

SECTION 00 90 01

**BIDDING AND CONTRACT REQUIREMENTS
ADDENDUM NUMBER 01**

Date: July 8, 2025

Distributed via:
Key Blueprints Planroom
Bid Express

To: **Prospective Bidders**

From: Legat Architects, Inc.
22 E. Gay Street, Ste. 500
Columbus, OH 43215
614.228.7758
www.legat.com

Architect's Project Number:
223121.00

Re: **Addendum Number 01 to the bidding documents for:**

**Ohio State School for the Blind
OSB-230001 New Natatorium**

This addendum forms a part of the bidding and contract documents and modifies the original bidding documents dated June 16, 2025. Acknowledge receipt of this addendum in the space provided on Bid Form. FAILURE TO DO SO MAY SUBJECT BIDDER TO DISQUALIFICATION.

I. SCHEDULE UPDATE

A. REVISE Bid Opening Date to **Thursday August 7, 2025 at 2:00PM.**

II. PART 1 - ADDENDUM TO THE PROJECT MANUAL

- A. Cover Sheet
 - 1. ADD 'Bid Set' title to cover sheet.
- B. Document 00 10 00 – Solicitation.
 - 1. Page 2:
 - a. REVISE bids received date to Thursday, August 7, 2025 at 2:00PM
- C. Document 13 34 19 – METAL BUILDING SYSTEMS
 - 1. Page 6, Article PART 2 - Products:
 - a. At Paragraph 2.01 Manufacturers:
 - 1) ADD Chief Buildings – A Division of Chief Industries as acceptable manufacturer #8.
- D. Document 22 10 00 - PLUMBING PIPING AND SPECIALTIES.
 - 1. Page 1, Article PART 1 General:
 - a. At Paragraph 1.2A:
 - 1) ADD line item for 'Interior storm piping from sump pump.'
 - 2) REVISE numbering accordingly.
 - 2. Page 9, Article PART 3 - Execution:
 - a. At Paragraph 3.7:
 - 1) REVISE Schedule to include Storm Piping.
- E. Document 22 10 29- PLUMBING PUMPS.
 - 1. Page 3, Article PART 2 - Products:
 - a. At Paragraph 2.2:
 - 1) ADD Submersible Sump Pumps section.
- F. Document 23 84 16- DEHUMIDIFIERS.
 - 1. Page 2, Article PART 2 - Products:

- a. At Paragraph 2.1:
 - 1) At Sub-Paragraph B:
 - a) ADD Seresco as acceptable manufacturer #4.

III. PART 2 - ADDENDUM TO THE DRAWINGS

- A. Drawing HM-101, titled, HAZARDOUS MATERIALS ABATEMENT PLAN.
 - 1. At GENERAL NOTES:
 - a. REVISE lettering of General Notes line items for coordination with Coded Notes.
- B. Drawing A-201, titled, EXTERIOR BUILDING ELEVATIONS.
 - 1. At MATERIAL LEGEND – EXTERIOR ELEVATIONS:
 - a. ADD Kingspan and Centria as acceptable Manufacturers.
 - 1) Additional manufacturers can be accepted upon Architect review.
- C. Drawing P-100, titled, FOUNDATION PLUMBING PLAN.
 - 1. At Pool Mechanical Room 108:
 - a. ADD Sump Pump SP-1 and discharge piping.
 - b. ADD Keynote 17.
- D. Drawing P-101, titled, FIRST FLOOR PLUMBING PLAN.
 - 1. At Pool Mechanical Room 108:
 - a. ADD Sump pump discharge piping.
 - b. ADD Keynote 24.
- E. Drawing P-601, titled, SCHEDULES.
 - 1. At Plumbing Equipment Schedule:
 - a. ADD SP-1.
- F. Drawing P-801, titled, DETAILS.
 - 1. At SP-1 Submersible Sump Pump Detail:
 - a. ADD Detail.
 - 2. At Sewage Ejector Detail:
 - a. REVISE Detail to remove foundation inlet.
- G. Drawing E-201, titled, POWER AND SYSTEMS PLAN.
 - 1. At Titleblock:
 - a. REVISE Sheet Number.
 - 2. At Pool Mechanical Room Enlarged Power Plan:
 - a. ADD Sump Pump SP-1 power connection & circuitry.
- H. Drawing E-401, titled, ONE LINE DIAGRAM, PANELBOARD SCHEDULES, AND DETAILS.
 - 1. At Titleblock:
 - a. REVISE Sheet Number.
 - 2. At Panelboard-LN Schedule:
 - a. ADD Sump Pump SP-1 load.

