAUST CFM SETPOINT HAS BEEN LESS THAN THE CFM INDICATED BELOW FOR 5 MINUTES, THE HIGHEST LAG FAN SHALL BE SHUT OFF.
• QUANTITY OF FANS OPERATING EXHAUST CFM SETPOINT LESS THAN
• 5 FANS 50,000 CFM
• 4 FANS 35,000 CFM
• 3 FANS 24,000 CFM
5. WHEN THE LEAD AND LAG BYPASS DAMPERS ARE CLOSED AND EXHAUST DUCT STATIC PRESSURE SETPOINT CANNOT BE MAINTAINED START THE LAG FAN.
6. PROVIDE A SOFTWARE PROGRAM TO AUTOMATICALLY ROTATE THE DESIGNATED LEAD AND ALL THE LAG FANS EVERY 500 RUN HOURS. START THE NEWLY DESIGNATED LEAD FAN PRIOR TO STOPPING THE CURRENT LEAD FAN.
- D. ENERGY RECOVERY COIL
1. WHEN THE AHU IS IN THE "OCCUPIED" MODE, THE ENERGY RECOVERY COIL AND ASSOCIATED BYPASS DAMPER SHALL BE CONTROLLED IN THE HEATING, ECONOMIZER, AND COOLING MODES AS FOLLOWS:
A. HEATING MODE - SHALL BE INITIATED IF THE OUTSIDE AIR TEMPERATURE IS BELOW 55 DEG F AND ECONOMIZER CYCLE HAS BEEN DISABLED. WHILE IN THIS MODE, OPEN THE ENERGY RECOVERY COIL VALVE AND CLOSE THE ENERGY RECOVERY BYPASS DAMPER.
B. COOLING MODE - SHALL BE INITIATED IF THE OUTSIDE AIR TEMPERATURE IS ABOVE 80 DEG F AND ECONOMIZER CYCLE HAS BEEN DISABLED. WHILE IN THIS MODE, OPEN THE ENERGY RECOVERY COIL VALVE AND CLOSE THE ENERGY RECOVERY BYPASS DAMPER.
C. ECONOMIZER MODE - WHEN THE AHU IS ON ECONOMIZER CYCLE OR THE COOLING MODE, THE ENERGY RECOVERY COIL VALVE SHALL BE CLOSED TO THE COIL AND THE ENERGY RECOVERY BYPASS DAMPER OPEN.
- E. FAN POWER ENERGY METER
1. INTERFACE WITH THE EACH FAN VFD FOR EF-1A, EF-1B, EF-1C, EF-1D, AND EF-1E TO MONITOR AND TOTALIZE KW USAGE. THE BAS SHALL RECORD AND TRACK BOTH CONSUMPTION AND DEMAND USAGE REPORTING HOURLY, DAILY, MONTHLY, AND ANNUAL ENERGY USAGE AND STORING THIS DATE FOR AT LEAST 36 MONTHS.



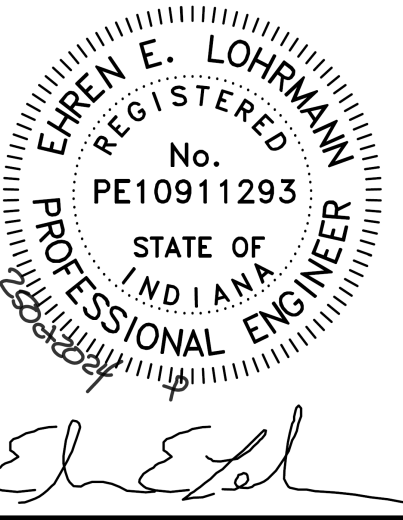
LAB EXHAUST FANS EF-1A, 1B, 1C, 1D, 1E
SCALE: NONE

LAB EXHAUST FANS EF-1A, 1B, 1C, 1D, 1E

NOTES:
1. STATUS FROM CONTACT ON VFD.
2. COORDINATE WITH VFD SUPPLIER.
3. POINT LISTED IS FOR ONE DAMPER. PROVIDE POINT AT EACH FAN.
4. POINT LISTED IS FOR ONE DAMPER. PROVIDE POINT AT EACH DAMPER.
5. POINT LISTED IS FOR ONE DAMPER. PROVIDE POINT AT EACH DAMPER.
6. DAMPER ACTUATOR 24V AC POWER TYPE WITH 0-10 VDC CONTROL SIGNAL INPUT FROM BAS.
7. TOTAL TWO (2) AS LOCATED ON DRAWINGS.
8. PIEZO RINGS PROVIDED BY FAN MANUFACTURE. ELECTRONICS PROVIDED BY OWNER, INSTALLED BY CIC.

POINT NO.	EF-01	EF-02	EF-03	EF-04	EF-05	EF-06	EF-07	EF-08	EF-09	EF-10	EF-11	EF-12	EF-13	EF-14	EF-15	EF-16	EF-17A, 17B, 17C	EF-18	EF-19	EF-20
POINT NAME	EXHAUST ENERGY RECOVERY BYPASS DAMPER	ENERGY RECOVERY COIL CONTROL VALVE	ENERGY RECOVERY COIL RETURN WATER TEMPERATURE	ENERGY RECOVERY DISCHARGE EXHAUST AIR TEMPERATURE	EXHAUST FAN - START/STOP	EXHAUST FAN - DRIVE SPEED	EXHAUST FAN - FAULT	EXHAUST FAN - DRIVE SPEED FEEDBACK	EXHAUST FAN - CURRENT FEEDBACK	EXHAUST FAN - AIRFLOW MEASUREMENT STATION	EXHAUST FAN - STATUS	EXHAUST FAN ISOLATION DAMPER	(3) EXHAUST FAN BYPASS DAMPER	(2) EXHAUST FAN BYPASS DAMPER	PRESSURE SAFETY SHUT-DOWN	DUCT STATIC PRESSURE	EXHAUST FAN VFD INTERFACE	EXHAUST FAN PLENUM STATIC PRESSURE	EXHAUST FAN PLENUM STATIC PRESSURE	
TYPE	BO	AI	AO	AI	AI	BO	AO	BI	AI	AI	AI	BI	BO	AO	AO	BI	AI	INTER-FACE	AI	AI
ALARM	HIGH/LOW		HIGH/LOW	HIGH/LOW			ON TRIP	ON MISMATCH			HIGH/LOW	ON FAILURE			LOW PRESS. SYSTEM ALARM	HIGH/LOW			HIGH/LOW	HIGH/LOW
NOTES					2,4	2,4	2,4	2,4	2,4	4,8	1,4	4,8	5,6	5,6	5	7	2,4			

1 LAB EXHAUST FAN CONTROL DIAGRAM



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VALVES AND FITTINGS

DOUBLE LINE		SINGLE LINE	
		CHECK VALVE	
		BALL VALVE	
		BUTTERFLY VALVE	
		GATE VALVE	
		CONCENTRIC PIPE REDUCER	
		ECCENTRIC PIPE REDUCER	
		PRESSURE GAUGE	
		TEMPERATURE GAUGE OR THERMOMETER	
		UNION	
		CLEANOUT	
		STRAINER	
		STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION	
		DRAIN VALVE WITH HOSE END CONNECTION	
		AUTOMATIC FLOW CONTROLLER WITH PIT PLUG IN AND OUT	
		EXPANSION JOINT	
		PRESSURE REGULATING VALVE	
		SAFETY RELIEF VALVE - PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE.	
		PRESSURE AND TEMPERATURE SAFETY RELIEF VALVE - PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE.	
		PRESSURE AND TEMPERATURE TEST PLUG	
		TRAP PRIMER	
		VACUUM GAUGE WITH STOP	
		CLEANOUT TO GRADE OR FINISHED FLOOR	
		END CAP	
		MIXING FAUCET	
		PLUG	
		HOSE BIB	
		WALL HYDRANT	
		PLUG VALVE	
		SHUTOFF VALVE AND BOX	
		SHUTOFF VALVE ON RISER	
		SOLENOID VALVE	
		WATER METER	

PLUMBING AND FIRE SUPPRESSION PIPING DESIGNATIONS

	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	EXISTING PIPE TO REMAIN
	EXISTING PIPE TO BE REMOVED
	HOT WATER PIPE (140 DEGS. F.)
	HOT WATER RETURN PIPE (140 DEGS. F.)
	ARGON PIPE
	ACID VENT PIPE
	ACID WASTE PIPE
	COMPRESSED AIR PIPE
	CARBON DIOXIDE PIPE
	COMBINATION FIRE SUPPRESSION AND DOMESTIC WATER SERVICE
	SPRINKLER PIPE (DRY)
	FIRE SUPPRESSION (STANDPIPE / SPRINKLER MAIN)
	FIRE SERVICE
	LABORATORY COMPRESSED AIR PIPE
	LABORATORY VACUUM PIPE
	NITROGEN PIPE
	NON-POTABLE
	IRRIGATION NON-POTABLE
	(OVERFLOW) SECONDARY STORM DRAINAGE PIPE
	PRE-ACTION / DELUGE SPRINKLER PIPE
	PURE WATER PIPE
	SPRINKLER PIPE (WET)
	SANITARY DRAINAGE PIPE
	SOFT COLD WATER
	SPRINKLER DRAIN PIPE
	STORM DRAINAGE PIPE
	TEMPERED WATER PIPE
	SANITARY SEWER VENT
	WATER SERVICE

SPECIALTY GAS SYMBOLS

	AIR OUTLET
	ARGON OUTLET
	NITROGEN OUTLET - HOSPITAL TYPE
	VACUUM OUTLET - LAB TYPE

GENERAL FLOOR PLAN NOTES

	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE
	APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE
	RISER OR STACK NUMBER
	DETAIL: B = DETAIL DESIGNATION P2 = SHEET WHERE DETAIL IS LOCATED
	SECTION: 1 = SECTION DESIGNATION P2 = SHEET WHERE DETAIL IS LOCATED
	EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES.
	EQUIPMENT DEVICE OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES.
	CONNECT TO EXISTING
	DEMOLISH TO POINT INDICATED
	PLAN NOTE APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE.
	DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL.
	"UP TO" SYMBOL (ITEM ON FLOOR ABOVE)

FIRE SUPPRESSION SYMBOLS

DOUBLE LINE	SINGLE LINE	DESCRIPTION
		CONCEALED PENDENT SPRINKLER
		FIRE DEPARTMENT VALVE
		FIRE HYDRANT
		FLOW SWITCH
		GATE VALVE OS&Y
		INSTITUTIONAL PENDENT SPRINKLER
		PENDENT SPRINKLER
		POST INDICATOR VALVE
		RECESSED PENDENT SPRINKLER
		SIDE WALL SPRINKLER
		SUPERVISED VALVE
		UPRIGHT SPRINKLER

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	DESCRIPTION
		BOTTOM CONNECTION (45°)
		BOTTOM CONNECTION (90°)
		BRANCH TEE CONNECTION (NOTE: BULLHEAD TEE'S ARE NOT PERMITTED)
		DIRECTION OF PITCH
		DROP
		ELBOW DOWN
		ELBOW UP
		EXISTING PIPE TO BE REMOVED
		EXISTING PIPE TO REMAIN
		FLOW DIRECTION DESIGNATION
		PIPE RISER
		PUMP
		RISE
		TOP CONNECTION (45°)
		TOP CONNECTION (90°)

ABBREVIATIONS

AAP	- AREA ALARM PANEL (MEDICAL GAS)	FOF	- FUEL OIL FLOW	P	- PROPANE GAS
AC	- AIR COMPRESSOR OR AIR CONDITIONER	FOG	- FUEL OIL GAUGE	PC	- PLUMBING CONTRACTOR (DIVISION 22)
ACC	- ACCESS	FOR	- FUEL OIL RETURN	PC	- OR PUMPED CONDENSATE RETURN
ACCU	- AIR COOLED CONDENSING UNIT	FOS	- FUEL OIL SUPPLY	PD	- PUMP DISCHARGE OR PARAPET DRAIN
AD	- ACCESS DOOR OR AREA DRAIN	FOT	- FLAT ON TOP	PV	- POST INDICATOR VALVE
ADB	- ACID DILUTION BASIN	FM	- FEET PER MINUTE	PBG	- PLUMBING
ADJ	- ADJUSTABLE	FR	- FIRE RISER	PS	- PRE-ACTION/DELUGE SPRINKLER
AFF	- ABOVE FINISHED FLOOR	FS	- FLOOR SINK OR FIRE SERVICE	PRESS	- PRESSURE
AFG	- ABOVE FINISHED GRADE	FSC	- FIRE SUPPRESSION CONTRACTOR (DIVISION 21)	PRV	- PRESSURE REGULATING VALVE
ALT	- ALTERNATE	FT	- FEET	PSF	- POUNDS PER SQUARE FOOT
AP	- ACCESS PANEL	FTG	- FOOTING	PSI	- POUNDS PER SQUARE INCH
APPROX	- APPROXIMATE	G	- GAS OR NATURAL GAS	PSIG	- POUNDS PER SQUARE INCH GAUGE
AR	- AIR RECEIVER OR ARGON	GA	- GAUGE	PW	- PURE WATER
ARCH	- ARCHITECT OR ARCHITECTURAL	GAL	- GALLON	RA	- RETURN AIR
ASSY	- ASSEMBLY	GALV	- GALVANIZED	RAD	- RADIUS
AW	- ACID WASTE	GC	- GENERAL TRADES CONTRACTOR	RCP	- REINFORCED CONCRETE PIPE
AW	- ACID WASTE	GD	- GARAGE DRAINAGE	RD	- ROOF DRAIN
BDD	- BACK DRAFT DAMPER	GPM	- GALLONS PER MINUTE	REC	- RECESSED
BFP	- BACKFLOW PREVENTER	GS	- GAS SERVICE	REQD	- REQUIRED
BLDG	- BUILDING	GW	- GREASE WASTE	Ri	- ROUGH IN
BOB	- BOTTOM OF BEAM	H2	- HYDROGEN	RL	- REFRIGERANT LIQUID
BOD	- BOTTOM OF DUCT	HB	- HOSE BIBB	ROS	- REVERSE OSMOSIS WATER SUPPLY
BOE	- BOTTOM OF EQUIPMENT	HC	- HVAC CONTRACTOR (DIVISION 23)	ROR	- REVERSE OSMOSIS WATER RETURN
BOF	- BOTTOM OF FOOTING	HD	- HUB DRAIN	RPM	- REVOLUTIONS PER MINUTE
BOG	- BOTTOM OF GIRLLE	HE	- HELIUM	RS	- REFRIGERANT SUCTION
BOP	- BOTTOM OF PIPE	HG	- REFRIGERANT HOT GAS	RV	- RELIEF VALVE
BOT	- BOTTOM	HP	- HORSEPOWER OR HIGH POINT	S	- SPRINKLER (WET)
BT	- BATHTUB	HPC	- HIGH PRESSURE CONDENSATE RETURN	SA	- SHOCK ARRESTOR OR SUPPLY AIR
BTU	- BRITISH THERMAL UNIT	HPS	- HIGH PRESSURE STEAM SUPPLY	SAN	- SANITARY OR SANITARY DRAIN
BTWH	- BRITISH THERMAL UNIT PER HOUR	HPW	- HIGH PURITY WATER	SCH	- SCHEDULE
BTWN	- BETWEEN	HPWR	- HIGH PURITY WATER RETURN	SCW	- SOFT COLD WATER
CA	- COMPRESSED AIR	HR	- HOSE REEL	SD	- SPRINKLER DRAIN OR SUBSOL DRAIN
CB	- CATCH BASIN	HT	- HEAT TRACE	SH	- SHOWER
CB	- CATCH BASIN	HTR	- HEATING, VENTILATING, AND AIR CONDITIONING	SHT	- SHEET
CCF	- CONTRACTOR FURNISHED CONTRACTOR INSTALLED	HVAC	- HEATING, VENTILATING, AND AIR CONDITIONING	SK	- SINK
CFM	- CUBIC FEET PER MINUTE	HW	- HOT WATER	SPEC	- SPECIFICATIONS
CHS	- CHILLED WATER SUPPLY	IA	- MEDICAL INSTRUMENT AIR	SQ	- SQUARE
CHR	- CHILLED WATER RETURN	ID	- INSIDE DIAMETER	SR	- SUPPLY RISER
CI	- CAST IRON	IN	- INVERT ELEVATION	SS	- SANITARY STACK (SOL OR WASTE) OR STAINLESS STEEL
CK	- CLINICAL SINK	IN	- INCHES	ST	- STANDARD
CLG	- CEILING	IV	- INDIRECT VENT	STM	- STORM OR STORM DRAINAGE
CMU	- CONCRETE MASONRY UNIT	IW	- INDIRECT WASTE	STRUC	- STRUCTURAL OR STRUCTURE
CO	- CLEAN OUT	JS	- JANITOR SINK	SUC	- SITE UTILITY CONTRACTOR
CO2	- MEDICAL CARBON DIOXIDE	K	- KITCHEN WASTE	T	- FUEL TANK VENT
CON	- CONNECT OR CONNECTION	KEC	- KITCHEN EQUIPMENT CONTRACTOR	TD	- TRENCH DRAIN
CONTR	- CONTRACTOR	L	- LENGTH	TEMP	- TEMPERATURE
CORR	- CORRIDOR	LA	- LABORATORY COMPRESSED AIR	TOB	- TOP OF BEAM
CS	- CLINICAL SINK OR COLD SOFT WATER	LAV	- LAVATORY	TOD	- TOP OF DUCT
CTR	- CENTER	LBS	- POUNDS	TOE	- TOP OF EQUIPMENT
CU	- COPPER	LOW	- LABORATORY COLD WATER	TOF	- TOP OF FOOTING
CWS	- COMBINATION WATER SERVICE OR CONDENSER WATER SUPPLY	LEC	- LABORATORY EQUIPMENT CONTRACTOR	TOJ	- TOP OF JOIST
CWR	- CONDENSER WATER RETURN	LHW	- LABORATORY HOT WATER	TOP	- TOP OF PIPE
D	- DEPTH OR DRAIN LINE	LHR	- LABORATORY HOT WATER RETURN	TOS	- TOP OF SLAB OR TOP OF STEEL
DCW	- DOMESTIC COLD WATER	LPC	- LOW PRESSURE CONDENSATE RETURN	TF	- TRAP FILLER
DD	- DECK DRAIN	LPS	- LOW PRESSURE STEAM SUPPLY	TP	- TRAP PRIMER OR TRAP PRIMER DISCHARGE
DET	- DETAIL	LV	- LABORATORY VACUUM OR LABORATORY VENT	TW	- TEMPERED WATER
DF	- DRINKING FOUNTAIN OR WATER COOLER	LW	- LABORATORY WASTE	TYP	- TYPICAL
DFU	- OR DIESEL FUEL	MA	- MEDICAL COMPRESSED AIR	UR	- URINAL
DHW	- DOMESTIC HOT WATER	MAP	- MASTER ALARM PANEL (MEDICAL GAS)	UNO	- UNLESS NOTED OTHERWISE
DHWR	- DOMESTIC HOT WATER RETURN	MAX	- MAXIMUM	V	- VENT OR SANITARY SEWER VENT
DI	- DIAMETER	MB	- MDP BASIN	VAC	- VACUUM
DIA	- DIAMETER	MC	- MECHANICAL CONTRACTOR (DIVISION 23)	VCL	- VACUUM CLEANING
DM	- DIMENSION	MEZZ	- MEZZANINE	VCV	- VACUUM CLEANING VALVE
DN	- DOWN	MFR	- MANUFACTURER	VE	- VACUUM EXHAUST
DS	- DOWN SPOUT OR SPRINKLER (DRY)	MH	- MANHOLE	VEL	- VELOCITY
DT	- PERFORATED DRAIN TILE	MIN	- MINIMUM OR MINUTE	VIB	- VALVE IN BOX
DWG	- DRAWING	MISC	- MISCELLANEOUS	VOL	- VOLUME
EA	- EACH	MTG	- MOUNTING	VP	- VACUUM PUMP
EC	- ELECTRICAL CONTRACTOR (DIVISION 26)	MTG	- MOUNTING	VS	- VENT STACK
EEW	- EMERGENCY EYE WASH	MPC	- MEDIUM PRESSURE CONDENSATE RETURN	VTR	- VENT THROUGH ROOF
EJ	- EXPANSION JOINT	MPS	- MEDIUM PRESSURE STEAM SUPPLY	VR	- VENT RISER
ELEC	- ELECTRICAL	MU	- WATER MAKE-UP	W	- WITHOUT
ELEV	- ELEVATOR	MV	- MEDICAL SURGICAL VACUUM	W	- WASTE
EQUIP	- EQUIPMENT	N2	- MEDICAL NITROGEN	WAGD	- WASTE ANESTHESIA GAS DISPOSAL
ET	- EXPANSION TANK	NC	- NORMALLY CLOSED	WC	- WATER CLOSET
ETR	- EXISTING TO REMAIN	NG	- GAS LINE (NON LEAD)	WCO	- WALL CLEANOUT
ES	- EMERGENCY SHOWER	NO	- NOT IN CONTRACT	WH	- WALL HYDRANT OR WATER HEATER
EQS	- EQUIPMENT SUPPLIER	NO	- NORMALLY OPEN	WI	- WALL INDICATOR VALVE
EW	- ELECTRICAL WATER COOLER	NO	- MEDICAL NITROUS OXIDE	WS	- WATER SERVICE
EXH	- EXHAUST AIR	NOM	- NOMINAL	YCO	- YARD CLEANOUT
EXP	- EXPANSION	NPW	- NON-POTABLE WATER	ZVC	- ZONE VALVE CABINET
EXT	- EXTERIOR	NPT	- NATIONAL PIPE THREAD		
EX	- EXISTING	NTS	- NOT TO SCALE		
F	- FIRE SUPPRESSION (STANDPIPE/SPRINKLER MAIN)	O2	- MEDICAL OXYGEN		
FCE	- FIRE CONTROL EQUIPMENT	OA	- OUTDOOR AIR		
FCO	- FLOOR CLEANOUT	OD	- OUTSIDE DIAMETER OR OVERFLOW DRAIN		
FD	- FLOOR DRAIN	OFCI	- OWNER FURNISHED CONTRACTOR INSTALLED		
FDC	- FIRE DEPARTMENT CONNECTION	OFOI	- OWNER FURNISHED OWNER INSTALLED		
FDV	- FIRE DEPARTMENT VALVE				
FE	- FINISHED FLOOR ELEVATION				
FHC	- FIRE HOSE CABINET				
FLR	- FLOOR				
FM	- FORCE MAIN				
FOB	- FLAT ON BOTTOM				

NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

SHEET LIST

SHEET NUMBER	SHEET NAME
P001	PLUMBING LEGEND, NOTES, AND INDEX OF DRAWINGS
P120	FIRST FLOOR BELOW FLOOR PLUMBING SUPPLY PLAN
P121	FIRST FLOOR ABOVE FLOOR PLUMBING SUPPLY PLAN
P122	SECOND FLOOR PLUMBING SUPPLY PLAN
P123	THIRD FLOOR PLUMBING SUPPLY PLAN
P124	PENTHOUSE AND ROOF PLUMBING SUPPLY PLAN
P220	FIRST FLOOR BELOW FLOOR PLUMBING DRAINAGE PLAN
P221	FIRST FLOOR ABOVE FLOOR PLUMBING DRAINAGE PLAN
P222	SECOND FLOOR PLUMBING DRAINAGE PLAN
P223	THIRD FLOOR PLUMBING DRAINAGE PLAN
P224	PENTHOUSE AND ROOF PLUMBING DRAINAGE PLAN
P401	ENLARGED PLUMBING PLANS
P501	PLUMBING DETAILS
P502	PLUMBING DETAILS - PLUMBING SANITARY VENT STACK
P503	PLUMBING SANITARY VENT STACK
P504	PLUMBING SANITARY VENT STACK - RESTROOM
P505	PLUMBING RISER DIAGRAMS - LAB GAS
P506	PLUMBING RISER DIAGRAMS - LAB GAS
P507	PLUMBING RISER DIAGRAMS - STORM
P508	PLUMBING RISER DIAGRAMS - STORM
P509	PLUMBING RISER DIAGRAMS - WATER DISTRIBUTION
P601	PLUMBING SCHEDULES

BID SET

GENERAL NOTES

- A. REFER TO LAB DRAWINGS FOR NUMBER, TYPES, AND LOCATION OF LAB GAS OUTLETS IN/AT LAB CASEWORK TO BE INSTALLED.
- B. REFER TO LAB DRAWINGS FOR NUMBER, SYSTEM, AND LOCATION OF LAB GAS OUTLETS IN CEILING PANELS.

NOTES

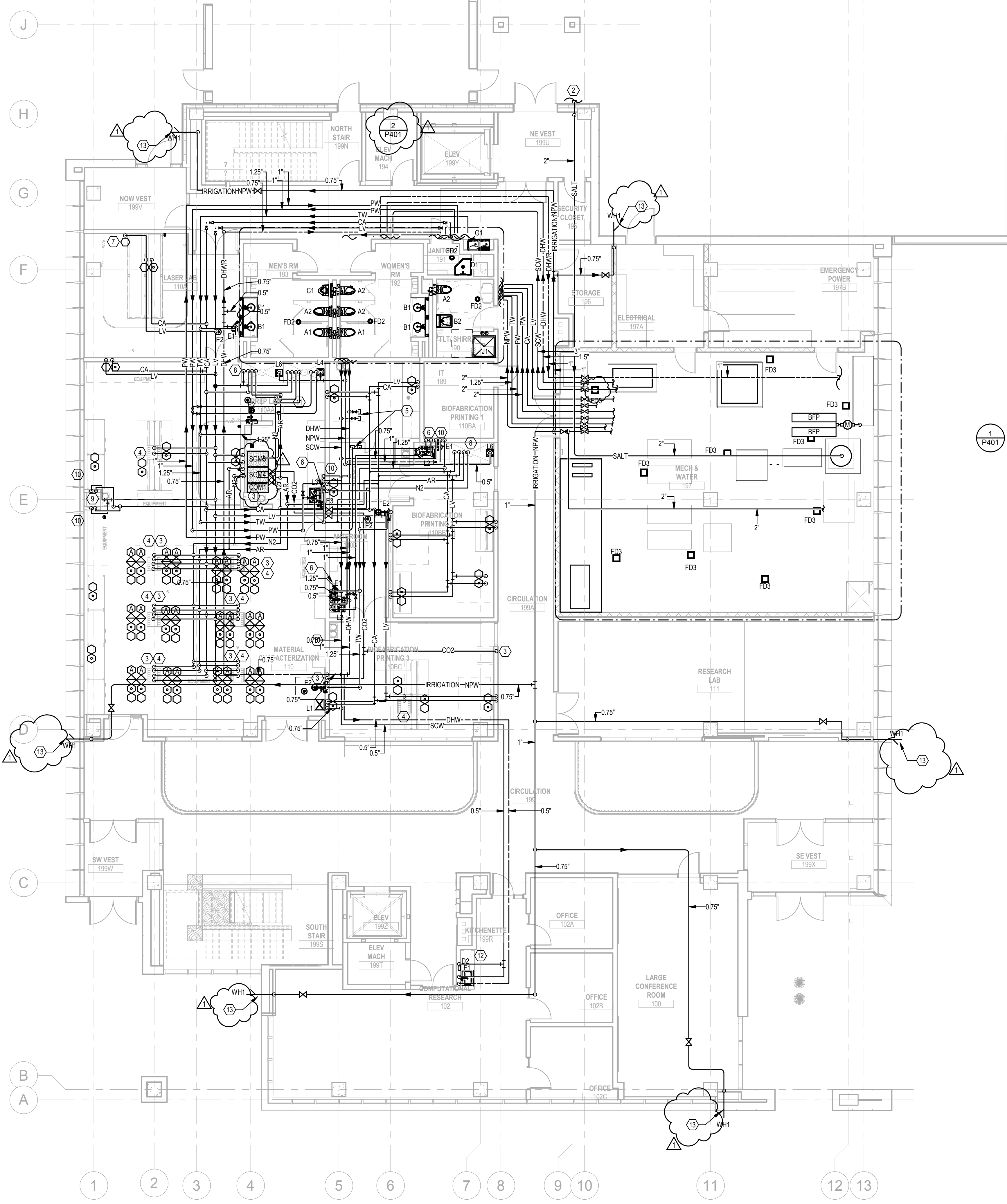
- 1 PROVIDE SYSTEM SHUT OFF VALVES OVERHEAD IN JANITOR CLOSET.
- 2 PROVIDE SALT FILL PORT FOR WATER SOFTENER. PROVIDE 100% STAINLESS STEEL PIPING WITH SWEEPING 90 DEGREE ELBOWS. ALL INSTALLATION TO MEET REQUIREMENTS AND RECOMMENDATIONS OF STEPSAVER SALT DELIVERY SYSTEM.
- 3 PROVIDE BALL VALVE FOR CONNECTION TO OWNER-PROVIDED EQUIPMENT. COORDINATE INSTALLATION HEIGHT WITH CASEWORK, EQUIPMENT AND OTHER UTILITIES.
- 4 PROVIDE CONNECTION TO CEILING SERVICE PANELS
- 5 PROVIDE CAPPED PIPING FOR FUTURE SINK.
- 6 PROVIDE PURE WATER SUPPLY WITH SHUT OFF VALVE FOR CONNECTION TO OWNER-PROVIDED EQUIPMENT.
- 7 INSTALL CONNECTION 18" ABOVE FINISHED FLOOR.
- 8 REFER TO LAB DRAWINGS FOR LOCATION OF SERVICE COLUMNS. PROVIDE LA, LV, N2, AR AND NPW TO FUME HOOD.
- 9 PROVIDE UTILITIES IN CHASE
- 10 PROVIDE PIPING DROPS IN UTILITY WALL AND ROUTE IN CHASE BEHIND CASEWORK TO ALL FIXTURES REQUIRING CONNECTION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS.
- 11 REFER TO LAB DRAWINGS FOR LOCATION OF SERVICE COLUMNS. PROVIDE LA, LV, N2, AR, NPW AND PW TO FUME HOOD.
- 12 PROVIDE WATER BOX LOCATED BELOW COUNTER LEVEL FOR CONNECTION TO OWNER-PROVIDED BEVERAGE EQUIPMENT. PROVIDE ASSE 1024 BACKFLOW PREVENTION DEVICE ON SUPPLY LINE.
- 13 COORDINATE WALL HYDRANT LOCATION WITH EXTERIOR FACADE PANEL JOINTS.

PLUMBING AND FIRE SUPPRESSION PIPING DESIGNATIONS

	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	EXISTING PIPE TO REMAIN
	EXISTING PIPE TO BE REMOVED
	HOT WATER PIPE (140 DEGS. F.)
	HOT WATER RETURN PIPE (140 DEGS. F.)
	ARGON PIPE
	ACID VENT PIPE
	ACID WASTE PIPE
	COMPRESSED AIR PIPE
	CARBON DIOXIDE PIPE
	COMBINATION FIRE SUPPRESSION AND DOMESTIC WATER SERVICE
	SPRINKLER PIPE (DRY)
	FIRE SUPPRESSION (STANDPIPE / SPRINKLER MAIN)
	FIRE SERVICE
	LABORATORY COMPRESSED AIR PIPE
	LABORATORY VACUUM PIPE
	NITROGEN PIPE
	NON-POTABLE
	IRRIGATION NON-POTABLE
	(OVERFLOW) SECONDARY STORM DRAINAGE PIPE
	PRE-ACTION / DELUGE SPRINKLER PIPE
	PURE WATER PIPE
	SPRINKLER PIPE (WET)
	SANITARY DRAINAGE PIPE
	SOFT COLD WATER
	SPRINKLER DRAIN PIPE
	STORM DRAINAGE PIPE
	TEMPERED WATER PIPE
	SANITARY SEWER VENT
	WATER SERVICE

SPECIALTY GAS SYMBOLS

	AIR OUTLET
	ARGON OUTLET
	NITROGEN OUTLET - HOSPITAL TYPE
	VACUUM OUTLET - LAB TYPE



1 FIRST FLOOR ABOVE FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"

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 ADDRESSES VARY

BID SET

REVISIONS:
1 11.08.24 ADDENDUM 1

DATE: **10.25.2024**
 arcDESIGN PROJECT NUMBER: **23176**
 CLIENT PROJECT NUMBER: **20230276**
 DRAWN BY: **JPF**
 DRAWING TITLE: **FIRST FLOOR ABOVE FLOOR PLUMBING SUPPLY PLAN**

DRAWING NUMBER: **P121**
 NEW BUILDING

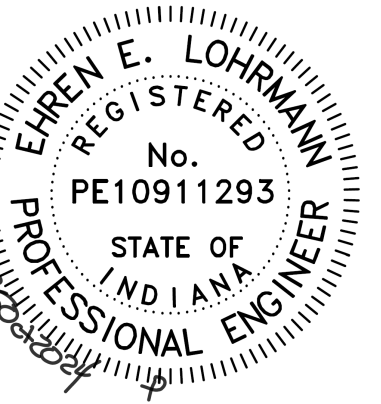


GENERAL NOTES

- A. REFER TO LAB DRAWINGS FOR NUMBER, TYPES, AND LOCATION OF LAB GAS OUTLETS IN/AT LAB CASEWORK TO BE INSTALLED
- B. REFER TO LAB DRAWINGS FOR NUMBER, SYSTEM, AND LOCATION OF LAB GAS OUTLETS IN CEILING PANELS.

NOTES

- 1. PROVIDE CONNECTION TO CEILING SERVICE PANELS. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS.
- 2. PROVIDE BALL VALVE FOR CONNECTION TO OWNER-PROVIDED EQUIPMENT. COORDINATE INSTALLATION HEIGHT WITH CASEWORK, EQUIPMENT AND OTHER UTILITIES
- 3. EXTEND WATER AND DRAIN CONNECTIONS TO DISHWASHER FROM ADJACENT SINK.
- 4. PROVIDE PURE WATER SUPPLY WITH SHUT OFF VALVE FOR CONNECTION TO OWNER-PROVIDED EQUIPMENT.
- 5. PROVIDE CAPPED PIPING FOR FUTURE FUME HOOD
- 6. PROVIDE UTILITIES DOWN IN SERVICE CHASE
- 7. REFER TO LAB DRAWINGS FOR LOCATION OF SERVICE COLUMNS. PROVIDE LA, LV, N2, AR AND NPW TO FUME HOOD
- 8. PROVIDE PIPING DROPS IN UTILITY WALL AND ROUTE IN CHASE BEHIND CASEWORK TO ALL FIXTURES REQUIRING CONNECTION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS.
- 9. ICE FLAKER INSTALLATION LOCATION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS.
- 10. GLASSWARE WASHER INSTALLATION LOCATION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS. PROVIDE DRAIN CONNECTION FROM DISHWASHER TO ADJACENT SINK TRAP.
- 11. PROVIDE WATER BOX LOCATED BELOW COUNTER LEVEL FOR CONNECTION TO OWNER-PROVIDED BEVERAGE EQUIPMENT. PROVIDE ASSE 1024 BACKFLOW PREVENTION DEVICE ON SUPPLY LINE.



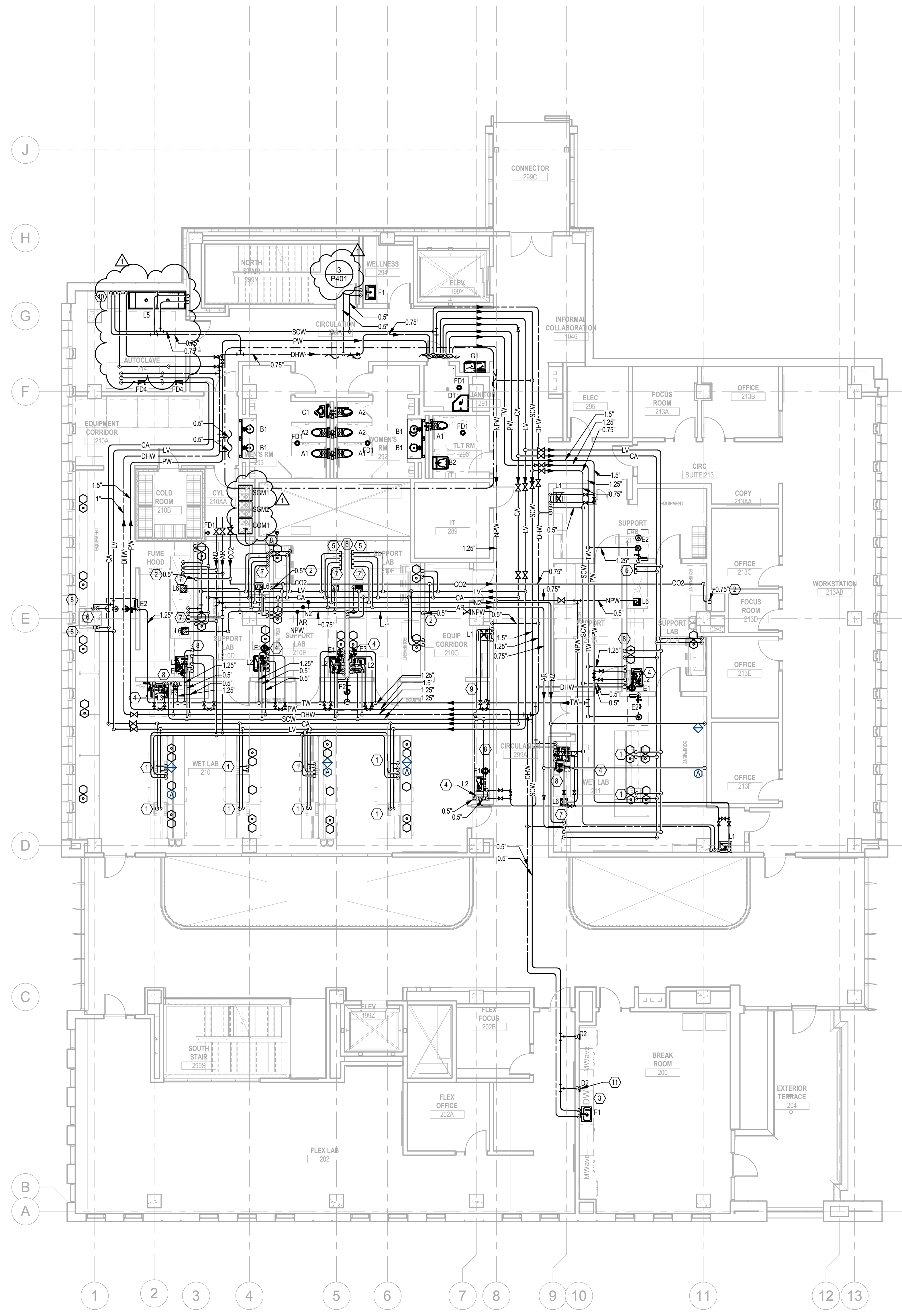
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PLUMBING AND FIRE SUPPRESSION PIPING DESIGNATIONS

	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	EXISTING PIPE TO REMAN
	EXISTING PIPE TO BE REMOVED
	HOT WATER PIPE (140 DEGS. F.)
	HOT WATER RETURN PIPE (140 DEGS. F.)
	ARGON PIPE
	ACID VENT PIPE
	ACID WASTE PIPE
	COMPRESSED AIR PIPE
	CARBON DIOXIDE PIPE
	COMBINATION FIRE SUPPRESSION AND DOMESTIC WATER SERVICE
	SPRINKLER PIPE (DRY)
	FIRE SUPPRESSION (STANDPIPE / SPRINKLER MAIN)
	FIRE SERVICE
	LABORATORY COMPRESSED AIR PIPE
	LABORATORY VACUUM PIPE
	NITROGEN PIPE
	NON-POTABLE
	IRRIGATION NON-POTABLE
	(OVERFLOW) SECONDARY STORM DRAINAGE PIPE
	PRE-ACTION / DELUGE SPRINKLER PIPE
	PURE WATER PIPE
	SPRINKLER PIPE (WET)
	SANITARY DRAINAGE PIPE
	SOFT COLD WATER
	SPRINKLER DRAIN PIPE
	STORM DRAINAGE PIPE
	TEMPERED WATER PIPE
	SANITARY SEWER VENT
	WATER SERVICE

SPECIALTY GAS SYMBOLS

	AIR OUTLET
	ARGON OUTLET
	NITROGEN OUTLET - HOSPITAL TYPE
	VACUUM OUTLET - LAB TYPE



1 SECOND FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"

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arcDESIGN PROJECT NUMBER:
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CLIENT PROJECT NUMBER:
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JPF
DRAWING TITLE:
SECOND FLOOR PLUMBING SUPPLY PLAN

DRAWING NUMBER:
P122
NEW BUILDING



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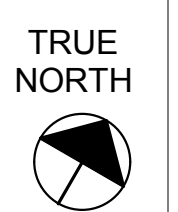
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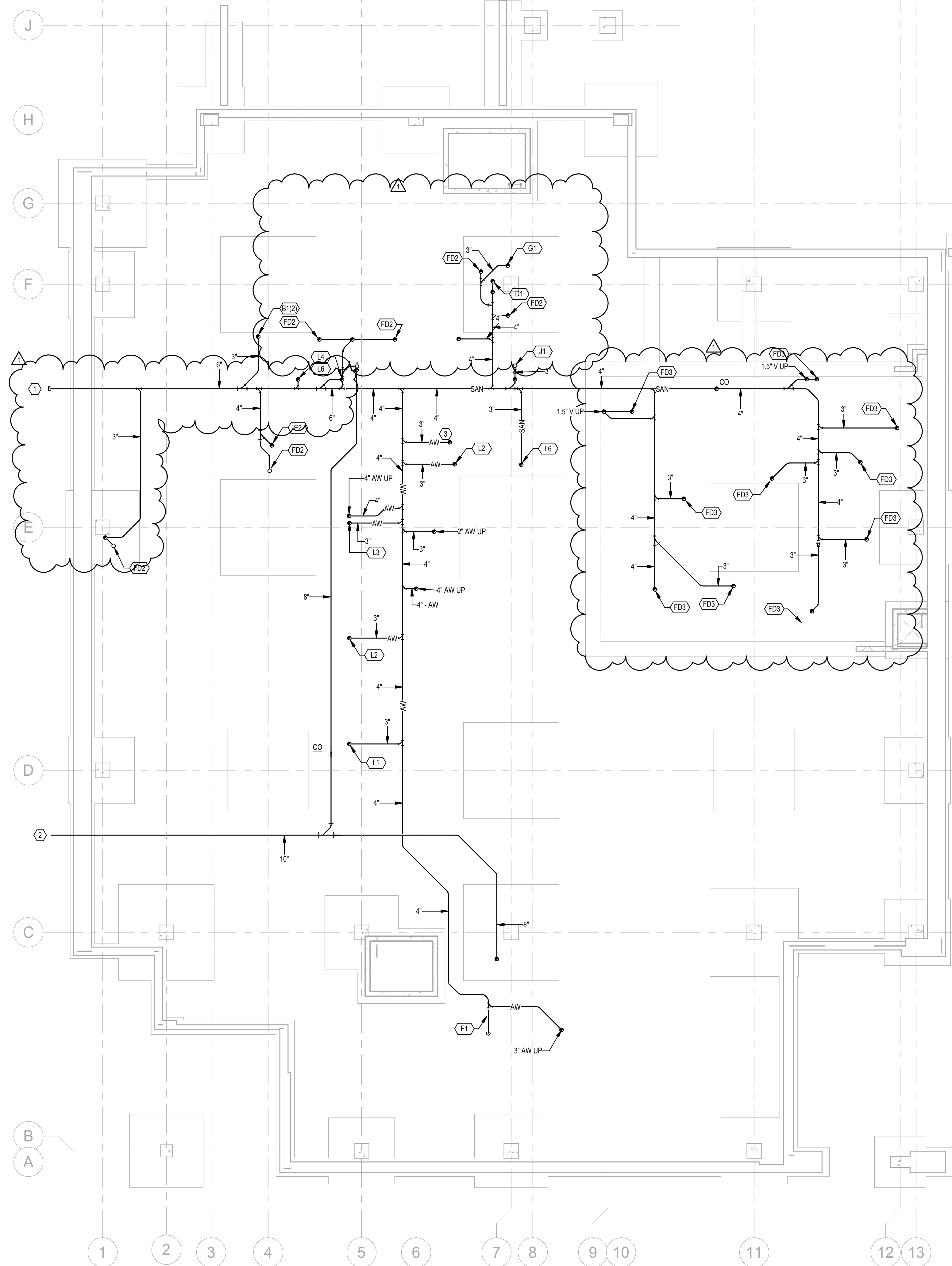
FIRST FLOOR
BELOW FLOOR
PLUMBING
DRAINAGE PLAN

DRAWING NUMBER:
P220
NEW BUILDING



NOTES

- 1 PROVIDE CONNECTION TO 6" SANITARY AT -4' - 0" INVERT FROM FINISHED FLOOR LEVEL. COORDINATE LOCATIONS AND DEPTH WITH CIVIL AND STRUCTURAL DRAWINGS.
- 2 PROVIDE CONNECTION TO 10" STORM AT -3' - 6" INVERT FROM FINISHED FLOOR LEVEL. COORDINATE LOCATION AND DEPTH WITH CIVIL AND STRUCTURAL DRAWINGS.
- 3 EXTEND PIPE ABOVE FLOOR. PROVIDE CLEANOUT FOR FUTURE SINK



1 FIRST FLOOR BELOW FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"

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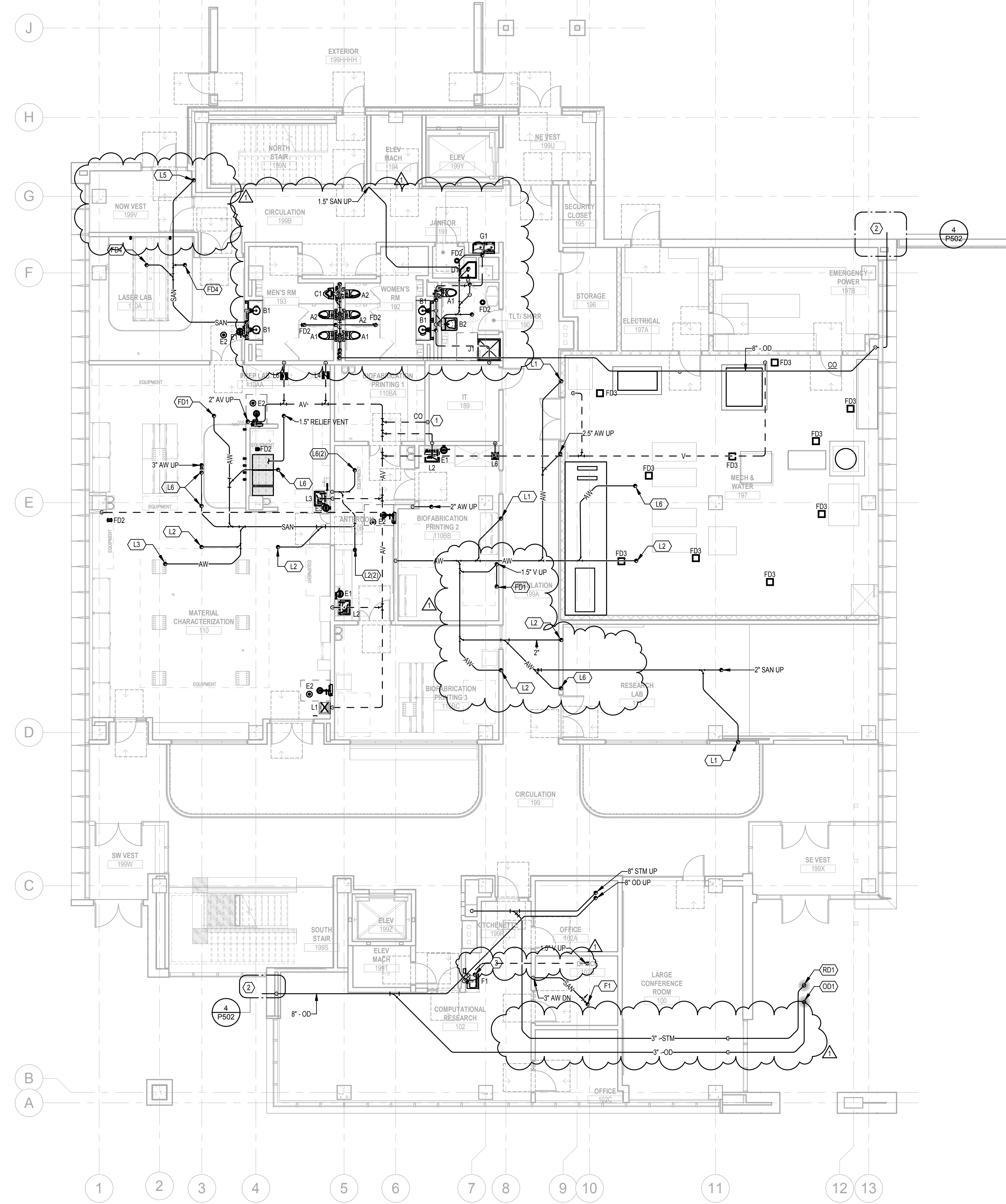
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CLIENT PROJECT NUMBER: 20230276
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DRAWING TITLE:

FIRST FLOOR ABOVE FLOOR PLUMBING DRAINAGE PLAN

DRAWING NUMBER:
P221
NEW BUILDING

NOTES

- 1 PROVIDE PIPE CLEANOUT FOR UNDERFLOOR DRAINAGE TO FUTURE SINK. COORDINATE LOCATION AND ELEVATION WITH ARCHITECT.
- 2 PROVIDE OVERFLOW STORM OUTLET AT APPROXIMATELY 2'-0" AFF. COORDINATE LOCATION AND ELEVATION WITH ARCHITECT.
- 3 PROVIDE STANDPIPE IN CABINET BELOW SINK. PROVIDE INSULATION ON DRAIN RECEIVING CONDENSATE WASTE IN ACCORDANCE WITH SPECIFICATIONS.