IV. PART 3 - ADDENDUM TO THE ADDENDUM

- A. None.

V. PART 4 - CLARIFICATIONS

- A. *Question: Does the high performance painting spec apply to the structural steel? Does a special primer need to be used?*

1. Answer: Yes, all structural steel is to receive high performance coatings per Spec Section 09 96 00 High Performance Coatings. The basis of design primer for PEMB structural steel is Tnemec Series 94-H20 Hydro-Zinc (Spec Section 09 96 00 Part 2.03(A)).
- B. *Question: Do you have a set start and/or finish date for this project?*
 1. Answer: Approx. start date is September 2025. Approx. end date is July 2026.
- C. *Question: Is the contractor responsible for the utility tap fees?*
 1. Answer: No new utilities are anticipated for this project. If there are utility tap fees, contractor will be reimbursed.
- D. *Question: Will the gas company be responsible for the site gas line & meter? Is the contractor responsible for any or that cost?*
 1. Answer: The existing gas service is to remain in place. Plumbing contractor is responsible for relocation of the gas meter.
- E. *Question: Just to confirm, is the owner hiring and paying for the 3rd party inspector?*
 1. Answer: Yes
- F. *Question: Will temporary fence be required? If so, please define limits and requirements.*
 1. Answer: Due to location, contractor's preference to include closure for staging area as well as project site.
- G. *Question: Please confirm that there are no allowances.*
 1. Answer: No allowances.
- H. *Question: The specifications read that the project duration is 365 consecutive days but during the pre-bid we were told the project duration is from September 2025 to July 2026. Please advise.*
 1. Answer: Final schedule to be determined after Controlling Board approval of awarded bidder.
- I. *Question: Is there a geotechnical report available for review.*
 1. Answer: None available – refer to FOUNDATION NOTE No. 2 on S-101 FOUNDATION PLAN. Specified bearing capacity must be verified by a soils engineer prior to placing concrete.
- J. *Question: A-401 appears to label some of the toilet accessories but not all. I see that some toilet accessories are also identified on A-212 but there are still some areas that appear to be missing labels such as roms 103T and 103S. Could all accessories be coded for identification?*
 1. Answer: Toilet accessories are tagged on A-401 when they do not show up on A-212 interior elevations. Extent of toilet accessories in the restrooms and shower areas for Men and Women are identical, other than the sanitary napkin disposal (SN) accessories in the Women's group restroom, as shown in the drawings.
- K. *Question: Could a substitution request form be provided?*
 1. Answer: Please request substitutions by email.
- L. *Question: Is all ductwork transite containing?*
 1. Answer: From the current drawings, all ductwork in the floor of the pool looks to be transite containing.
- M. *Question: Is transite duct visible or is it hidden inside the duct?*
 1. Answer: The transite cannot be seen due to it being in the floor of the pool.
- N. *Question: The larger ductwork looked like metal to me from the floor so just checking if it's all duct that's transite or just some of it?*
 1. Answer: From the current drawings, only the floor of the pool areas ductwork contains transite.
- O. *Question: Describe what and where the vapor barrier can be found? It is only in the walk look and floor of the pool, correct?*
 1. Answer: From the current drawings a vapor barrier is assumed to be installed on the underside of the pool. The makeup of the vapor barrier is to be determined when it is exposed during demo.
- P. *Question: Do you expect the vapor barrier to be able to be separated from the concrete or do you expect it will all go as asbestos? If it's all to be asbestos, what is the expected thickness of the pool walls and pool floor?*
 1. Answer: The makeup of the vapor barrier is indetermined and is not accessible until demo work is performed. The thickness of the pool walls and pool floor should be in the current drawings.
- Q. Spray insulation thickness on the underside of the roof is to achieve minimum U-0.035, typical throughout building. Basis of design product (Staycell Closed-Cell Spray Foam System – Preferred Solutions, Inc.) is a foamed-in-place intumescent insulation that is sprayed directly onto underside of roof panels. Provide thermal blocks on each roof purlin, as shown in Bid Set drawings.