1 FIRST FLOOR ABOVE FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"



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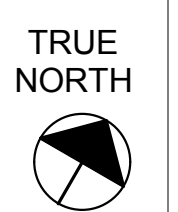
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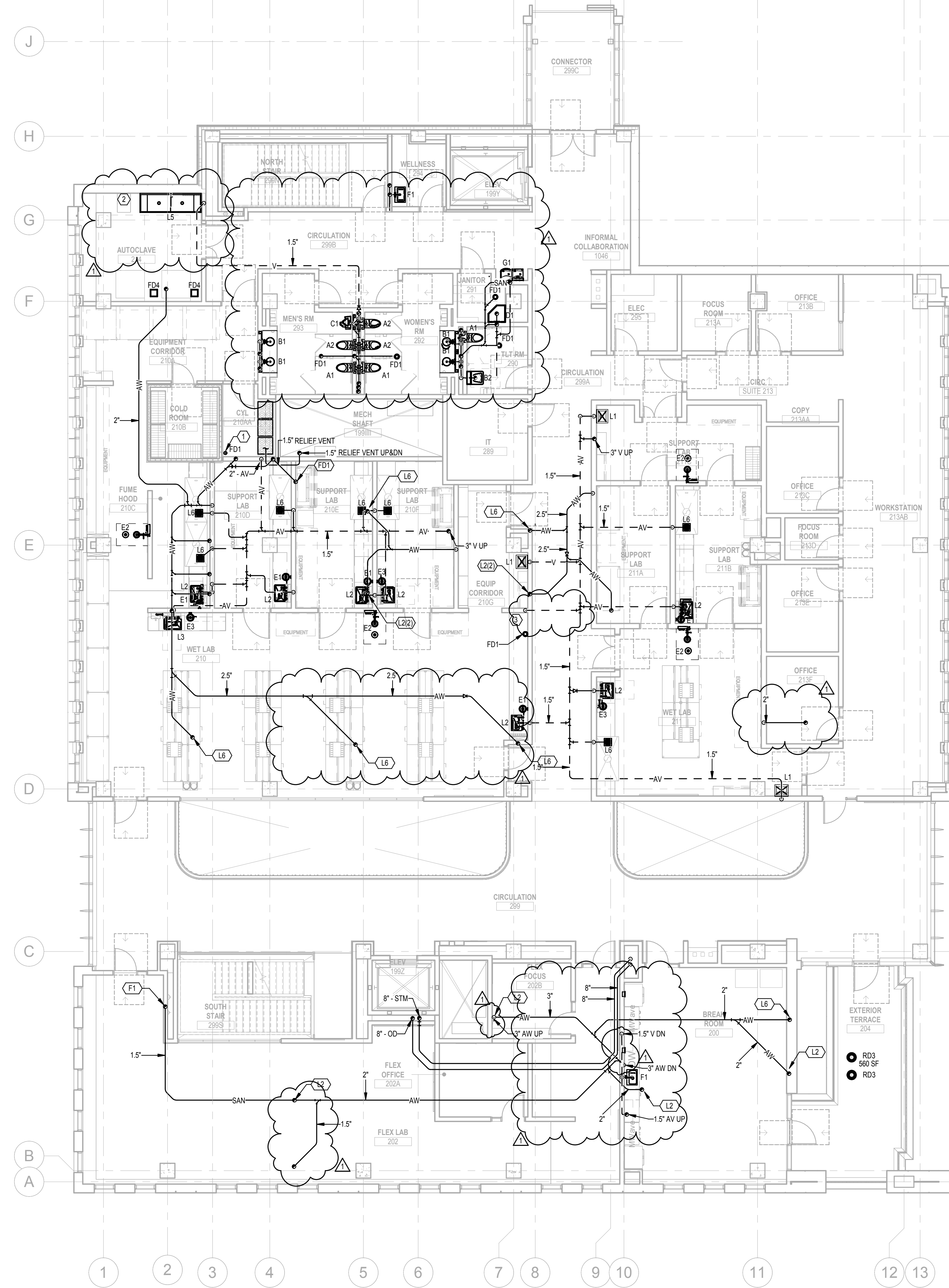
**SECOND FLOOR PLUMBING
DRAINAGE PLAN**

DRAWING NUMBER:
P222
NEW BUILDING



NOTES

- PROVIDE INSULATION ON DRAIN RECEIVING CONDENSATE WASTE IN ACCORDANCE WITH SPECIFICATIONS.
- GLASSWARE WASHER INSTALLATION LOCATION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS. PROVIDE DRAIN CONNECTION FROM DISHWASHER APPLIANCE TO SINK TRAP.
- ICE FLAKER INSTALLATION LOCATION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS. ROUTE DRAIN TO FLOOR DRAIN AND TERMINATE WITH AIR GAP.



1 SECOND FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"

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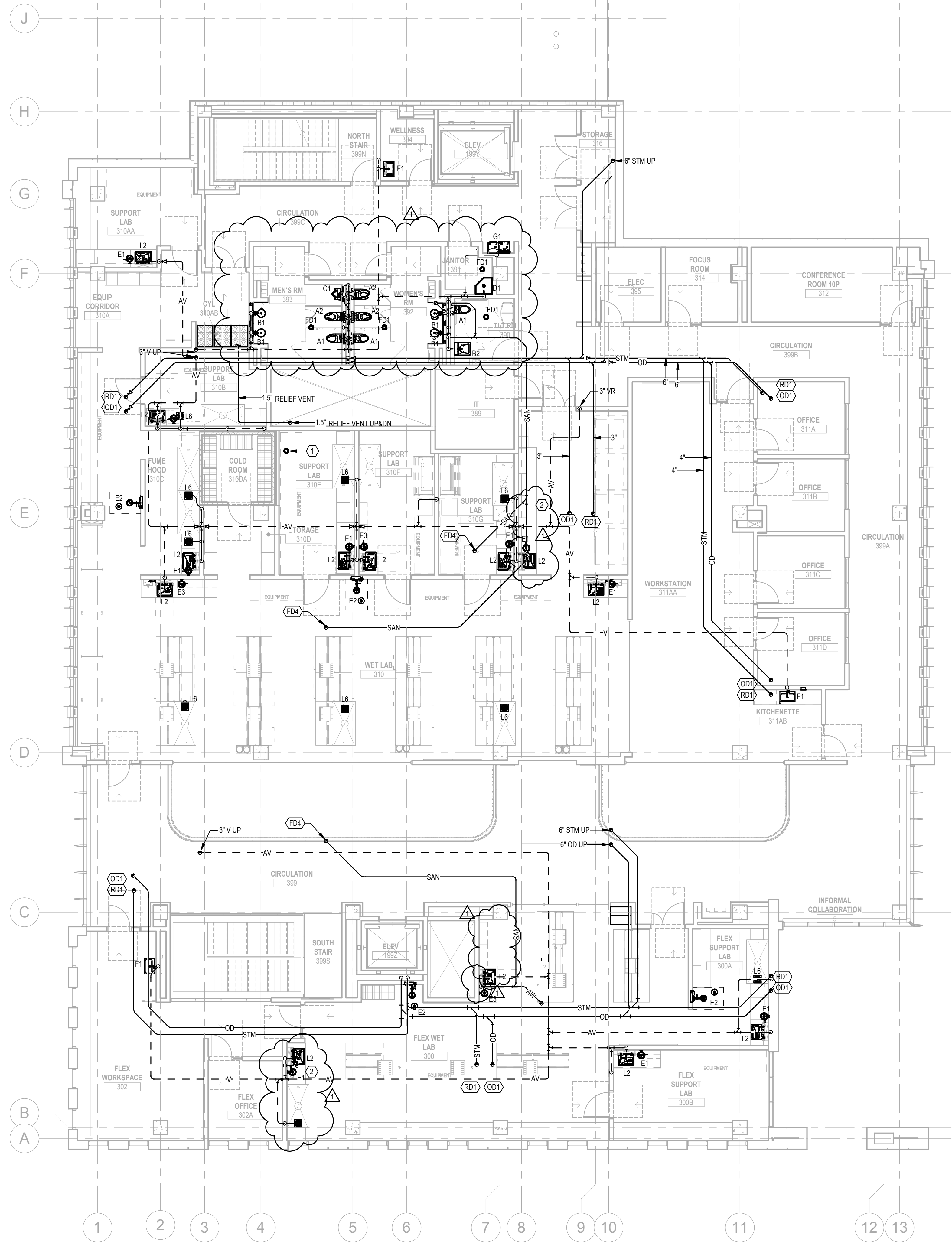
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arcDESIGN PROJECT NUMBER:
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20230276
DRAWN BY:
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DRAWING TITLE:

THIRD FLOOR
PLUMBING
DRAINAGE PLAN

DRAWING NUMBER:
P223
NEW BUILDING

NOTES

- 1 PROVIDE INSULATION ON DRAIN RECEIVING CONDENSATE WASTE IN ACCORDANCE WITH SPECIFICATIONS.
- 2 UC ICE FLAKER INSTALLATION LOCATION. REFER TO LAB EQUIPMENT DRAWINGS FOR ALL CONNECTION REQUIREMENTS. PROVIDE STANDPIPE BELOW SINK FOR ICE MACHINE DRAIN. ROUTE DRAIN TO STANDPIPE AND TERMINATE WITH AIR GAP.



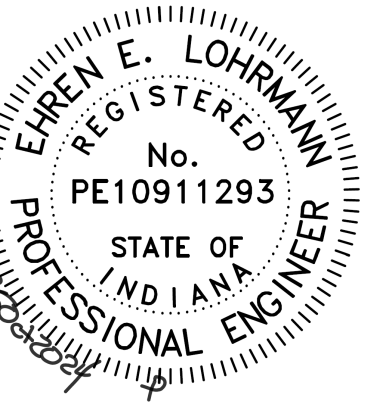
1 THIRD FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"



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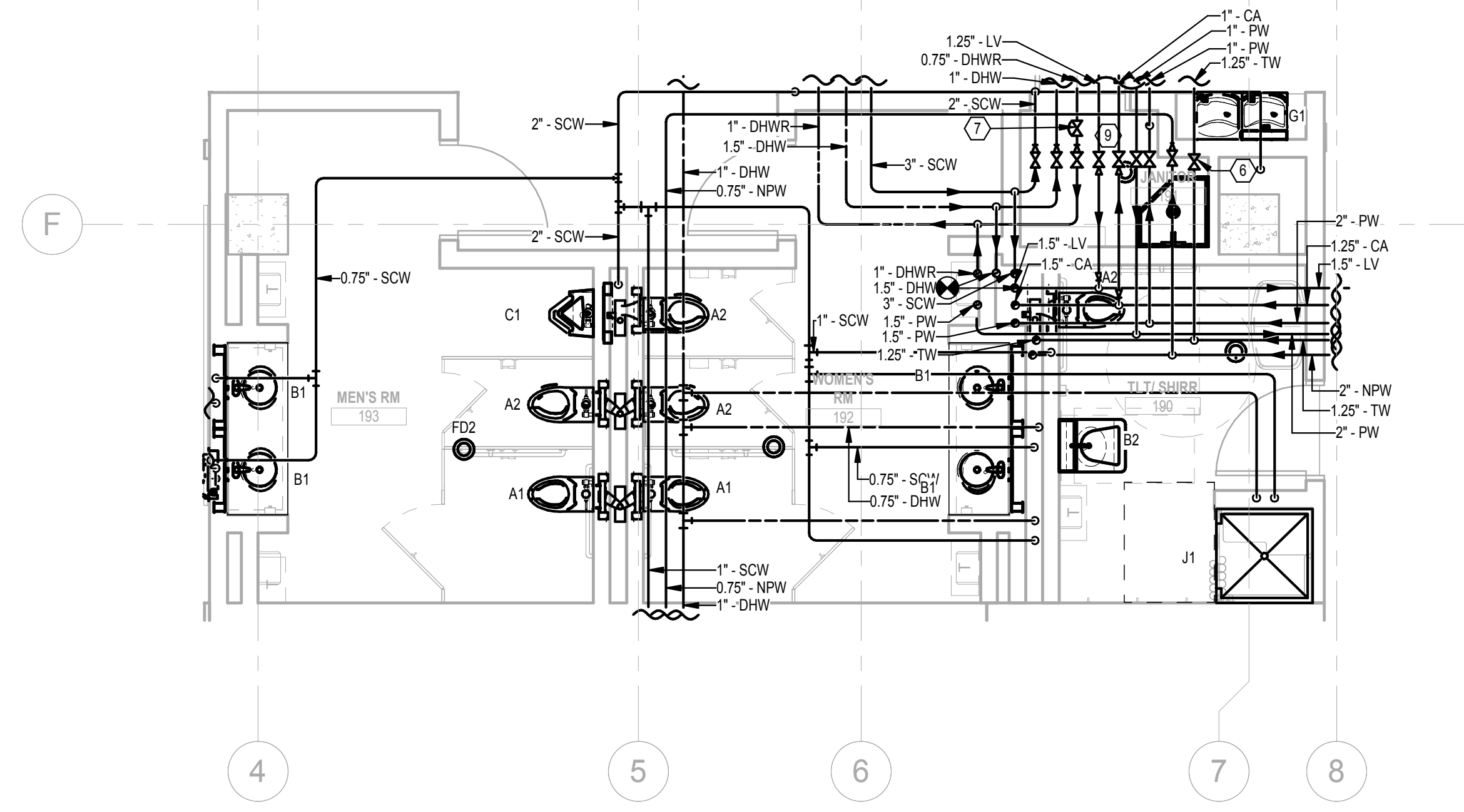
PROJECT NO. 2023-06075



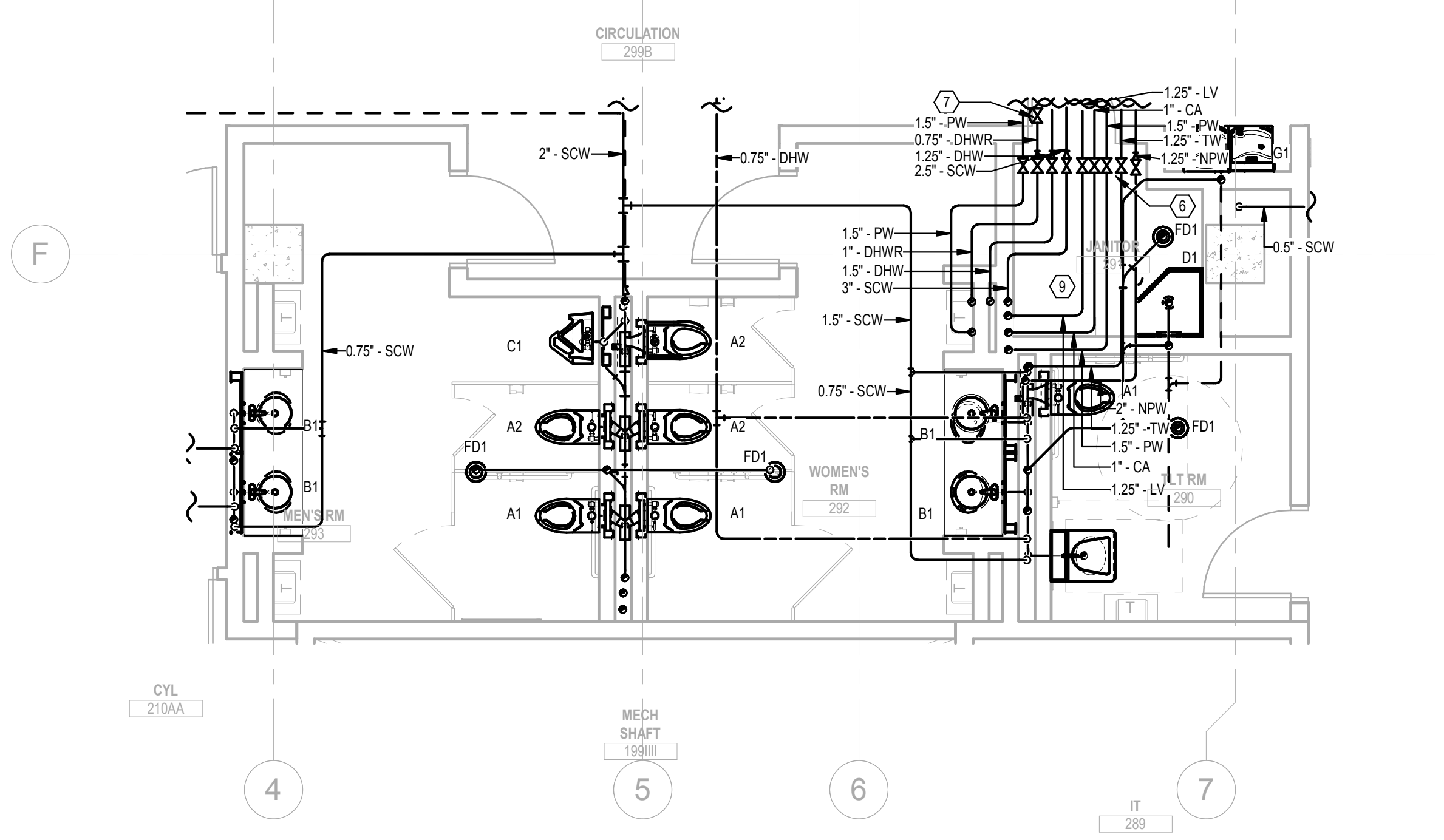
Chen E. Lohrmann

NOTES

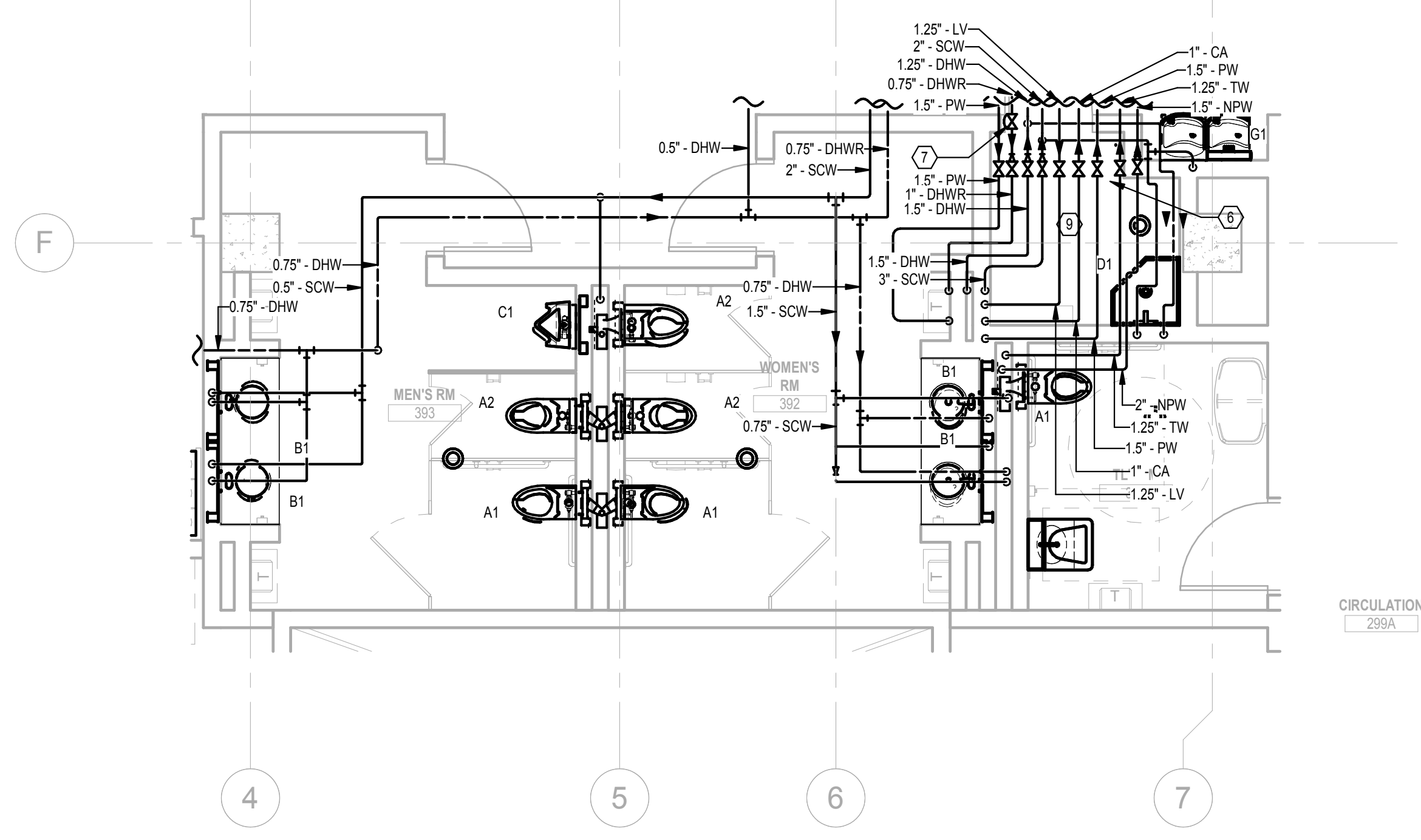
- 1 PROVIDE MODBUS-CAPABLE BADGER METER TO TRACK ALL IRRIGATION WATER.
- 2 PROVIDE MODBUS-CAPABLE BADGER METER TO TRACK ALL DOMESTIC HOT WATER.
- 3 PROVIDE MODBUS-CAPABLE BADGER METER TO TRACK ALL DOMESTIC HOT WATER.
- 4 PROVIDE BACKFLOW PREVENTER ON IRRIGATION WATER SUPPLY. ROUTE DRAIN TO NEAREST FLOOR DRAIN AND TERMINATE WITH AIR GAP.
- 5 PROVIDE CONNECTION TO DRIP IRRIGATION SYSTEM.
- 6 PROVIDE SYSTEM SHUT OFF VALVES OVERHEAD IN JANITOR CLOSET. PIPING TO MAINTAIN FULL RISER SIZE UP TO VALVE AND THEN DECREASE TO FLOOR DISTRIBUTION SIZE.
- 7 SET RECIRCULATION BALANCING VALVE TO 1 GPM.
- 8 PROVIDE BACKFLOW PREVENTER ON MAKEUP WATER SUPPLY TO HVAC EQUIPMENT. ROUTE DRAIN TO NEAREST FLOOR DRAIN AND TERMINATE WITH AIR GAP.
- 9 EXPOSED INSULATION WITHIN THIS ROOM SHALL BE PROVIDED WITH PVC JACKETING FOR PROTECTION FROM MOISTURE OR IMPACT DAMAGE.



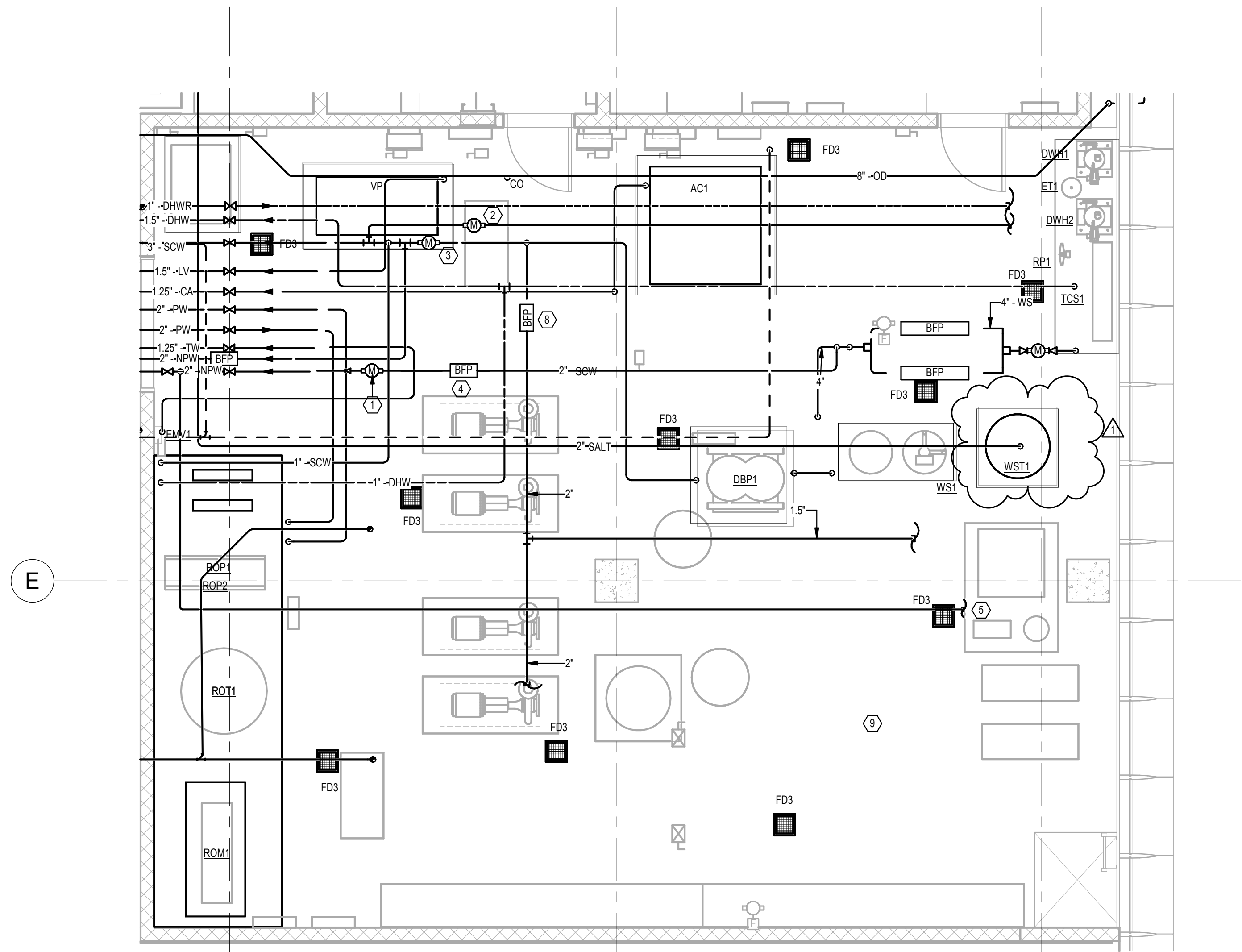
2 FIRST FLOOR FLOOR ENLARGED PLUMBING PLAN
SCALE: 1/4" = 1'-0"



3 SECOND FLOOR ENLARGED PLUMBING PLAN
SCALE: 1/4" = 1'-0"



4 THIRD FLOOR PLUMBING PLAN
SCALE: 1/4" = 1'-0"



1 ENLARGED MECHANICAL ROOM
SCALE: 1/4" = 1'-0"

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 DRAWING TITLE: ENLARGED PLUMBING PLANS

DRAWING NUMBER: P401
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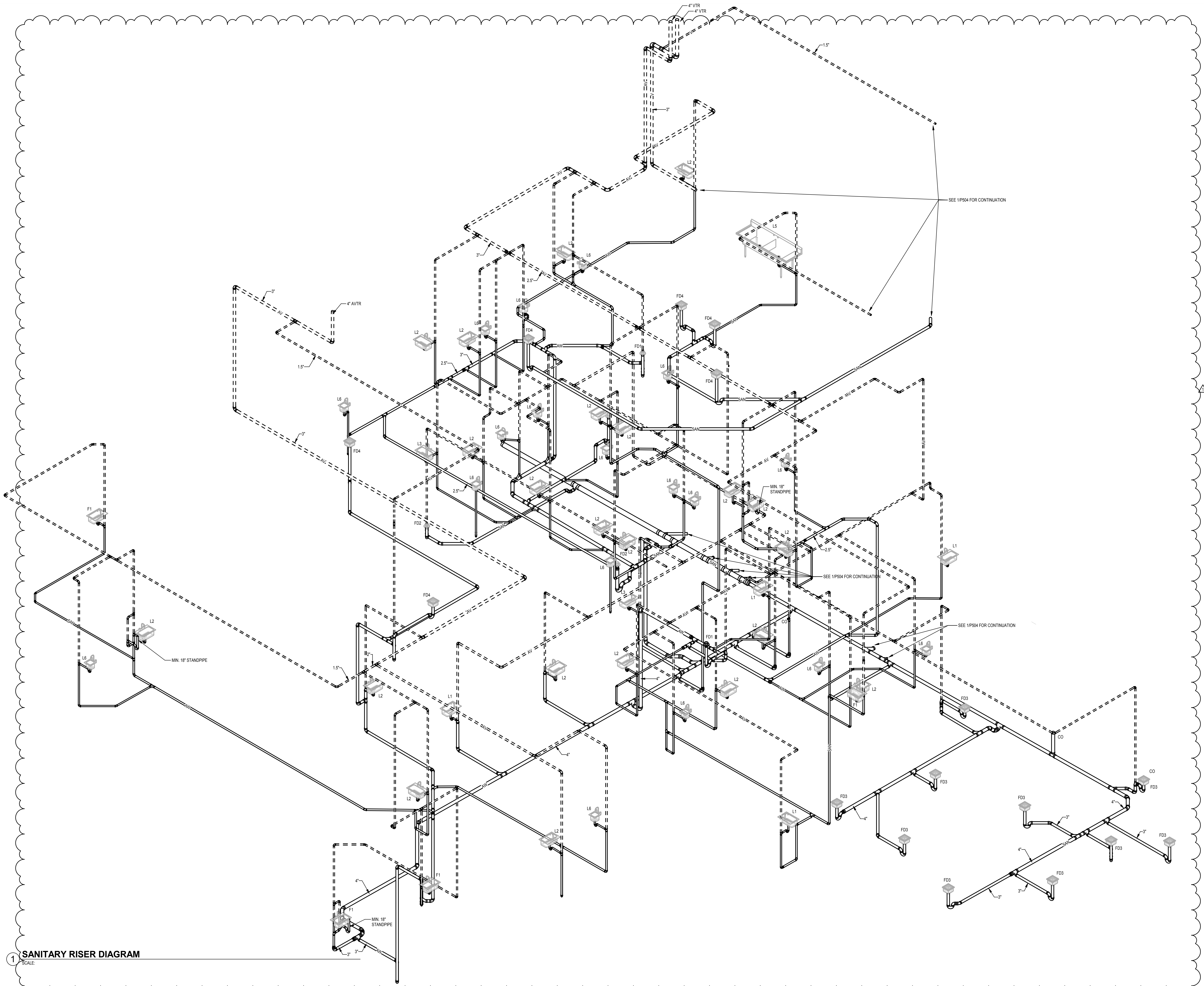
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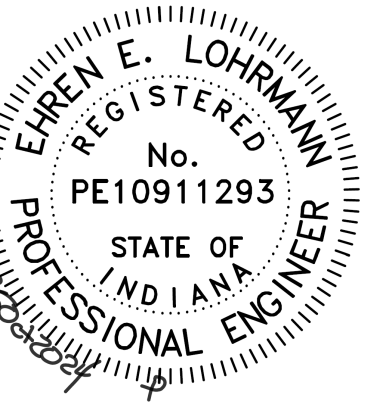
PLUMBING
SANITARY VENT
STACK

DRAWING NUMBER:
P503



1 SANITARY RISER DIAGRAM
SCALE:

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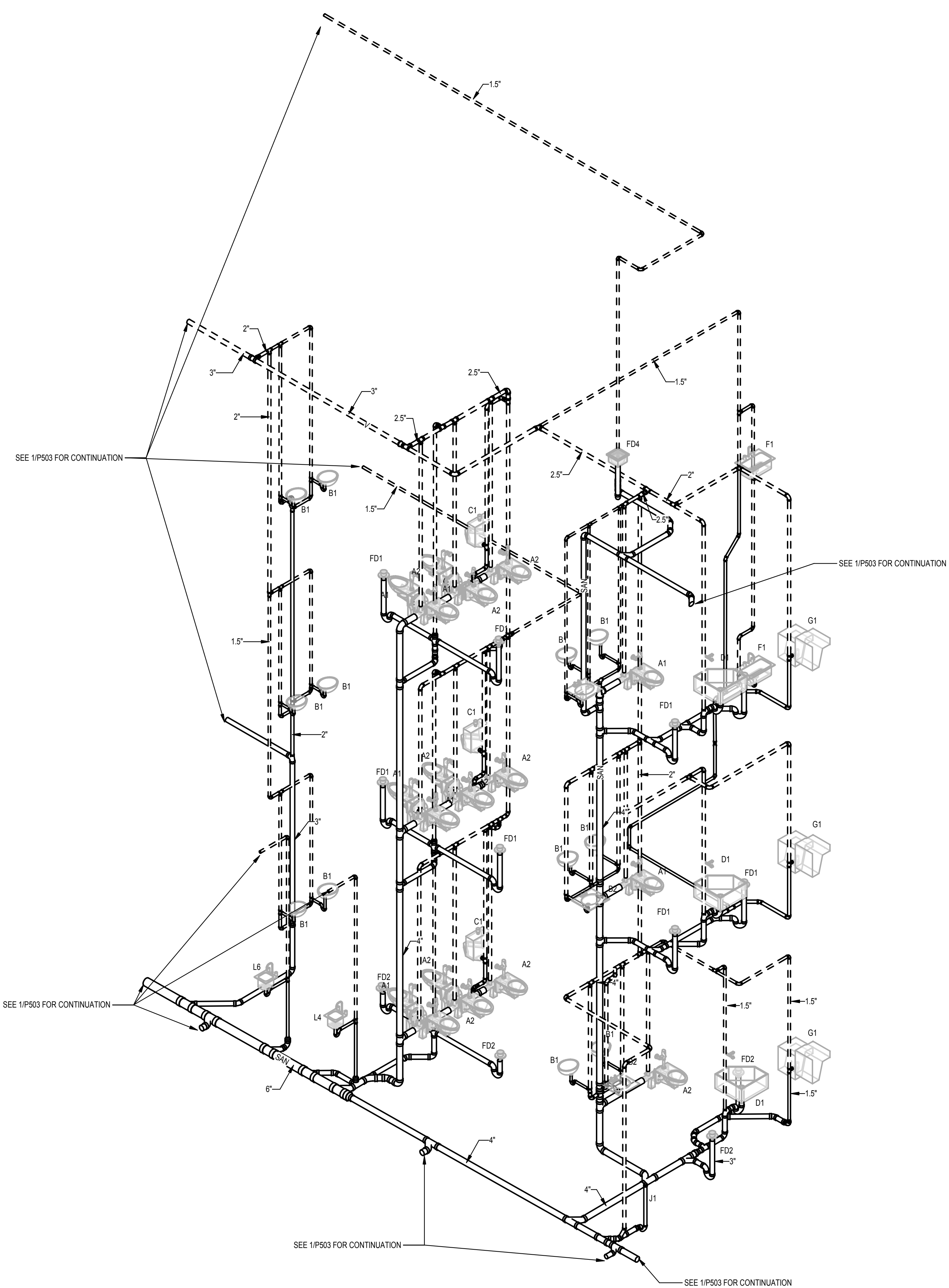
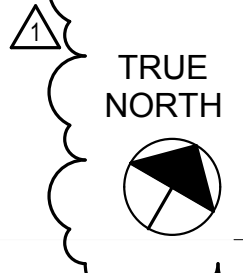
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**PLUMBING
SANITARY VENT
STACK -
RESTROOM**

DRAWING NUMBER:
P504

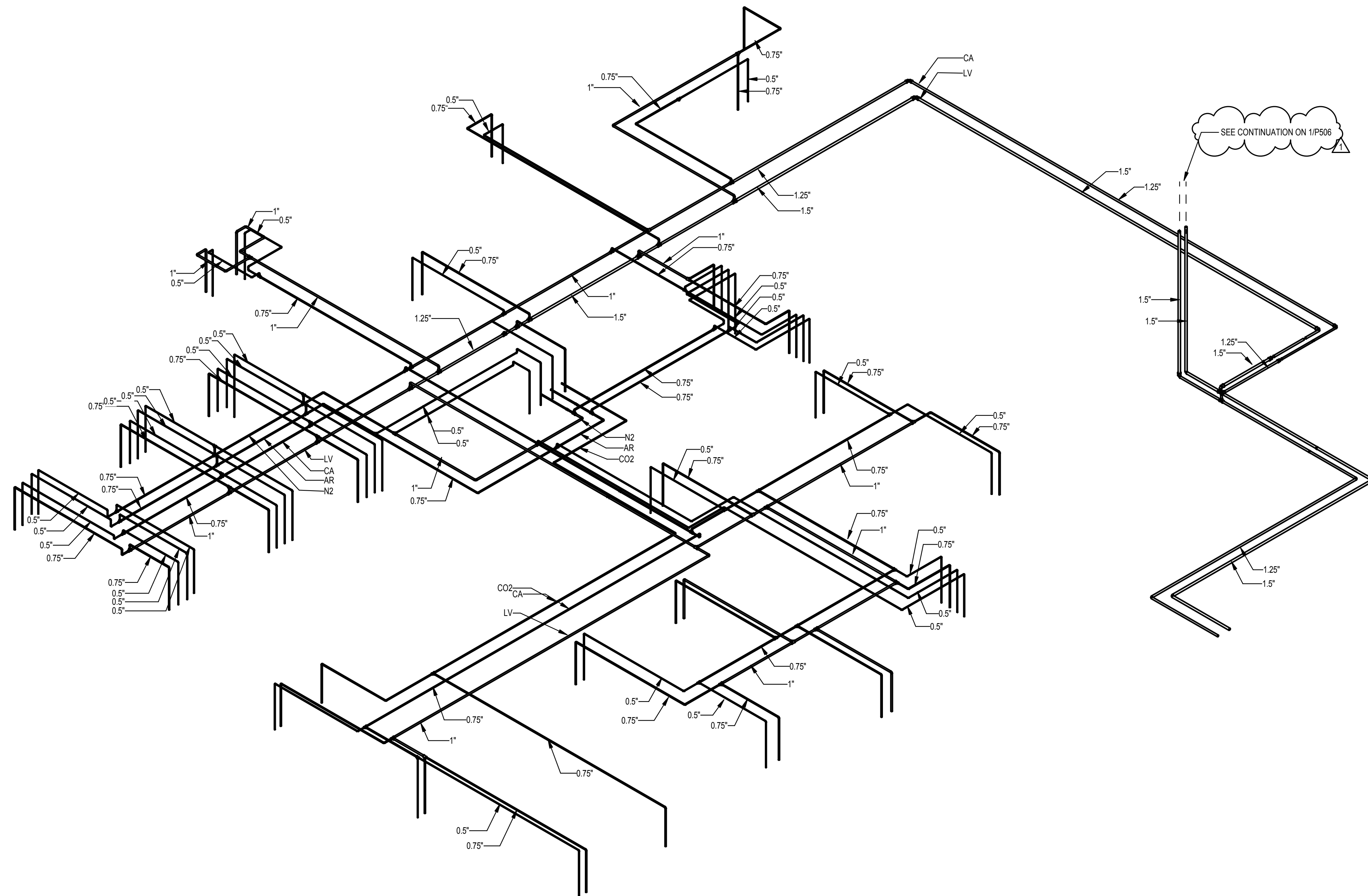


1 RESTROOM RISER DIAGRAM

SCALE:



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1 LAB GAS RISER DIAGRAM - LEVEL 1
SCALE

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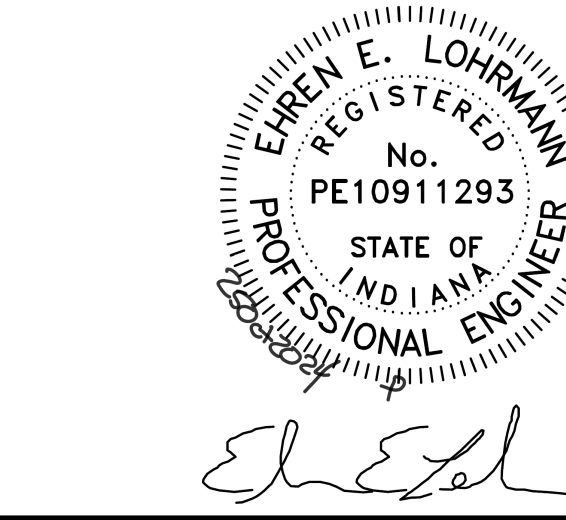
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DRAWING TITLE:

**PLUMBING
RISER
DIAGRAMS - LAB
GAS**

DRAWING NUMBER:
P505

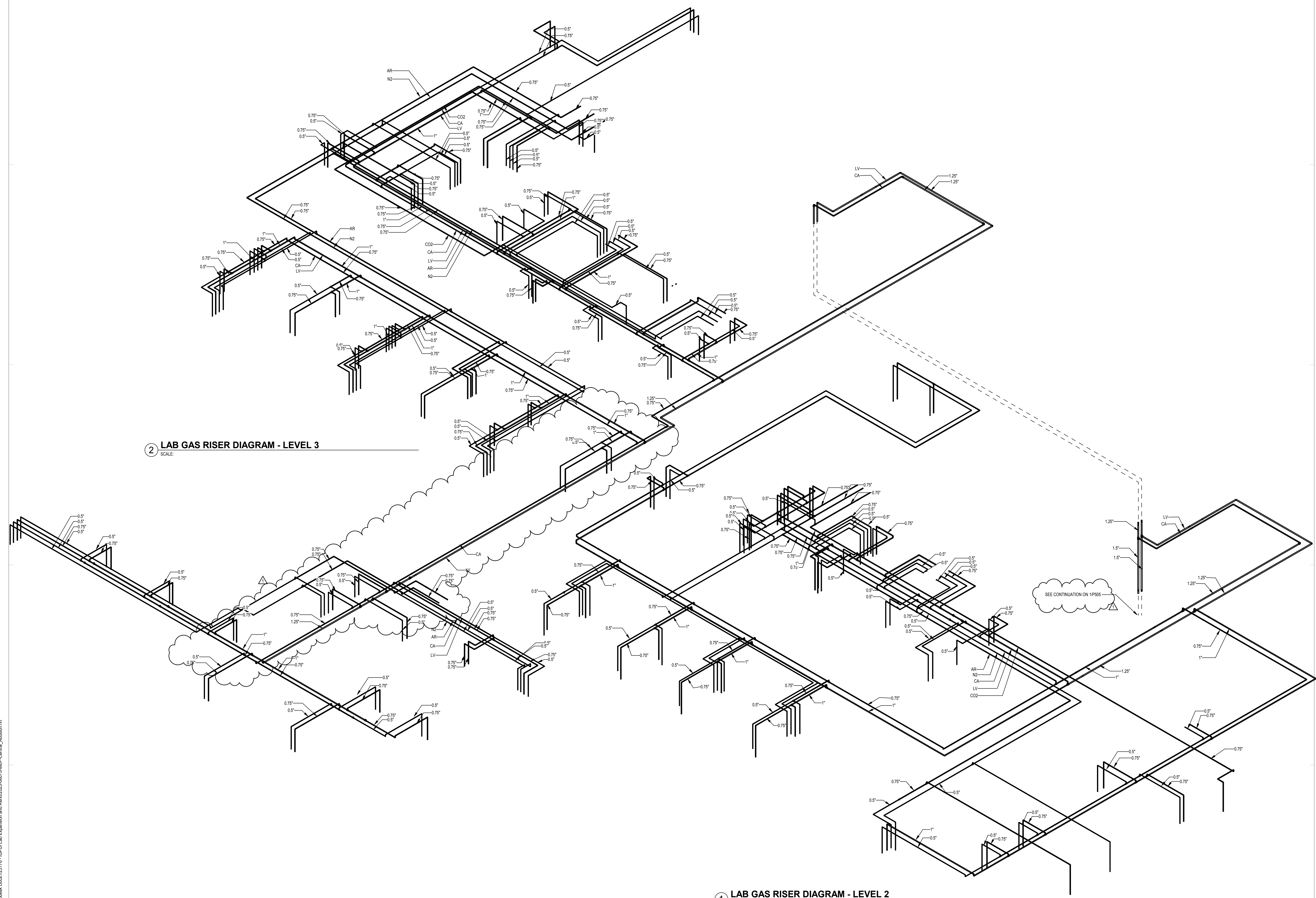




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CLIENT PROJECT NUMBER: 20230276
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DRAWING TITLE: PLUMBING RISER DIAGRAMS - LAB GAS
DRAWING NUMBER: P506



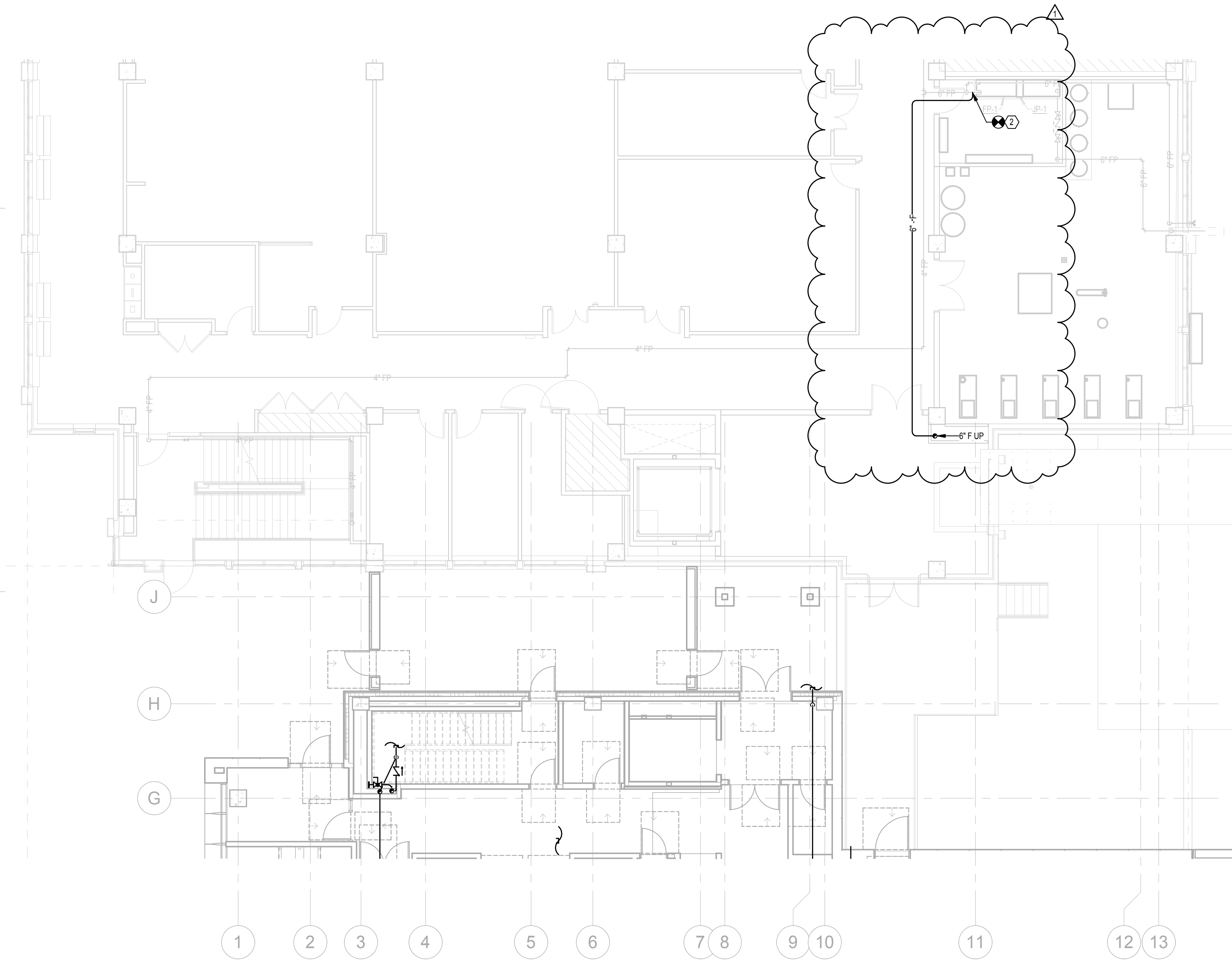
2 LAB GAS RISER DIAGRAM - LEVEL 3
SCALE:

1 LAB GAS RISER DIAGRAM - LEVEL 2
SCALE:

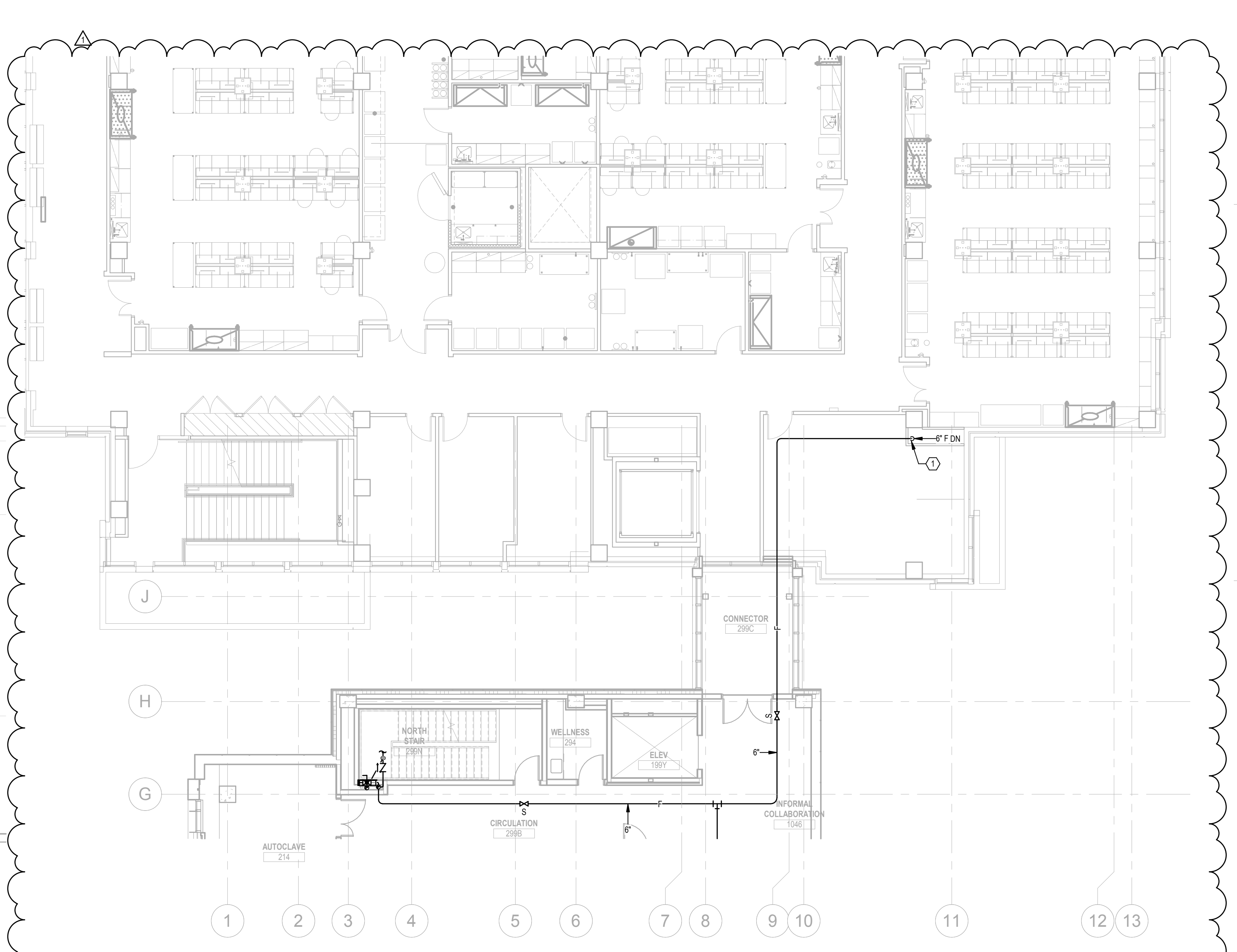
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NOTES

- ROUTE FIRE SUPPRESSION SUPPLY PIPING DOWN IN CHASE TO FIRST FLOOR.
- CONNECT NEW BUILDING FIRE SUPPRESSION SUPPLY TO 6" PUMPED MAIN IN FIRE PUMP ROOM.



1 EXISTING SELB FIRE SUPPRESSION PLAN - LEVEL 1
SCALE: 1/8" = 1'-0"



2 EXISTING SELB FIRE SUPPRESSION PLAN - LEVEL 2
SCALE: 1/8" = 1'-0"

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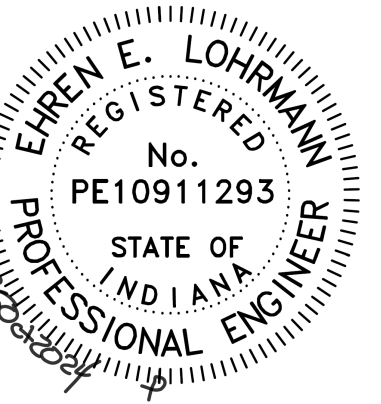
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DRAWING TITLE: SELB PIPING PLAN

DRAWING NUMBER:
FS120
NEW BUILDING



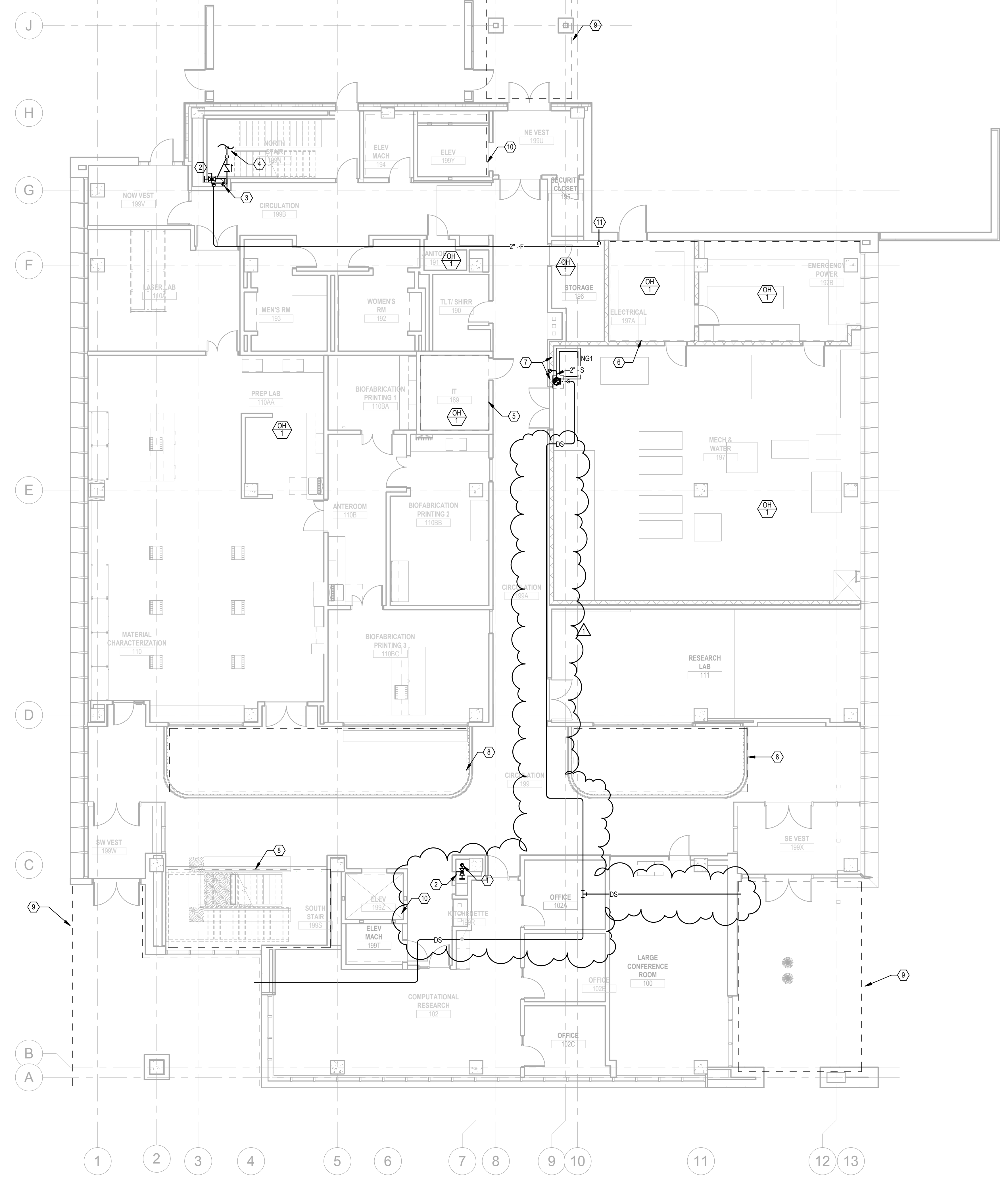
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NOTES

- 1 PROVIDE 4" CLASS 1 STANDPIPE UP, CONCEALED WITHIN CHASE.
- 2 PROVIDE 2.5" FDV IN VALVE CABINET
- 3 PROVIDE 6" COMBINATION CLASS 1 STANDPIPE/SPRINKLER RISER AND 2" DRAIN STACK UP, CONCEALED WITHIN CHASE.
- 4 PROVIDE SPRINKLER SUPPLY TO FLOOR. FLOOR CONTROL VALVE TO BE LOCATED IN VALVE CABINET
- 5 NO SPRINKLER PIPING ALLOWED WITHIN SPACE EXCEPT PIPING SERVING THE SPACE. SPRINKLER TO BE WALL-MOUNTED TO MINIMIZE POSSIBLE LEAKS.
- 6 NO SPRINKLER PIPING ALLOWED WITHIN SPACE. NO SPRINKLER COVERAGE REQUIRED.
- 7 PROVIDE DRY PIPE SYSTEM VALVE AND NITROGEN GENERATOR IN MECHANICAL ROOM AND ROUTE PIPING TO CANOPIES.
- 8 PROVIDE WATER CURTAINS AND TIGHTLY SPACED SPRINKLER HEADS WHERE REQUIRED FOR PROTECTION OF ATRIUM AND OPEN STAIRWELL.
- 9 PROVIDE DRY SPRINKLER COVERAGE FOR CANOPY. SPRINKLER CAPS IN THIS AREA SHALL BE COORDINATED WITH ARCHITECT TO MATCH CEILING.
- 10 SPRINKLER PROTECTION SHALL BE OMITTED FROM ELEVATOR HOISTWAY AS PERMITTED BY INDIANA BUILDING CODE SECTION 903.3.1.1.1 EXEMPTION #4.
- 11 PROVIDE SPRINKLER DRAIN OUTLET AT APPROXIMATELY 20" AFF. DISCHARGE TO SPLASHBLOCK.



1 FIRE SUPPRESSION LEVEL 01
SCALE: 1/8" = 1'-0"

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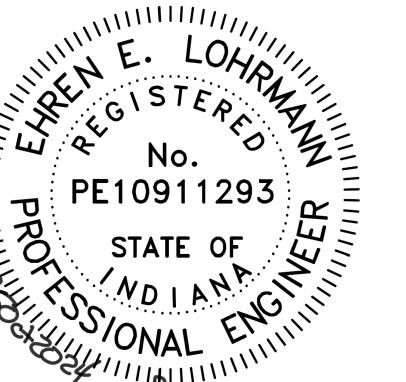
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CLIENT PROJECT NUMBER:
20230276
DRAWN BY:
JPF
DRAWING TITLE:
**FIRST FLOOR
FIRE
SUPPRESSION
PLAN**

DRAWING NUMBER:
FS121
NEW BUILDING

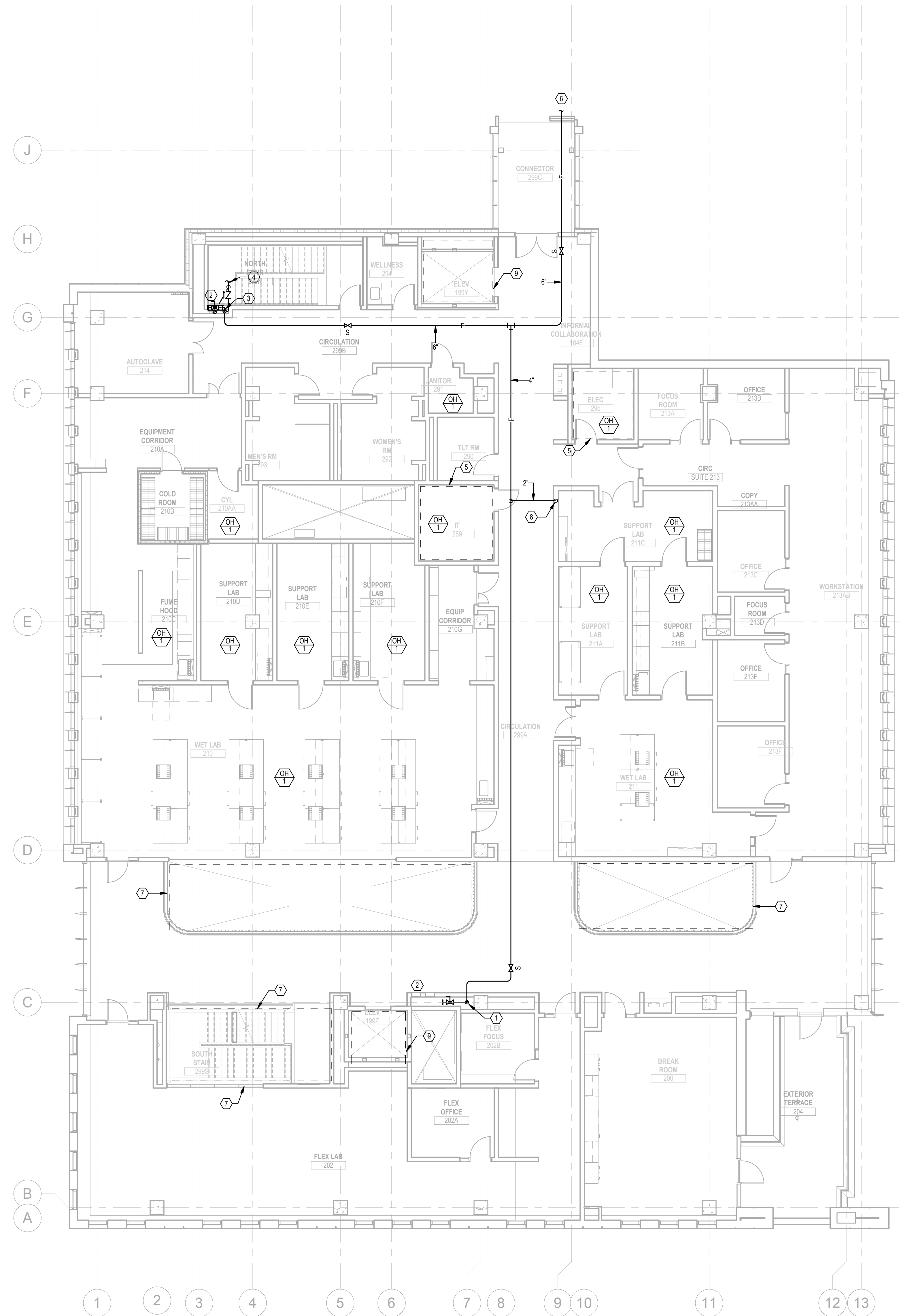




PROJECT NO. 2023-06075



Chen E. Lokriman



NOTES

- 1 PROVIDE 4" CLASS I STANDPIPE UP AND DOWN, CONCEALED WITHIN CHASE.
- 2 PROVIDE 2.5" FDV IN VALVE CABINET.
- 3 PROVIDE 4" SPRINKLER RISER AND 2" DRAIN STACK UP AND DOWN, CONCEALED WITHIN CHASE.
- 4 PROVIDE SPRINKLER SUPPLY TO FLOOR. FLOOR CONTROL VALVE TO BE LOCATED IN VALVE CABINET
- 5 NO SPRINKLER PIPING ALLOWED WITHIN SPACE EXCEPT PIPING SERVING THE SPACE. SPRINKLER TO BE WALL-MOUNTED TO MINIMIZE POSSIBLE LEAKS.
- 6 PROVIDE 6" FEED FROM FIRE PUMP IN ADJACENT BUILDING ABOVE CEILING OF CONNECTOR TO SERVE NEW BUILDING. BUILDING FIRE SUPPRESSION SYSTEM TO BE SERVED BY EXISTING FDC IN ADJACENT BUILDING. REFER TO IFC120 FOR ROUTING IN ADJACENT BUILDING.
- 7 PROVIDE WATER CURTAINS AND TIGHTLY SPACED SPRINKLER HEADS WHERE REQUIRED FOR PROTECTION OF ATRIUM AND OPEN STAIRWELL.
- 8 PROVIDE SUPPLY TO DRY SPRINKLER SYSTEM IN MECHANICAL ROOM ON FLOOR BELOW.
- 9 SPRINKLER PROTECTION SHALL BE OMITTED FROM ELEVATOR HOISTWAY AS PERMITTED BY INDIANA BUILDING CODE SECTION 903.3.1.1 EXEMPTION #4.

1 FIRE SUPPRESSION LEVEL 02
SCALE: 1/8" = 1'-0"

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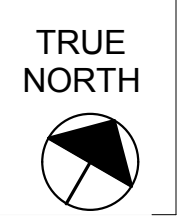
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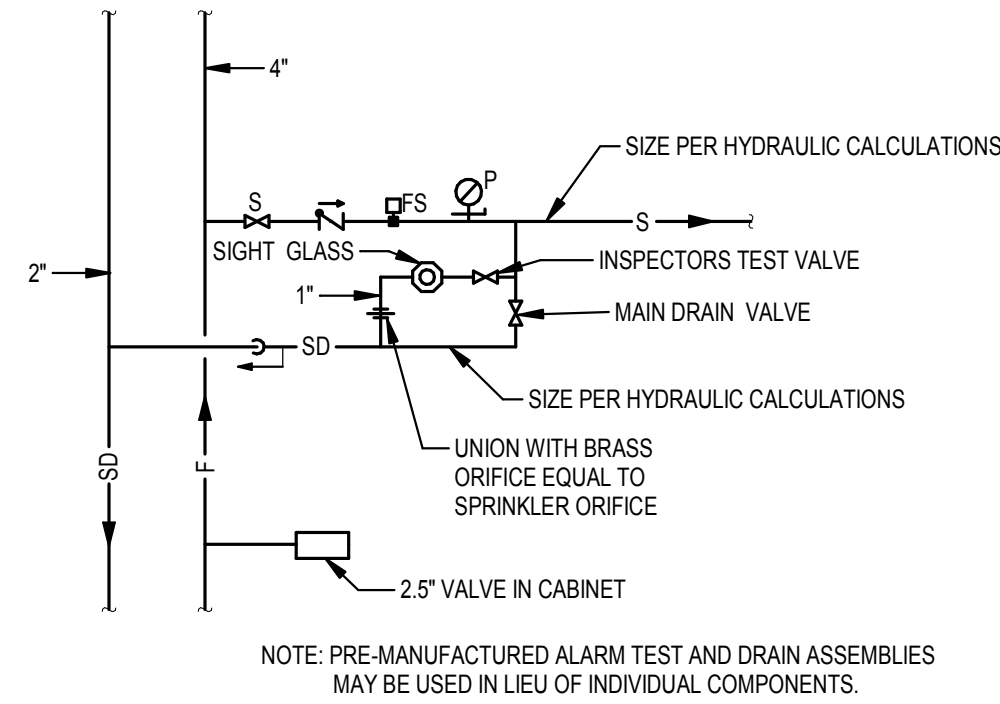
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 arcDESIGN PROJECT NUMBER: 23176
 CLIENT PROJECT NUMBER: 20230276
 DRAWN BY: JPF
 DRAWING TITLE:

SECOND FLOOR
 FIRE
 SUPPRESSION
 PLAN

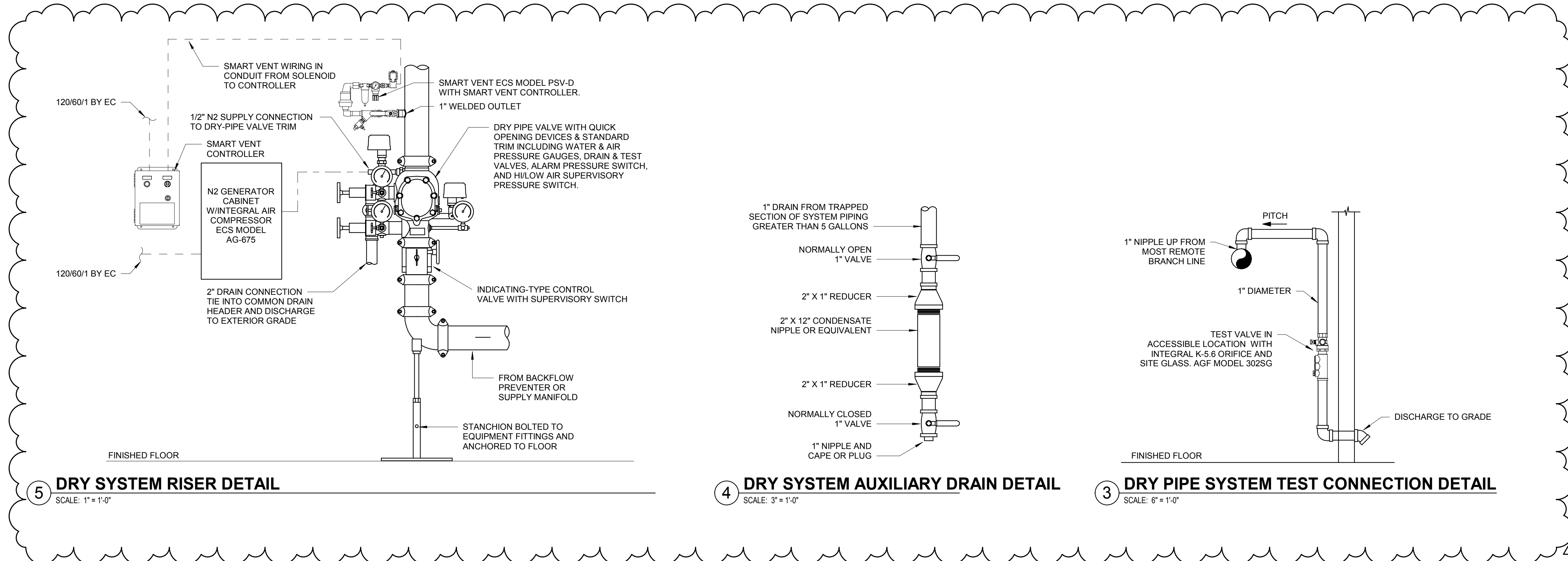
DRAWING NUMBER:
FS122
 NEW BUILDING



FIRE SUPPRESSION EQUIPMENT						
GENERAL NOTES: A. INSTALL ALL "LOOSE" COMPONENTS. B. WATER CONNECTIONS SHALL BE AS LISTED. TERMINAL OUTLETS AND INLETS ON EQUIPMENT MAY BE SMALLER AND INCREASER/REDUCER FITTING.						
NOTES: 1. BASIS OF DESIGN: GENERAL AIR PRODUCTS NGP-1000D-M3-3B						
MARK	DESCRIPTION	CAPACITY	PRESSURE HEAD	ELECTRICAL (VOLTAGE - PHASE)	APPROX. DIMENSIONS	SEE NOTE
NG1	VERTICAL NITROGEN TANK W/ WALL MOUNTED CABINET	30 GAL	HP	240	WIDTH/DIA: 33" LENGTH: 44" HEIGHT: 62"	1



1 SPRINKLER FLOOR CONTROL VALVE
SCALE: NONE



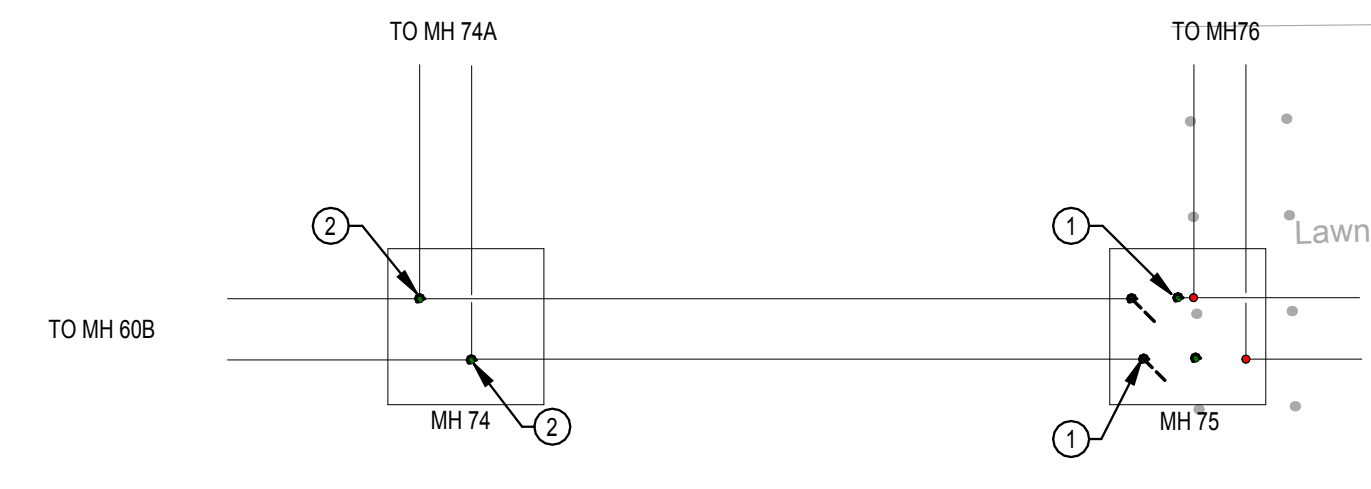
PLAN NOTES

- EXISTING MV ELECTRIC MANHOLE TO BE MAINTAINED.
- NEW VISTA SWITCH PURCHASED BY UN INSTALLED UNDER THIS CONTRACT. REFER TO DETAILS 3 AND 4 ON THIS SHEET.
- PROVIDE PAD FOR NEW SWITCH. PAD SHALL EXTEND 12" PAST SWITCH IN ALL DIRECTIONS. PAD PER DETAIL 10, SHEET E006.
- EXISTING UNDERGROUND CONDUIT FEEDER FOR CAMPUS MV SYSTEM TO BE MAINTAINED.
- EXISTING BUILDING GROUND TEST WELL TO BE MAINTAINED.
- PROVIDE DUCTBANK BETWEEN SWITCH AND MANHOLE PER DETAIL 2, THIS SHEET. UTILIZE LONG SWEEPING BENDS IN CONDUIT. REFER TO DETAILS 3 AND 4 ON THIS SHEET.
- PROVIDE CONNECTION IN MANHOLE OF NEW SWITCH-TWO CIRCUITS WILL BE SWITCHED.
- PROVIDE 120V, 20A CIRCUIT TO BLUE LIGHT. REFER TO E221 FOR CIRCUIT INFORMATION.
- RELOCATE EXISTING GENERATOR TO THIS LOCATION FOR CONSTRUCTION. COORDINATE EXACT LOCATION AND PAD PRIOR TO RELOCATION. RE-TEST FUEL TANK PRESSURE TEST AFTER MOVE. WORK WITH THE OWNER FOR TIMING OF THE GENERATOR MOVE. MOVE TO OCCUR OUTSIDE OF NORMAL WORK HOURS.
- PROVIDE TEMPORARY FEEDERS IN THROUGH THE WALL TO BACKFEED DISTRIBUTION AND FIRE PUMP. PROVIDE CONTROL LINES AS WELL TO / FROM TEMP GENERATOR LOCATION FOR PROPER OPERATION.
- PROVIDE 3 SETS OF 4-500MCM, 1/20" ISOLATED GROUND AND 1/20" GROUND, IN 3-4" C.
- PROVIDE 20A, 120V CIRCUIT FROM BUILDING TO SWITCH. UTILIZE #4 CONDUCTORS FOR CIRCUIT. PROVIDE 2" FC CONCEALED IN BUILDING.
- PROVIDE 2" FC FROM SWITCH INTO THE BUILDING AND BACK TO THE ELECTRIC METER IN THE MAIN ELECTRIC ROOM.
- RISE UP CONCEALED IN THE BUILDING. PROVIDE JUNCTION BOX FOR EACH CONDUIT. RUN REMAINDER OF WAY BACK TO MAIN ELECTRIC ROOM ABOVE CEILING.

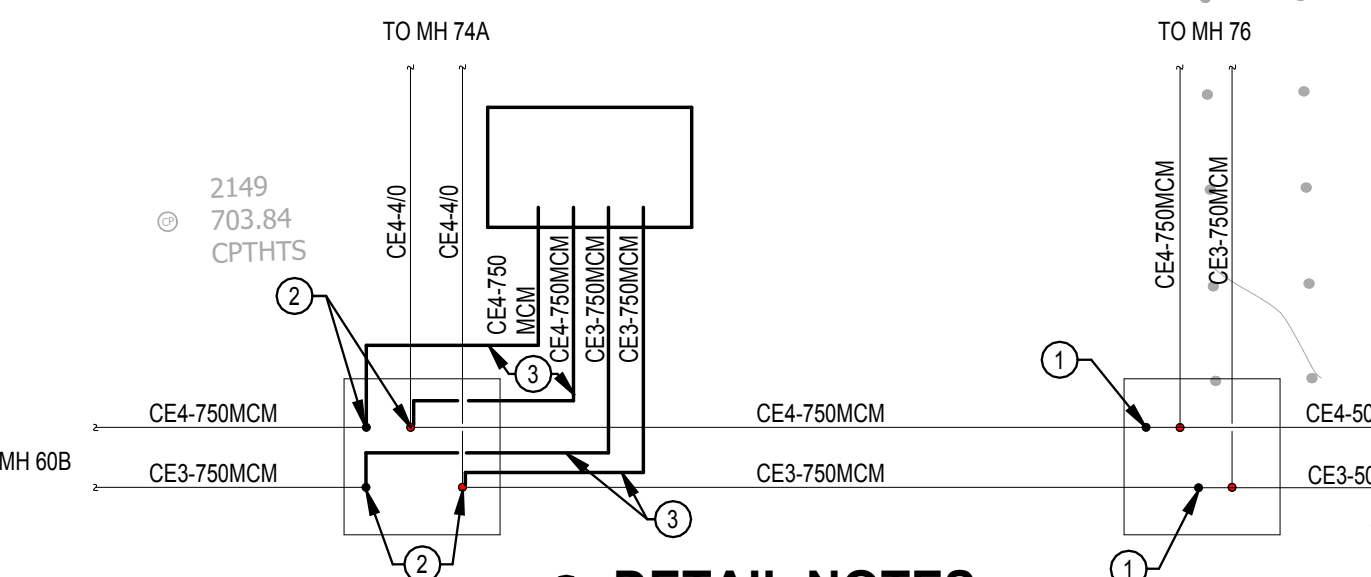
GENERAL NOTES

- CONNECTION BETWEEN DUCT BANK AND MANHOLE OR BUILDING FOOTER SHALL BE DOVELED WITH #4-#10 REBAR. EPOXY REBAR INTO DRILLED HOLES.
- DETAIL NOTES**
- 4000 PSI CONCRETE.
 - 5" I.D. DUCTS, SCHEDULE 40 PVC.
 - #40 BARE GROUND WIRE SHALL BE LAD IN THE CONCRETE AND TERMINATED AT BOTH ENDS. THIS IS IN ADDITION TO THE GROUND PULLED IN WITH CONDUCTORS.
 - USE CARLON CONDUIT SNAP-LOC SUPPORT AND SPACERS, 2 INCHES BETWEEN OUTSIDE OF CONDUITS. DO NOT USE SOLID SINGLE PLANE CONDUIT SUPPORTS.
 - ALL REBAR MUST BE A MINIMUM OF 1 INCH AWAY FROM CONDUIT.
 - METALLIC WARNING TAPE.

2 UNDERGROUND DUCTS - 4
SCALE: NONE



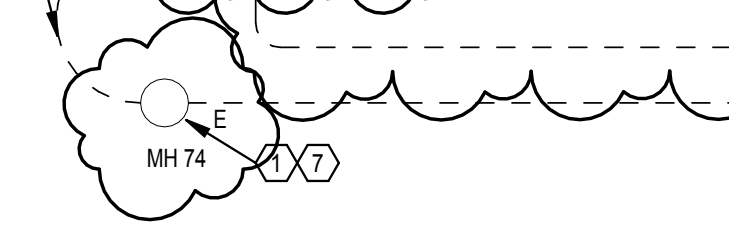
3 DEMO WORK
SCALE: NONE



DETAIL NOTES

- DISCONNECT EXISTING SWITCH IN MANHOLE AND REMOVE. REMOVE MOD-T CONNECTORS FROM EACH SIDE OF SWITCH AND PROVIDE APPROPRIATE COMPATIBLE SPLICE BETWEEN EXISTING CONDUCTORS TO MAKE CIRCUIT CONTINUOUS. INTENT IS TO REUSE EXISTING MOD-T CONNECTORS.
- DISCONNECT EXISTING CONDUCTOR SPLICE IN MANHOLE. PROVIDE NEW 750 MCM CABLE FROM SPLICE TO NEW SWITCH AND BACK AS INDICATED.
- UTILIZE LONG SWEEPING BENDS ON ALL CONDUITS. DUCTBANK PER DETAIL 2, THIS SHEET.

4 NEW WORK
SCALE: NONE



1 POWER & SYSTEMS LEVEL 01
SCALE: 1" = 20'-0"

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MULTI-BUILDING SCIENCE LABORATORY &
RENOVATION
ADDRESSES VARY

BID SET

△ REVISIONS:
1 11.08.24 ADDENDUM 1

DATE:
10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276
DRAWN BY:
JPF
DRAWING TITLE:

FIRST FLOOR
CONDUIT PLAN

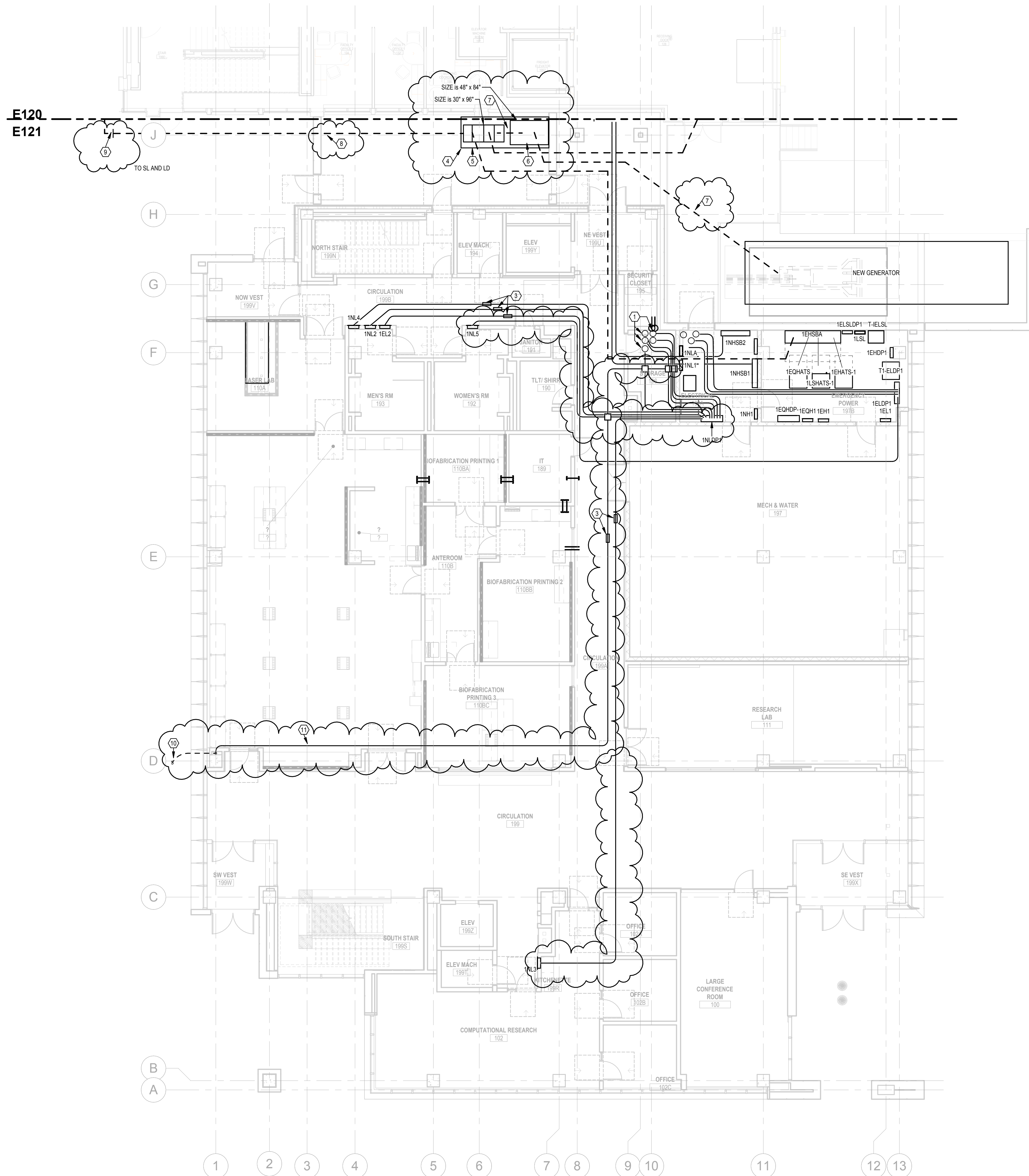
DRAWING NUMBER:
E121
NEW BUILDING

GENERAL NOTES:

A FOR CONDUIT SIZES, REFER TO ONE LINE DRAWINGS.

PLAN NOTES

1. UP TO SECOND FLOOR.
2. CONDUIT TO RUN UP AND OVER. RUN CONDUITS UP AT DECK FOR TRANSITION BETWEEN EQUIPMENT.
3. PROVIDE 6 X 6 X 16" PULLBOX.
4. PROVIDE PAD FOR NEW EQUIPMENT.
5. NEW EMERGENCY SWITCHBOARD M1EHSB PER SINGLELINE.
6. NEW GENERATOR DOCKING STATION PER SINGLELINE.
7. NEW CONDUIT DUCT BANK PER SINGLELINE. PROVIDE ADDITIONAL 4-2°C FOR CONTROL WIRING.
8. NEW CONDUIT DUCT BANK PER SINGLELINE. PROVIDE ADDITIONAL 8-2°C AND 2-4°C FOR CONTROL AND SPARE CAPACITY.
9. SCOPE FOR BUILDING ADDITION ENDS AT CORNER OF EXISTING SELB BUILDING.
10. REFER TO SITE PLAN FOR CONTINUATION.
11. REFER TO SITE PLAN FOR CONDUIT SIZES AND CIRCUIT INTENT.



GENERAL NOTES:

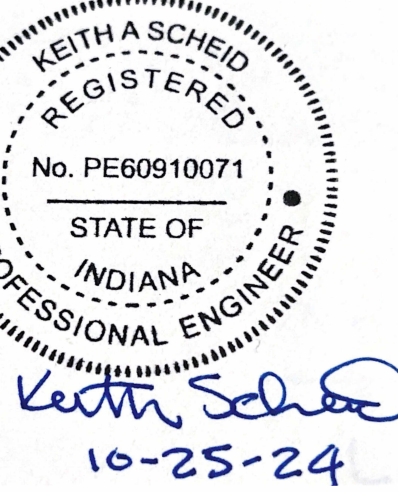
A. FOR CONDUIT SIZES, REFER TO ONE LINE DRAWINGS.

PLAN NOTES

1. UP TO PENTHOUSE LEVEL.
2. PROVIDE 6" X 6" X 16" PULL BOX FOR CONDUIT PULL.
3. SPACE ALLOCATED FOR FUTURE PANEL TRANSFORMER.



PROJECT NO. 2023-06075



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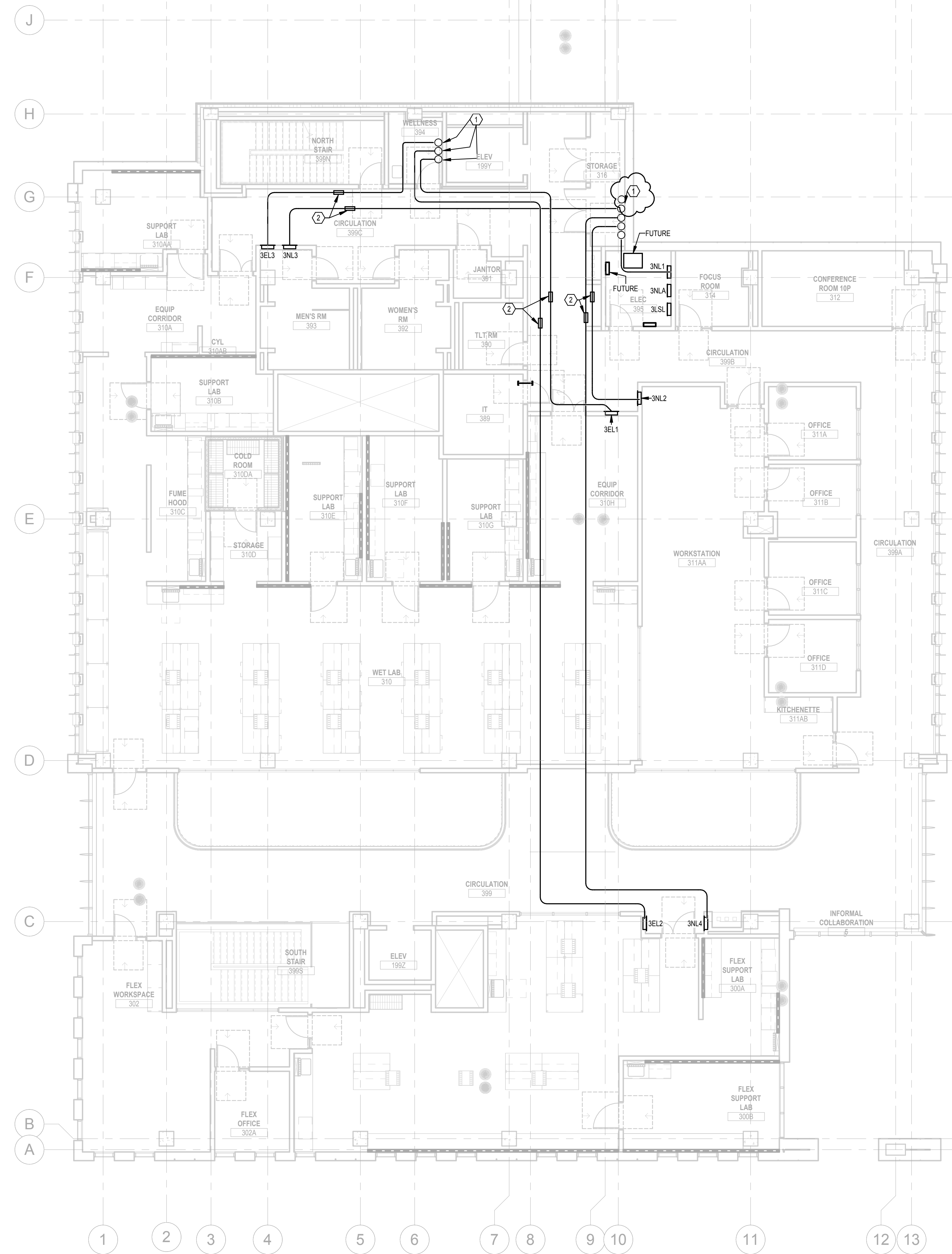
BID SET

△ REVISIONS:
1 11.08.24 ADDENDUM 1

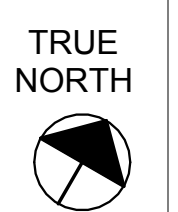
DATE: **10.25.2024**
arcDESIGN PROJECT NUMBER: **23176**
CLIENT PROJECT NUMBER: **20230276**
DRAWN BY: **JPF**
DRAWING TITLE:

**THIRD FLOOR
CONDUIT PLAN**

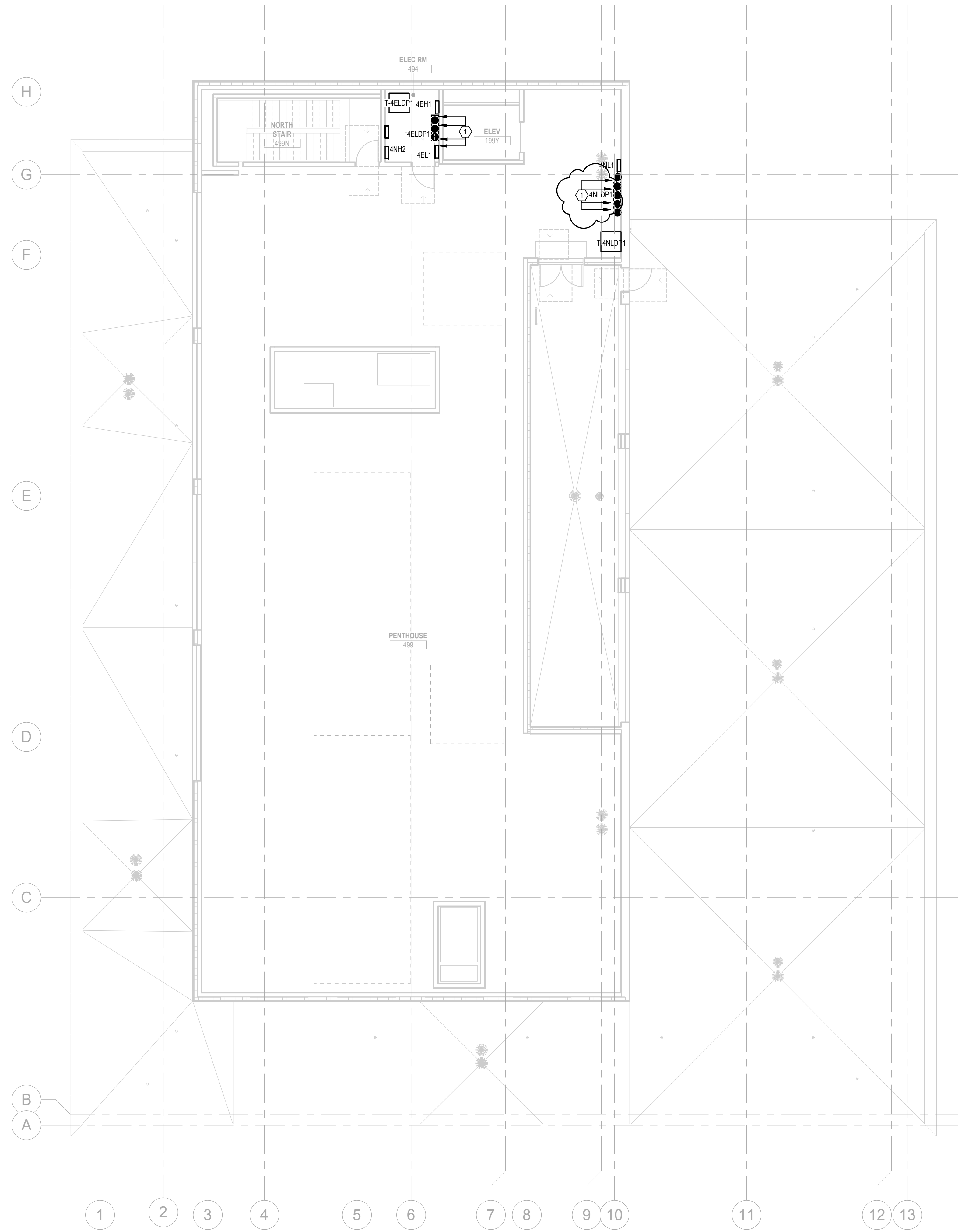
DRAWING NUMBER:
E123
NEW BUILDING



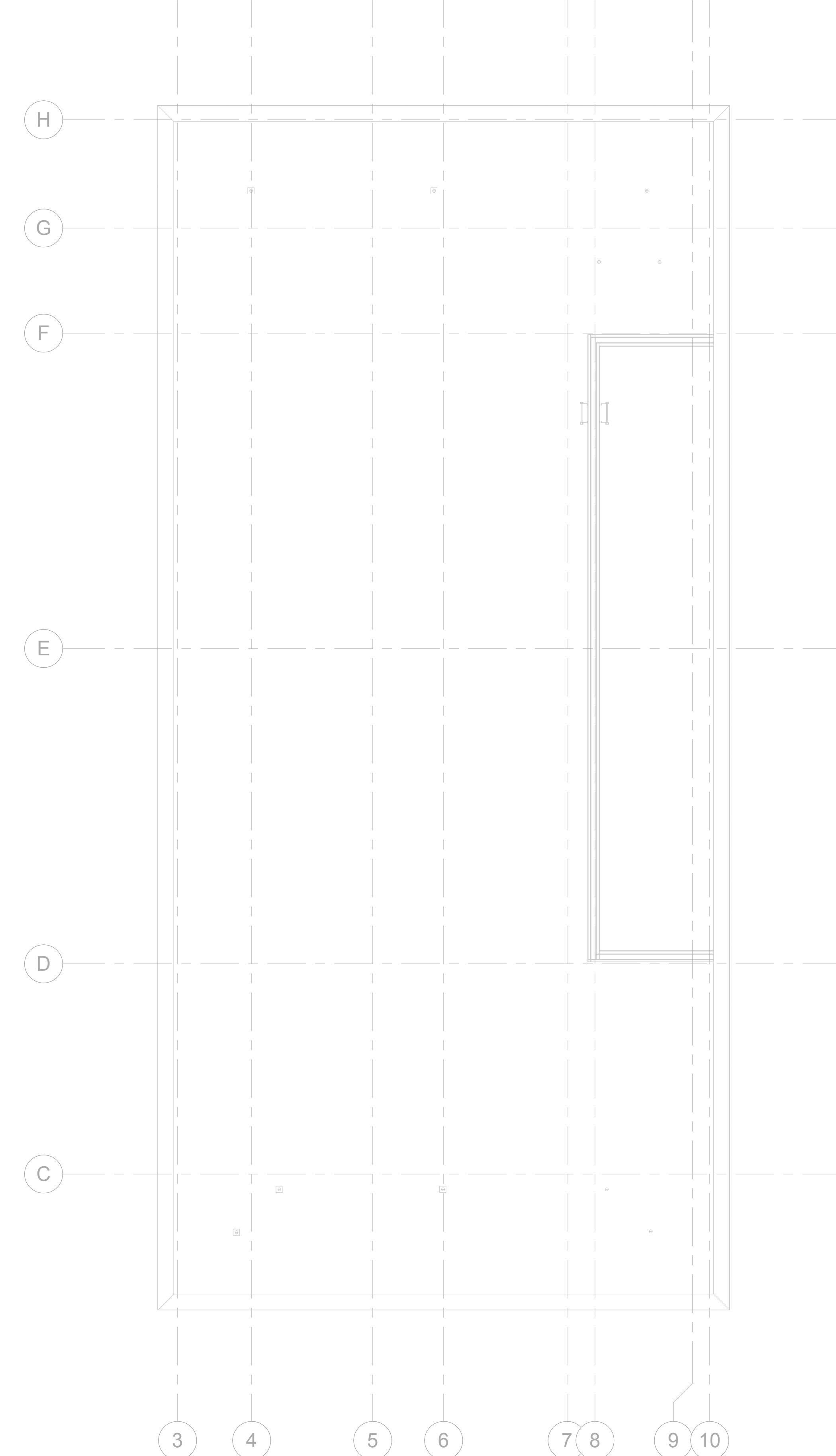
1 THIRD FLOOR CONDUIT PLAN
SCALE: 1/8" = 1'-0"



○ PLAN NOTES
1. CONDUITS RISING TO BELOW FLOOR.