- R. Detail 6/A-501 is diagrammatic at the intersection of the roof slopes. As this panel joint will be dictated by the PEMB manufacturer, the exact panel joint layout is not shown in the drawings. It is not intended to be one panel bent over the two slopes.
- S. Skylights over the pool area are to be supplied by skylight vendor, not PEMB manufacturer.
- T. There is no PEMB basis of design.
- U. Contractor is responsible to provide additional on-site investigation for flow testing to verify existing conditions to receive required flow.
- V. Design intent is for the PEMB to be carbon steel, per GENERAL NOTES – HIGH PERFORMANCE COATINGS on Sheet AF001.
- W. Provide vertical (non-tapered) profile of PEMB columns to min. 7'-0" A.F.F., as demonstrated on Sheets A-301, A-302 & A-311.
- X. There are no landscaping drawings or specifications.
- Y. Signage is to be included in the bid.
- Z. Existing natatorium drawings are available for reference upon request. Contact Architect.

END OF SECTION

This addendum consists of 39 pages.

This addendum has 35 attached pages identified below:

- Pre-Bid Attendance List (2 pages)
- EDGE Requirements - for reference only (2 pages)
- Specification Sections:
 - 22 10 00 – PLUMBING PIPING AND SPECIALTIES. (10 pages)
 - 22 10 29 – PLUMBING PUMPS. (4 pages)
 - 23 84 16 – DEHUMIDIFIERS. (10 pages)
- Sketches:
 - None.
- Drawings:
 - HM-101 – HAZARDOUS MATERIALS ABATEMENT PLAN
 - P-100 – FOUNDATION PLUMBING PLAN
 - P-101 – FIRST FLOOR PLUMBING PLAN
 - P-601 – SCHEDULES
 - P-801 – DETAILS
 - E-201 – POWER AND SYSTEMS PLAN
 - E-401 – ONE LINE DIAGRAM, PANELBOARD SCHEDULES, AND DETAILS

LEGAT ARCHITECTS

Design with a Difference

Attendance Record

OWNER	Ohio State School for the Blind	RE	Pre-Bid Meeting
PROJECT TITLE	OSB-230001 New Natatorium	PROJECT NO.	223121.00
LOCATION	5220 N. High Street	DATE, TIME	July 2, 2025, 10:00 AM

NAME	ORGANIZATION	EMAIL
------	--------------	-------

Matthew New	RRES Demo	Matt@RRESVCS.com
(EDGE) DAN SHERWIN	SHERWIN ELEC.	DSHERWIN@SHERWINELECTRICAL.COM
Kaylynn Morgan-Stulgis	Ferguson Construction	KStulgis@ferguson-construction.com
Luke Vandrell	" "	lvandrell@ferguson-construction.com
Jay Bussey	Roberts Construction	JBussey@RobertsConstruction.net
BRAD WALKER	HINA Environmental	brwalker@hinanvironmental.com
Yonn Seto	ECS Construction	yseto@ecsbuilds.com
Brandon Williams	Temporary Wall Systems	brandon.williams@TempWallSystems.com
Andrew Rowe	ECS	arowe@ecsbuilds.com
MIKE CASEY	PEPPER CONSTRUCTION.	MCASEY@PEPPERCONSTRUCTION.COM
MATT ALLSHOUSE	ELFORD	MALLSHOUSE@ELFORD.COM
Mitchell Hines	Setterlin	m.hines@setterlin.com
Brad Bumpus	Lepi	BRAD@LepiEnterprises.COM