1 4TH FLOOR CONDUIT PLAN
SCALE: 1/8" = 1'-0"



2 ROOF CONDUIT PLAN
SCALE: 1/8" = 1'-0"

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RENOVATION
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BID SET

△ REVISIONS:
1 11.08.24 ADDENDUM 1

DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276
DRAWN BY: JPF
DRAWING TITLE:

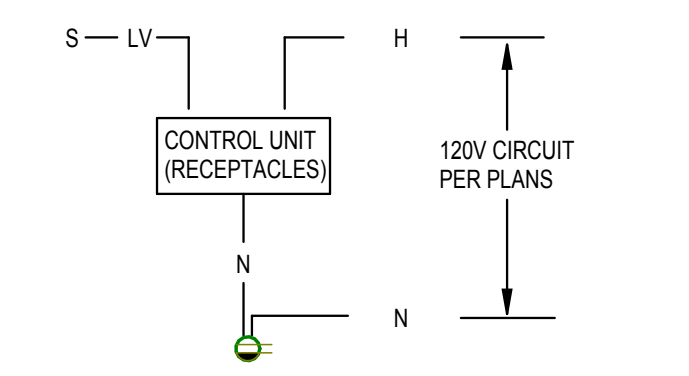
PENTHOUSE AND ROOF CONDUIT PLAN

DRAWING NUMBER:
E124
NEW BUILDING

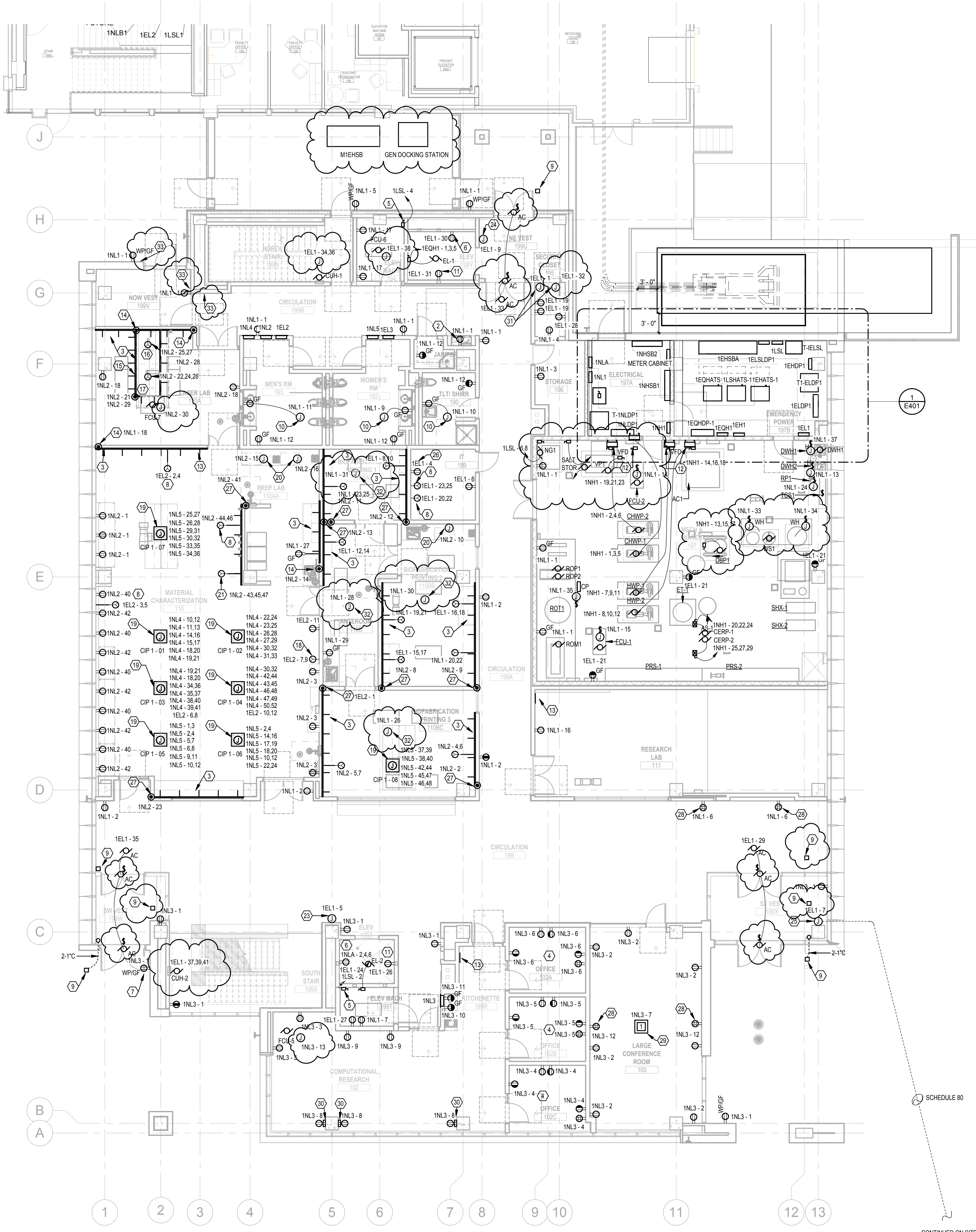


PLAN NOTES

- PROVIDE CONNECTION TO SYSTEMS FURNITURE. PROVIDE 3 - 120V, 20A CIRCUITS, NORMAL BRANCH.
- OUTLET FOR WATER COOLER. PROVIDE GF BREAKER IN PANEL TO SERVE LOAD.
- PROVIDE DUAL CHANNEL RACEWAY, EQUAL TO LEGRAND AL4320. PROVIDE RECEPTACLE EVERY 36" ALONG LENGTH. PROVIDE CIRCUITRY (ONE, TWO, THREE CIRCUITS AS INDICATED). WHERE MULTIPLE CIRCUITS ARE INDICATED, ALTERNATE RECEPTACLES ALONG LENGTH. ANY RECEPTACLE WITHIN SIX FEET OF WATER, PROVIDE OF DEVICE, COORDINATE MOUNTING WITH CASEWORK.
- PROVIDE ADDITIONAL CONTROL UNIT FOR SWITCHING ON/OFF OF LOCAL RECEPTACLES. RECEPTACLES SHALL TURN ON/OFF WITH ROOM LIGHTING. REFER TO DETAIL 2, THIS SHEET.
- 120V CIRCUIT FOR ELEVATOR CAB LIGHTING.
- SIMPLEX RECEPTACLE FOR ELEVATOR SUMP PUMP.
- PROVIDE BLACK COVER WITH SILVER OUTLET.
- 208V, 20A 1PH NEMA L6-20R RECEPTACLES.
- PROVIDE PEDESTAL FOR OPERATOR/CARD READER. COORDINATE REQUIREMENTS WITH EQUIPMENT SUPPLIER AND PROVIDE ACCORDINGLY.
- PROVIDE CIRCUIT FOR AUTOMATIC FAUCETS / FLUSH VALVES. COORDINATE MOUNTING LOCATION WITH ELEVATOR INSTALLER.
- PROVIDE RECEPTACLE FOR MAINTENANCE. COORDINATE MOUNTING LOCATION WITH ELEVATOR INSTALLER.
- VED BY OTHERS. MOUNTED AND WIRED UNDER THIS CONTRACT.
- LAB GROUND BAR PER DETAIL SHEET. CONNECT TO GROUND PER GROUNDING RISER DIAGRAM DETAIL 4, SHEET E504.
- DROP DOWN CHASE FOR CIRCUITS LEADING TO WIREWAY. PROVIDE 1 - 1.5" C FOR LOW VOLTAGE TO WIREWAY.
- WIREWAY TO MOUNT TO OVERHEAD TRAPEZE.
- PROVIDE L14 - 20R DEVICE. MOUNT IN CEILING.
- PROVIDE L16 - 20R DEVICE. MOUNT IN CEILING.
- PROVIDE L14 - 20R DEVICE.
- PROVIDE KEVAUNEE FOUR STATION, 2' X 2' CEILING PANEL WITH CIRCUITRY AS INDICATED. PROVIDE 2 DEVICES / 120V / WITH L5 - 20R CONFIGURATION AND 2 DEVICES / 208V / WITH L14 - 20R CONFIGURATION.
- PROVIDE 120V, 20A CIRCUIT TO FUME HOOD.
- PROVIDE L16 - 20R DEVICE.
- POWER FOR WALL MONITORS.
- POWER FOR EMERGENCY PHONE AND AED.
- POWER FOR EMERGENCY PHONE.
- RUN ABOVE CEILING FROM PANEL TO THIS CORNER. DROP TO BELOW FLOOR AND EXTEND OUTDOORS AS INDICATED.
- PROVIDE OUTLET AS TVSS OUTLET.
- DROP POWER AND DATA DOWN WALL TO FEED WIREWAY. PROVIDE 1 - 1.5" C FOR LOW VOLTAGE TO WIREWAY.
- PROVIDE 20A, 120V CIRCUIT FOR MONITOR. MOUNT AT 6'. COORDINATE LOCATION AND MOUNTING.
- FLOORBOX. COORDINATE MOUNTING WITH TECHNOLOGY FOR ADDITIONAL REQUIREMENTS AND DETAIL. COORDINATE FINAL LOCATION WITH FFE SELECTED.
- PROVIDE DUAL CHANNEL RACEWAY, EQUAL TO LEGRAND AL 4320. PROVIDE RECEPTACLE AT 18" AFF. COORDINATE EXACT LOCATION WITH FFE SELECTED.
- PROVIDE POWER TO SECURITY PANEL.
- 208V, 20A CIRCUIT FOR FAN FILTER UNIT (FFU). COORDINATE EXACT LOCATION IN SPACE AND PROVIDE ACCORDINGLY.
- ACTUATOR ON WALL.



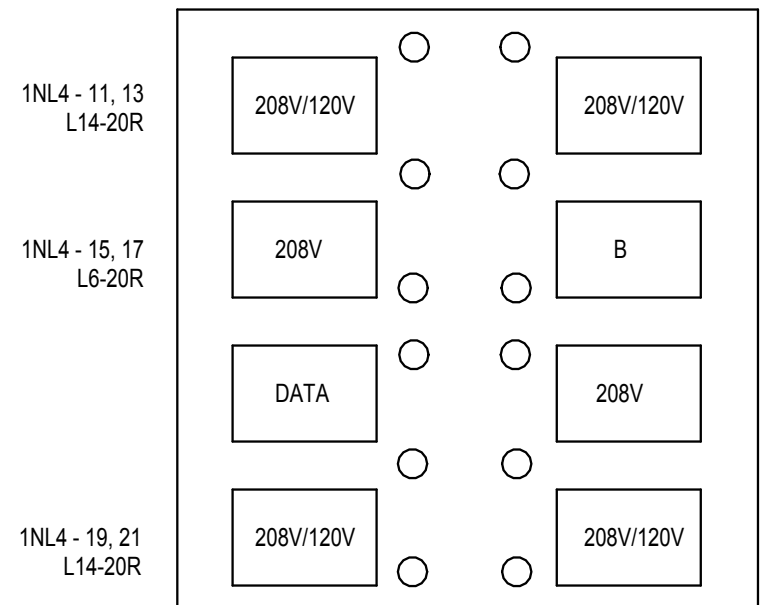
2 RECEPTACLE CONTROL DETAIL
SCALE: NONE



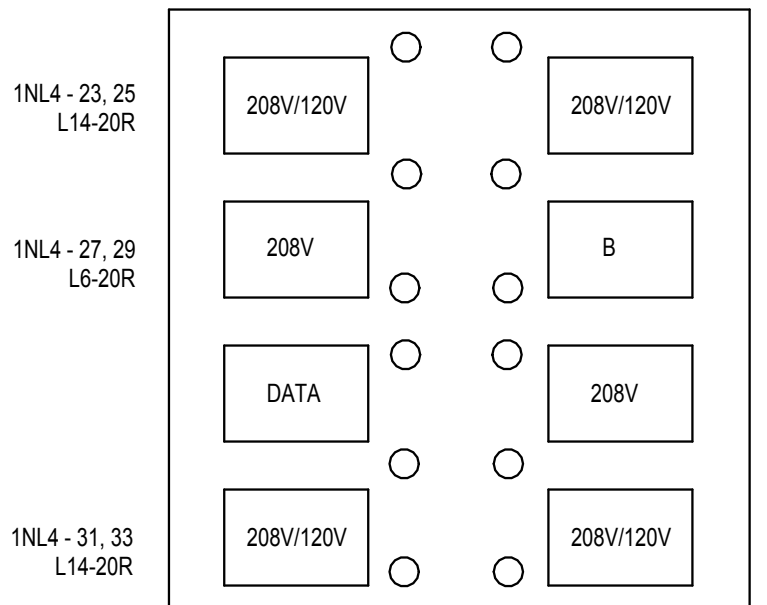
CONTINUED ON SITE PLAN

1 POWER & SYSTEMS LEVEL 01
SCALE: 1/8" = 1'-0"

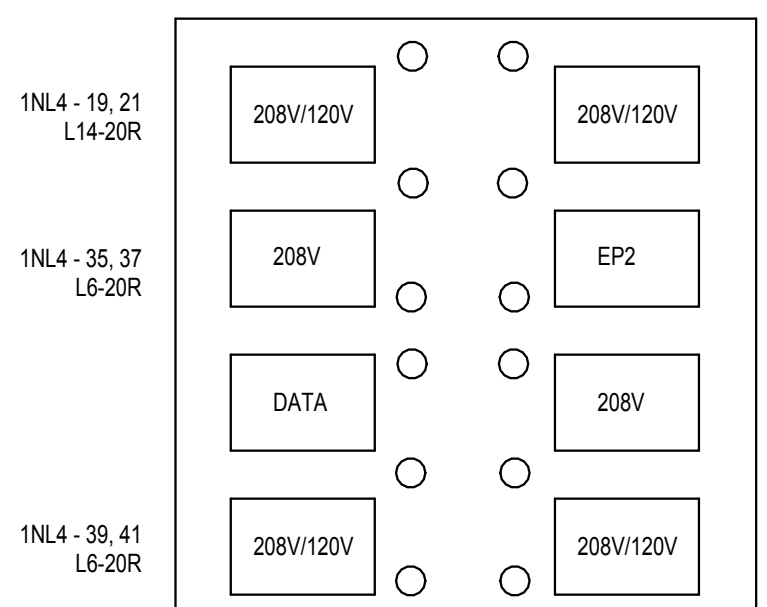
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TYPE C:



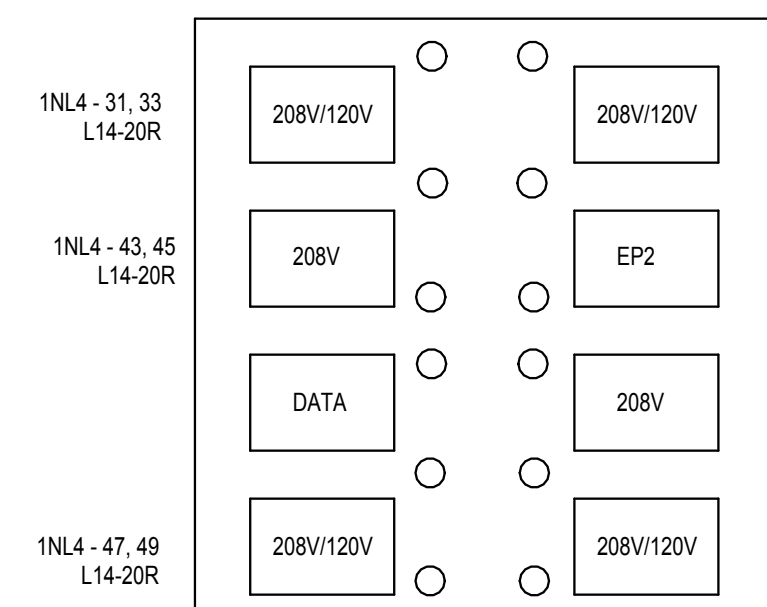
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TYPE C:



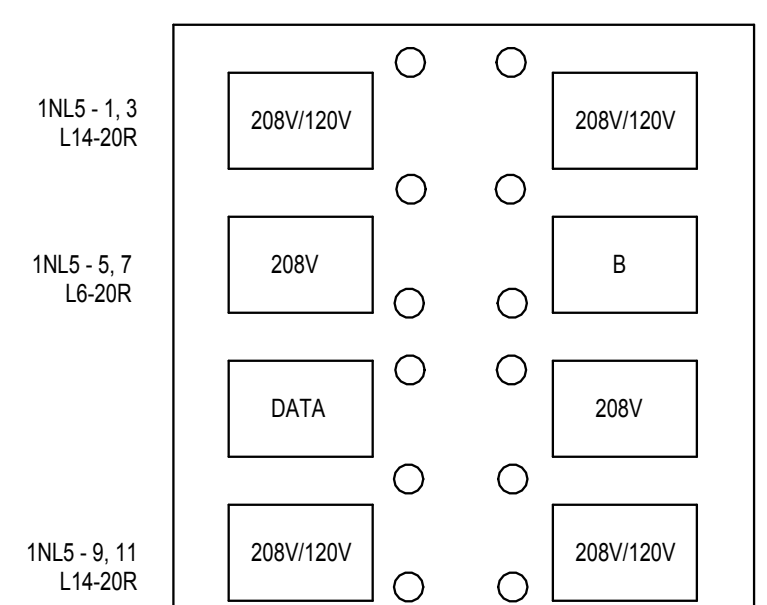
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TYPE D:



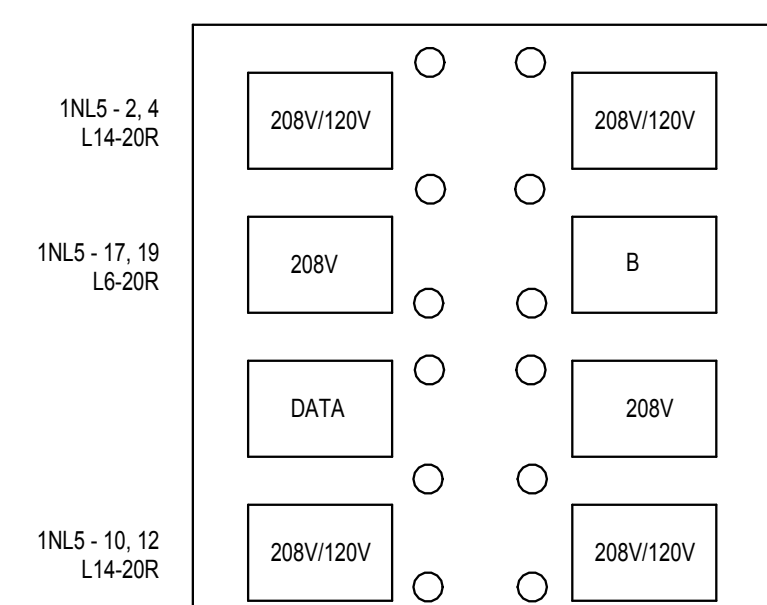
PANEL CIP 1 - 04:
TYPE D:



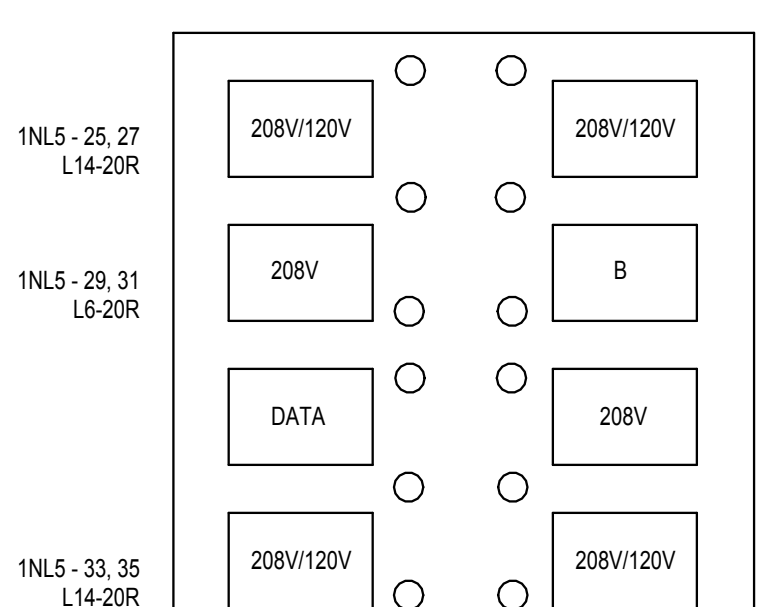
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TYPE C:



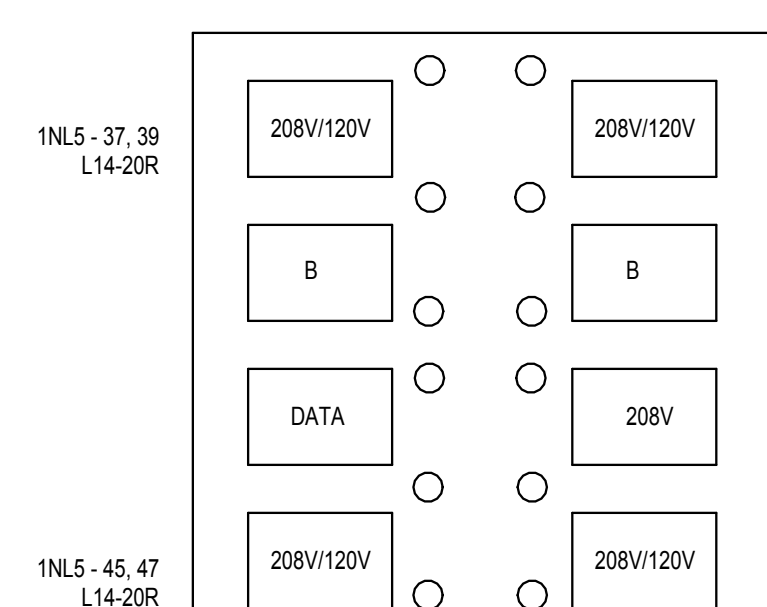
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TYPE C:



PANEL CIP 1 - 07:
TYPE A:



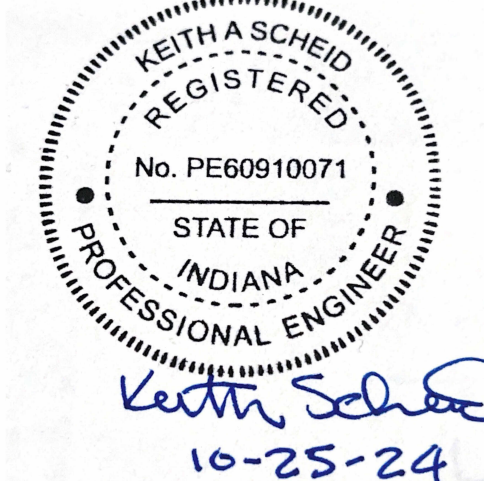
PANEL CIP 1 - 08:
TYPE B:



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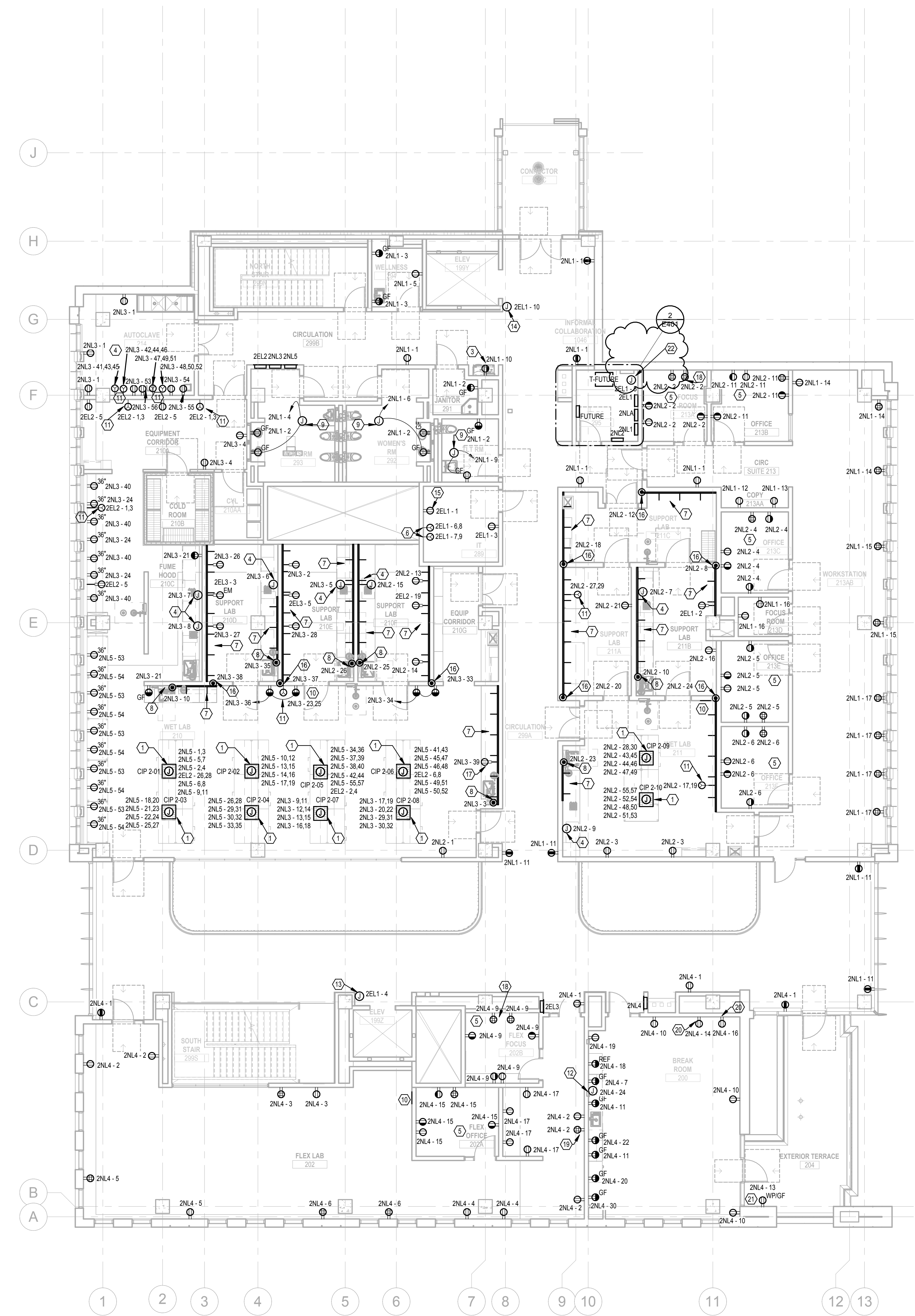


PROJECT NO. 2023-06075



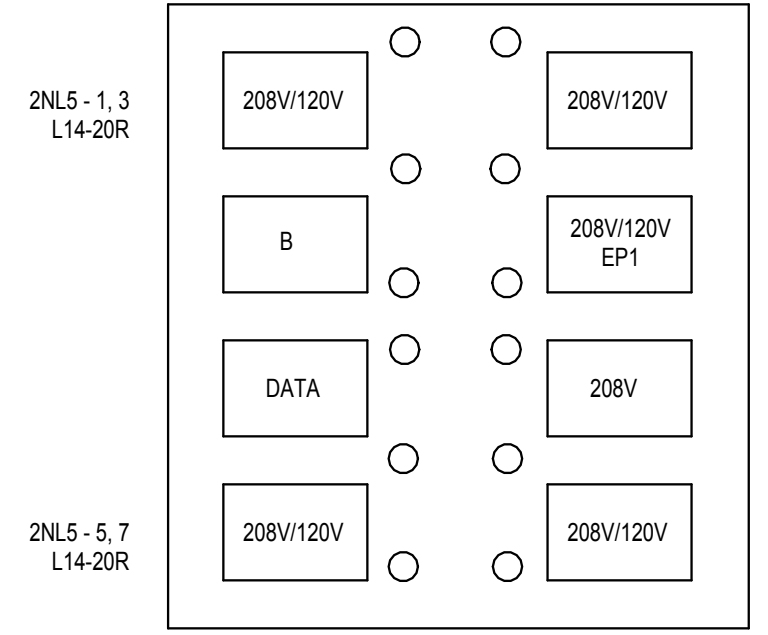
PLAN NOTES

- 2 X 2 CEILING PANEL WITH CIRCUITRY AS INDICATED.
- PROVIDE CONNECTION TO SYSTEMS FURNITURE. PROVIDE QUANTITY OF CIRCUITS INDICATED.
- OUTLET FOR WATER COOLER. PROVIDE GF BREAKER IN PANEL TO SERVE LOAD.
- PROVIDE CONNECTION TO FUME HOOD.
- PROVIDE ADDITIONAL CONTROL UNIT FOR SWITCHING ON/OFF OF LOCAL RECEPTACLES. RECEPTACLES SHALL TURN OFF WITH ROOM LIGHTING. REFER TO DETAIL 2, SHEET E221.
- 208V, 20A 1PH NEMA L8-20R RECEPTACLES.
- PROVIDE BLACK, DUAL CHANNEL RACEWAY, SIMILAR TO LEGRAND AL420. PROVIDE RECEPTACLE EVERY 36" ALONG LENGTH. PROVIDE CIRCUITRY ONE, TWO, THREE CIRCUITS AS INDICATED. WHERE MULTIPLE CIRCUITS ARE INDICATED, ALTERNATE RECEPTACLES ALONG LENGTH. ANY RECEPTACLE WITHIN SIX FEET OF A WATER, PROVIDE GF DEVICE. COORDINATE MOUNTING WITH CASEWORK.
- DROP FEED IN WALL TO SERVE WIREWAY. PROVIDE 1.5" FC FOR LOW VOLTAGE TO WIREWAY.
- PROVIDE CIRCUIT FOR AUTOMATIC FAUCETS / FLUSHVALVES. COORDINATE ROUGH IN WITH OTHER TRADES AND ROUGH IN ACCORDINGLY. CONNECT SAME CIRCUIT TO RECEPTACLE UNDER SINK FOR FAUCET TRANSFORMER.
- LAB GROUND BAR PER DETAIL SHEET. CONNECT TO GROUND PER GROUNDING RISER DIAGRAM. DETAIL 4, SHEET E503.
- PROVIDE L14-20R DEVICE.
- CIRCUIT FOR DISHWASHER.
- POWER FOR EMERGENCY PHONE AND AED.
- POWER FOR EMERGENCY PHONE.
- PROVIDE OUTLET AS TVSS OUTLET.
- DROP POWER AND DATA DOWN WALL TO FEED WIREWAY. PROVIDE 1 - 1.5" C FOR LOW VOLTAGE TO WIREWAY.
- MOUNT DEVICE UNDER COUNTER.
- MOUNT DEVICE AT 48" COORDINATE MOUNTING WITH TECHNOLOGY FOR DETAILS.
- MOUNT DEVICE AT 60" COORDINATE MOUNTING WITH TECHNOLOGY FOR DETAILS.
- OUTLET FOR VENDING. COORDINATE LOCATION WITH FFE SELECTED.
- PROVIDE WITNESS COVER PLATE.
- PROVIDE 120V, 20A POWER TO BAS CONTROLLER.

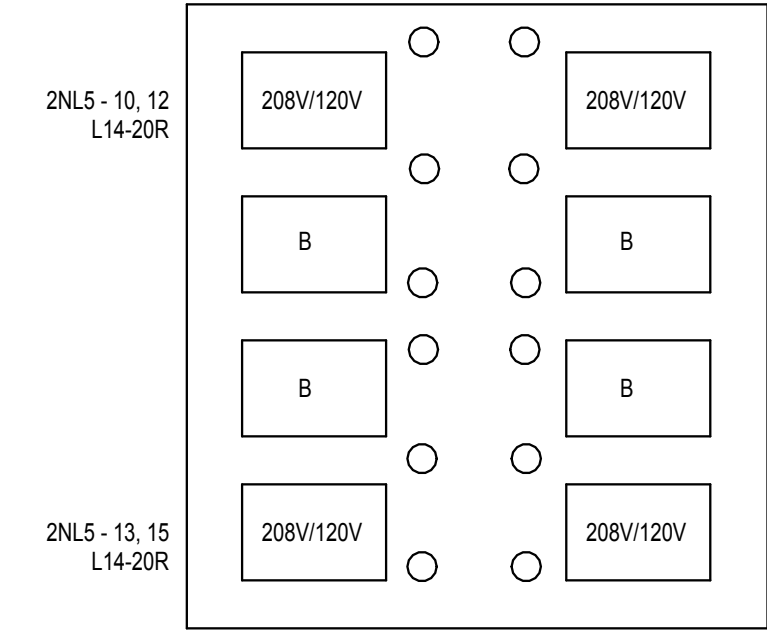


1 POWER & SYSTEMS LEVEL 02
SCALE: 1/8" = 1'-0"

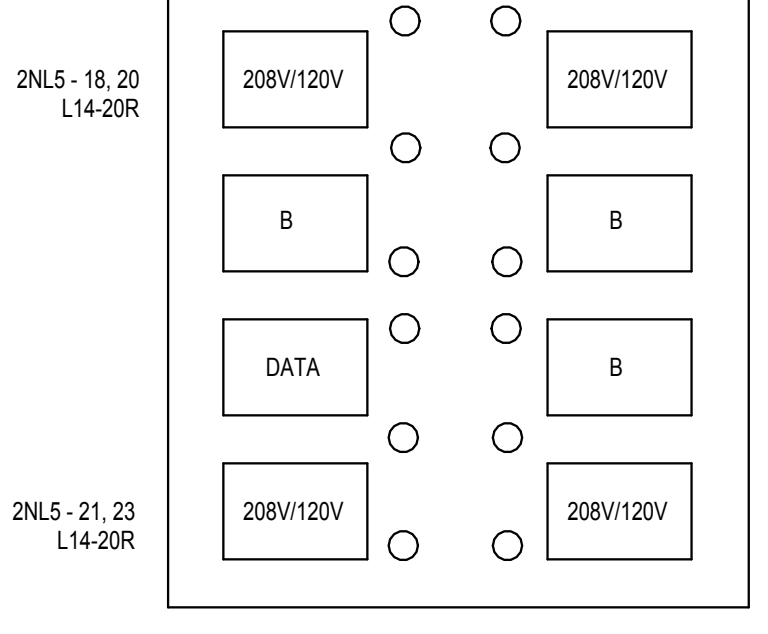
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TYPE E:**



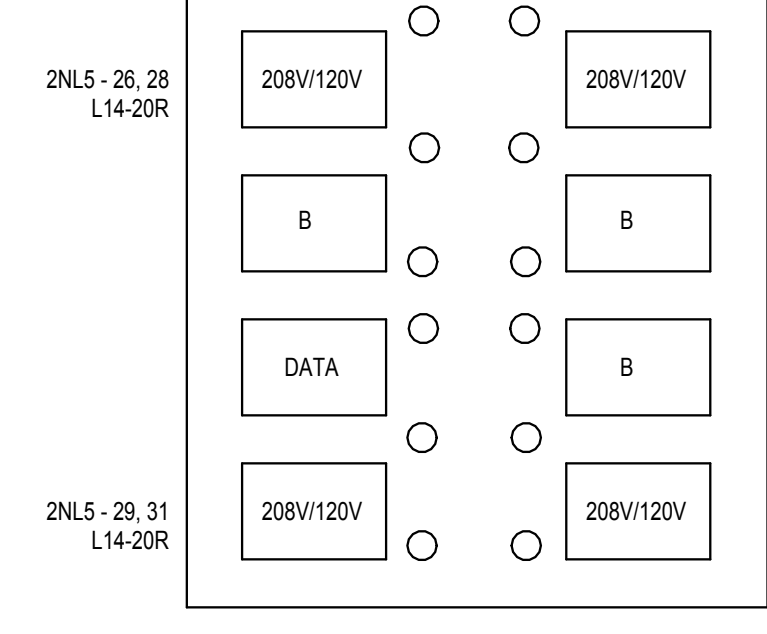
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TYPE G:**



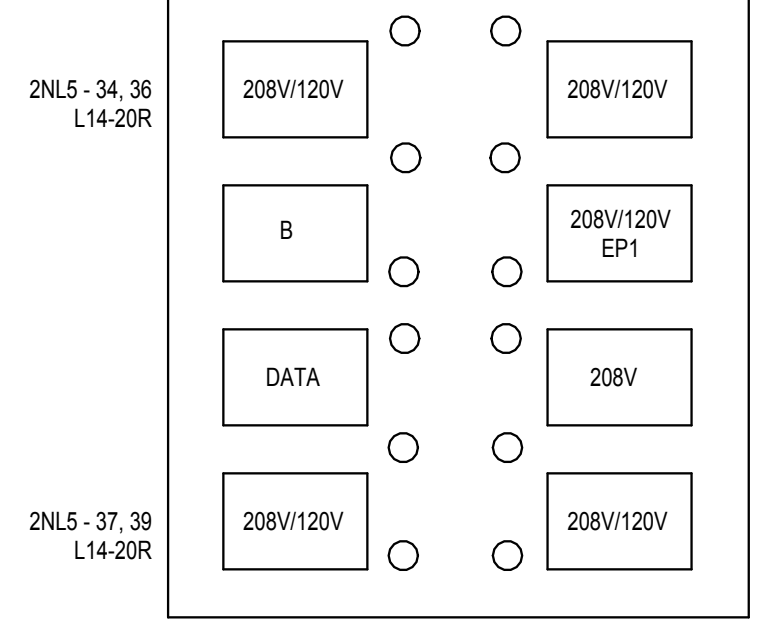
**PANEL CIP 2 - 03:
TYPE F:**



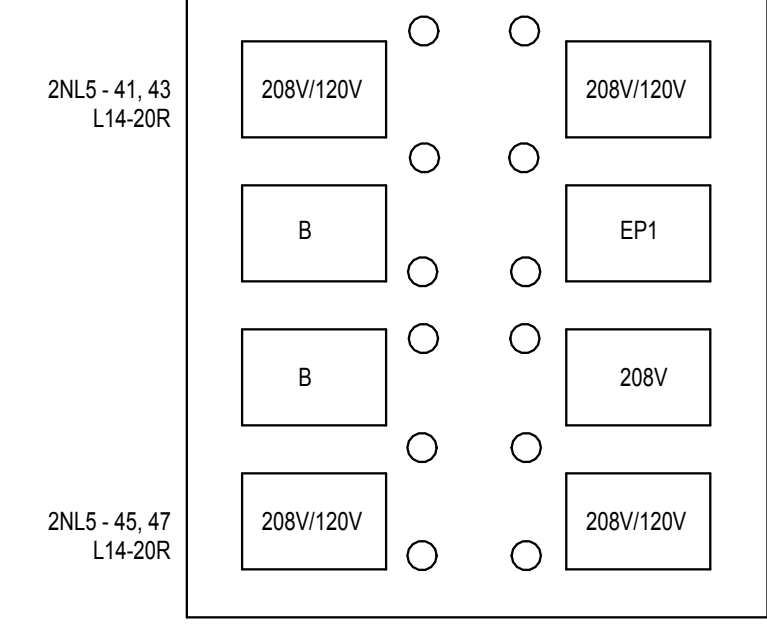
**PANEL CIP 2 - 04:
TYPE F:**



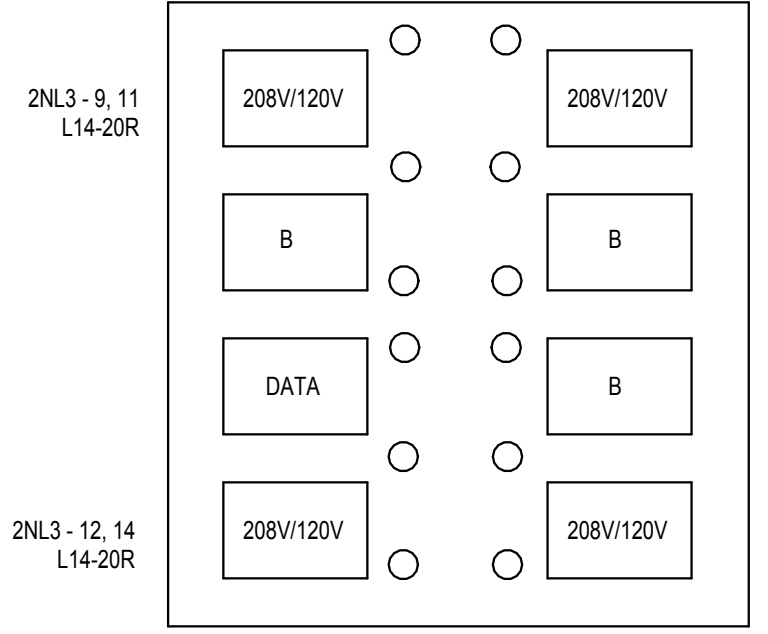
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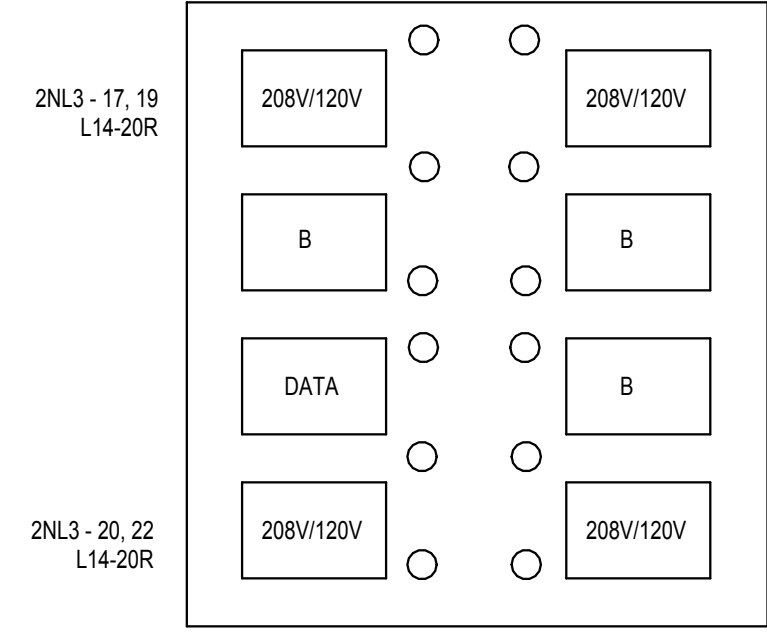
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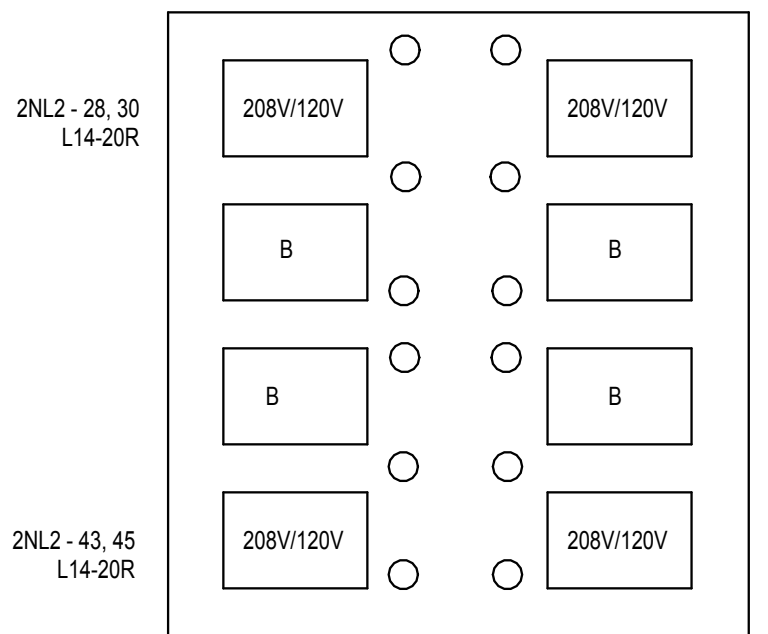
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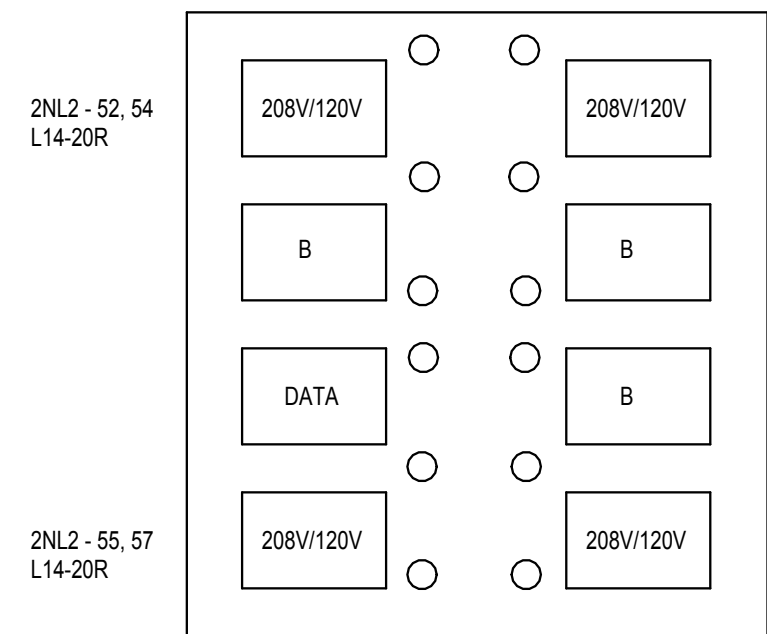
**PANEL CIP 2 - 08:
TYPE F:**