WGC - Chad Malick - cmalickwgc@gmail.com
AKC Don Marofsky donmarofsky@sbcglobal.net 614-228-7892
O'Rourke WPorking - Tony Ulling - Tulling@orourkewvorking.com
Simon Surfaces - Luke Brown - lbrown@simonsurfaces.com 513-871-1420
Sehlhorst - Ryan Freeman - rfreeman@sehlhorst.com / 513 265 9765
Sehlhorst Jeff Sizemore Jeff@sehlhorst.com 513-432-3783
Stonhard Tony Donatelli tony.donatelli@stonhard.com 614-357-9310
DSEA Ken Beatty kbeatty@dsea-services.com 513-617-1532
Continental Ethan Parker eparker@builtbycontinental.com 937-539-3571
Continental Jason Vermilion jvermilion@builtbycontinental.com 740-258-8962
Continental Danielle Wyatt dwyatt@builtbycontinental.com 614-883-1090
Hydro Mechanical Trevor Lender tlender@hydromechanicalohio.com 614-301-0285
EPS Ben Cassidy bcassidy@~~eps~~epsOhio.com 614-302-7625
NRGO Tara Street tara@northrisejgc.com 740-415-8303
~~Scain~~ Scain Trey Potter tpotter@scaindc.com 202-445-5111



OSB-240001
Ohio State School for the Blind
New Natatorium
Columbus, Franklin County OH 43214

Encouraging Diversity Growth and Equity (EDGE) Requirements

- This Project is subject to the State of Ohio's Encouraging Diversity, Growth and Equity ("EDGE") Business Development Program which was established under the Ohio Revised Code 123.152 (9/26/2003). The program is a requirement for companies choosing to bid and work on state funded projects.
- The EDGE participation goal for the Dorm Demolition and New Road project is 5%.
- Meeting the goal is a requirement unless a company demonstrates good faith efforts were made to utilize an EDGE vendor and were unable to do so. **Bidders selecting Option B on the EDGE Program Commitment to Participate section of the bid form**, if committing to less than the goal and are selected must submit a request for waiver on company letterhead, provide a detailed **Demonstration of Good Faith** form (F110-13v0912) and go through the waiver process before being awarded a contract.
- **Bids are to be submitted via Bid Express Internet Bidding on Wednesday, July 17th, 2025, before 2:00 P.M. local time!**
- If awarded a contract, confirm the EDGE contractor(s) is certified when the **Intent to Contract Form #00-45-39** (2016-March) is signed. You may request subcontractor's certification letter to verify certification timeline which is a 2-year period. Also, provide a detailed list of materials, supplies, labor, and cost for EDGE services.
 - **Materials/Supplies** - Mark Material Supplier Box & enter Type, Quantity, & Cost of Materials
 - **Trade Subcontractor** - Mark Subcontractor Box & enter Trade Services & Labor Cost
 - **Trade Subcontractor and Material Supplier** - Mark Both Boxes & enter Trade Services/Labor Cost & Materials/Cost
- **Construction Specification Institute Codes (CSI)** – Confirm EDGE contractor is providing services for which they are certified. <https://development.force.com/ODSA/s/mbddcertsearch> (EDGE Certified Company search site)
- **Ohio Administrative Code 123: 2-14-06 Commercially Useful Function** - (A) A contractor awarded a contract pursuant to chapters 123., 125. and 153. of the Revised Code may count towards its EDGE goal only those expenditures to EDGE certified business that perform a commercially useful function.

(C)(1) **The workers on the EDGE contract are regular employees of the contracted EDGE business.**

(C)(4) The equipment used by the EDGE business is owned or controlled by the EDGE business. The EDGE business owns or rents or leases from a traditional rental or leasing source pursuant to a written rental or lease agreement.

(C)(5) The EDGE contractor business has the responsibility, with respect to execution of the work of the contract, for actively managing, performing, and supervising the work involved.

(C)(A-F) The EDGE supply business has the responsibility, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering, payment, and where applicable, installation.