**PANEL CIP 2 - 09:
TYPE H:**



**PANEL CIP 2 - 10:
TYPE F:**



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1 11.08.24 ADDENDUM 1

DATE:
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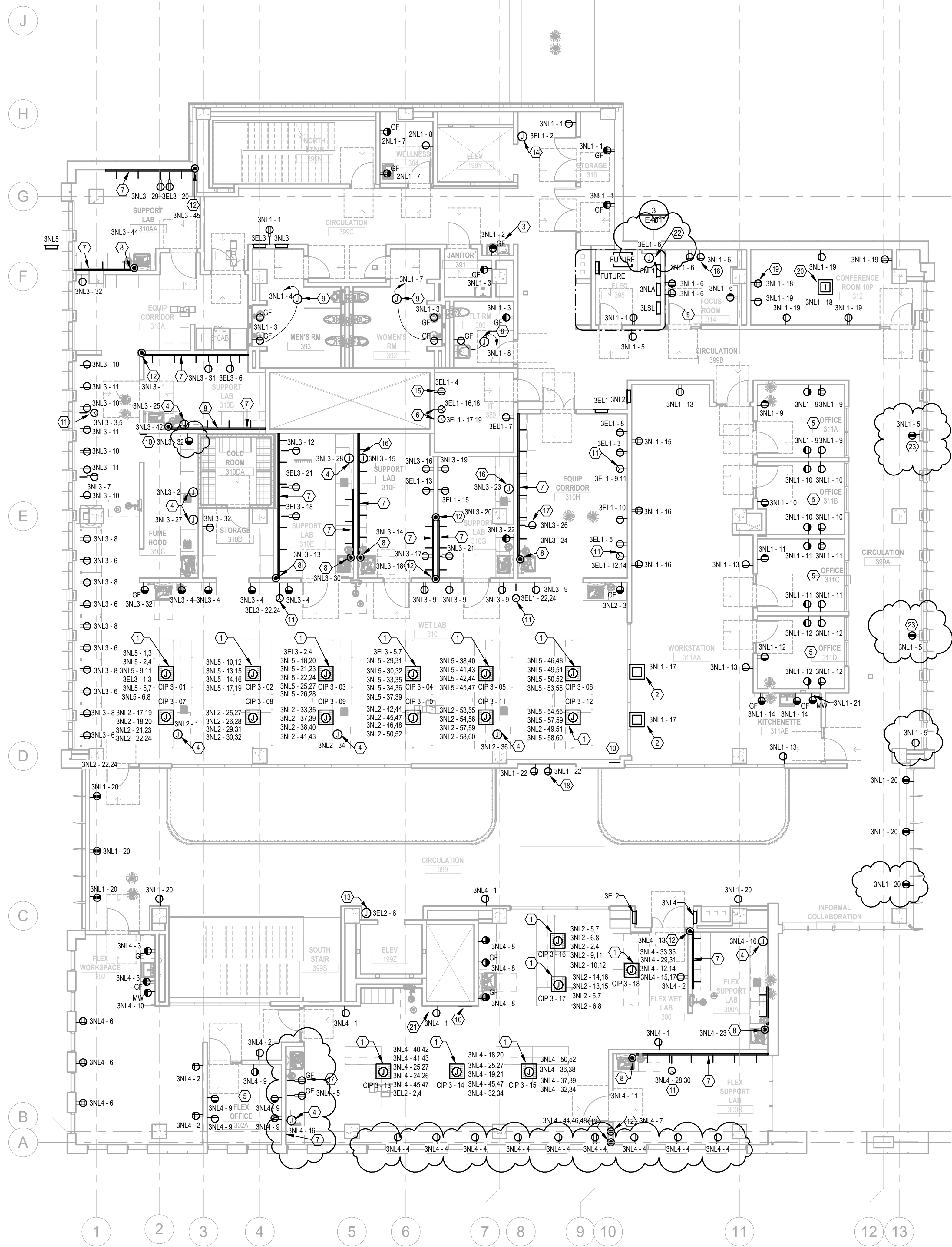
**SECOND FLOOR
ELECTRICAL
POWER PLAN**

DRAWING NUMBER:
E222
NEW BUILDING



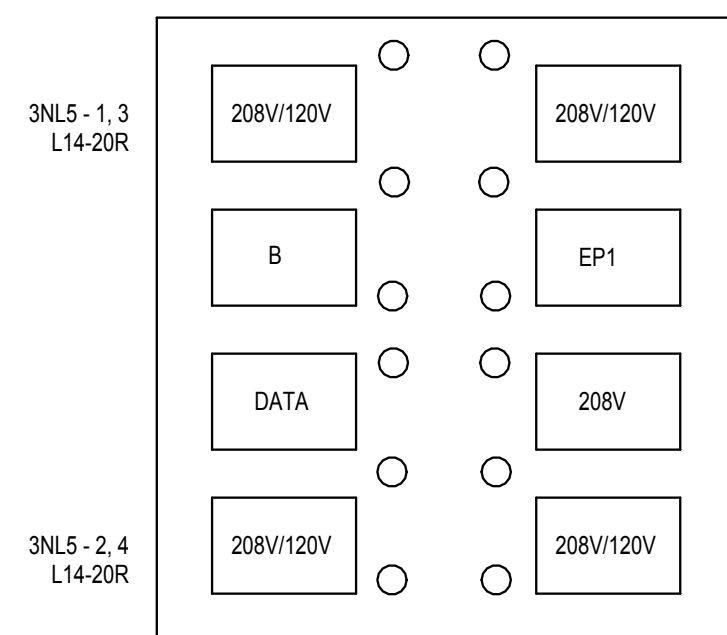
PLAN NOTES

- 2' X 2' CEILING PANEL WITH CIRCUITRY AS INDICATED.
- PROVIDE FIRE RATED POKE THROUGH TO SERVE TABLES.
- OUTLET FOR WATER COOLER. PROVIDE GF BREAKER IN PANEL TO SERVE LOAD.
- PROVIDE CONNECTION TO FUME HOOD.
- PROVIDE ADDITIONAL CONTROL UNIT FOR SWITCHING ON/OFF OF LOCAL RECEPTACLES. RECEPTACLES SHALL TURN ON/OFF WITH ROOM LIGHTING. REFER TO DETAIL 1, THIS SHEET.
- 208V, 20A 1PH NEMA L6-20R RECEPTACLES.
- PROVIDE DUAL CHANNEL RACEWAY SIMILAR TO LEGRAND ALA 4800. PROVIDE RECEPTACLE EVERY 36" ALONG LENGTH. PROVIDE CIRCUITRY (ONE, TWO, THREE CIRCUITS AS INDICATED). WHERE MULTIPLE CIRCUITS ARE INDICATED, ALTERNATE RECEPTACLES ALONG LENGTH. ANY RECEPTACLE WITHIN SIX FEET OF A WATER, PROVIDE GF DEVICE. COORDINATE MOUNTING WITH CASEWORK.
- DROP FEED IN CHASE TO SERVE WIREWAY. PROVIDE 1.5'C FOR LOW VOLTAGE TO WIREWAY.
- PROVIDE CIRCUIT FOR AUTOMATIC FAUCETS/FLUSH VALVES. COORDINATE ROUGH IN WITH OTHER TRADES AND ROUGH IN ACCORDINGLY. CONNECT SAME CIRCUIT TO RECEPTACLE UNDER SINK FOR FAUCET TRANSFORMER.
- LAB GROUND BAR PER DETAIL SHEET. CONNECT TO GROUND PER GROUNDING RISER DIAGRAM. DETAIL 4, SHEET E503.
- PROVIDE L14-20R DEVICE.
- DROP FEED IN WALL TO SERVE WIREWAY. PROVIDE 1.5'C FOR LOW VOLTAGE TO WIREWAY.
- POWER TO EMERGENCY PHONE AND AED.
- POWER TO EMERGENCY PHONE.
- PROVIDE OUTLET AS TVSS OUTLET.
- FUME HOOD IS FUTURE. STOP CIRCUIT ABOVE CEILING IN JUNCTION BOX. LABEL 'FUTURE FUME HOOD' WITH CIRCUIT NUMBER ON JUNCTION BOX.
- MOUNT DEVICE UNDER COUNTER FOR EQUIPMENT CONNECTION.
- MOUNT DEVICE AT 48". COORDINATE WITH TECHNOLOGY FOR DETAILS.
- MOUNT DEVICE AT 60". COORDINATE WITH TECHNOLOGY FOR DETAILS.
- FLOOR BOX. COORDINATE MOUNTING WITH TECHNOLOGY FOR ADDITIONAL REQUIREMENTS AND PERMITS.
- MOUNT DEVICE WITH FIRE RATED BACKING IN WALL.
- PROVIDE 120V, 20A POWER TO BAS CONTROLLER.
- COORDINATE MOUNTING HEIGHT OF DEVICE WITH PER PACKAGE.

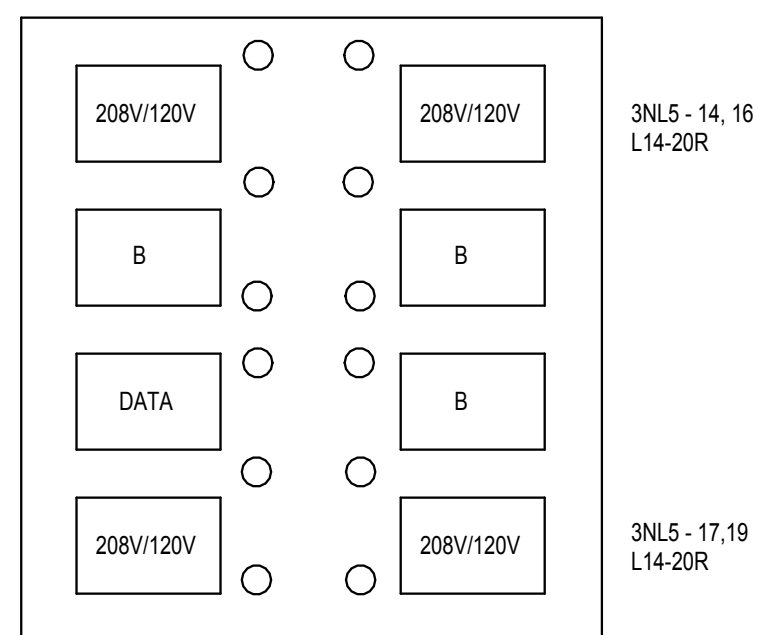


POWER & SYSTEMS LEVEL 03
SCALE: 1/8" = 1'-0"

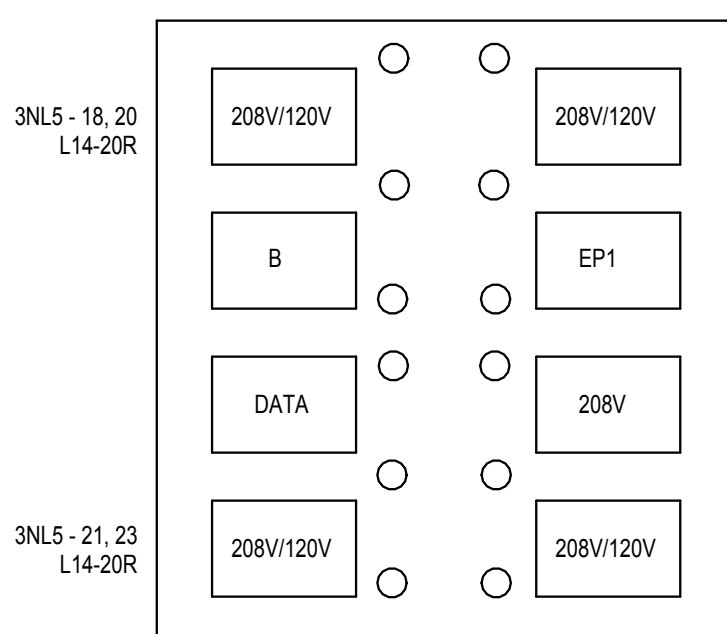
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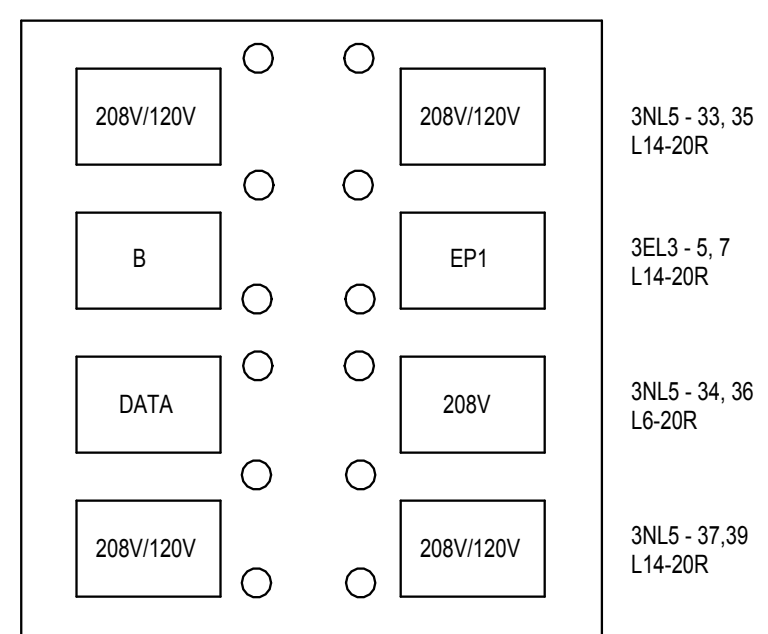
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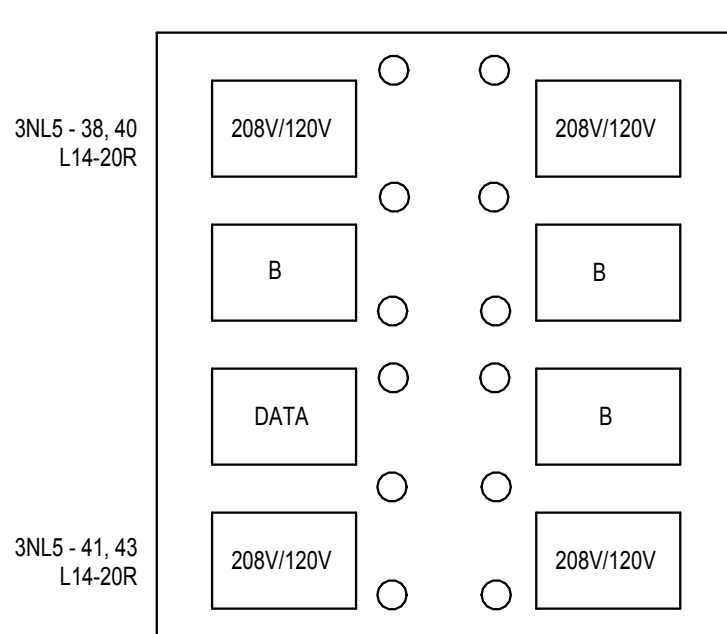
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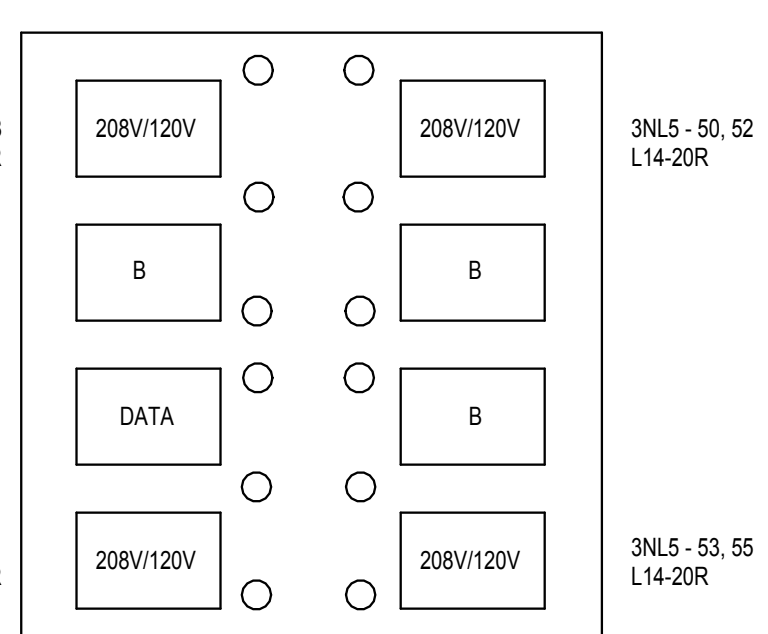
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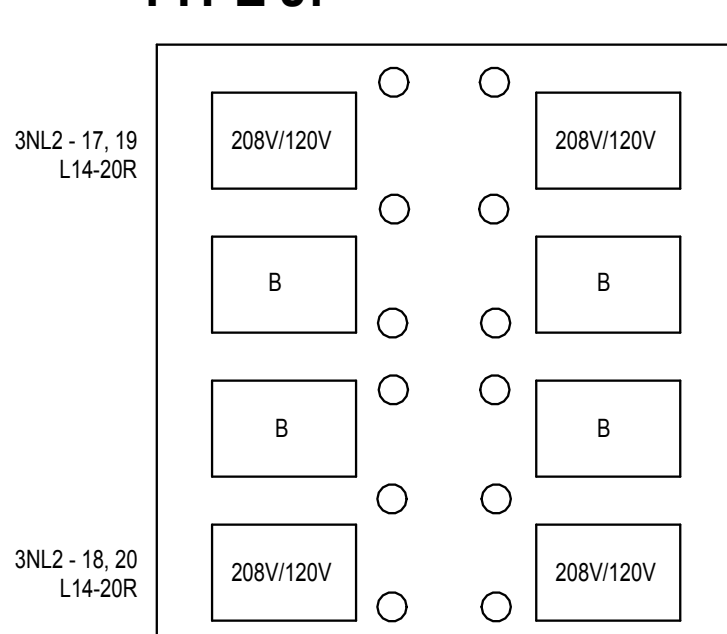
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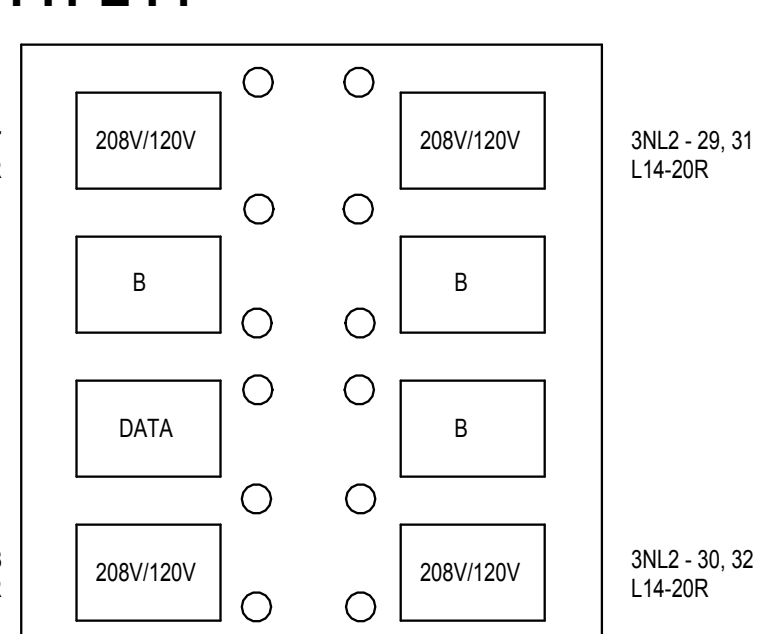
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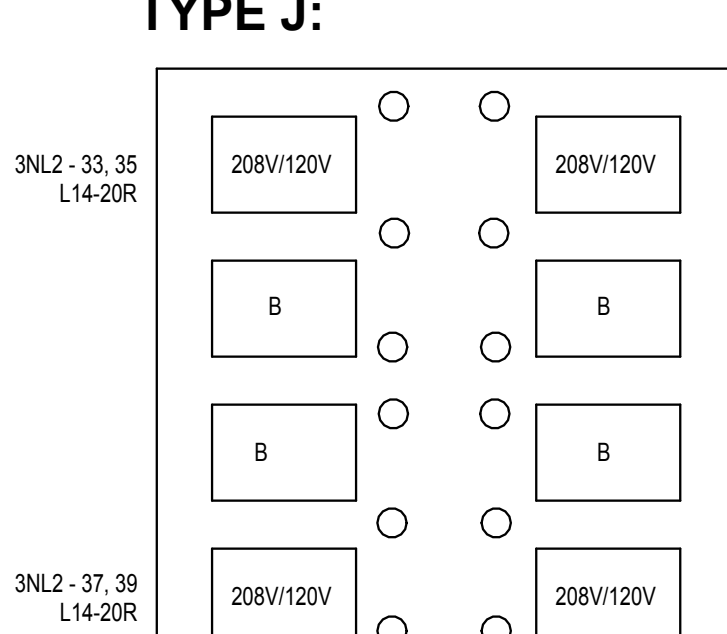
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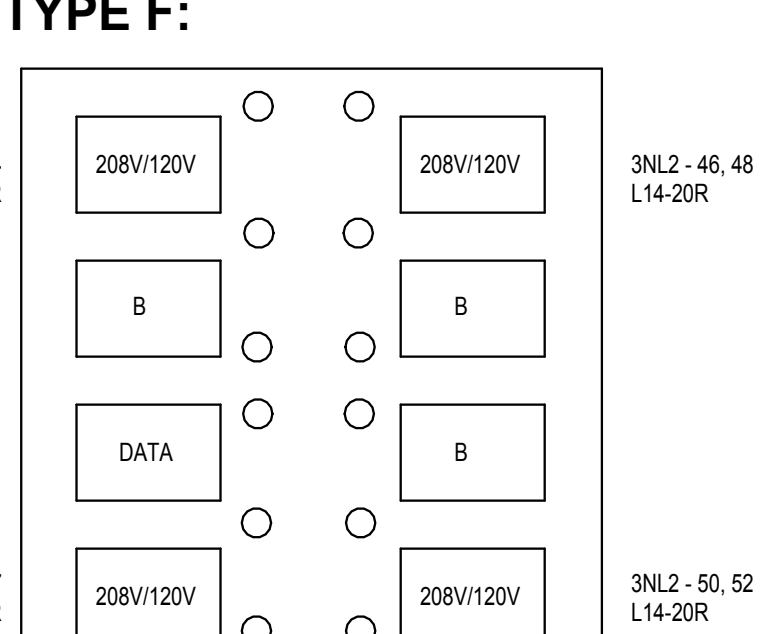
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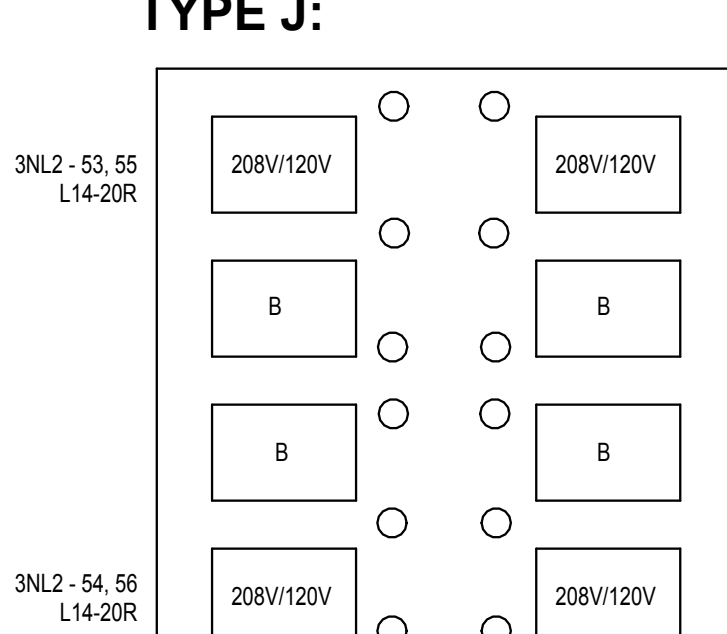
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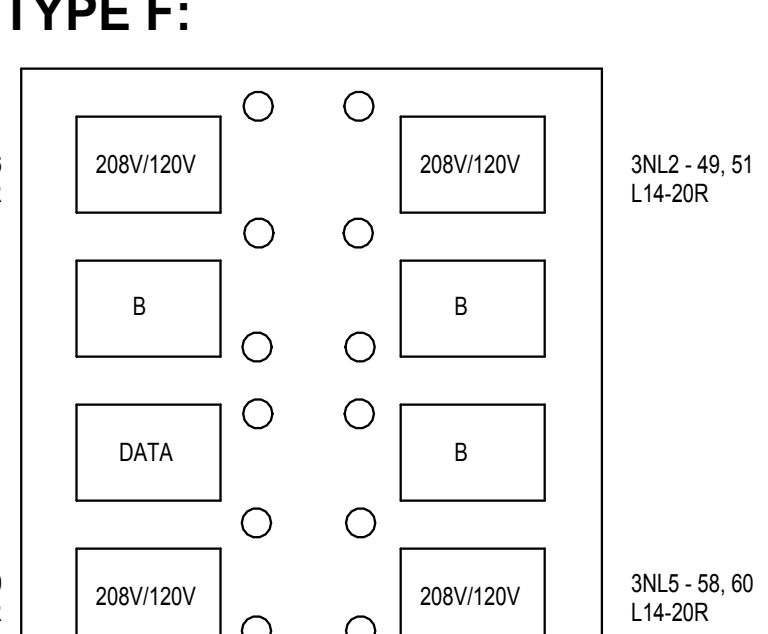
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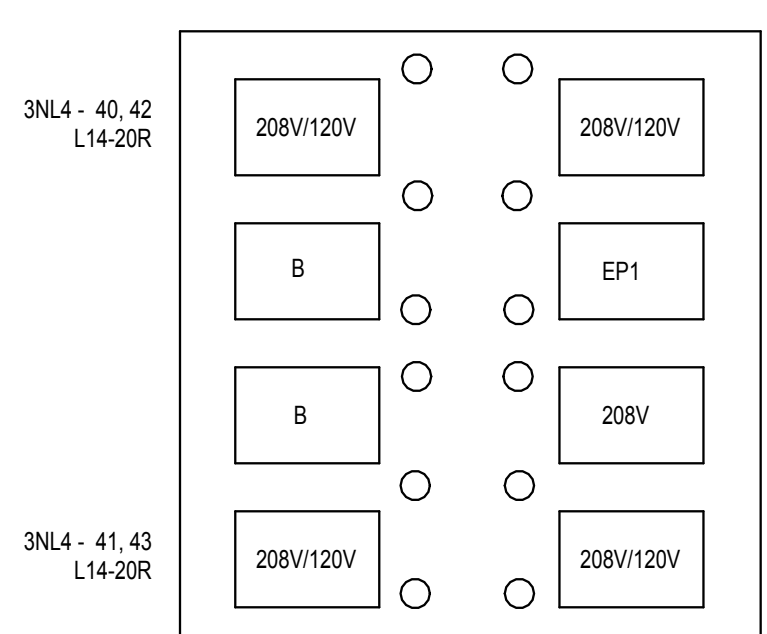
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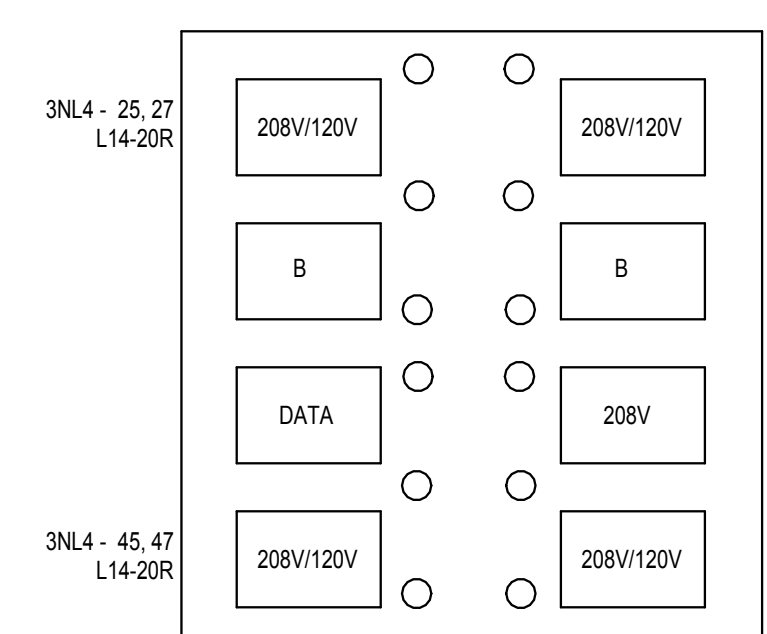
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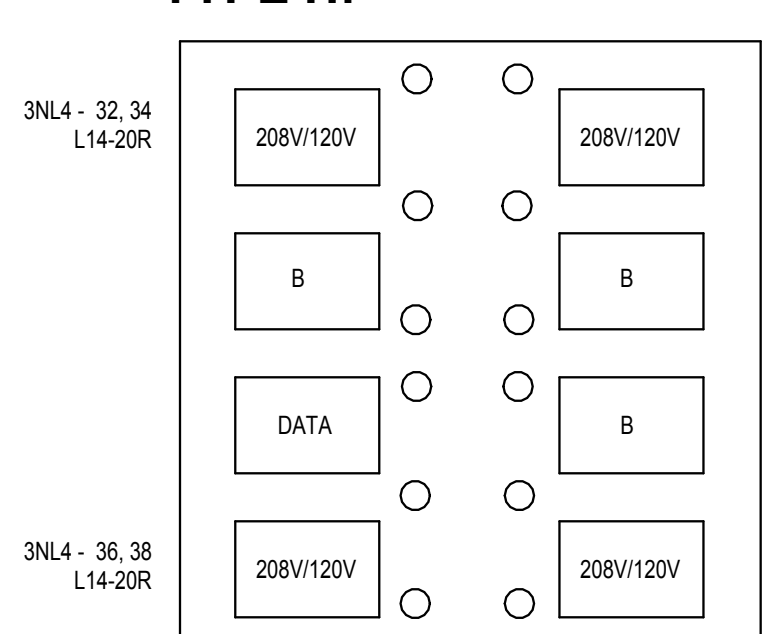
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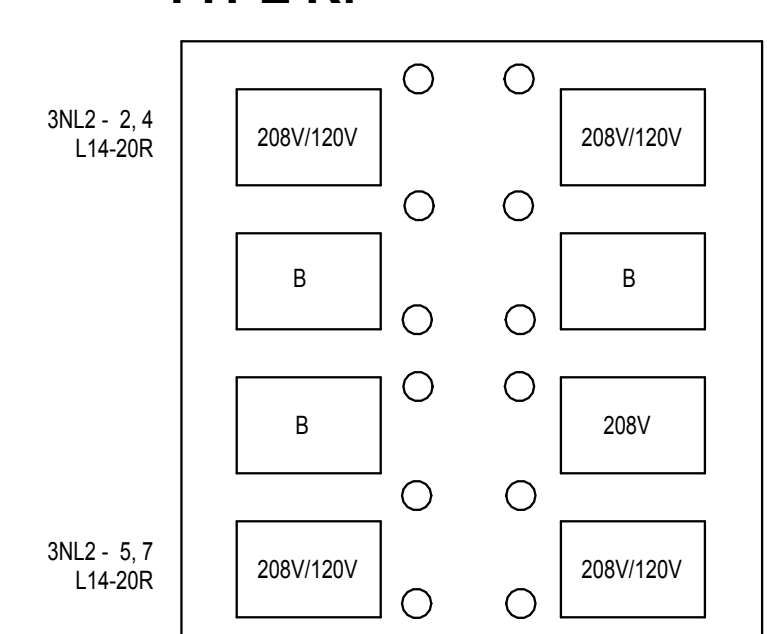
PANEL CIP 3 - 14: TYPE B:



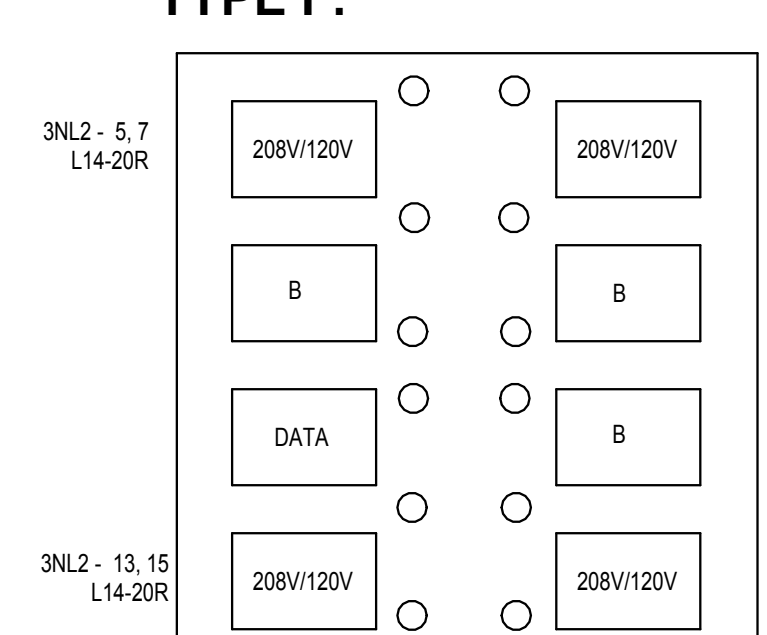
PANEL CIP 3 - 15: TYPE H:



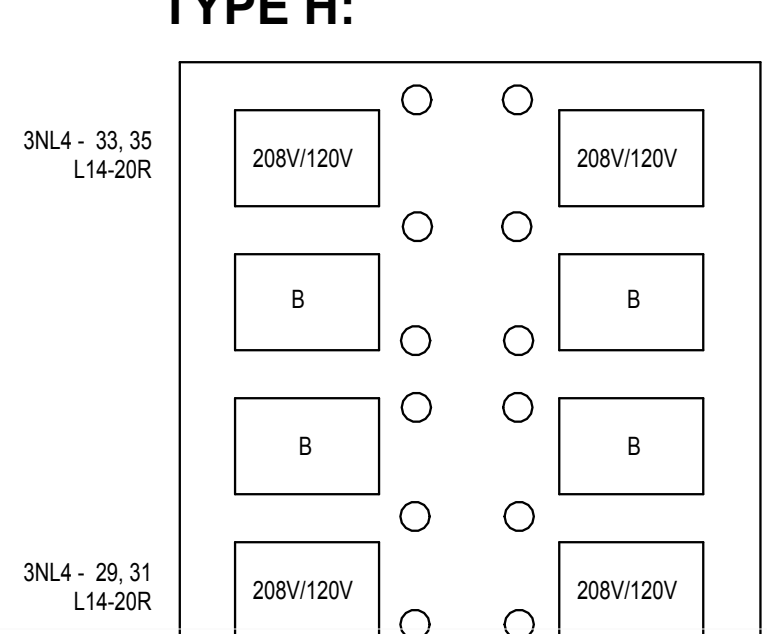
PANEL CIP 3 - 16: TYPE K:



PANEL CIP 3 - 17: TYPE F:



PANEL CIP 3 - 18: TYPE H:

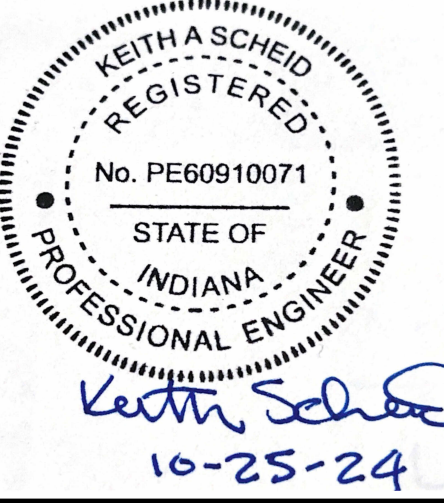
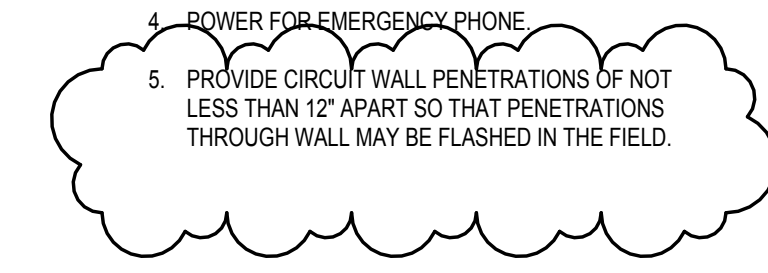


GENERAL NOTES

A. MOUNT ALL RECEPTACLES ON THIS FLOOR AT 2' AFF.

PLAN NOTES

1. SINGLE POINT CONNECTION TO UNIT.
2. PROVIDE 120V CIRCUIT TO INTERNAL LIGHTING WITHIN UNIT. COORDINATE ROUGH IN LOCATION WITH OTHER TRADES.
3. VFD PROVIDED BY OTHERS. EC TO MOUNT AND WIRE.
4. POWER FOR EMERGENCY PHONE.
5. PROVIDE CIRCUIT WALL PENETRATIONS OF NOT LESS THAN 12" APART SO THAT PENETRATIONS THROUGH WALL MAY BE FLASHED IN THE FIELD.



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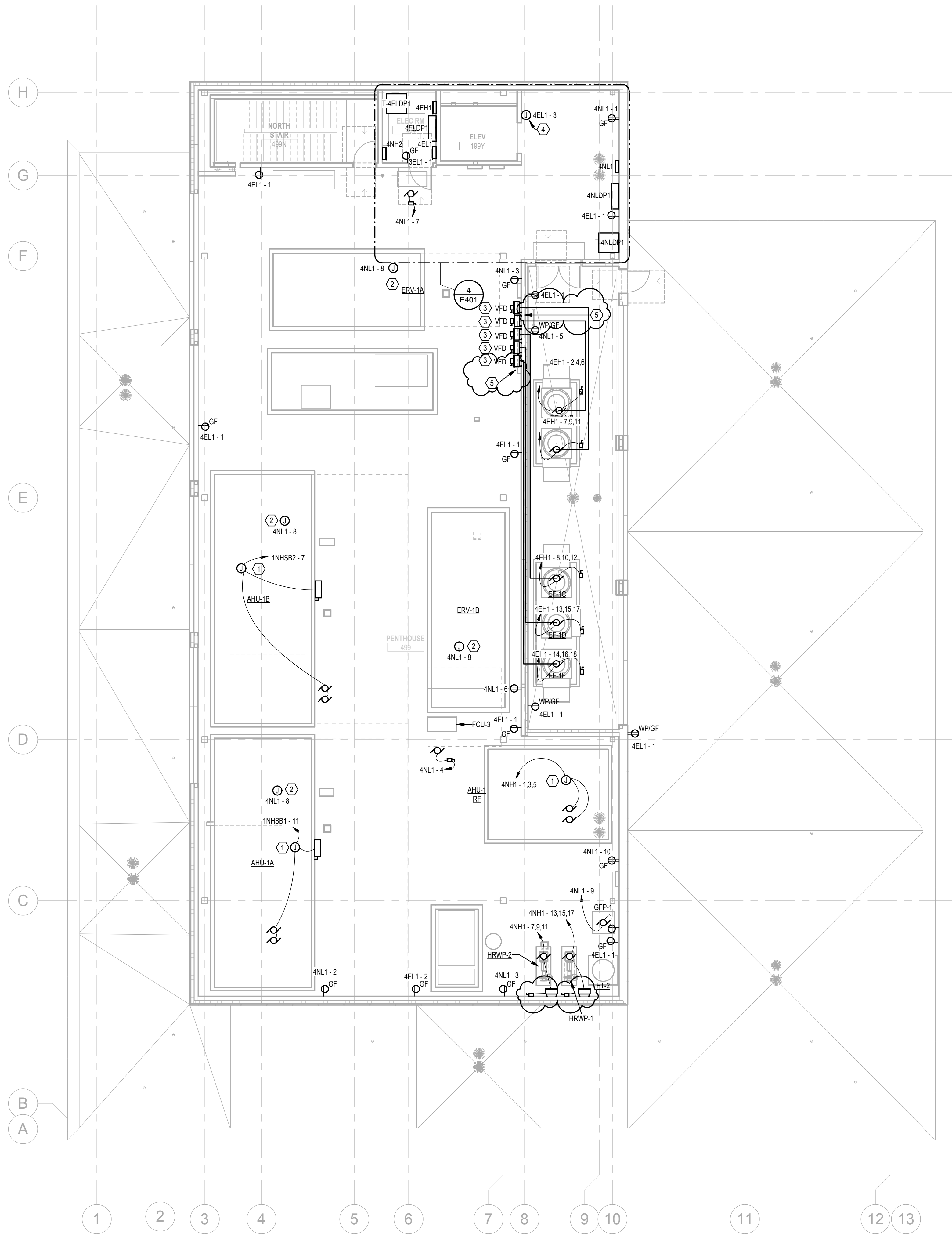
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1 11.08.24 ADDENDUM 1

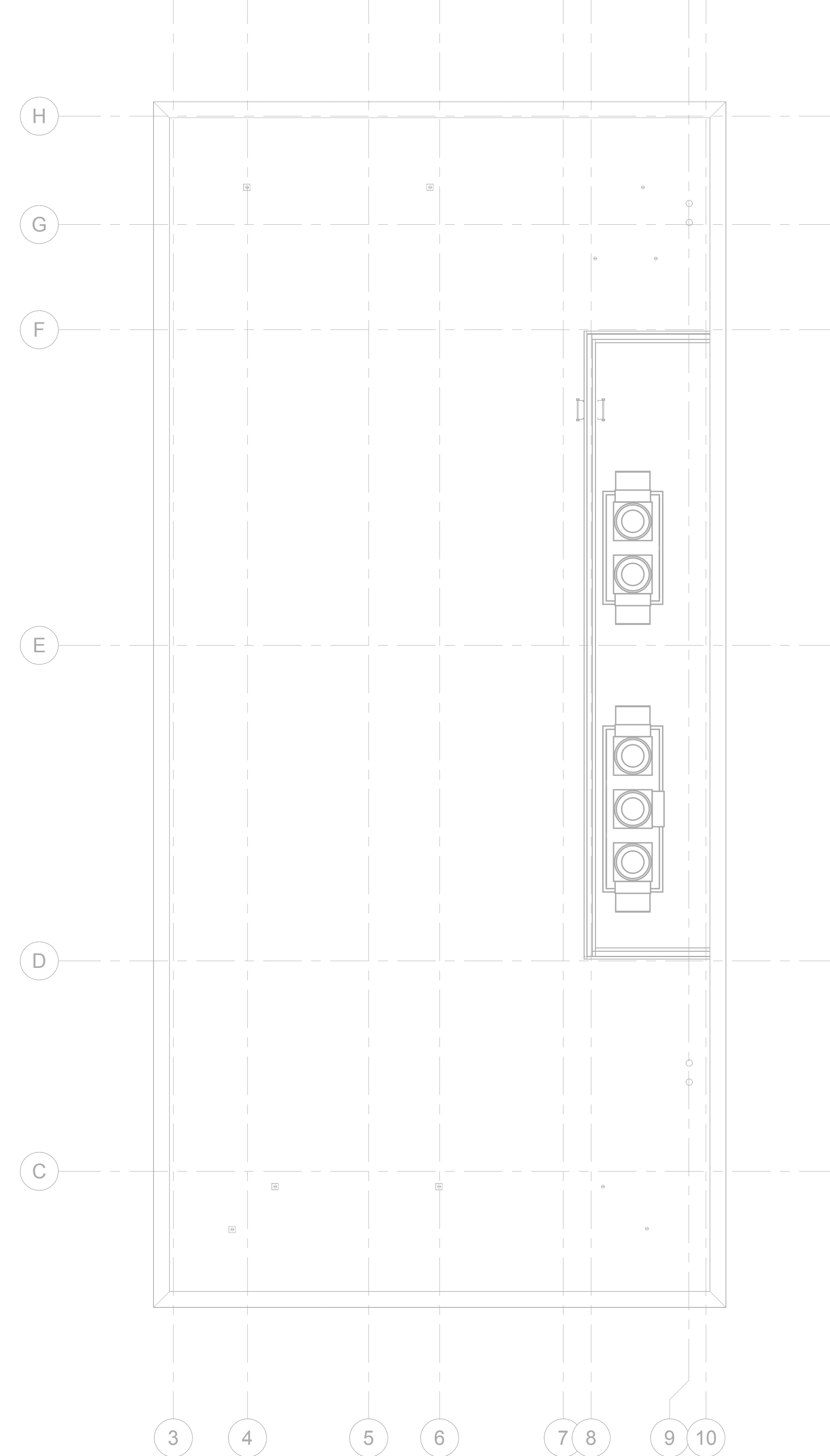
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10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276
DRAWN BY:
JPF
DRAWING TITLE:

**PENTHOUSE
AND ROOF
ELECTRICAL
POWER PLAN**

DRAWING NUMBER:
E224
NEW BUILDING



1 POWER & SYSTEMS LEVEL 04
SCALE: 1/8" = 1'-0"



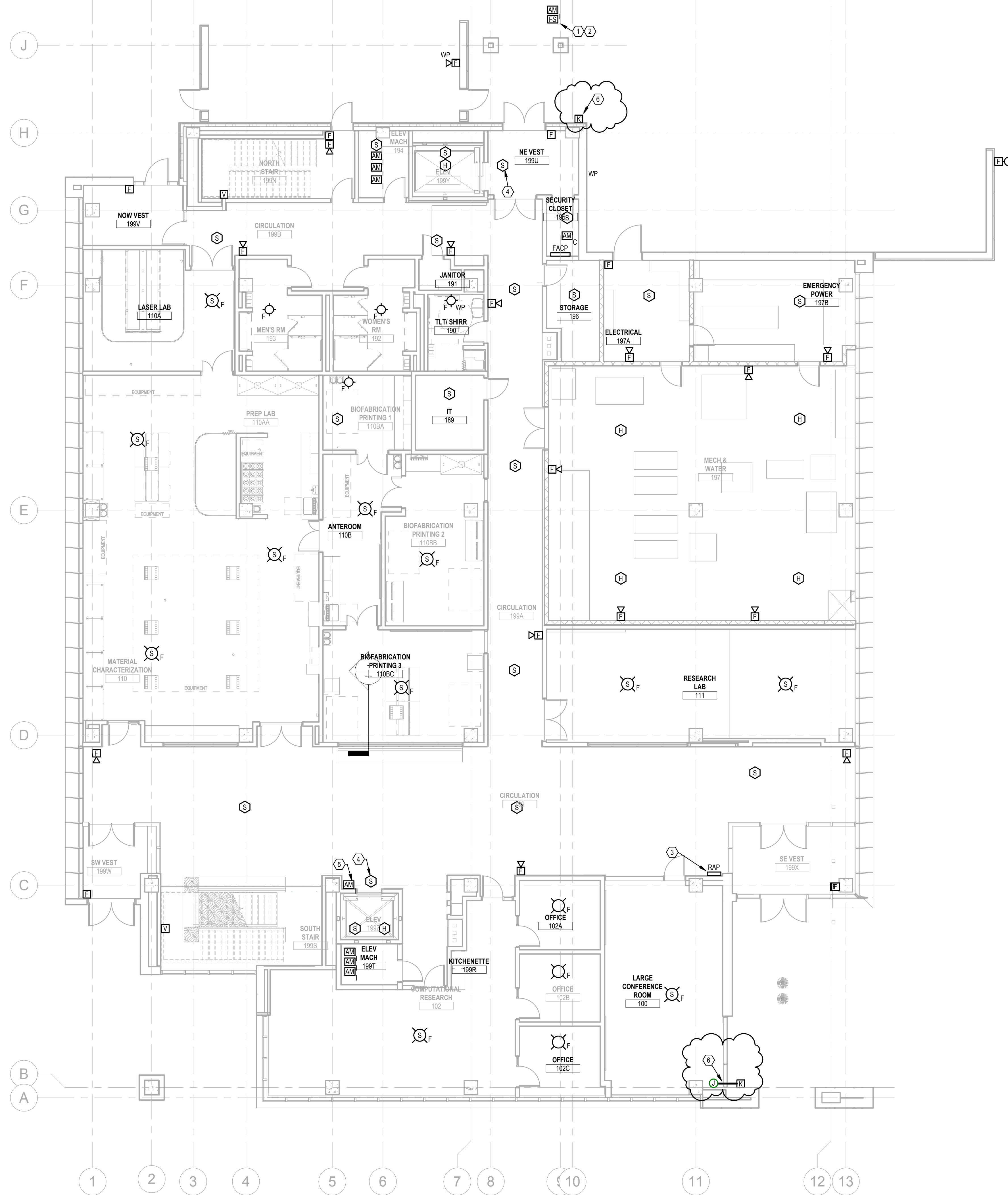
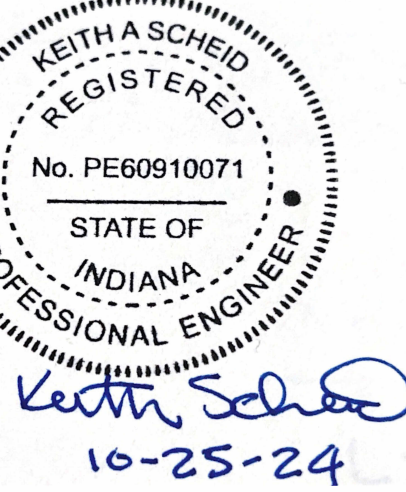
2 POWER & SYSTEMS LEVEL 05
SCALE: 1/8" = 1'-0"

PLAN NOTES

- COORDINATE LOCATION OF FLOW SWITCH WITH FIRE SUPPRESSION.
- ALARM BUILDING ADDITION AT ACTIVATION OF FLOW SWITCH. PROVIDE ADJUSTMENT OF SELB PROGRAMMING SUCH THAT WHEN FLOW SWITCH FOR THE ADDITION IS ACTIVATED AND FIRE PUMP RUNS, SELB DOES NOT GO INTO ALARM UNLESS FLOW IN SELB IS ACTIVATED.
- REMOTE PANEL TO NOTIFY ON ALARM ONLY, NOT ON TROUBLE.
- DEVICE FOR ELEVATOR RECALL.
- DEVICE TO MONITOR ADD.
- BRING CONDUIT TO RECESSED KNOX BOX FROM ABOVE.