Important Reminders

- **Drug Free Safety Program** - Confirm all contractors, subcontractors and lower-tier subcontractors are compliant with the BWC Drug Free Safety Program or an approved comparable program per General Contract Conditions Article 1.6 Drug Free Safety Program. Failure to confirm compliance shall result in contractor, subcontractor, or the lower-tier subcontractor being found in breach of the contract and that breach shall be used in the responsibility analysis of that contractor, subcontractor or lower-tier subcontractor who was not enrolled in a program for future contracts with the State for 5 years after the date of the breach.
- **Certificate of Compliance** - Any person or company desiring to participate as the Lead Contractor on a state-assisted construction contract shall make an application for a Certificate of Compliance with Federal and State affirmative action programs. Application shall be made with the Ohio Department of Administrative Services: www.das.ohio.gov/eod
- **Replacement of EDGE Subcontractors** – Once the project is in progress, any changes from one EDGE sub to another must be pre-approved in writing by OFCC, per General Contract Conditions: Replacement of Subs.

Othniel Beauzyl- OFCC EDGE Program Manager – 614-715-7866

Othniel.Beauzyl@ofcc.ohio.gov

ADDENDUM 01

SECTION 22 10 00 – PLUMBING PIPING AND SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the furnishing and installation of all materials, labor, equipment, supervision, fees, and services incidental to proper completion of all plumbing system work:
 - 1. Domestic cold water system.
 - 2. Domestic hot water system.
 - 3. Interior waste and vent piping to 5'-0" outside building.
 - ~~3.4.~~ Interior storm piping from sump pump.
 - 4.5. Cooling coil condensate drainage system.
 - ~~5-6.~~ Domestic Water Supply:
 - a. Arrange and pay for connection to municipal water service.
 - b. Provide approved water meters and pay for all fees, permits, inspections, and tests relating to the water meter installation.

1.3 REFERENCES

- A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
 - 1. ANSI/ASME Standards:
 - a. A112.19.2 - V.T. China Plumbing Fixtures.
 - b. A112.1.2 - Air Gaps in Plumbing Systems.
 - c. A112.21.1 - Floor Drains.
 - d. A112.21.2 - Roof Drains.
 - e. A112.36.2M - Cleanouts.
 - f. A112.26.1 - Water Hammer Arresters.
 - 2. ASSE (American Society of Sanitary Engineering) Standards:
 - a. 1001 - Pipe Applied Atmospheric Type Vacuum Breakers.
 - b. 1003 - Water Pressure Reducing Valves.
 - c. 1011 - Hose Connection Vacuum Breakers.
 - d. 1012 - Backflow Preventers with Intermediate Atmospheric Vent.
 - e. 1013 - Reduced Pressure Principal Backflow Preventer.
 - f. 1016 - Individual Thermostatic Pressure Balancing, and Combination Pressure Balancing and Thermostatic Control Valves for Individual Fixture Fittings.
 - g. 1017 - Temperature Actuated Mixing Valves for Hot Water Distribution Systems.
 - h. 1018 - Trap Seal Primer Valves – Potable Water Supplied.
 - i. 1044 - Trap Seal Primer Valves – Drainage Type.
 - j. 1072 – Performance Requirements for Barrier Type Trap Seal Protection for Floor Drains.
 - 3. ASTM Standards:
 - a. A53 - Steel Pipe, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - b. A74 - Cast Iron Soil Pipe and Fittings.
 - c. A181 - Carbon Steel Forgings for General Purpose Piping.
 - d. A194 - Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.
 - e. A234 - Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
 - f. A307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - g. A395 - Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.
 - h. A518 - Corrosion-Resistant High Silicon Iron Castings.
 - i. B88 - Seamless Copper Water Tube.
 - j. B306 - Copper Drainage Tube (DWV).

ADDENDUM 01

- k. C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
 - l. C564 - Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
 - m. D2136 - Test Method for Coated Fabrics - Low Temperature Bend Test.
 - n. D2657 - Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings.
 - o. D2665 - Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
 - p. D2751 - Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
 - q. D3034 - Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - r. D4101 - Propylene Plastic Injection and Extrusion Materials.
 - s. F789 - Type PS-46 and PS-115 Poly (Vinyl Chloride) (PVC) Plastic Gravity Flow Sewer Pipe and Fittings.
- 4. AWWA Standards:
 - a. C500 - Gate Valves for Water and Sewerage Systems.
 - b. M20 - Water Chlorination Principles and Practices.
 - 5. PDI (Plumbing and Drainage Institute) Standard: WH-201 - Water Hammer Arresters.
 - 6. ARI Standard: 1010 - Drinking Fountains and Mechanically Refrigerated Drinking Water Coolers.
 - 7. NSF/ANSI Standard 372 – Drinking Water System Components – Lead Content.