PROJECT NO. 2023-06075



1 FIRST FLOOR FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

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1 11.08.24 ADDENDUM 1

DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276
DRAWN BY: JPF
DRAWING TITLE: FIRST FLOOR FIRE ALARM PLAN

DRAWING NUMBER: E321
NEW BUILDING



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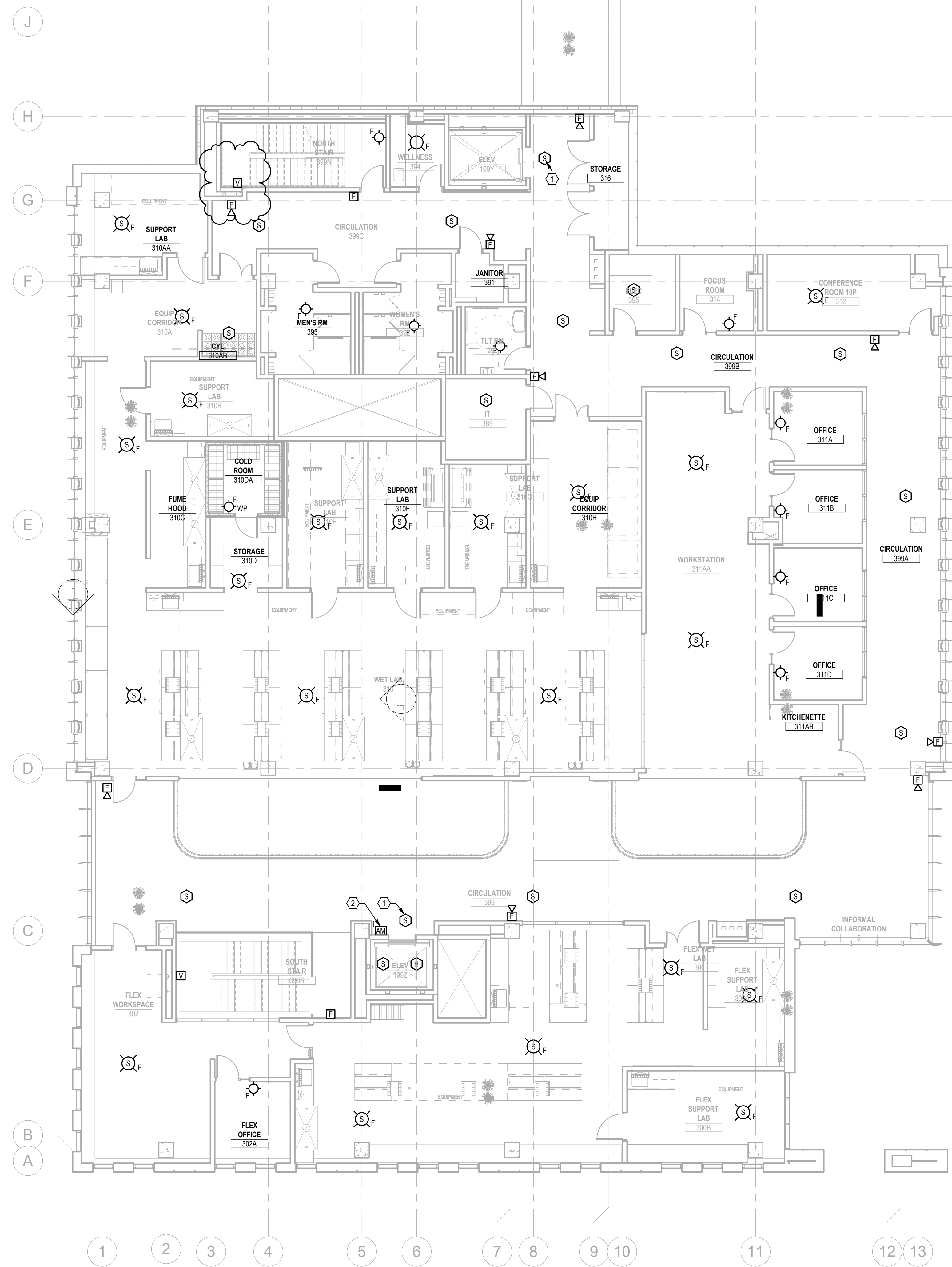
REVISIONS:
1 11.08.24 ADDENDUM 1

DATE:
10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276
DRAWN BY:
JPF
DRAWING TITLE:

THIRD FLOOR
FIRE ALARM
PLAN

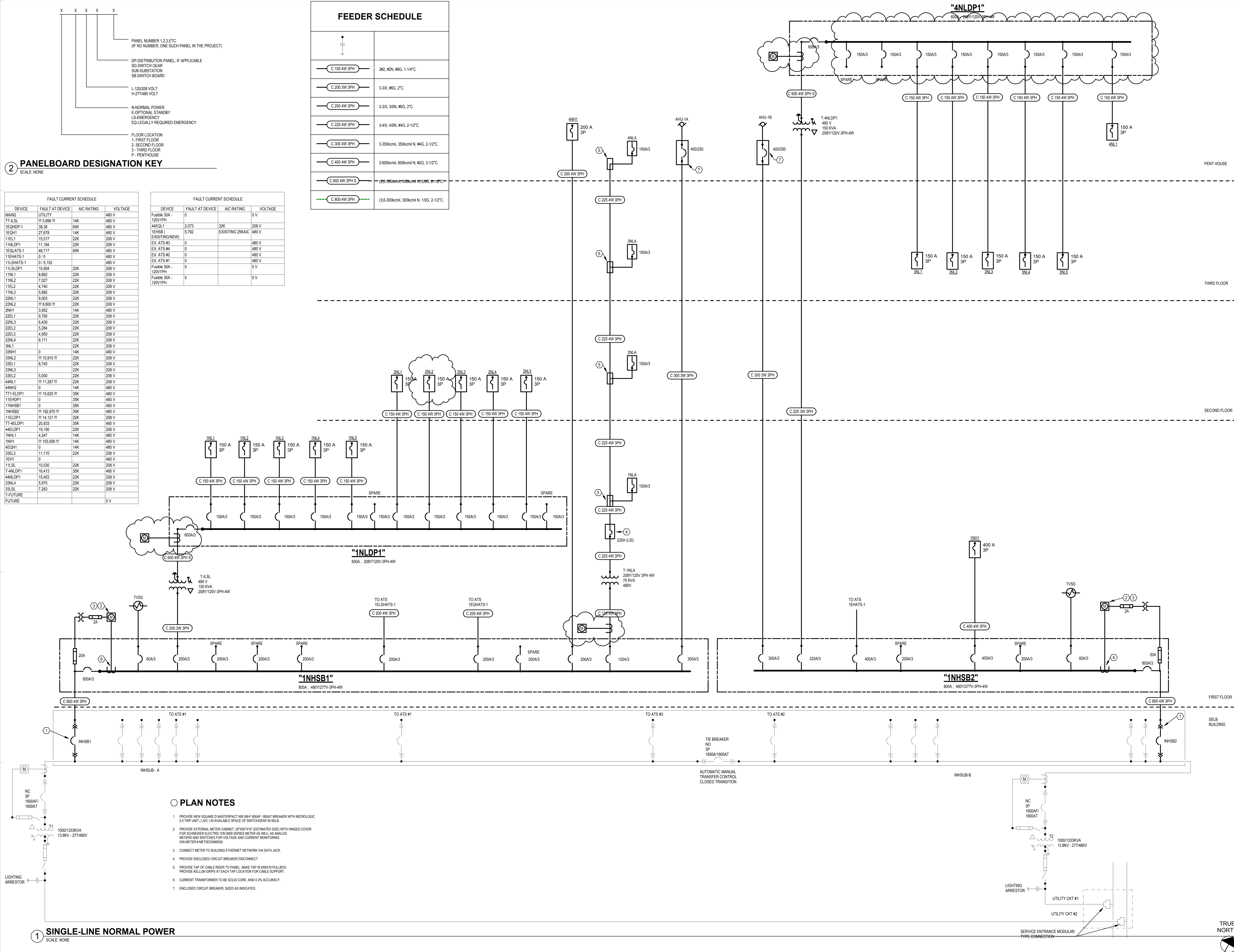
DRAWING NUMBER:
E323
NEW BUILDING

- NOTES :**
1. DEVICE FOR ELEVATOR RECALL.
 2. DEVICE TO MONITOR AED.



1 THIRD FLOOR FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"





2 PANELBOARD DESIGNATION KEY
SCALE: NONE

PANEL NUMBER 1,2,3, ETC.
(IF NO NUMBER, ONE SUCH PANEL IN THE PROJECT)

DP-DISTRIBUTION PANEL, IF APPLICABLE
SG-SWITCH GEAR
SUB-SUBSTATION
SS-SWITCH BOARD

L-120/208 VOLT
H-277/480 VOLT

N-NORMAL POWER
E-OPTIONAL STANDBY
LS-EMERGENCY
EQ-LEGALLY REQUIRED EMERGENCY

FLOOR LOCATION
1- FIRST FLOOR
2- SECOND FLOOR
3- THIRD FLOOR
P- PENTHOUSE

FAULT CURRENT SCHEDULE

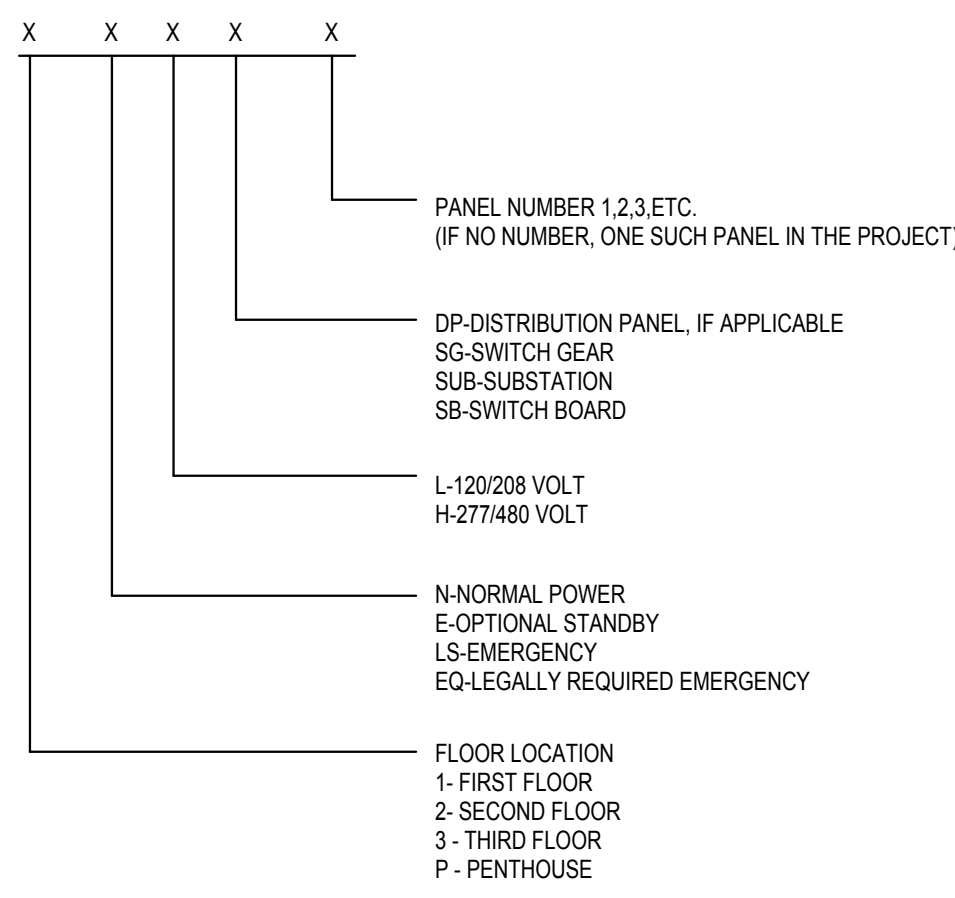
DEVICE	FAULT AT DEVICE	AIC RATING	VOLTAGE
MAIN2	UTILITY	480 V	480 V
T4.SL	5,886	14K	480 V
1EQHDP-1	38.28	65K	480 V
1EQH1	27.878	14K	480 V
11EL1	15.517	22K	208 V
11NLDP1	11.184	22K	208 V
1EQATS-1	44.717	65K	480 V
11EHATS-1	0/0		480 V
11LSHATS-1	0/5,152		480 V
11SLDP1	10.804	22K	208 V
11NL1	8.662	22K	208 V
11NL2	7.027	22K	208 V
11EL2	4.740	22K	208 V
11NL3	5.682	22K	208 V
22NL1	9.003	22K	208 V
22NL2	9,600	22K	208 V
2NH1	3,952	14K	480 V
22EL1	9,750	22K	208 V
22NL3	6,430	22K	208 V
22EL2	5,284	22K	208 V
22EL3	4,950	22K	208 V
22NL4	6,111	22K	208 V
3NL1	0	22K	208 V
33NH1	0	14K	480 V
33NL2	10,910	22K	208 V
33EL1	8,745	22K	208 V
33NL3	0	22K	208 V
33EL2	5,000	22K	208 V
44NL1	11,267	22K	208 V
44NH2	0	14K	480 V
T71-ELDP1	15,625	35K	480 V
11EHDP1	0	35K	480 V
11NHSB1	0	35K	480 V
1NHSB2	192,970	35K	480 V
11ELDP1	14,121	22K	208 V
T7-4ELDP1	20,833	35K	480 V
44ELDP1	19,150	22K	208 V
1NH1	4,247	14K	480 V
1NH1	103,095	14K	480 V
4EH1	0	14K	480 V
33EL3	11,110	22K	208 V
1EH1	0	22K	208 V
11LSL	10,030	22K	208 V
T-4NLDP1	16,413	35K	480 V
44NLDP1	15,453	22K	208 V
33NL4	5,975	22K	208 V
33SL	7,283	22K	208 V
T-FUTURE			0 V
FUTURE			0 V

FEEDER SCHEDULE

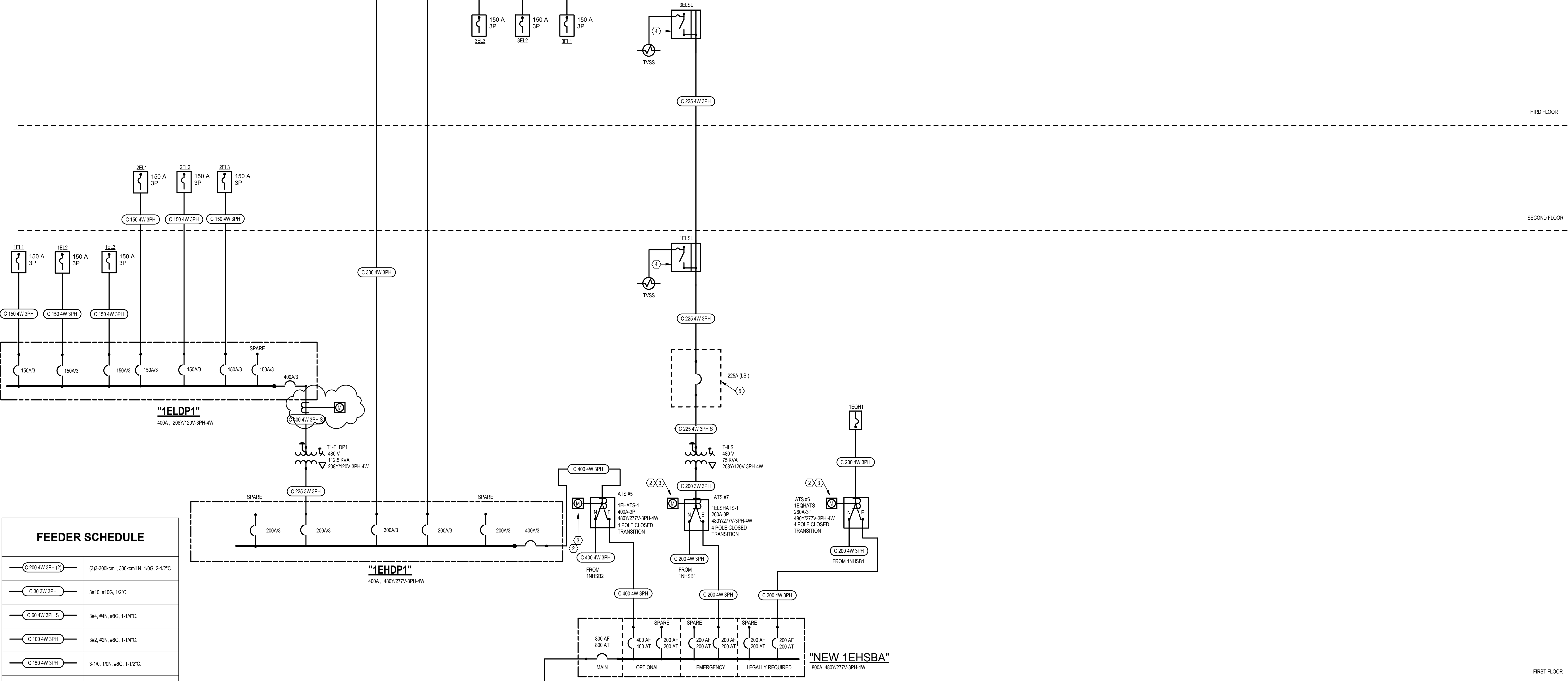
FEEDER	DESCRIPTION	SIZE	LENGTH	VOLTAGE
C 100 4W 3PH	3#2, #2N, #8G, 1-1/4"			
C 200 3W 3PH	3-3/8, #6G, 2"			
C 200 4W 3PH	3-3/8, 3#N, #6G, 2"			
C 225 4W 3PH	3-4/8, 4#N, #4G, 2-1/2"			
C 300 4W 3PH	3-3/8kcmil, 350kcmil N, #4G, 2-1/2"			
C 400 4W 3PH	3-600kcmil, 600kcmil N, #2G, 3-1/2"			
C 600 4W 3PH S	3-300kcmil, 300kcmil N, #2G, 3-1/2"			
C 800 4W 3PH	3-300kcmil, 300kcmil N, 1#0G, 2-1/2"			

1 SINGLE-LINE NORMAL POWER
SCALE: NONE

- PLAN NOTES**
- PROVIDE NEW SQUARE D MASTERPACT MW 800AF 800AT BREAKER WITH MICROLOGIC 5.0 TRIP UNIT (L5IC) IN AVAILABLE SPACE OF SWITCHGEAR IN SELB.
 - PROVIDE EXTERNAL METER CABINET, 30"x50"x10" (ESTIMATED SIZE) WITH HINGED COVER FOR SCHNEIDER ELECTRIC ION 900 SERIES METER AS WELL AS ANALOG METERS AND SWITCHES FOR VOLTAGE AND CURRENT MONITORING. ION METER # MTE500N6530
 - CONNECT METER TO BUILDING ETHERNET NETWORK VIA DATA JACK.
 - PROVIDE ENCLOSED CIRCUIT BREAKER DISCONNECT
 - PROVIDE TAP OF CABLE RISER TO PANEL, MAKE TAP IN 6X6X16 FULLBOX. PROVIDE KELLUM GRIPS AT EACH TAP LOCATION FOR CABLE SUPPORT.
 - CURRENT TRANSFORMER TO BE SOLID CORE, ANSI 0.3% ACCURACY.
 - ENCLOSED CIRCUIT BREAKER, SIZED AS INDICATED.



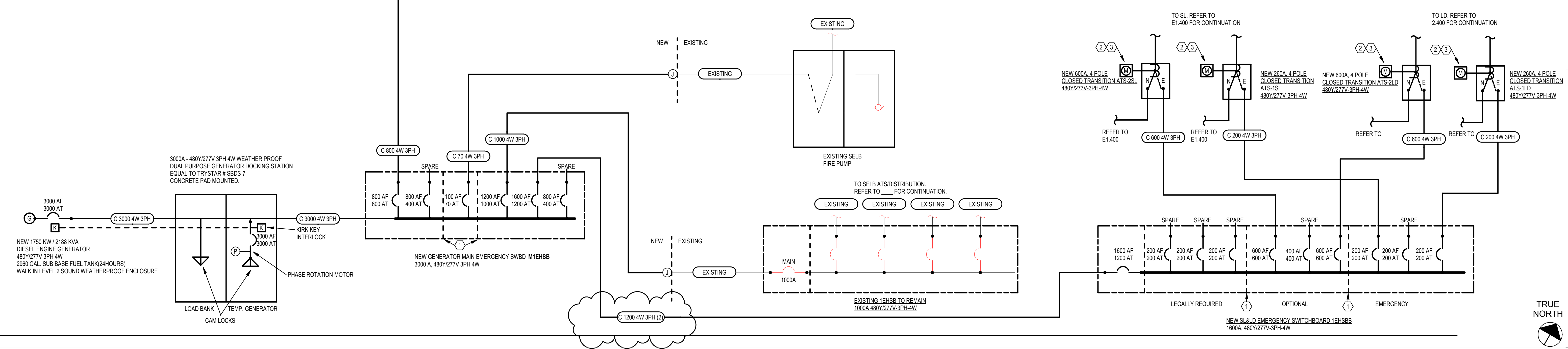
2 PANELBOARD DESIGNATION-KEY
SCALE: NONE



FEEDER SCHEDULE

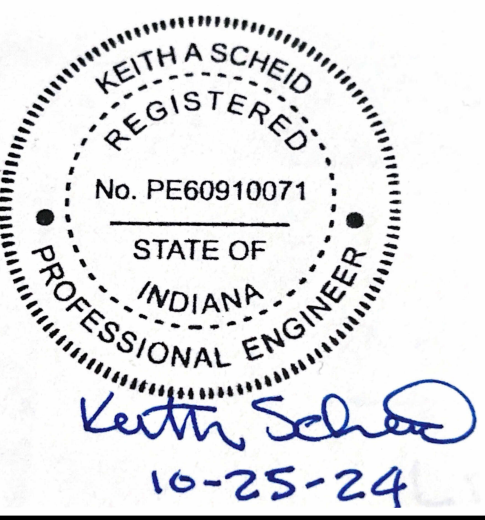
C 200 4W 3PH (2)	(3)3-300kcmil, 300kcmil N, 1/0G, 2-1/2" C.
C 30 3W 3PH	3#10, #10G, 1/2" C.
C 60 4W 3PH S	3#4, #4N, #6G, 1-1/4" C.
C 100 4W 3PH	3#2, #2N, #6G, 1-1/4" C.
C 150 4W 3PH	3-1/0, 1/0N, #6G, 1-1/2" C.
C 200 3W 3PH	3-3/0, #6G, 2" C.
C 200 4W 3PH	3-3/0, 3/0N, #6G, 2" C.
C 225 3W 3PH	3-4/0, #4G, 2" C.
C 225 4W 3PH S	3-4/0, 4/0N, #2G, 2-1/2" C.
C 400 4W 3PH	3-400kcmil, 600kcmil N, #2G, 4" C.
C 600 4W 3PH S	(2)3-350kcmil, 350kcmil N, 2/0G, 2-1/2" C.
C 800 4W 3PH S	(3)3-300kcmil, 300kcmil N, 1/0G, 2-1/2" C.
C 3000 4W 3PH	(8)4-600kcmil, 400kcmil, G, 4" C.
C 1200 4W 3PH	(6)4-600kcmil, 3/0g, 4" C.
C 800 4W 3PH (2)	(2)4-600kcmil, 1/0G, 4" C.
C 70 3W 3PH	3-2, 3#4, 156" c
C 1200 4W 3PH (2)	(6)4-600kcmil, 4/0 G, 4" C.

1 SINGLE-LINE EMERGENCY POWER
SCALE: NONE



- PLAN NOTES**
1. PROVIDE SEPARATION BETWEEN SECTIONS OF SWITCHBOARD
 2. PROVIDE 1" C FROM ATS METER TO MAIN METER CABINET IN NORMAL ELECTRIC ROOM. PROVIDE RS485 COMMUNICATIONS CABLE IN RACEWAY TO CONNECT ATS METER TO BUILDING ION 9000 METER.
 3. PROVIDE WITH INTEGRAL METER.
 4. PROVIDE MAINSWITCH FOR DISCONNECTING MEANS ONLY. NO OVERCURRENT FUNCTION.
 5. PROVIDE ENCLOSED CIRCUIT BREAKER WITH LSI FUNCTIONS.

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|---|----------|------------|
| 1 | 11.08.24 | ADDENDUM 1 |
|---|----------|------------|

DATE: **10.25.2024**
arcDESIGN PROJECT NUMBER: **23176**
CLIENT PROJECT NUMBER: **20230276**
DRAWN BY: **JPF**
DRAWING TITLE: **SINGLE LINE DIAGRAM - EMERGENCY POWER - NEW WORK**
DRAWING NUMBER: **E502**

11/8/2024 11:09:26 AM Autodesk Docs\23176 - IUPUI Lab Expansion and Renovation\2023-06075-MEP-Central_Addition.rvt



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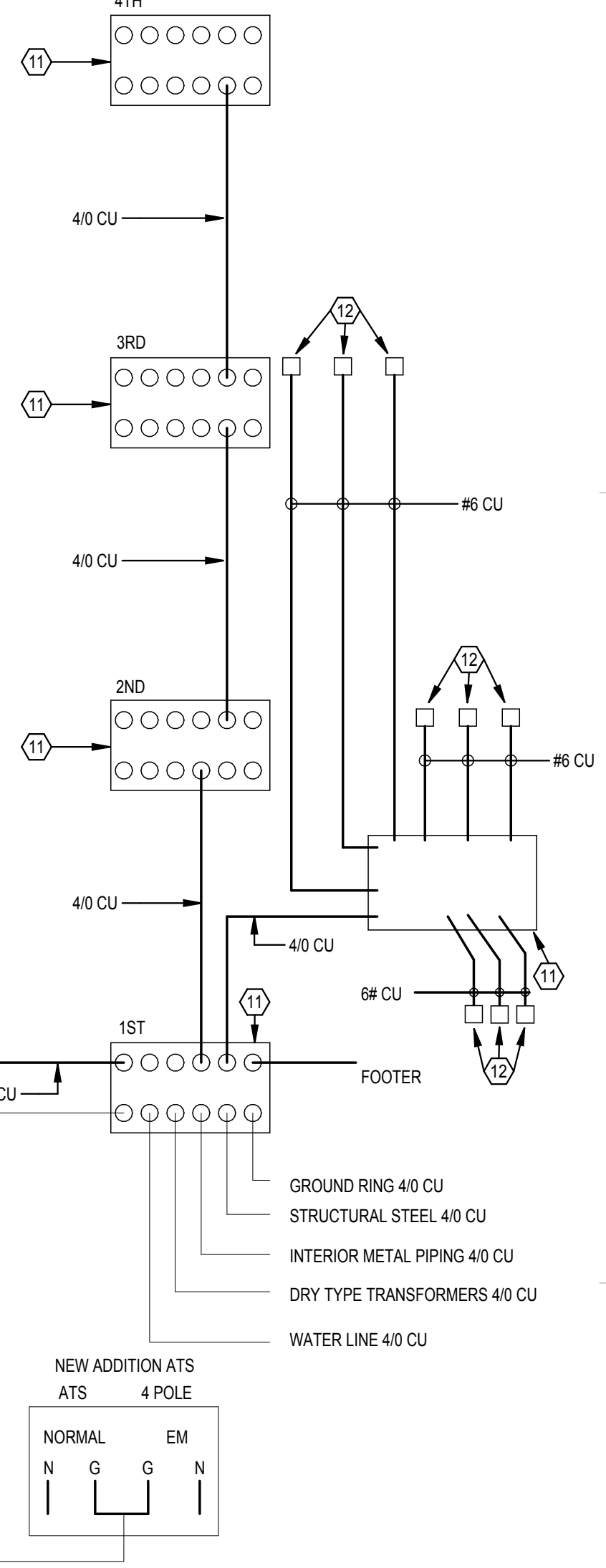
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DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276
DRAWN BY: JPF
DRAWING TITLE: GROUNDING PLAN

DRAWING NUMBER: E504
NEW BUILDING

GENERAL NOTES:

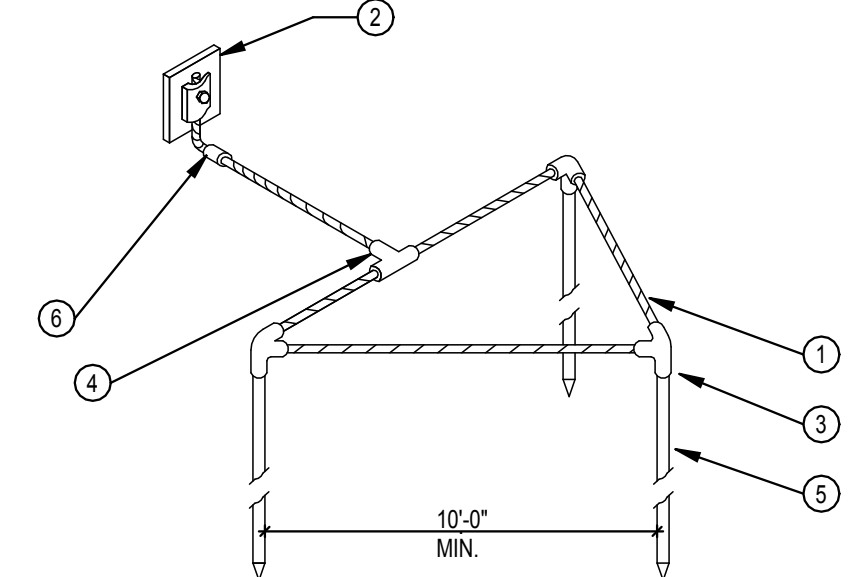
- A. GROUND RING IS EXISTING AROUND SELB. LOCATE AND PROTECT DURING CONSTRUCTION. RELOCATE AS REQUIRED.
- PROVIDE BUILDING GROUND RING. SIZE PER GROUNDING RISER.
- PROVIDE A TEST WELL FOR GROUND MEGGER TESTING. SEE DETAIL 3, SHEET E506.
- PROVIDE MAIN SERVICE GROUNDING TRIANGLE. SEE DETAIL 3, THIS SHEET.
- PROVIDE BUILDING GROUND BAR. REFER TO GROUNDING RISER DIAGRAM DETAIL 4 THIS SHEET AND DETAIL 2, SHEET E505.
- EXISTING BUILDING GROUND RING AROUND SELB. INTERCEPT AND CONNECT TO THIS BUILDING'S GROUND RING.
- RECONNECT EXISTING COLUMN GROUND TO NEW GROUND RING IF DISTURBED DURING EXCAVATION.
- EXISTING SELB GROUND ROD LOCATION NOT VERIFIED.
- PROVIDE GROUND ROD EVERY 75' MAX OR AS INDICATED. SEE DETAIL 3, SHEET E506.
- PROVIDE FOUNDATION SLEEVE FOR LIGHTNING PROTECTION AT MAX OF 100 FOOT INTERVALS. SIZE TO BE 1".
- GROUND RING TEST WELL PER DETAIL 3, SHEET E506.
- GROUND BAR PER DETAIL 2, SHEET E505.
- LAB GROUND BAR 2"x6"x3/8" WITH INSULATED WALL BRACKETS. SIMILAR TO NEWTON INSTRUMENT COMPANY PART# 212379070. REFER TO FLOOR PLAN FOR LOCATION.



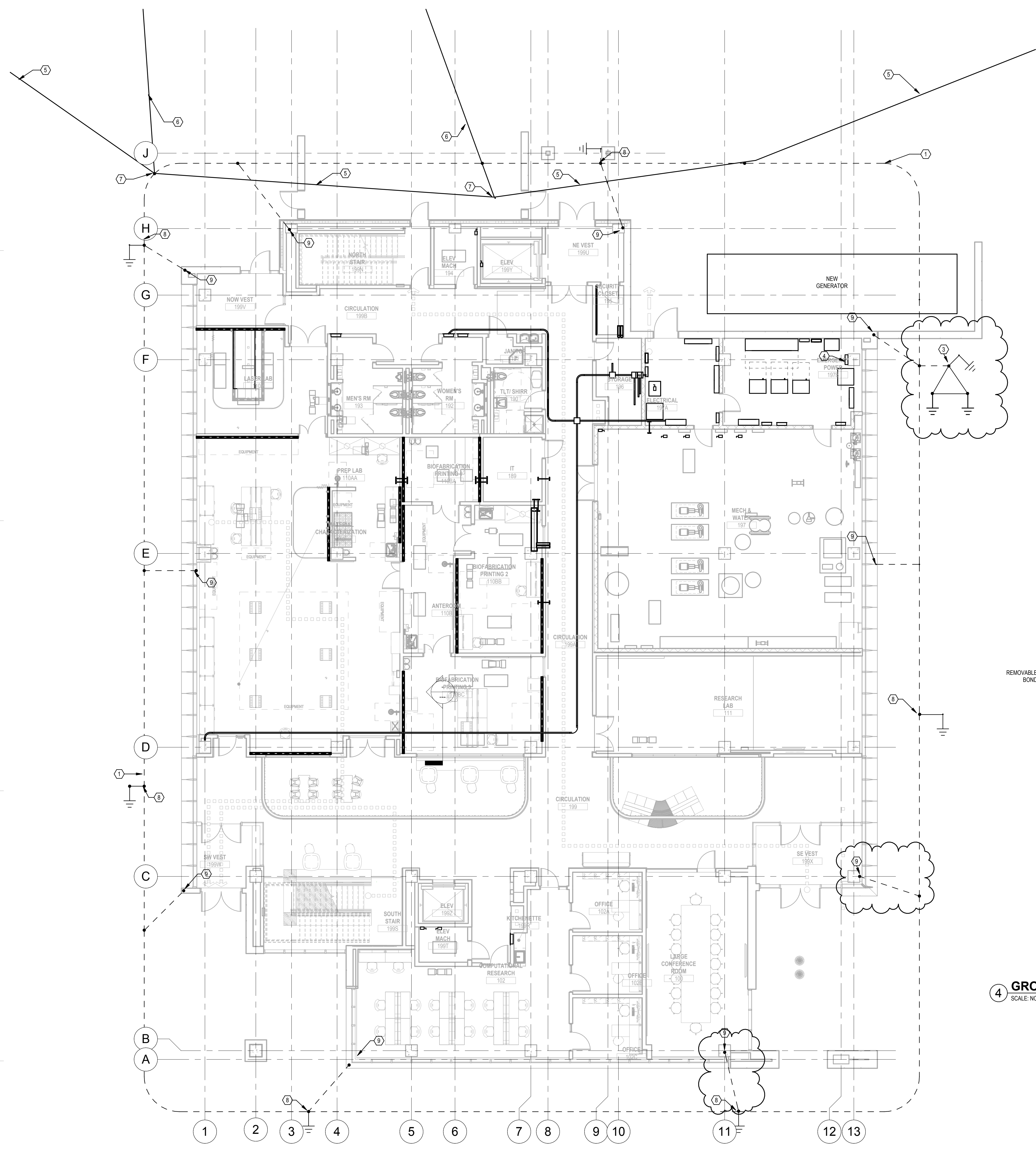
4 GROUNDING RISER DIAGRAM
SCALE: NONE

DETAIL NOTES

- CONDUCTOR - 400 COPPER WIRE 420 LBS. PER 1000 FT. TO AIR TERMINALS.
- FUTURE BONDING PLATE - WITH MINIMUM CONTACT AREA OF 8 SQUARE INCH CADWELD TO STEEL COLUMN.
- GROUND ROD CONNECTION - CADWELD. (TYPICAL FOR 3)
- FUTURE CONDUCTOR CONNECTION - CADWELD.
- COPPERWELD GROUND ROD - 3/4" (TYPICAL FOR 3)
- GROUND CONDUCTOR EXISTS 18" BELOW FINISHED GRADE - COORDINATE EXPOSED LENGTH FOR FUTURE STEEL CONNECTION.



3 MAIN SERVICE GROUNDING TRIANGLE DETAIL
SCALE: NONE



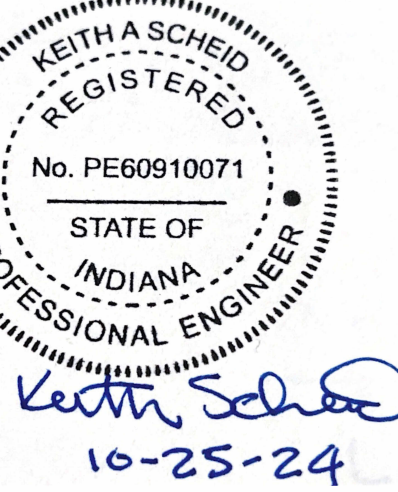
1 GROUNDING PLAN
SCALE: 1/8" = 1'-0"



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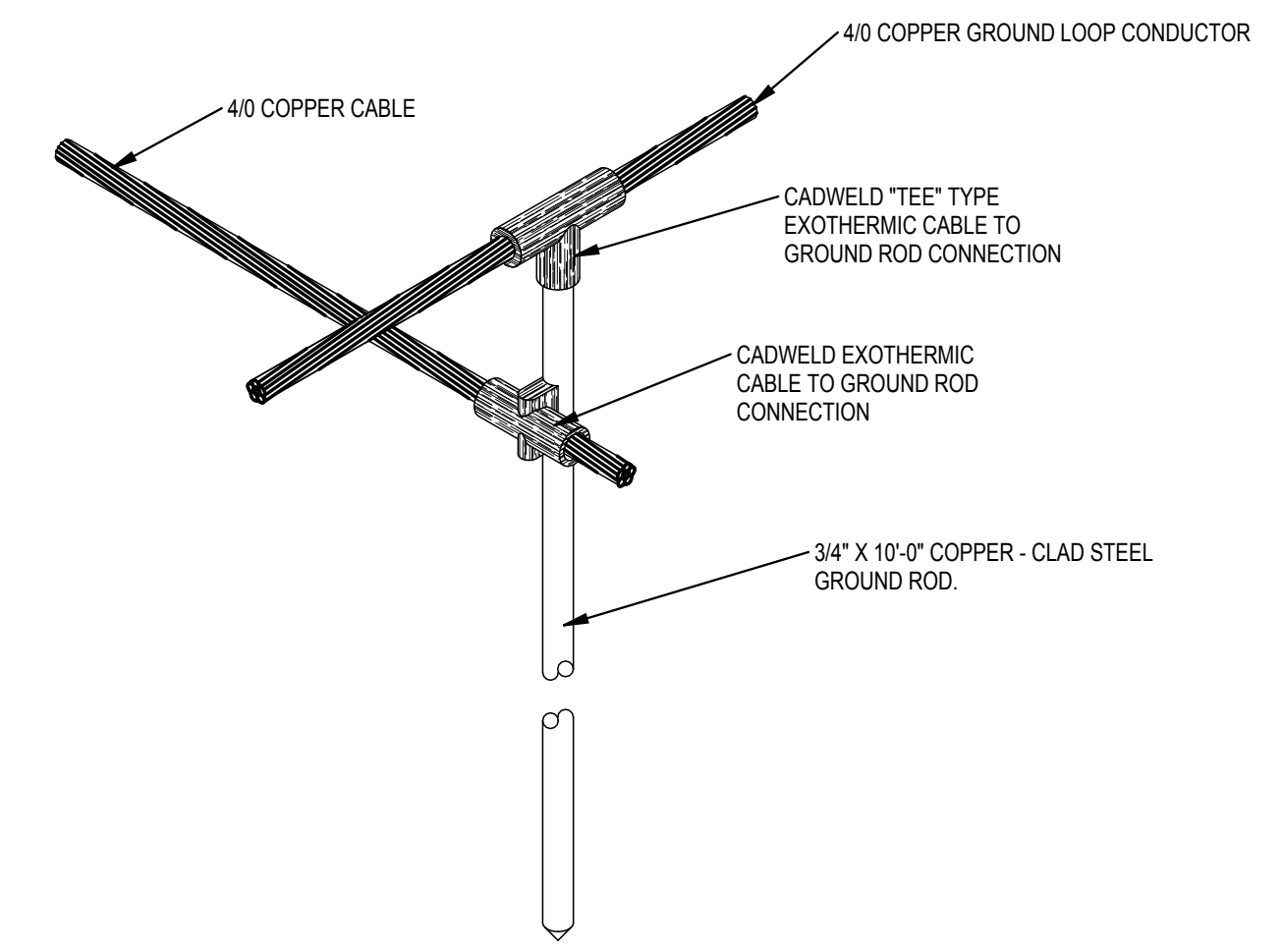
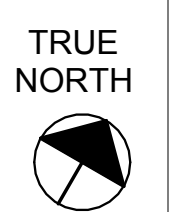
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1 11.08.24 ADDENDUM 1

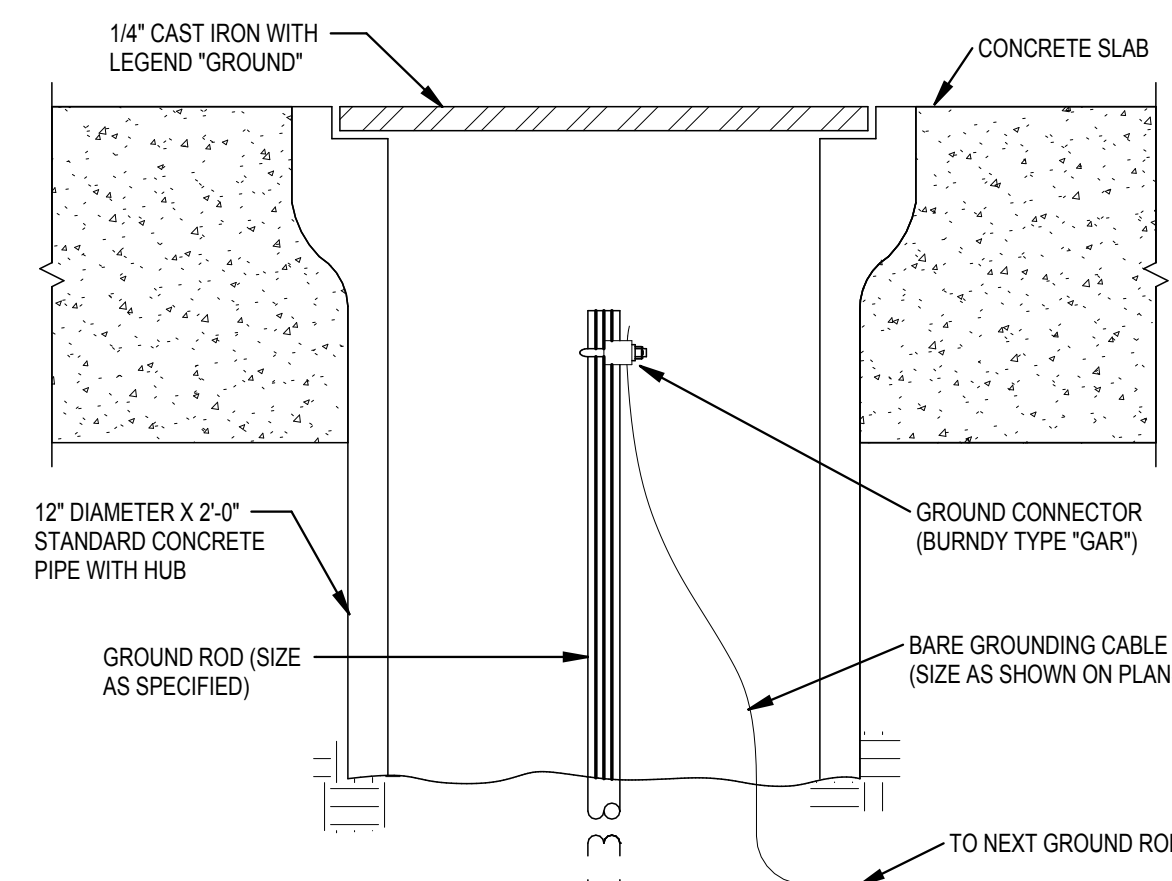
DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276
DRAWN BY: JPF
DRAWING TITLE:

ELECTRICAL DIAGRAMS

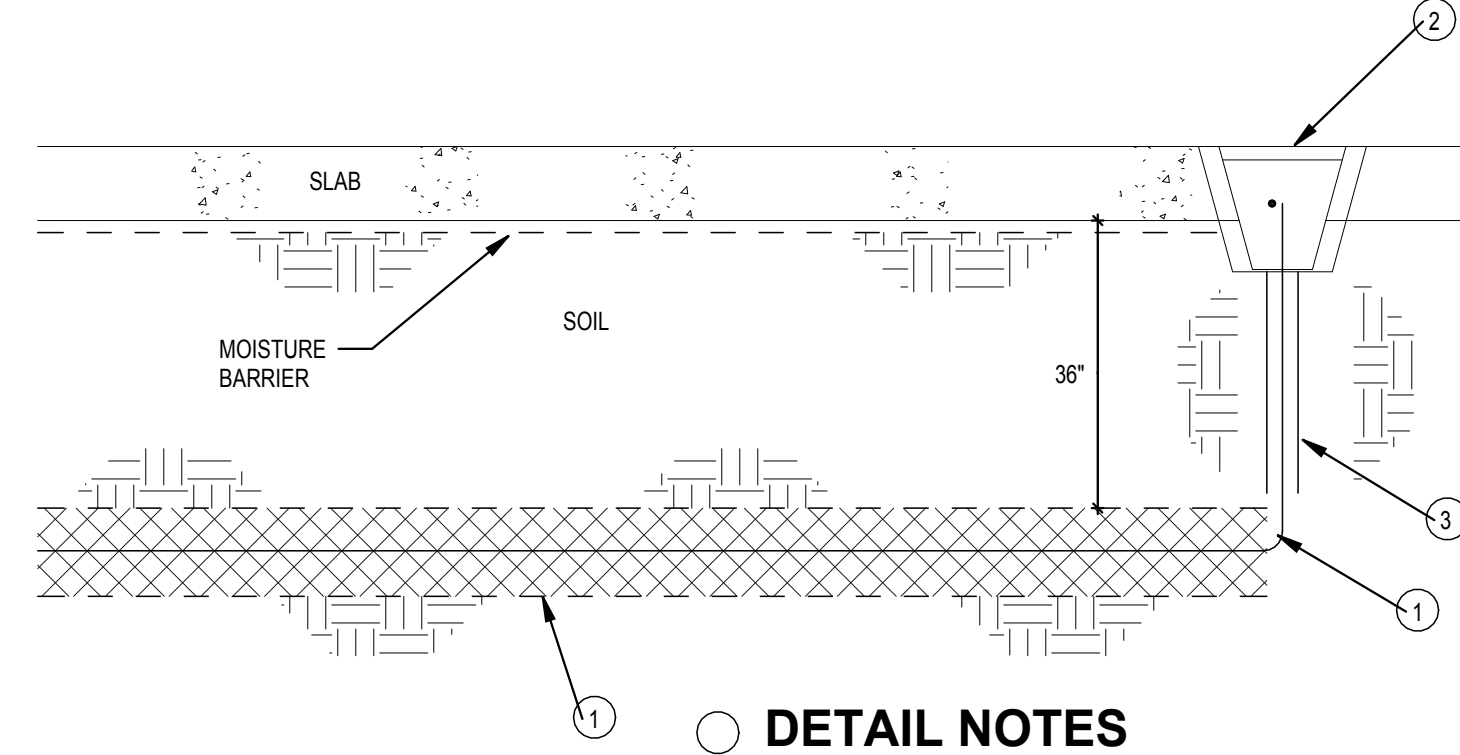
DRAWING NUMBER:
E506



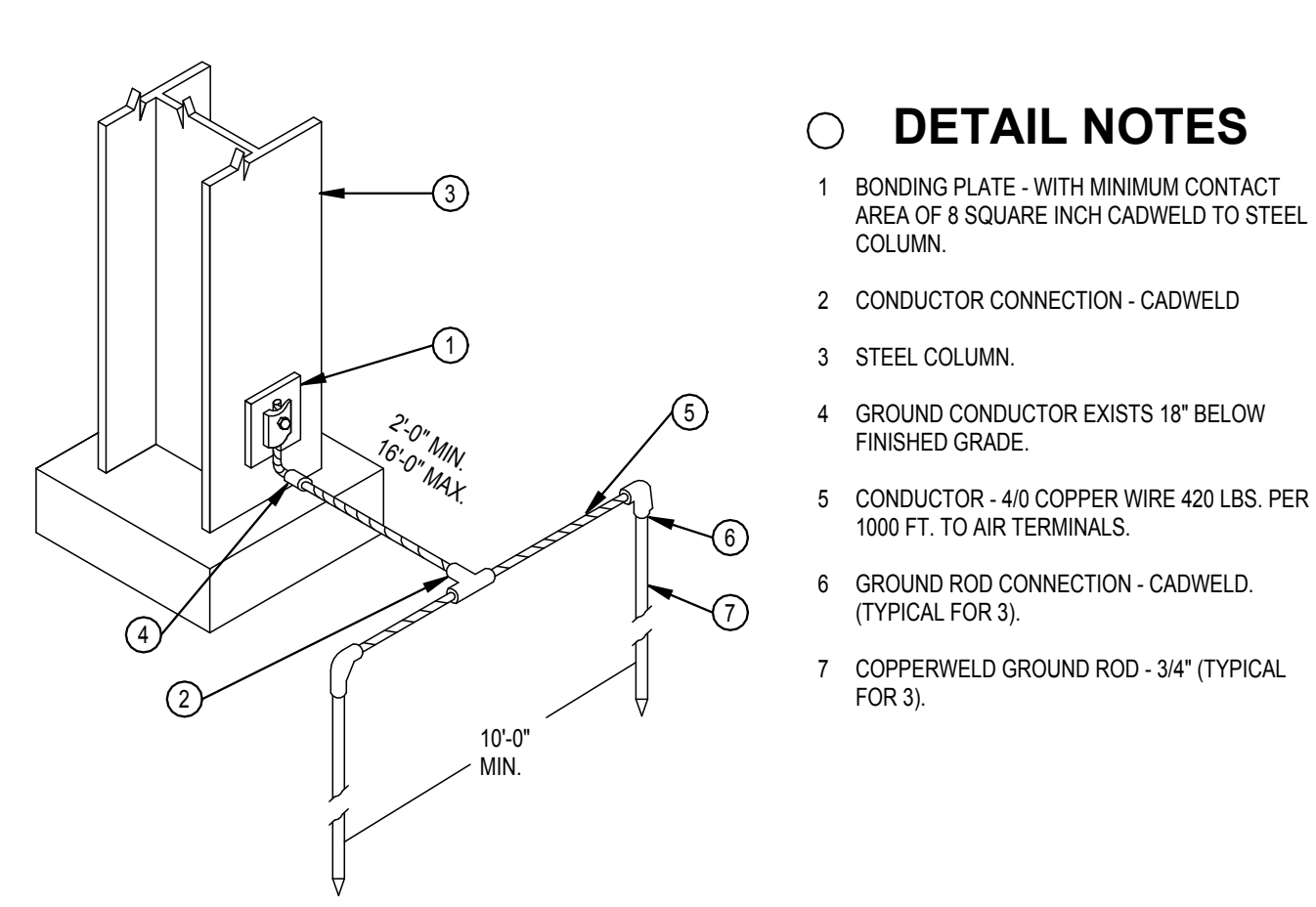
4 TYPICAL GROUNDING ROD CONNECTION
SCALE: NONE



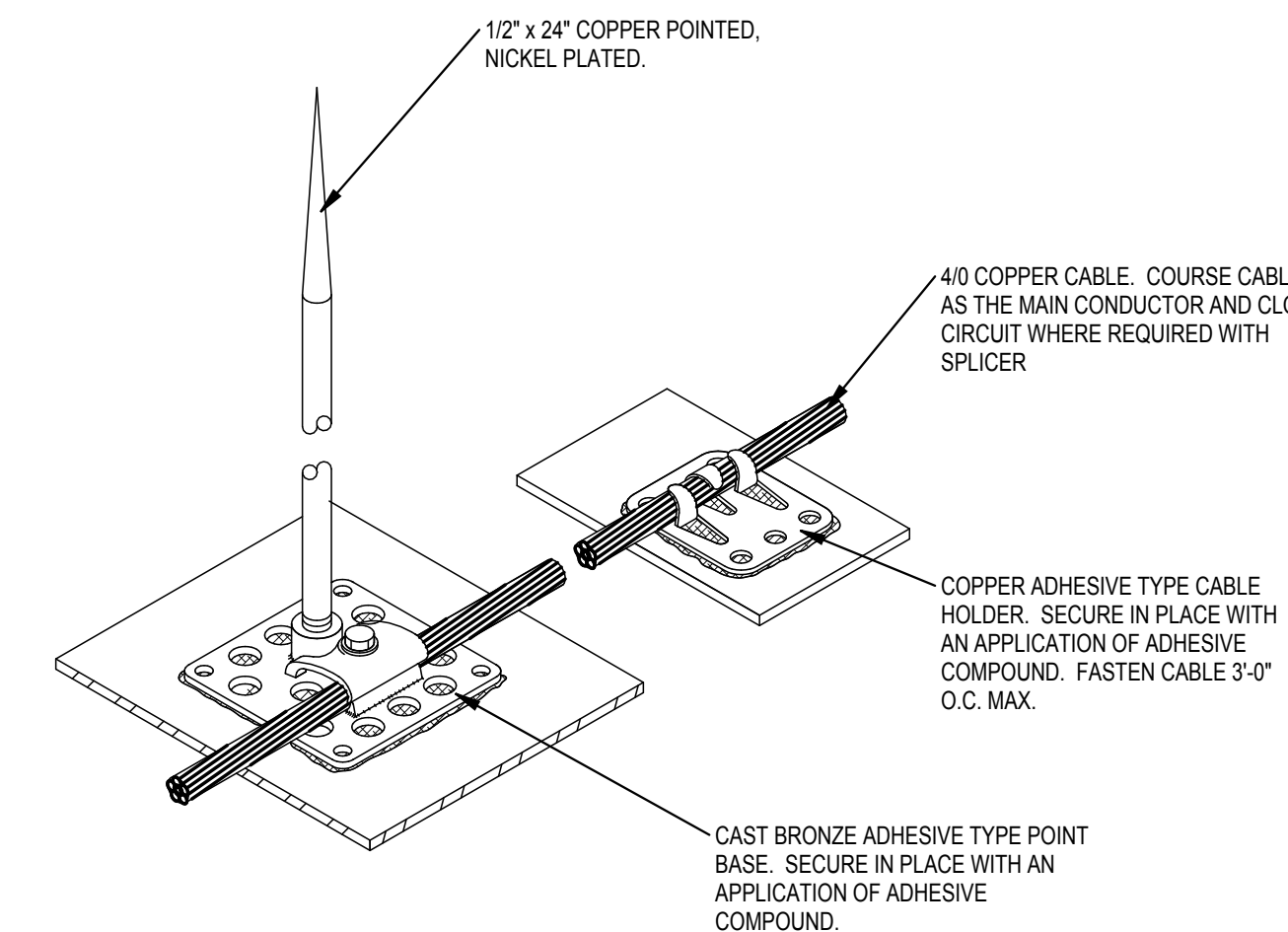
3 TEST WELL AND GROUND ELECTRODE
SCALE: NONE



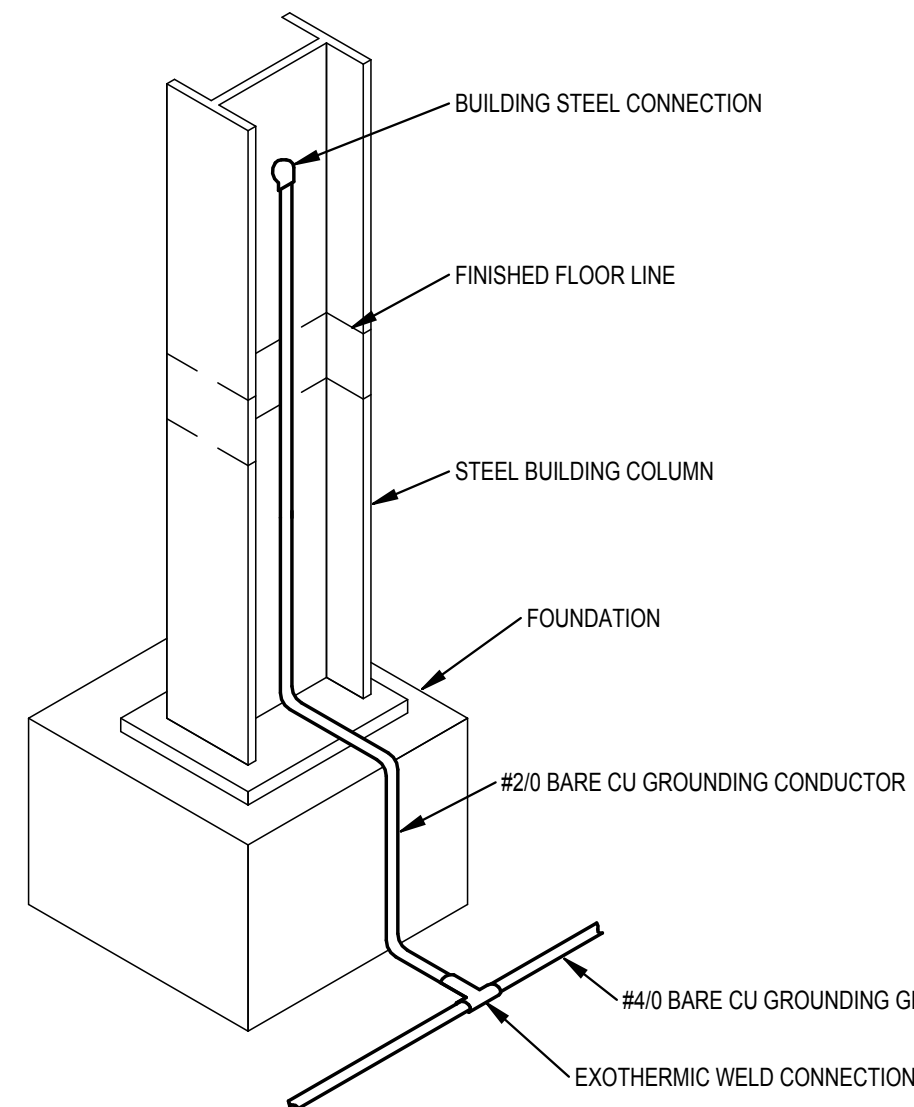
2 GROUND RING ELEVATION
SCALE: NONE



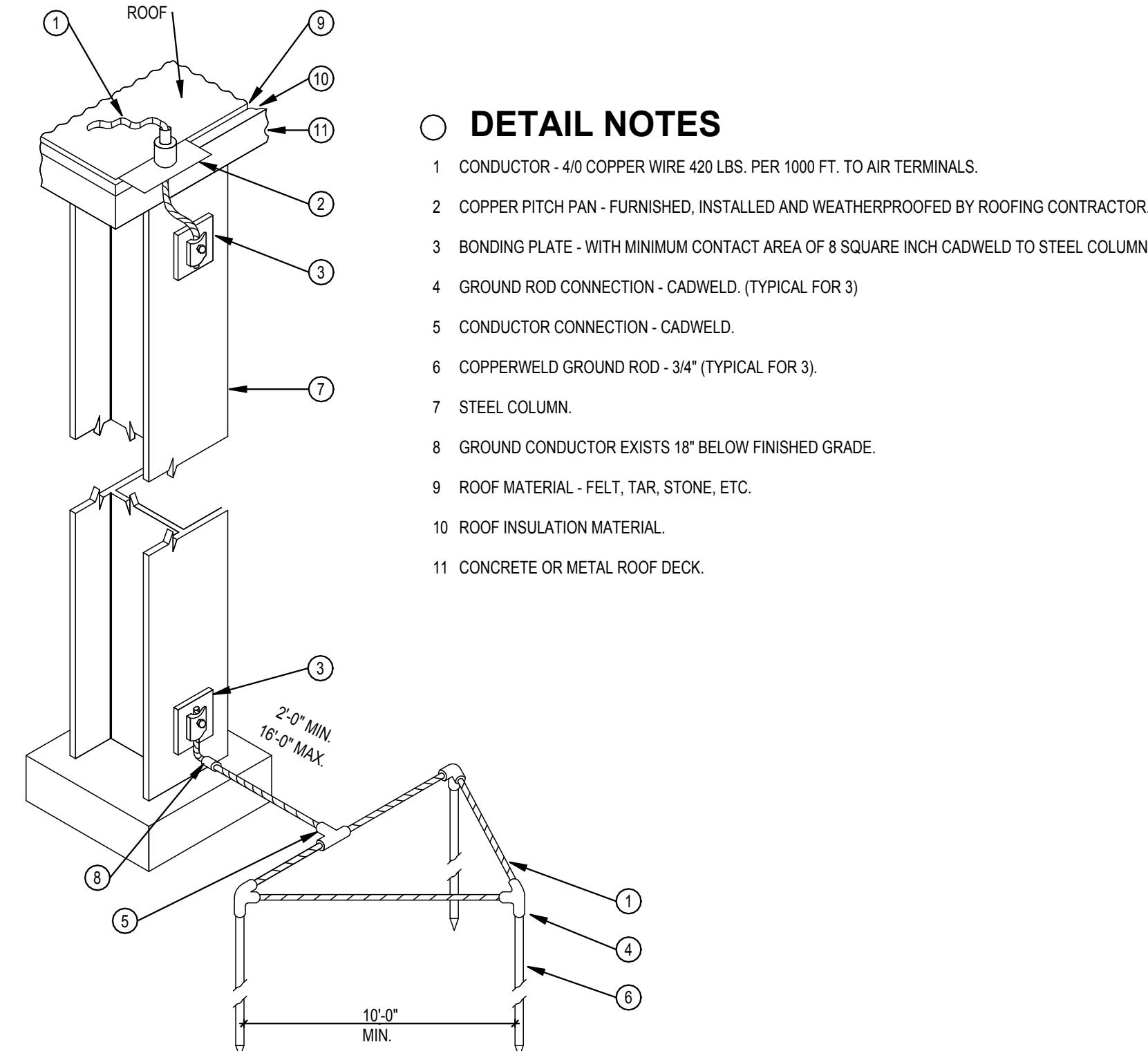
1 COLUMN GROUNDING
SCALE: NONE



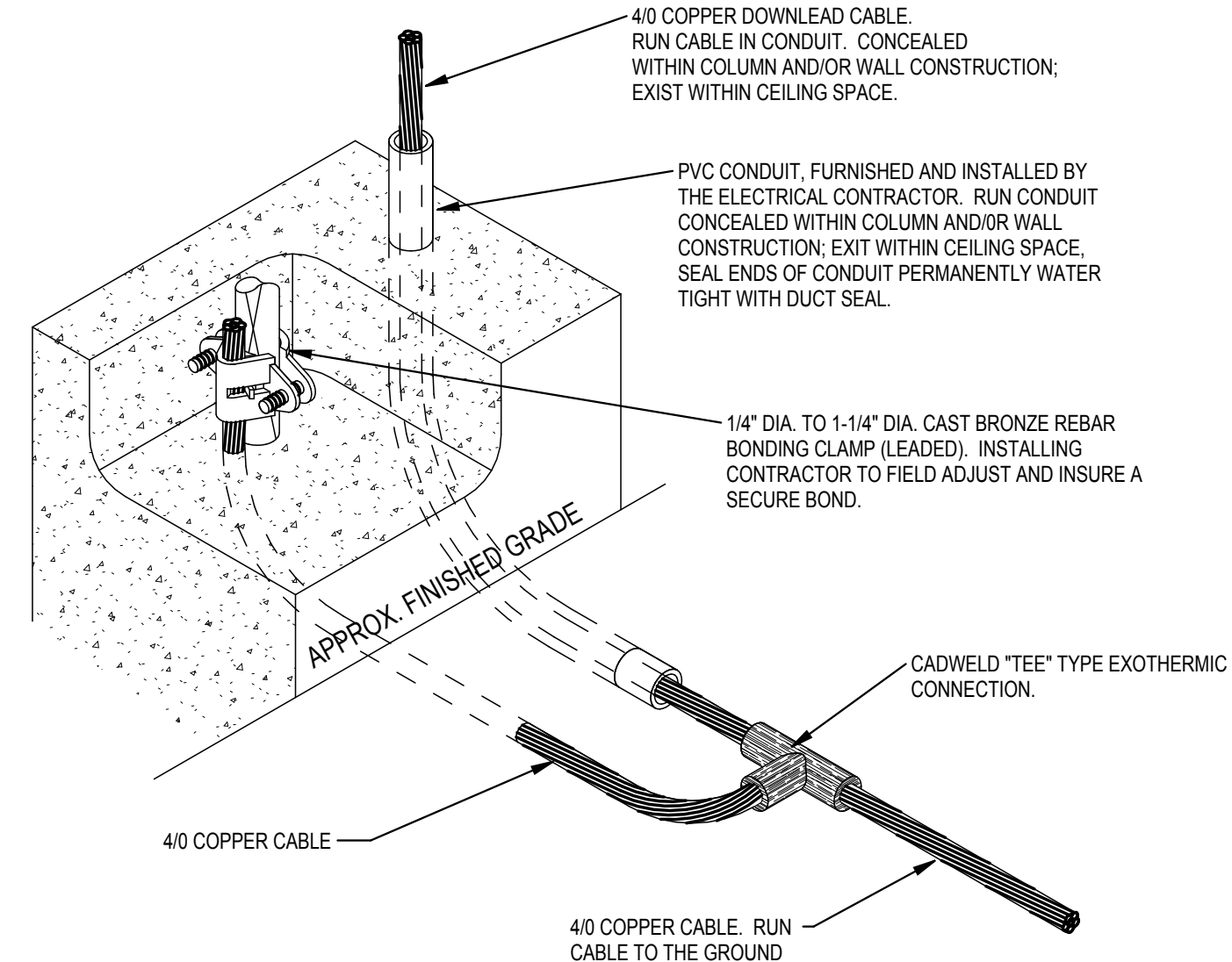
8 ADHESIVE AIR TERMINAL
SCALE: NONE



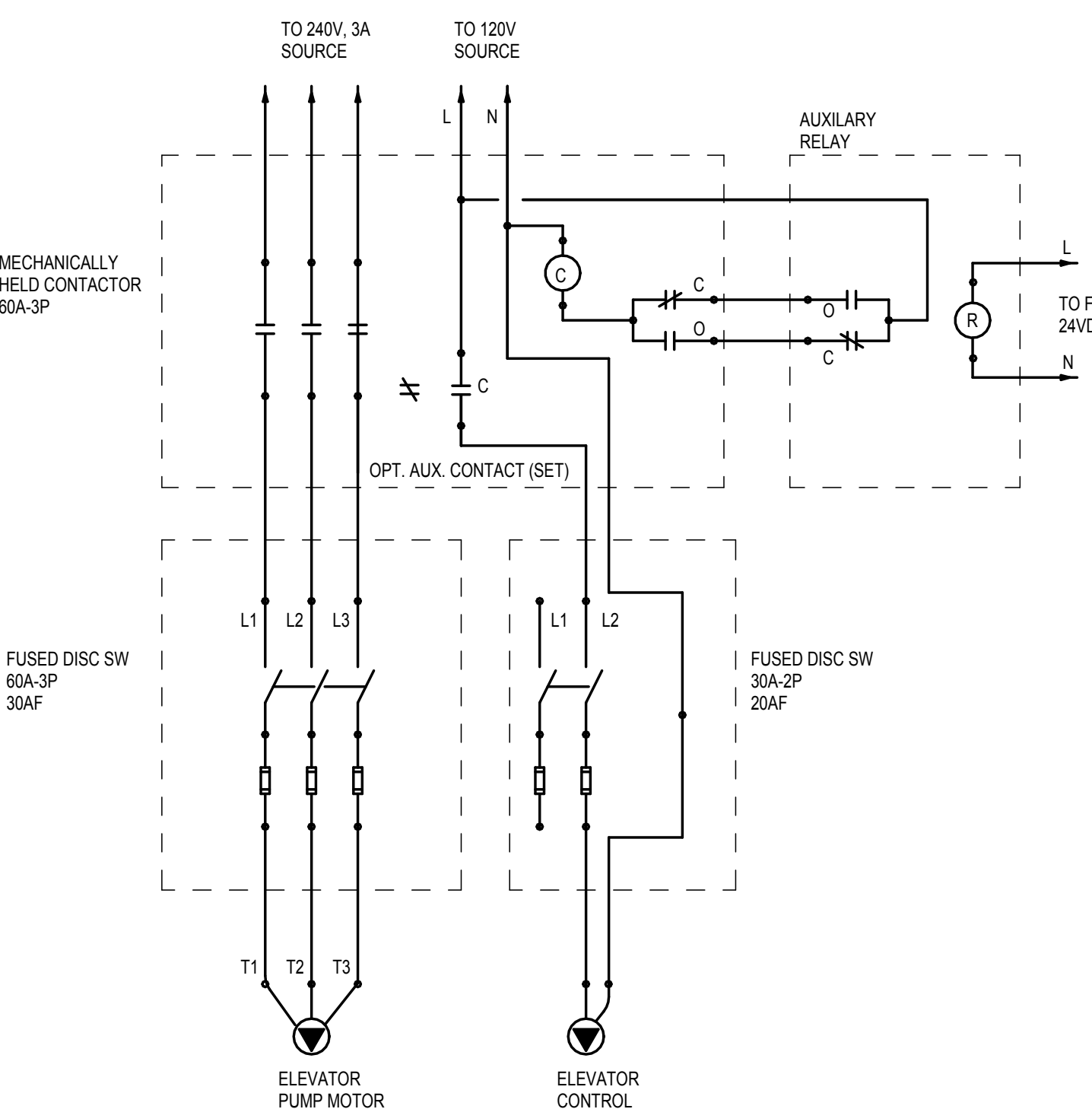
7 STRUCTURAL GROUNDING
SCALE: NONE



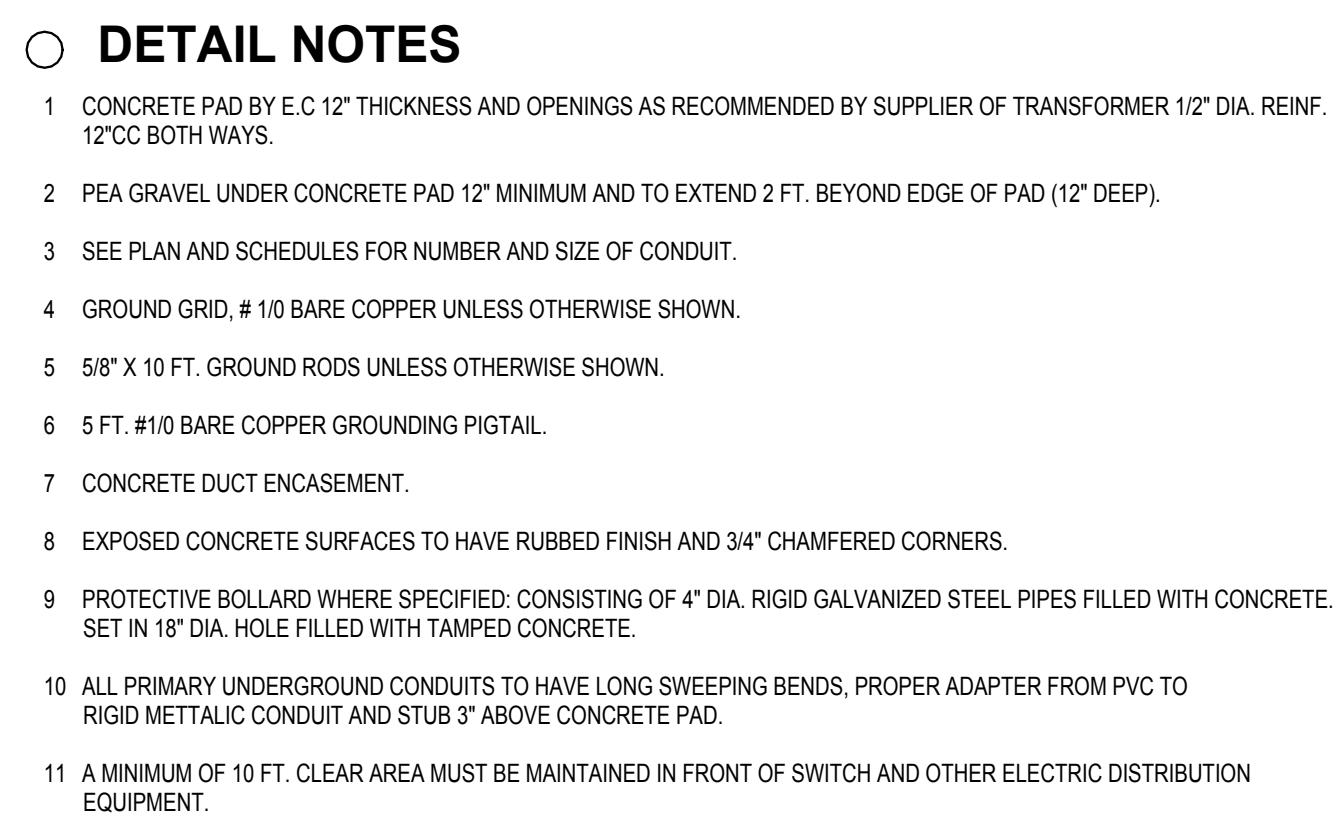
6 LIGHTNING PROTECTION DOWNLEAD AND GROUND ROD CONNECTION
SCALE: NONE



5 CONCEALED DOWNLEAD TO GROUNDING CONNECTION
SCALE: NONE



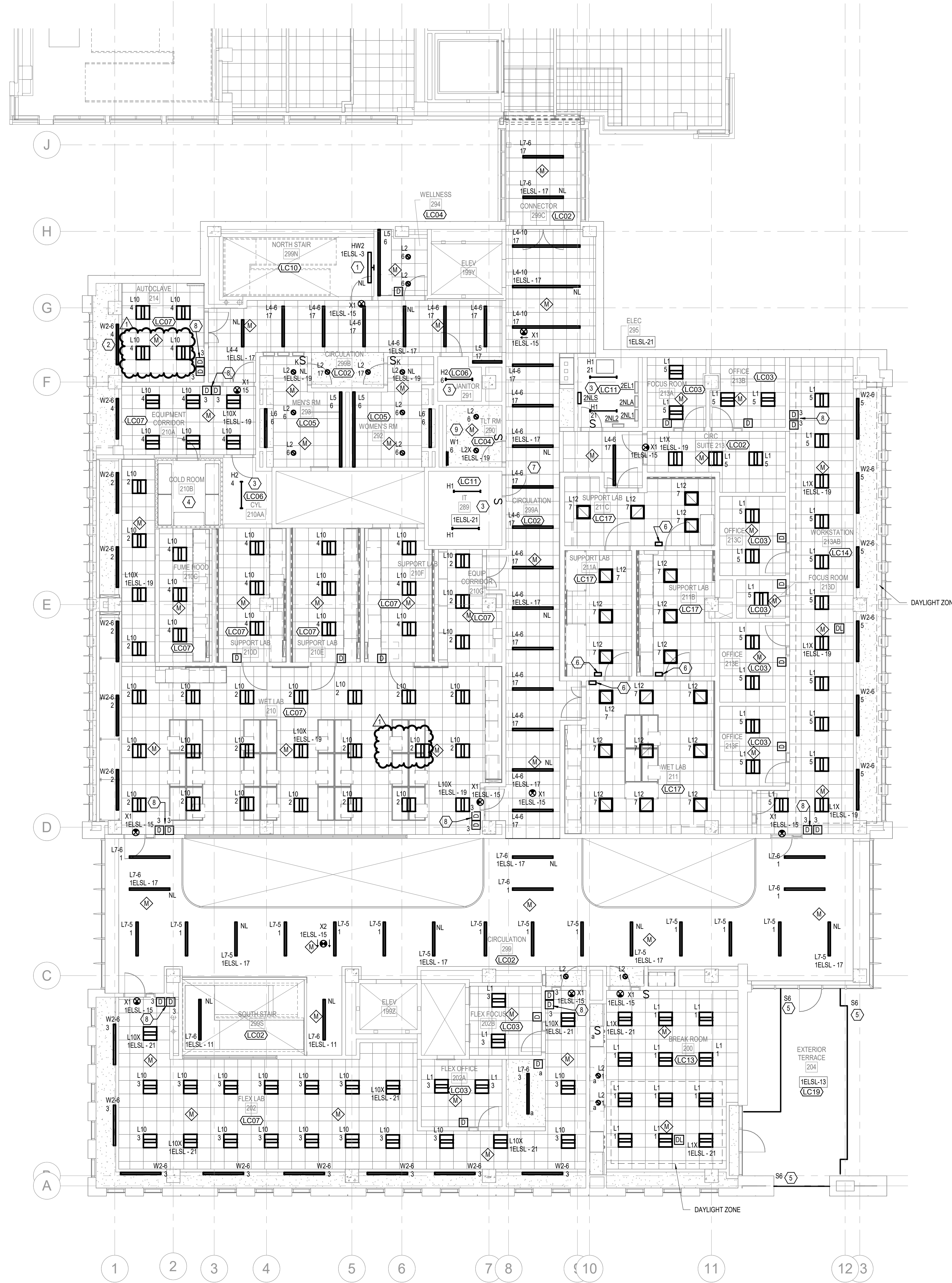
9 ELEVATOR WIRING SCHEMATIC
SCALE: NONE



10 VISTA SWITCH PAD
SCALE: NONE

GENERAL DETAIL NOTES
A COORDINATE EXACT CONCRETE PAD SIZE, OPENINGS AND OTHER REQUIREMENTS TO EXTEND EDGE OF CONCRETE 12\"/>

1/18/2024 8:59:29 AM Autodesk Docs://23176 - IUPUI Lab Expansion and Renovation 23103 IUPUI Science Building Expansion and Renovation ET - Addition v2.rvt



1 LIGHTING PLAN - LEVEL 2
1/8" = 1'-0"

GENERAL NOTES

- A REFER TO SHEET EL01 FOR LIGHTING SYMBOLS AND ABBREVIATIONS.
- B REFER TO SHEET EL01 FOR LIGHT FIXTURE SCHEDULES.
- C COORDINATE INSTALLATION OF LIGHT FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLANS, ARCHITECTURAL ELEVATIONS, MECHANICAL EQUIPMENT, DIFFUSERS, SUPPORTS, PIPING, DUCTWORK AND STRUCTURAL PLANS PRIOR TO ROUGH-IN AND INSTALLATION OF LIGHT FIXTURES.
- D ALL MOUNTING HEIGHTS NOTED ON THE PLANS ARE TO THE BOTTOM OF THE LIGHT FIXTURE UNLESS NOTED OTHERWISE.
- E LOCATE CEILING MOUNTED OCCUPANCY SENSORS TO PROVIDE COMPLETE AREA COVERAGE OF THE SPACE IN WHICH THEY ARE TO BE INSTALLED. SELECT PROPER SENSOR COVERAGE PATTERN FROM MANUFACTURERS PRODUCT TO DETERMINE COVERAGE. ADDITIONAL SENSORS REQUIRED DUE TO LACK OF COVERAGE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE MANUFACTURER. SENSORS SHALL INCLUDE ALL POWER SUPPLIES AND RELAYS NECESSARY FOR PROPER OPERATION.
- F ALL COVER PLATES FOR ELECTRICAL DEVICES SHALL BE SELECTED BY THE INTERIOR DESIGNER/ARCHITECT.
- G WIRING SYSTEM SHALL BE CONDUIT AND CONDUCTOR UNLESS NOTED OTHERWISE. USE SOLID CONDUCTOR FOR SIZE #10AWG AND SMALLER. USE STRAPPED FOR LARGER SIZES.
- H LABEL ALL RELAYS AND POWER SUPPLIES (ON THE DEVICE OR ON THE BOX THEY ARE CONNECTED TO) WITH THE AREA THE DEVICES SERVE. THE BRANCH CIRCUIT IT CONTROLS AND THE DEVICE ADDRESS IF APPLICABLE.
- I EMERGENCY LIGHTING SHOWN ON THIS DRAWING INDICATES CODE REQUIRED EMERGENCY LIGHTING FED FROM THE EMERGENCY BRANCH OF THE ESSENTIAL ELECTRICAL SYSTEM.
- J LIGHTING IS TO BE FED FROM THE FOLLOWING PANELBOARDS:
 LEVEL 1 - 1NLS (NORMAL)/EISL (EMERGENCY)
 LEVEL 2 - 2NLS (NORMAL)/EISL (EMERGENCY)
 LEVEL 3 - 3NLS (NORMAL)/EISL (EMERGENCY)
 PENTHOUSE - 4NLS (NORMAL)/EISL (EMERGENCY)
 CIRCUIT NUMBERS ONLY HAVE BEEN SHOWN FOR FIXTURES FED FROM NORMAL PANELS. REFER TO SHEET EL02 FOR PANELBOARD SCHEDULES.

SHEET KEYNOTES

- 1 MOUNT LIGHT FIXTURE AT 8'-0" ABOVE STAIR LANDING TO BOTTOM OF LIGHT FIXTURE.
- 2 SURFACE MOUNT LIGHT FIXTURE HORIZONTALLY TO SIDE OF BULKHEAD SO THAT THE BOTTOM OF THE LIGHT FIXTURE IS FLUSH WITH THE BOTTOM OF THE BULKHEAD. TYPICAL OF ALL TYPE W2-6.
- 3 MOUNT LIGHT FIXTURES AT 10'-0" AFF TO BOTTOM OF LIGHT FIXTURE.
- 4 LIGHTING FOR THIS SPACE PROVIDED BY EQUIPMENT MANUFACTURER.
- 5 HAND RAIL WITH INTEGRATED LED SOURCE. REFER TO ARCHITECTURAL DETAILS AND ELEVATIONS FOR ADDITIONAL INFORMATION. HANDRAIL TO BE CONTROLLED WITH EXTERIOR BUILDING MOUNTED LIGHTING.
- 6 PROVIDE FOUR-BUTTON LIGHTING CONTROL STATION WITH ON/OFF AND INDEPENDENT DIMMING FOR WHITE AND RED LEDS.
- 7 OCCUPANCY SENSORS IN CORRIDORS LEADING TO ANIMAL RESEARCH AREAS TO HAVE ULTRASONIC FUNCTION DISABLED. CONFIRM EXACT PATH WITH ARCHITECT AND OWNER.
- 8 PROVIDE ONE (1) DIMMER SWITCH TO CONTROL FIXTURE TYPE L10 AND ONE (1) DIMMER SWITCH TO CONTROL FIXTURE TYPE W2-6.
- 9 REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHT OF FIXTURE TYPE 'W'.

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1 11/08/2024 Addendum 1

DATE:
10.25.2024
arcDESIGN PROJECT NUMBER:
23176
CLIENT PROJECT NUMBER:
20230276
DRAWN BY:
KJE
DRAWING TITLE:

LIGHTING PLAN - LEVEL 2

DRAWING NUMBER:
EL122



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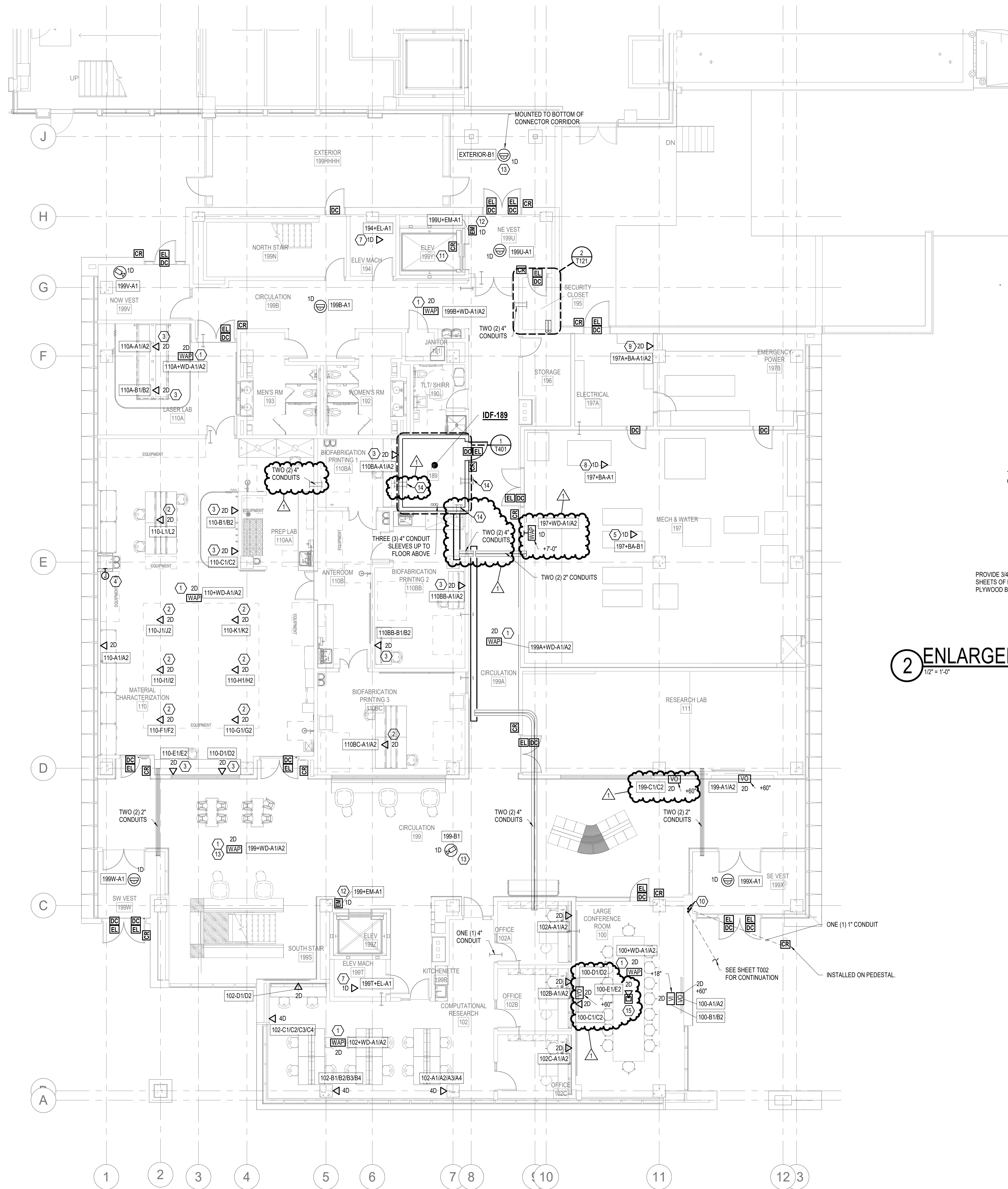


275 VETERANS WAY
SUITE 300
CARMEL, IN 46032

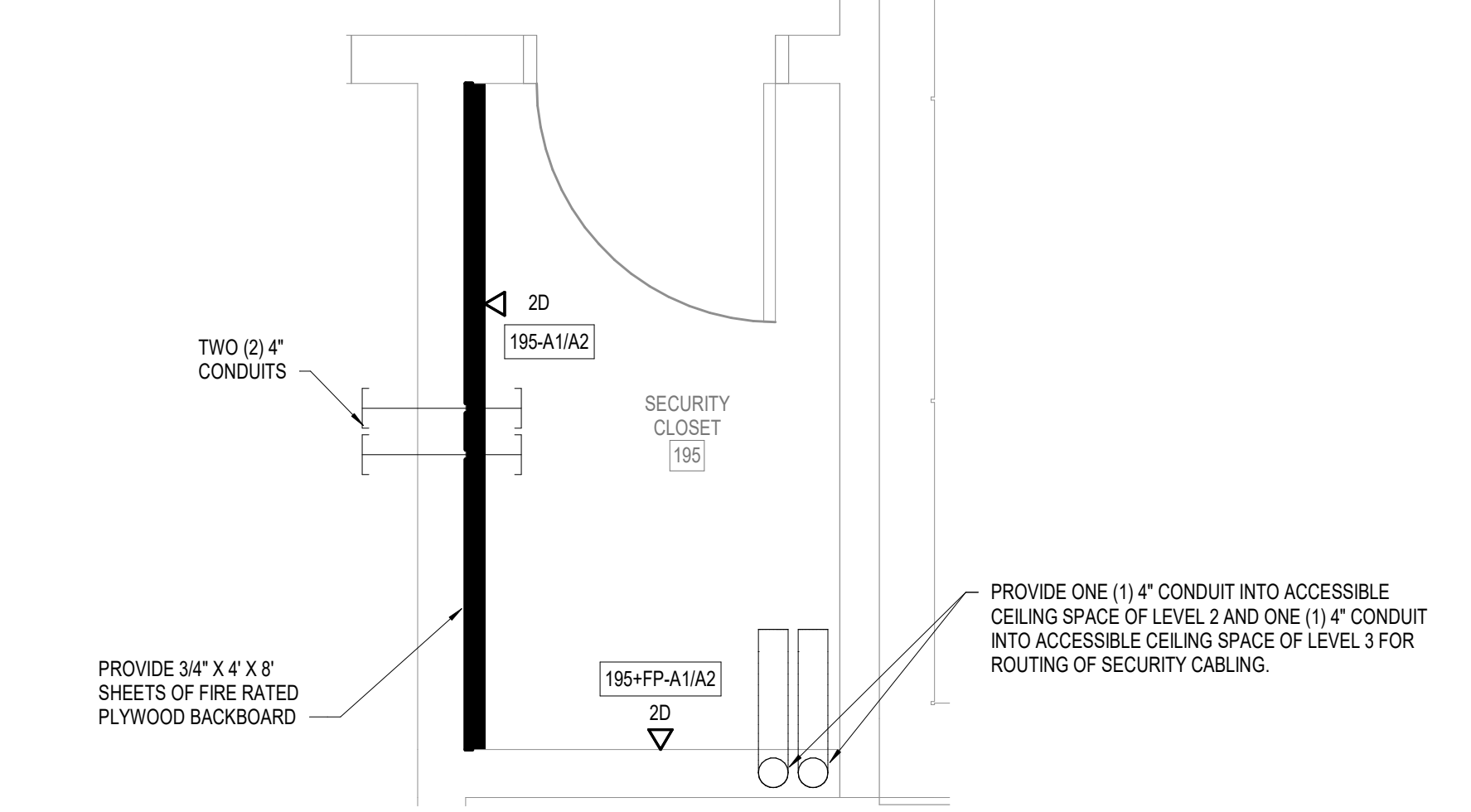


SHEET KEYNOTES

- 1 PROVIDE CATEGORY 6A DROPS FOR WIRELESS ACCESS POINT. PROVIDE 20FT SLACK LOOP COILED NEATLY AND SUPPORTED ABOVE THE CEILING. TERMINATE CABLES WITH RJ45 MODULAR JACKS AND TEST PER SPECIFICATIONS. NOTE LOCATION ON THE RECORD DRAWINGS AND MARK LOCATION ON THE CEILING WITH A GREEN DOT STICKER.
- 2 PROVIDE TWO (2) CATEGORY 6A DROPS TO CEILING INTERFACE PANEL. REFER TO ARCHITECTURAL DRAWING GLOZ FOR MORE INFORMATION.
- 3 INSTALL DATA DROPS IN SURFACE MOUNTED RACEWAY. REFER TO ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR MORE INFORMATION.
- 4 PROVIDE JUNCTION BOX FOR ROUTING OF CABLING INTO SERVICE CHASE. SEE DETAIL 47501 FOR MORE INFORMATION.
- 5 PROVIDE ONE (1) DATA DROP FOR HVAC DDC. TERMINATE CABLE WITH RJ45 MODULAR JACK AND TEST PER SPECIFICATIONS. COORDINATE EXACT LOCATION AND TERMINATION (FACEPLATE, SURFACE MOUNT BOX, ETC.) WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
- 6 PROVIDE TWO (2) CATEGORY 6A DROPS TO FIRE ALARM PANEL. COORDINATE EXACT LOCATION AND TERMINATION WITH FIRE ALARM CONTRACTOR PRIOR TO INSTALLATION.
- 7 PROVIDE ONE (1) DATA DROP FOR ELEVATOR EQUIPMENT. TERMINATE CABLE WITH RJ45 MODULAR JACKS AND TEST PER SPECIFICATIONS. COORDINATE EXACT LOCATION AND TERMINATION (FACEPLATE, SURFACE MOUNT BOX, ETC.) WITH ELEVATOR CONTRACTOR PRIOR TO INSTALLATION.
- 8 PROVIDE ONE (1) DATA DROP FOR LEED METERING SYSTEM. TERMINATE CABLE WITH RJ45 MODULAR JACK AND TEST PER SPECIFICATIONS. COORDINATE EXACT LOCATION AND TERMINATION (FACEPLATE, SURFACE MOUNT BOX, ETC.) WITH LOCATION OF LEED METERING SYSTEM HEADEND PRIOR TO INSTALLATION.
- 9 PROVIDE TWO (2) DATA DROPS FOR MAIN ELECTRICAL METERS. TERMINATE CABLE WITH RJ45 MODULAR JACK AND TEST PER SPECIFICATIONS. COORDINATE EXACT LOCATION AND TERMINATION (FACEPLATE, SURFACE MOUNT BOX, ETC.) WITH ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.
- 10 ROUTE CONDUITS FROM SITE UP WALL INTO ACCESSIBLE CEILING SPACE.
- 11 PROVIDE TRAVELING CABLE FOR ELEVATOR CARD READER. PROVIDE ONE (1) FS-45 CABLE FROM ELEVATOR EQUIPMENT ROOM TO SECURITY CLOSET 195.
- 12 PROVIDE ONE (1) CATEGORY 6A CABLE TO NEAREST IDF AND ONE (1) 184 CABLE TO SECURITY CLOSET 195.
- 13 PROVIDE ONE (1) 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
- 14 PROVIDE TWO (2) E2 PATH 44" FIRE RATED PATHWAY INTO IDF.
- 15 PROVIDE ONE (1) 1.25" CONDUIT FOR DATA CABLING AND ONE (1) 1.25" CONDUIT FOR AV INSTALLED IN SLAB (UNDER SLAB SHALL NOT BE PERMITTED) TO NEAREST ACCESSIBLE CEILING SPACE.



2 ENLARGED TECHNOLOGY PLAN - SECURITY CLOSET 195
1/2" = 1'-0"



1 TECHNOLOGY PLAN - LEVEL 1
1/8" = 1'-0"

ALL COMMUNICATIONS
CABLING ON THIS SHEET
SHALL BE SERVED BY IDF-189



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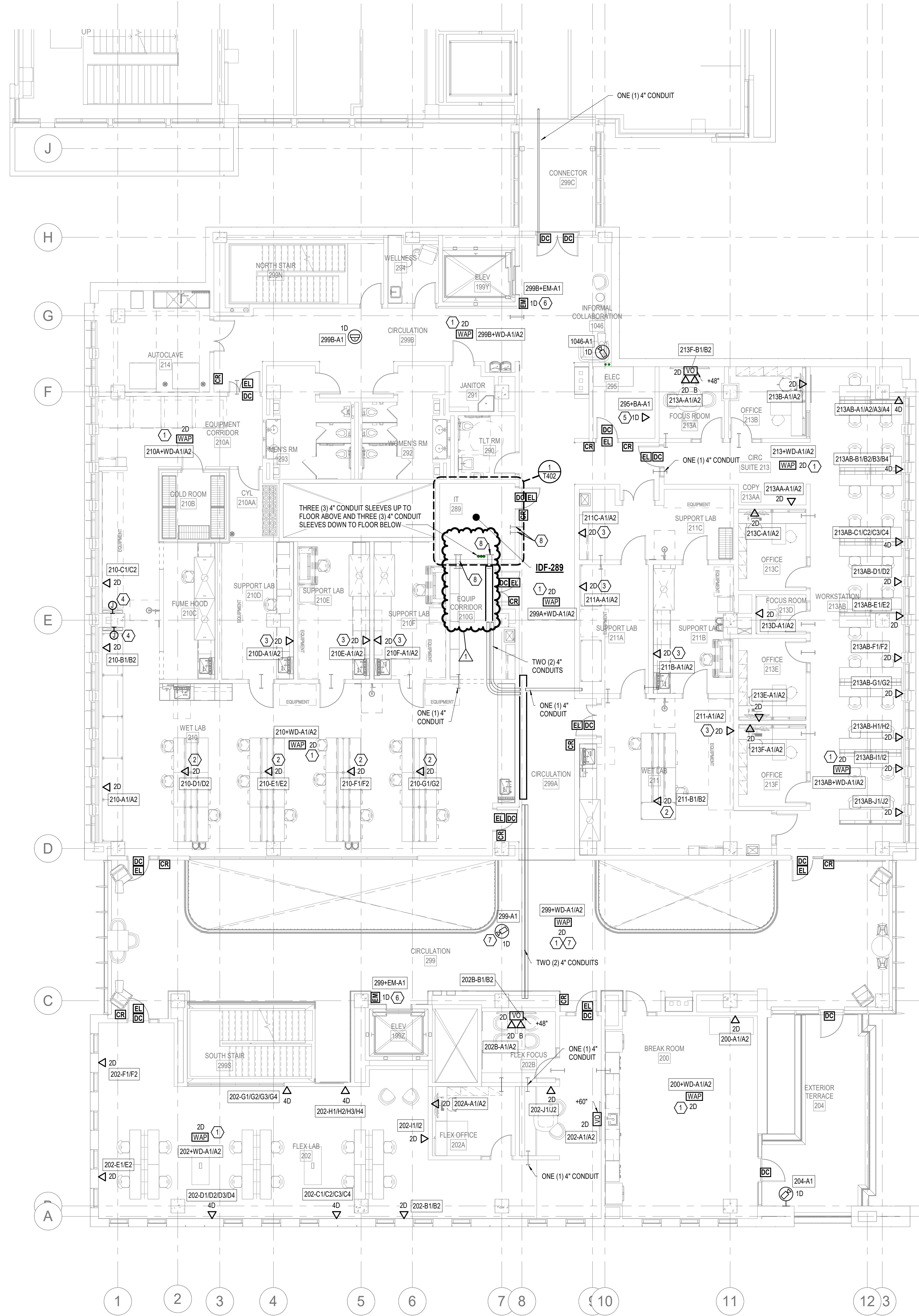
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REVISIONS:
1 11/08/2024 Addendum 1

DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276
DRAWN BY: EAG
DRAWING TITLE: TECHNOLOGY PLAN - LEVEL 1

DRAWING NUMBER: T121

11/7/2024 6:56:53 PM Autodesk Docs://23176 - IUPUI Lab Expansion and Renovation 23103 IUPUI Science Building Expansion and Renovation ET - Addition v2.rvt



1 TECHNOLOGY PLAN - LEVEL 2

1/8" = 1'-0"

ALL COMMUNICATIONS
CABLING ON THIS SHEET
SHALL BE SERVED BY IDF-289



SHEET KEYNOTES

- 1 PROVIDE CATEGORY 6A DROPS FOR WIRELESS ACCESS POINT. PROVIDE 20FT SLACK LOOP COILED NEATLY AND SUPPORTED ABOVE THE CEILING. TERMINATE CABLES WITH RJ45 MODULAR JACKS AND TEST PER SPECIFICATIONS. NOTE LOCATION ON THE RECORD DRAWINGS AND MARK LOCATION ON THE CEILING WITH A GREEN DOT STICKER.
- 2 PROVIDE TWO (2) CATEGORY 6A DROPS TO CEILING INTERFACE PANEL. REFER TO ARCHITECTURAL DRAWING 4102 FOR MORE INFORMATION.
- 3 INSTALL DATA DROPS IN SURFACE MOUNTED RACEWAY. REFER TO ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR MORE INFORMATION.
- 4 PROVIDE JUNCTION BOX FOR ROUTING OF CABLING INTO SERVICE CHASE. SEE DETAIL 41301 FOR MORE INFORMATION.
- 5 PROVIDE ONE (1) DATA DROP FOR HVAC DDC. TERMINATE CABLE WITH RJ45 MODULAR JACK AND TEST PER SPECIFICATIONS. COORDINATE EXACT LOCATION AND TERMINATION (FACEPLATE, SURFACE MOUNT BOX, ETC.) WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
- 6 PROVIDE ONE (1) CATEGORY 6A CABLE TO NEAREST IDF AND ONE (1) 184 CABLE TO SECURITY CLOSET 165.
- 7 PROVIDE ONE (1) 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
- 8 PROVIDE TWO (2) EZ PATH 44+ FIRE RATED PATHWAY INTO IDF.

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DRAWING TITLE:

TECHNOLOGY PLAN - LEVEL 2

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T122

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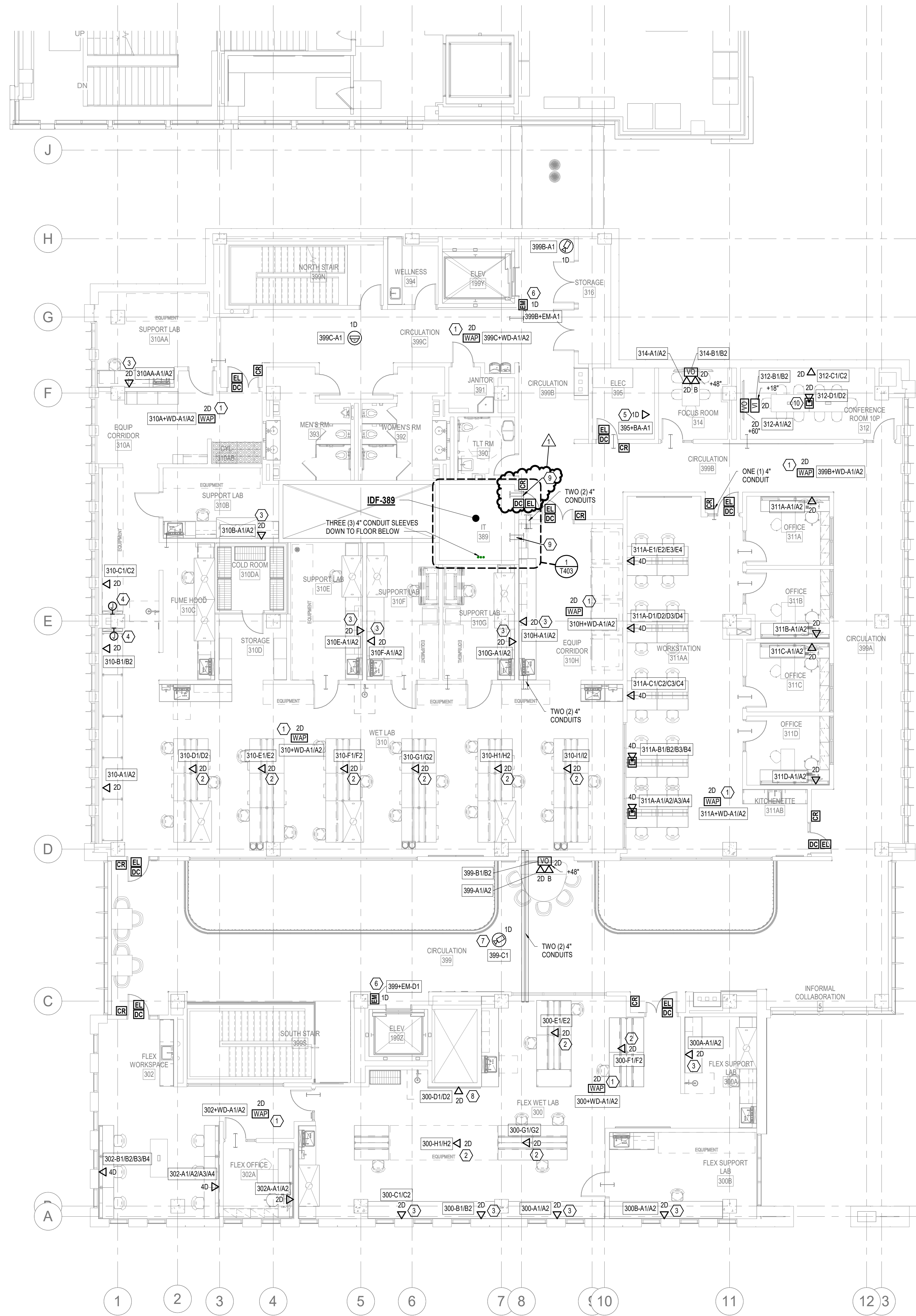
PROJECT NO. 20230276

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SHEET KEYNOTES

- 1 PROVIDE CATEGORY 6A DROPS FOR WIRELESS ACCESS POINT. PROVIDE 2FT. SLACK LOOP COILED NEATLY AND SUPPORTED ABOVE THE CEILING. TERMINATE CABLES WITH R45 MODULAR JACKS AND TEST PER SPECIFICATIONS. NOTE LOCATION ON THE RECORD DRAWINGS AND MARK LOCATION ON THE CEILING WITH A GREEN DOT STICKER.
- 2 PROVIDE TWO (2) CATEGORY 6A DROPS TO CEILING INTERFACE PANEL. REFER TO ARCHITECTURAL DRAWING Q102 FOR MORE INFORMATION.
- 3 INSTALL DATA DROPS IN SURFACE MOUNTED RACEWAY. REFER TO ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR MORE INFORMATION.
- 4 PROVIDE JUNCTION BOX FOR ROUTING OF CABLING INTO SERVICE CHASE. SEE DETAIL 41501 FOR MORE INFORMATION.
- 5 PROVIDE ONE (1) DATA DROP FOR HVAC DDC. TERMINATE CABLE WITH R45 MODULAR JACK AND TEST PER SPECIFICATIONS. COORDINATE EXACT LOCATION AND TERMINATION (FACEPLATE, SURFACE MOUNT BOX, ETC.) WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
- 6 PROVIDE ONE (1) CATEGORY 6A CABLE TO NEAREST IDF AND ONE (1) 184 CABLE TO SECURITY CLOSET 195.
- 7 PROVIDE ONE (1) 1" CONDUIT FROM CAMERA TO NEAREST ACCESSIBLE CEILING SPACE.
- 8 INFORMATION OUTLET MUST MATCH WALL FIRE RATING AT THIS LOCATION.
- 9 PROVIDE TWO (2) EZ PATH 44+ FIRE RATED PATHWAY INTO IDF.
- 10 ONE (1) 1.25" CONDUIT FOR DATA CABLING AND ONE (1) 1.25" CONDUIT FOR AV CABLING TO NEAREST ACCESSIBLE CEILING SPACE.



1 TECHNOLOGY PLAN - LEVEL 3
1/8" = 1'-0"

ALL COMMUNICATIONS
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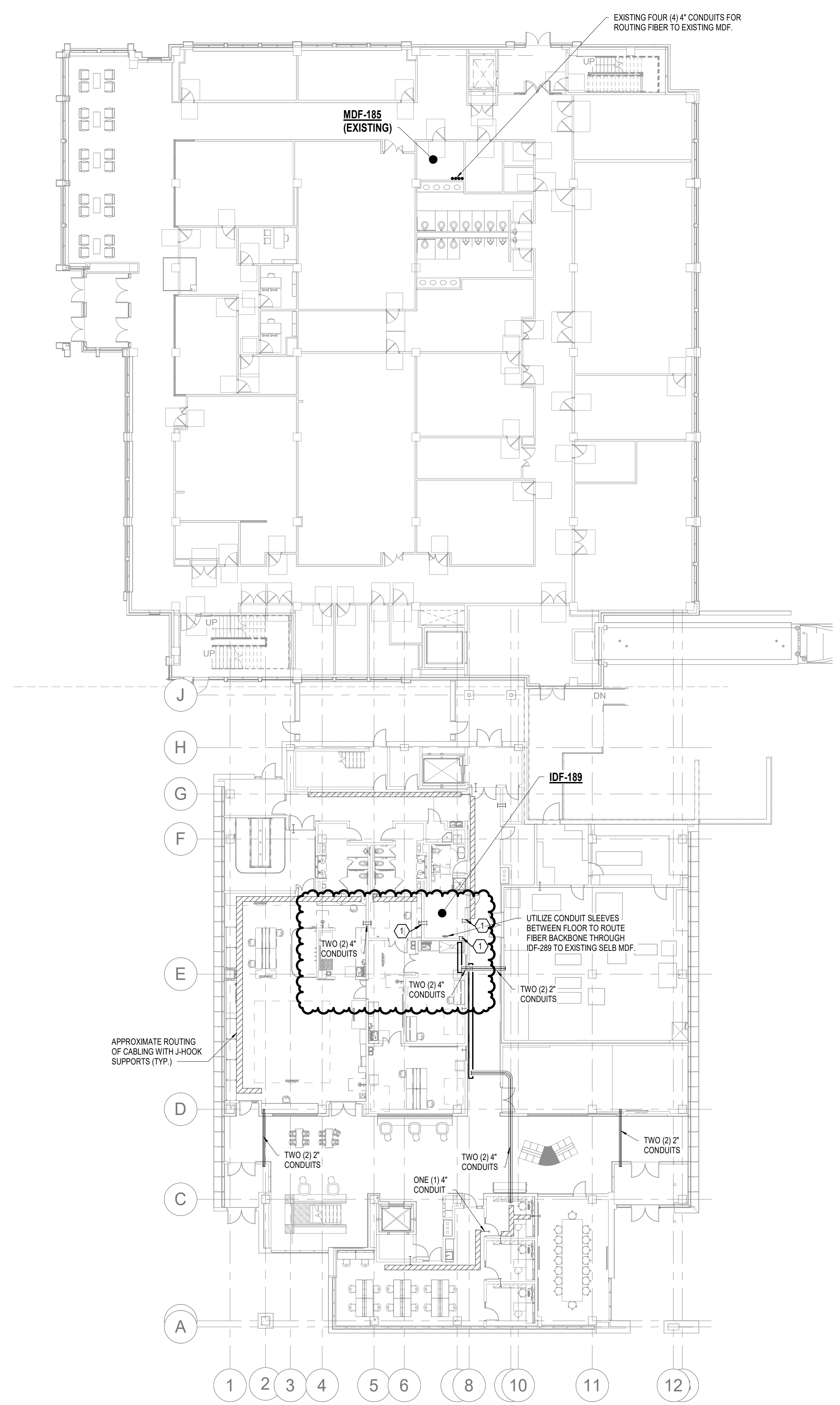
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T123

SHEET KEYNOTES

1 PROVIDE TWO (2) EZ PATH 44+ FIRE RATED PATHWAY INTO IDF.

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1 OVERALL TECHNOLOGY PLAN - LEVEL 1
1/16" = 1'-0"

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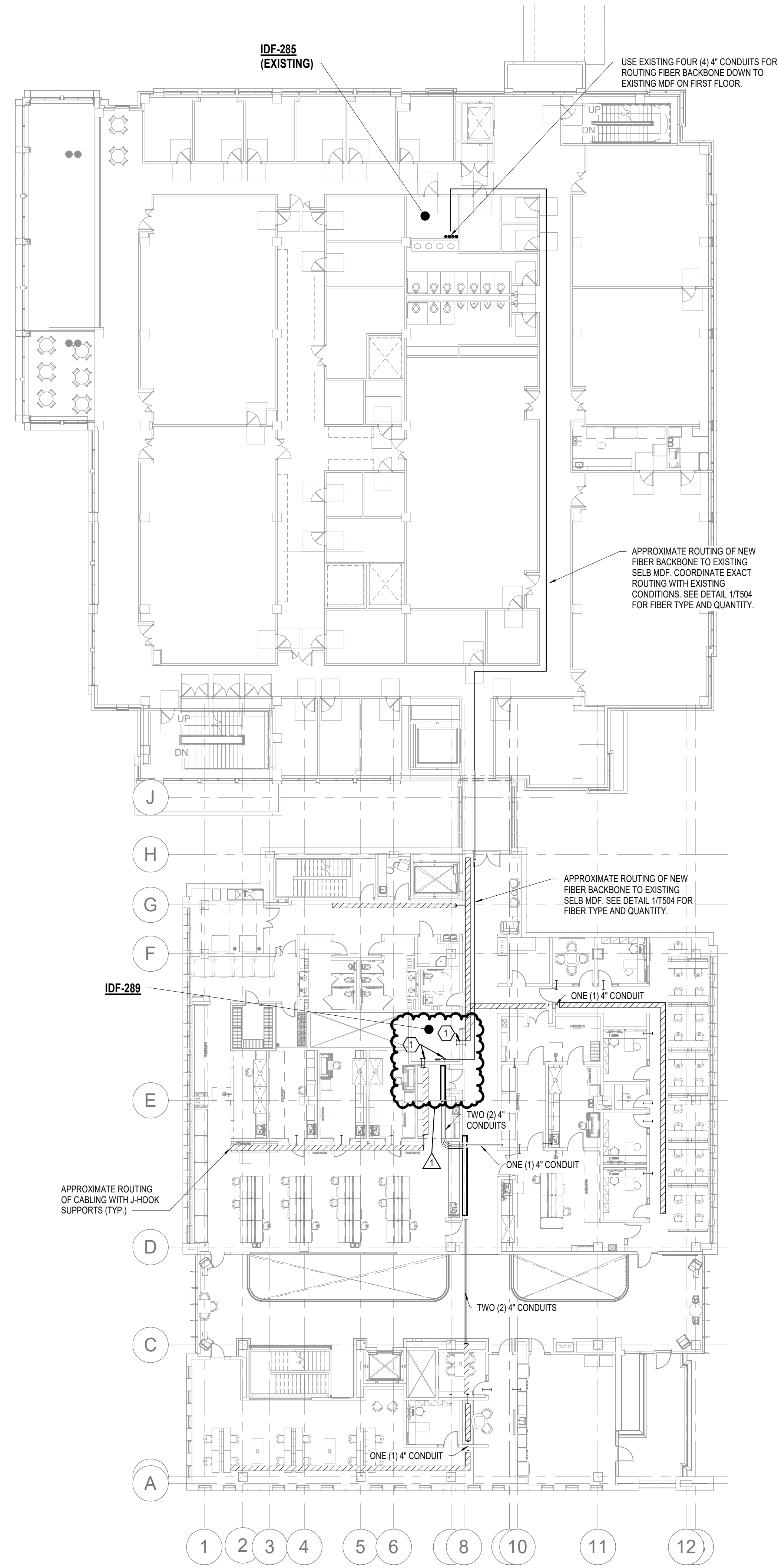
**OVERALL
TECHNOLOGY
PLAN - LEVEL 1**

DRAWING NUMBER:
T201



SHEET KEYNOTES

1 PROVIDE TWO (2) E2 PATH 44+ FIRE RATED PATHWAY INTO IDF.



1 OVERALL TECHNOLOGY PLAN - LEVEL 2
1/16" = 1'-0"

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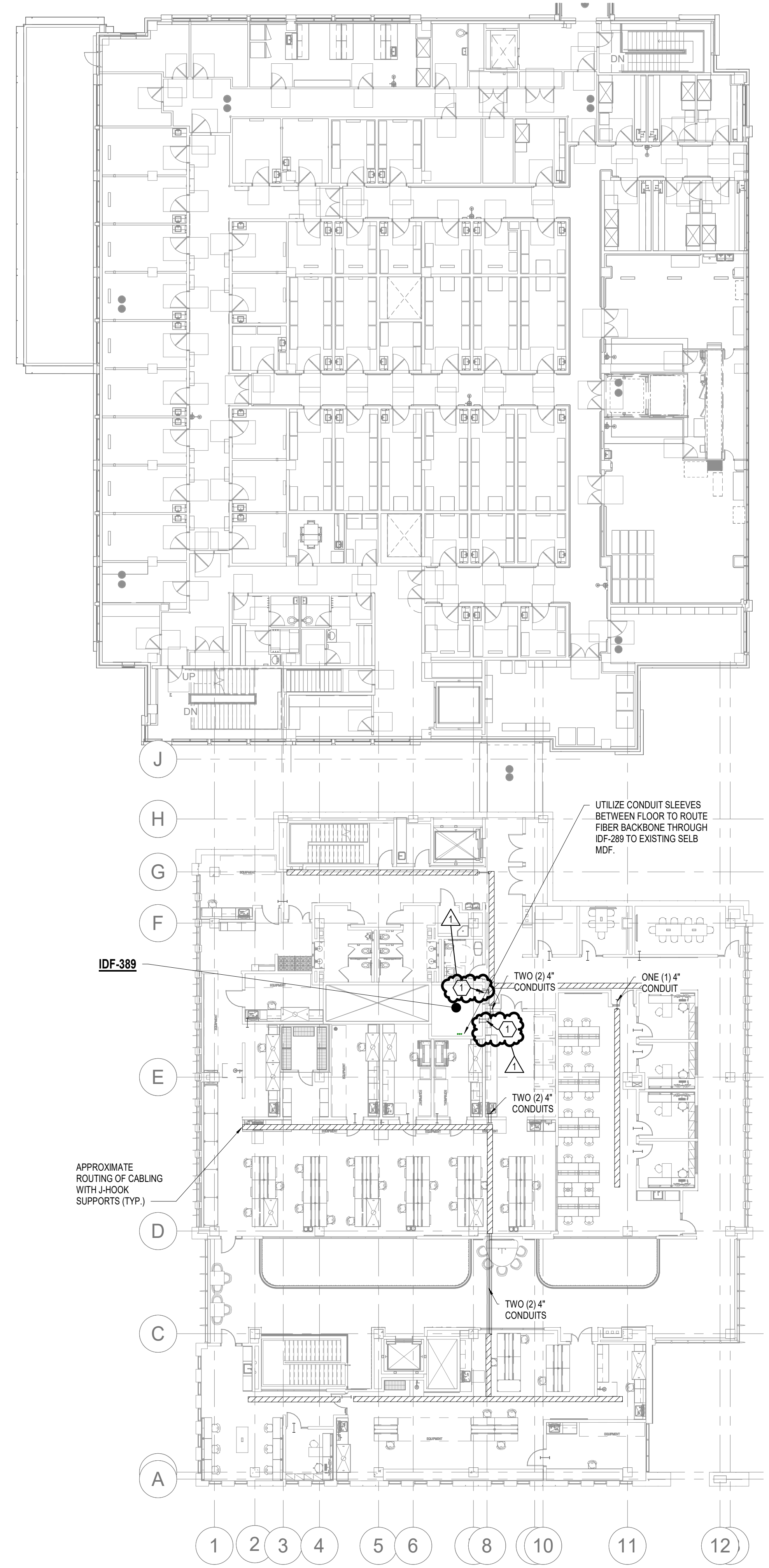
OVERALL TECHNOLOGY PLAN - LEVEL 2

DRAWING NUMBER:
T202



SHEET KEYNOTES

1 PROVIDE TWO (2) E2 PATH 44+ FIRE RATED PATHWAY INTO IDF.



1 OVERALL TECHNOLOGY PLAN - LEVEL 3
1/16" = 1'-0"

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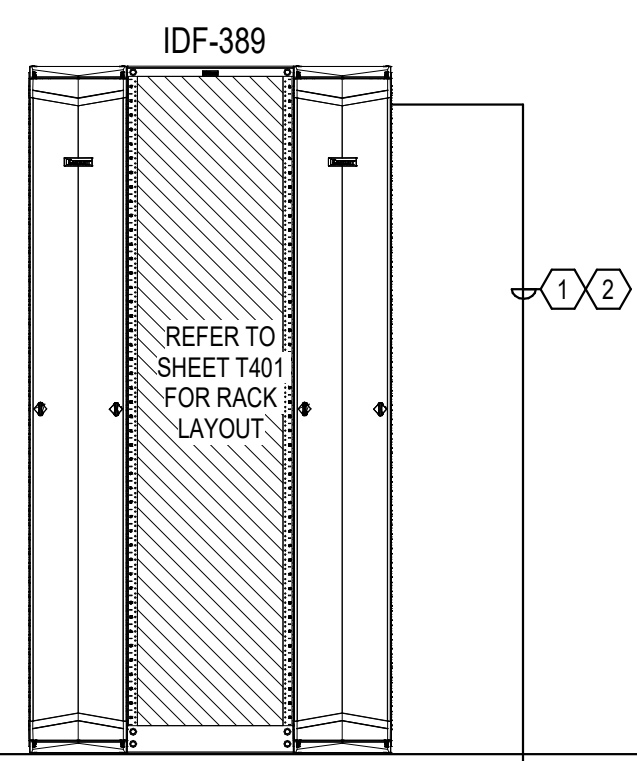
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arcDESIGN PROJECT NUMBER: 23176
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DRAWING TITLE:
OVERALL TECHNOLOGY PLAN - LEVEL 3

DRAWING NUMBER:
T203

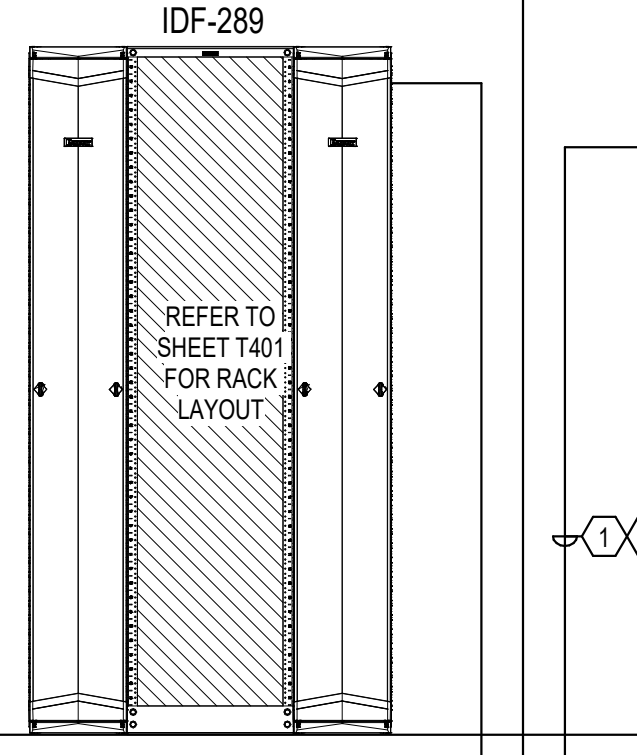


132 TOTAL PORTS
7 - 4-PORT IO'S
38 - 2-PORT IO'S
3 - 1-PORT IO'S
8 - WAP'S
8 - CAMERAS



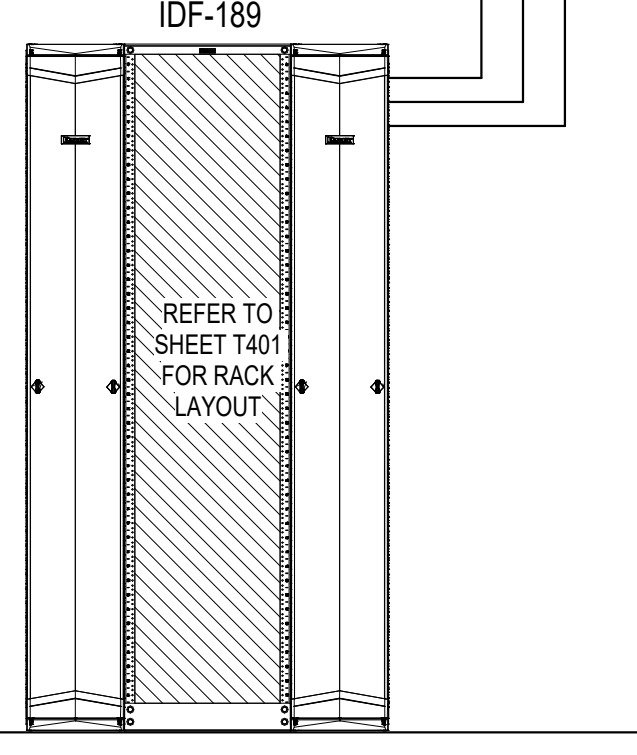
THIRD FLOOR

133 TOTAL PORTS
7 - 4-PORT IO'S
40 - 2-PORT IO'S
3 - 1-PORT IO'S
9 - WAP'S
4 - CAMERAS



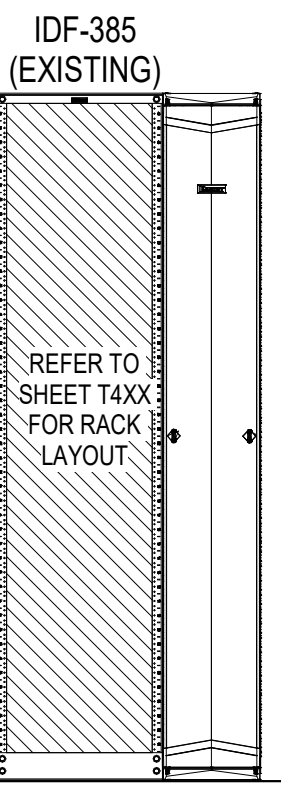
SECOND FLOOR

107 TOTAL PORTS
3 - 4-PORT IO'S
33 - 2-PORT IO'S
6 - 1-PORT IO'S
8 - WAP'S
7 - CAMERAS

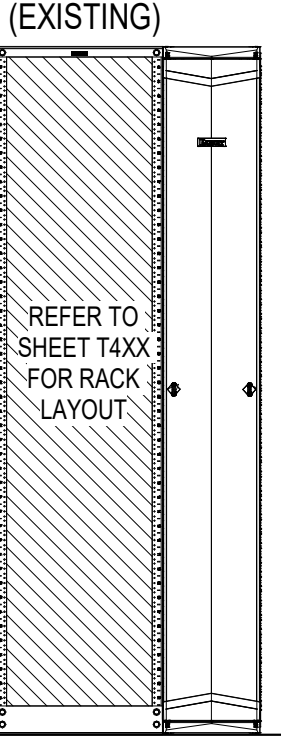


FIRST FLOOR

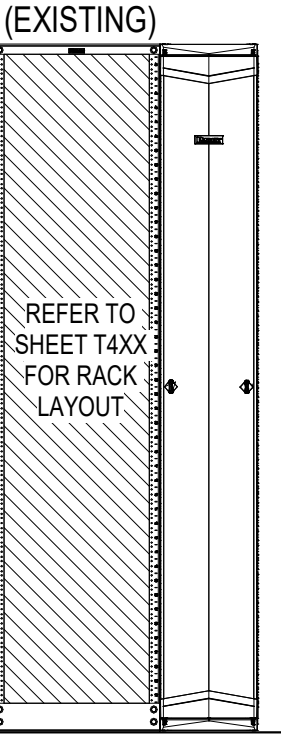
IUI LAB ADDITION



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

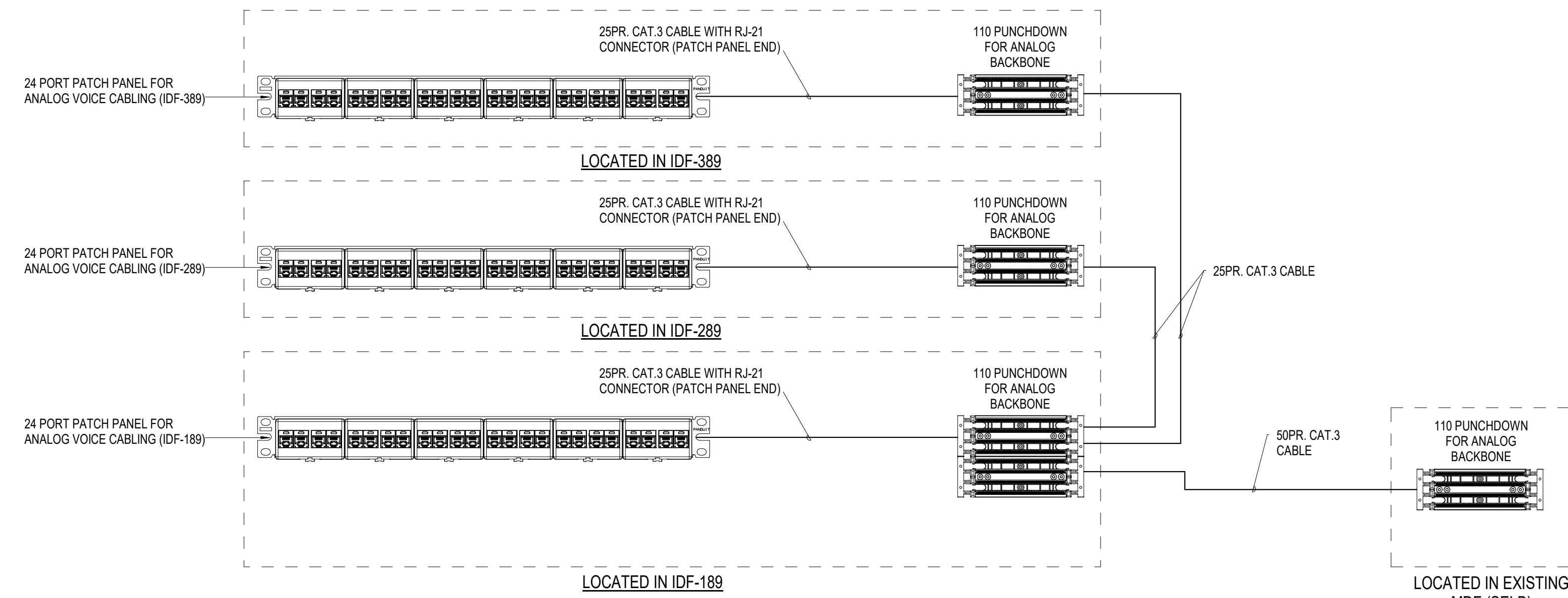
SELB

FIBER ROUTED THROUGH COORIDOR
LOCATED ON SECOND FLOOR.

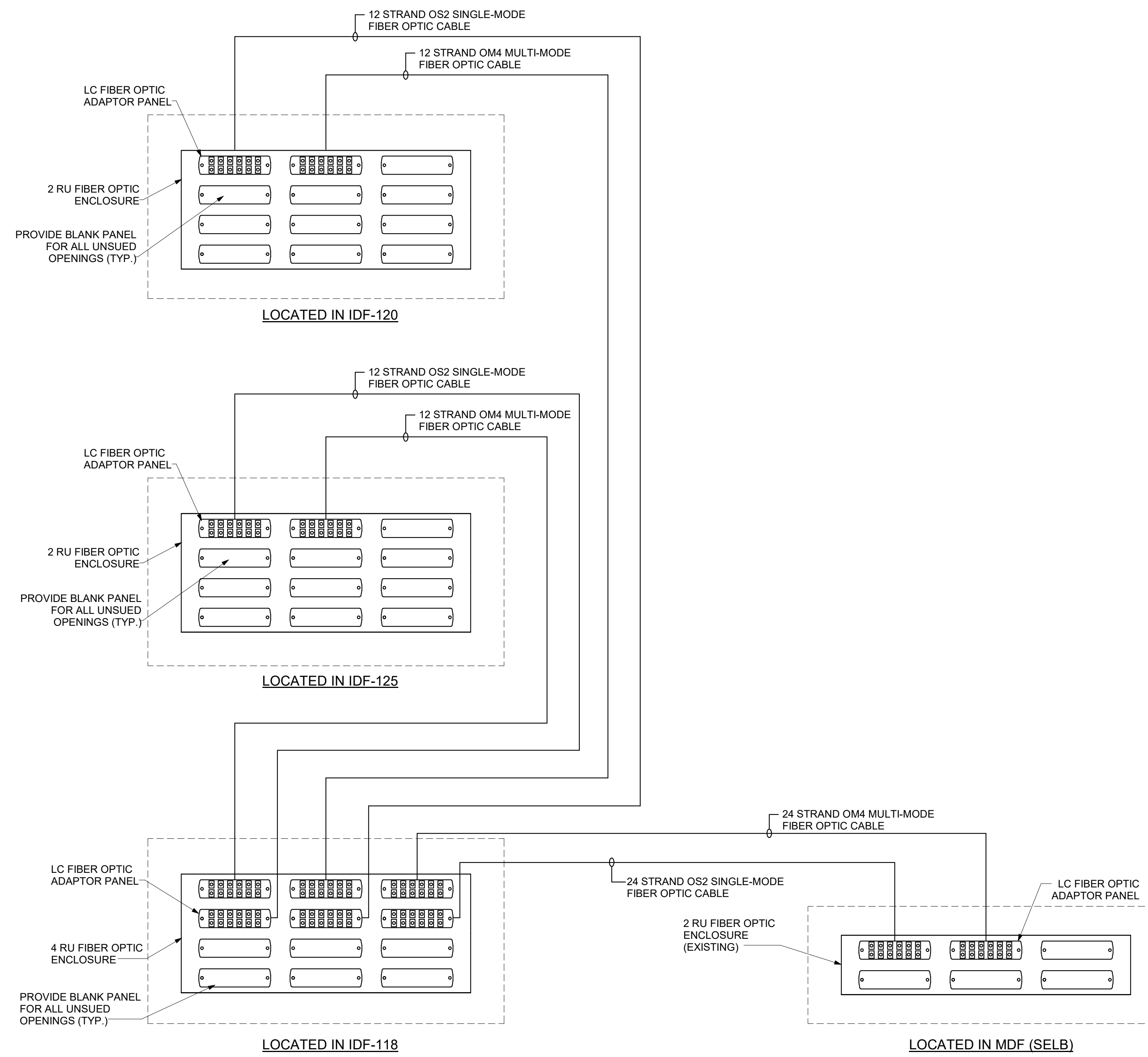
DETAIL KEYNOTES

- 1 12 STRAND SINGLE-MODE FIBER OPTIC CABLE (REFER TO FIBER RISER DIAGRAM FOR MORE INFORMATION)
- 2 12 STRAND MULTI-MODE FIBER OPTIC CABLE (REFER TO FIBER RISER DIAGRAM FOR MORE INFORMATION)

1 TELECOM RISER DIAGRAM
NOT TO SCALE



3 ANALOG BACKBONE RISER DIAGRAM
NOT TO SCALE



2 FIBER OPTIC RISER DIAGRAM
NOT TO SCALE

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DATE: 10.25.2024
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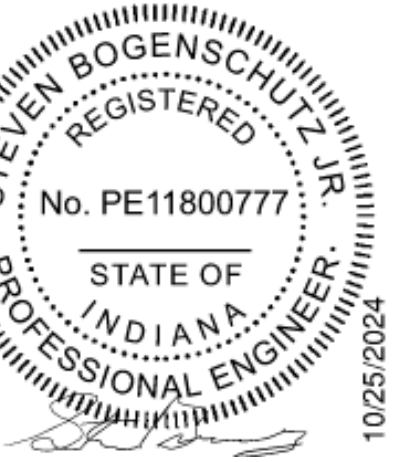
**TECHNOLOGY
DETAILS**

DRAWING NUMBER:

T504



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DATE: 10.25.2024
arcDESIGN PROJECT NUMBER: 23176
CLIENT PROJECT NUMBER: 20230276
DRAWN BY: Author
DRAWING TITLE:

TECHNOLOGY SCHEDULES

DRAWING NUMBER:

T601



ROOM NUMBER	LABEL	TELECOM ROOM	DATA PORTS	DESCRIPTION
	ROOF-A1	IDF-389	1	ROOF MOUNTED SECURITY CAMERA
	ROOF-B1	IDF-389	1	ROOF MOUNTED SECURITY CAMERA
	ROOF-C1	IDF-389	1	ROOF MOUNTED SECURITY CAMERA
	ROOF-D1	IDF-389	1	ROOF MOUNTED SECURITY CAMERA
300	300-WD-A1A2	IDF-389	2	WIRELESS ACCESS POINT
300	300-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-B1B2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-C1C2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-D1D2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-E1E2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-F1F2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-G1G2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300	300-H1H2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300A	300A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
300B	300B-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
302	302-WD-A1A2	IDF-389	2	WIRELESS ACCESS POINT
302	302-A1A2A3A4	IDF-389	4	SINGLE GANG INFORMATION OUTLET
302	302-B1B2B3B4	IDF-389	4	SINGLE GANG INFORMATION OUTLET
302A	302A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
302A	302A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-WD-A1A2	IDF-389	2	WIRELESS ACCESS POINT
310	310-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-B1B2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-C1C2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-D1D2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-E1E2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-F1F2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310	310-G1G2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310A	310A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310A	310A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310B	310B-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310E	310E-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310F	310F-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310G	310G-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310H	310H-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
310I	310I-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
311A	311A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
311A	311A-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
311AA	311AA-WD-A1A2	IDF-389	2	WIRELESS ACCESS POINT
311AA	311A-A1A2A3A4	IDF-389	4	INFORMATION OUTLET FLOOR BOX
311AA	311A-B1B2B3B4	IDF-389	4	INFORMATION OUTLET FLOOR BOX
311AA	311A-C1C2C3C4	IDF-389	4	SINGLE GANG INFORMATION OUTLET
311AA	311A-D1D2D3D4	IDF-389	4	SINGLE GANG INFORMATION OUTLET
311AA	311A-E1E2E3E4	IDF-389	4	SINGLE GANG INFORMATION OUTLET
311B	311B-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
311C	311C-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
311D	311D-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
312	312-A1A2	IDF-389	2	AV OUTPUT LOCATION
312	312-B1B2	IDF-389	2	AV OUTPUT LOCATION
312	312-C1C2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
312	312-D1D2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
314	314-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
314	314-B1B2	IDF-389	2	AV OUTPUT LOCATION
395	395-BA-A1	IDF-389	1	HVAC DDC
399	399-EM-D1	IDF-389	1	EMERGENCY PHONE
399	399-A1A2	IDF-389	2	SINGLE GANG INFORMATION OUTLET
399	399-B1B2	IDF-389	2	AV OUTPUT LOCATION
399	399-C1	IDF-389	1	CEILING MOUNTED SECURITY CAMERA
399B	399B-EM-A1	IDF-389	1	EMERGENCY PHONE
399B	399B-WD-A1A2	IDF-389	2	WIRELESS ACCESS POINT
399B	399B-A1	IDF-389	1	CEILING MOUNTED SECURITY CAMERA
399C	399C-WD-A1A2	IDF-389	2	WIRELESS ACCESS POINT
399C	399C-A1	IDF-389	1	CEILING MOUNTED SECURITY CAMERA
499	499-BA-A1	IDF-389	1	HVAC DDC
499N	499N-A1	IDF-389	1	WALL MOUNTED SECURITY CAMERA

ROOM NUMBER	LABEL	TELECOM ROOM	DATA PORTS	DESCRIPTION
200	200-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
200	200-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202	202-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
202	202-A1A2	IDF-289	2	AV OUTPUT LOCATION
202	202-B1B2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202	202-C1C2C3C4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
202	202-D1D2D3D4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
202	202-E1E2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202	202-F1F2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202	202-G1G2G3G4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
202	202-H1H2H3H4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
202	202-I1I2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202A	202A-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202B	202B-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
202B	202B-B1B2	IDF-289	2	AV OUTPUT LOCATION
204	204-A1	IDF-289	1	WALL MOUNTED SECURITY CAMERA
210	210-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
210	210-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210	210-B1B2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210	210-C1C2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210	210-D1D2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210	210-E1E2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210	210-F1F2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210	210-G1G2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210A	210A-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
210D	210D-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210E	210E-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
210F	210F-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
211	211-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
211	211-B1B2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
211A	211A-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
211B	211B-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
211C	211C-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213A	213A-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213A	213A-B1B2	IDF-289	2	AV OUTPUT LOCATION
213AB	213AB-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213AB	213AB-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
213AB	213AB-A1A2A3A4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
213AB	213AB-B1B2B3B4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
213AB	213AB-C1C2C3C4	IDF-289	4	SINGLE GANG INFORMATION OUTLET
213AB	213AB-D1D2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213AB	213AB-E1E2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213AB	213AB-F1F2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213AB	213AB-G1G2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213AB	213AB-H1H2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213AB	213AB-I1I2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213B	213B-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213C	213C-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213D	213D-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213E	213E-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
213F	213F-A1A2	IDF-289	2	SINGLE GANG INFORMATION OUTLET
295	295-BA-A1	IDF-289	1	HVAC DDC
299	299-EM-A1	IDF-289	1	EMERGENCY PHONE
299	299-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
299	299-A1	IDF-289	1	CEILING MOUNTED SECURITY CAMERA
299A-1	299B-EM-A1	IDF-289	1	EMERGENCY PHONE
299A-2	299A-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
299B	299B-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT
299B	299B-A1	IDF-289	1	CEILING MOUNTED SECURITY CAMERA
1046	1046-A1	IDF-289	1	CEILING MOUNTED SECURITY CAMERA
SUITE 213	213-WD-A1A2	IDF-289	2	WIRELESS ACCESS POINT

ROOM NUMBER	LABEL	TELECOM ROOM	DATA PORTS	DESCRIPTION
	189-WD-A1A2	IDF-189	1	WIRELESS ACCESS POINT
	EXTERIOR-EM-A1/EXTERIOR-A2	IDF-189	2	EMERGENCY PHONE
	EXTERIOR-B1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA
100	100-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
100	100-A1A2	IDF-189	2	AV OUTPUT LOCATION
100	100-B1B2	IDF-189	2	AV OUTPUT LOCATION
100	100-C1C2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
100	100-D1D2	IDF-189	2	AV OUTPUT LOCATION
100	100-E1E2	IDF-189	2	INFORMATION OUTLET FLOOR BOX
102	102-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
102	102-A1A2A3A4	IDF-189	4	SINGLE GANG INFORMATION OUTLET
102	102-B1B2B3B4	IDF-189	4	SINGLE GANG INFORMATION OUTLET
102	102-C1C2C3C4	IDF-189	4	SINGLE GANG INFORMATION OUTLET
102	102-D1D2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
102A	102A-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
102B	102B-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
102C	102C-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
110	110-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-B1B2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-C1C2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-D1D2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-E1E2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-F1F2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-G1G2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-H1H2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-I1I2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-J1J2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-K1K2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110	110-L1L2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110A	110A-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
110A	110A-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110A	110A-B1B2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110BA	110BA-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110BB	110BB-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110BB	110BB-B1B2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
110BC	110BC-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
194	194-EL-A1	IDF-189	1	ELEVATOR PHONE
195	195-FP-A1A2	IDF-189	2	FIRE PANEL
195	195-A1A2	IDF-189	2	SECURITY PANELS
197	197-BA-A1	IDF-189	1	LEED METERING SYSTEM
197	197-BA-B1	IDF-189	1	HVAC DDC
197A	197A-BA-A1A2	IDF-189	2	SINGLE GANG INFORMATION OUTLET
199	199-EM-A1	IDF-189	1	EMERGENCY PHONE
199	199-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
199	199-A1A2	IDF-189	2	DIGITAL SIGNAGE LOCATION
199	199-B1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA
199	199-C1C2	IDF-189	2	DIGITAL SIGNAGE LOCATION
199A	199A-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
199B	199B-WD-A1A2	IDF-189	2	WIRELESS ACCESS POINT
199B	199B-A1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA
199T	199T-EL-A1	IDF-189	1	ELEVATOR PHONE
199U	199U-EM-A1	IDF-189	1	EMERGENCY PHONE
199U	199U-A1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA
199V	199V-A1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA
199W	199W-A1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA
199X	199X-A1	IDF-189	1	CEILING MOUNTED SECURITY CAMERA

FLOOR	SERVED ROOM	IO TYPE	IO TYPE (# ports)	# IO's	# PORTS	IDF TOTAL PORTS	INSTALLED RACKS
4	389	BA (1)	1	1	1	----	
4	389	CAM	1	5	5	----	
3	389	BA (1)	1	1	1	----	
3	389	WAP	2	8	16	----	
3	389	STD (2)	2	38	76	----	
3	389	STD (4)	4	7	28	----	
3	389	CAM	1	3	3	----	
3	389	EM	1	2	2	----	
SUM	----	----	----	----	----	132	1
2	289	BA (1)	1	1	1	----	
2	289	WAP	2	9	18	----	
2	289	STD (2)	2	40	80	----	
2	289	STD (4)	4	7	28	----	
2	289	CAM	1	4	4	----	
2	289	EM (1)	1	2	2	----	
SUM	----	----	----	----	----	133	1
1	189	BA (1)	1	2	2	----	
1	189	BA (2)	2	2	4	----	
1	189	WAP	2	8	16	----	
1	189	ELEV	1	2	2	----	
1	189	STD (2)	2	30	60	----	
1	189	STD (4)	4	3	12	----	
1	189	CAM	1	7	7	----	
1	189	EM (1)	1	2	2	----	
1	189	EM (2)	2	1	2	----	
SUM	----	----	----	----	----	107	1