1.4 SUBMITTALS

- A. Manufacturer's Literature: For all products required in Part 2 of this Section:
 - 1. Required Information:
 - a. General:
 - 1) Name of Manufacturer.
 - 2) Model number.
 - 3) Dimensions.
 - 4) Details of construction and installation.
 - b. Performance Data:
 - 1) Heat transfer devices.
 - 2) Pumps.
 - 2. Not required for piping or hangers and supports.

1.5 QUALITY ASSURANCE

- A. Fabrication and Installation Personnel Qualifications:
 - 1. Trained and experienced in the fabrication and installation of the materials and equipment.
 - 2. Knowledgeable of the design and the reviewed Shop Drawings.
- B. Regulatory Agencies Requirements:
 - 1. All state and local codes and ordinances shall have jurisdiction.
 - 2. All related electrical devices shall be housed in suitable enclosures as defined by the National Electrical Manufacturers' Association (NEMA).
 - 3. All gas-fired appliances and installation shall be in accordance with American Gas Association (AGA) guidelines.
 - 4. All components used in systems in contact with drinking water shall comply with the requirements of NSF 372 for lead free.

PART 2 - PRODUCTS

2.1 PIPE AND PIPE FITTINGS

- A. Comply with the requirements of Division 22 Sections "Steel Pipe and Fittings for Plumbing," "Cast Iron Pipe and Fittings for Plumbing," "Plastic Pipe and Fittings for Plumbing," and "Copper Pipe and Fittings for Plumbing."
- B. Refer to schedules in Part 3 of this Specification for specific applications of pipe materials to plumbing systems.
- C. Refer to Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment" and the schedule in Part 3 of this Section for Hanger and Support Requirements for Plumbing System Piping.

ADDENDUM 01

2.2 SPECIALTIES

- A. Strainers:
1. Manufacturer: Armstrong, Mueller.
 2. Type: "Y".
 3. Screen: 20 mesh brass, removable.
 4. Area: 5 times pipe diameter.
 5. Pressure Rating: Match piping.
 6. Install in front of each modulating valve, pressure regulating valve, pump suction and where indicated.
- B. Basket Strainers:
1. Manufacturer: Mueller Steam Specialty.
 2. Model: 125F.
 3. Cast iron body and cover, rated 200 psi W.O.G. with quick-release knobs and floor support.
 4. Basket: 0.057-inch perforated stainless steel (1/8-inch perforated on 5 inches and larger) removable with O-ring seal.
 5. Capacity: 6 to 1 open ratio.
- C. Manual Air Vents:
1. Manufacturer: Bell & Gossett or Dole.
 2. Size: 1/8-inch.
 3. Type: Slotted head (Bell & Gossett 4V or Dole No. 9).
 4. Location: Wherever called for on Drawings.
- D. Shock Absorbers:
1. Furnish and install where indicated or wherever quick closing valves (including flush valves) are utilized. Shock absorbers shall be located and sized in accordance with Standard PDI-WH-201.
 2. Manufacturer: Josam, Wade, or Zurn.
- E. Dielectric Water Fittings:
1. Dielectric Couplings: Electroplated steel or brass nipple, with an inert and non-corrosive, thermoplastic lining.
 2. Dielectric Unions: Provide dielectric unions with appropriate end connections for the pipe materials in which installed (screwed, soldered or flanged), which effectively isolates dissimilar metals, prevents galvanic actions and stops corrosion.
- F. DWV Fitting Restraints
1. Provide engineered fitting restraints on all no-hub DWV and storm pipe fittings greater than 4 inches. Pipe shall be restrained at all changes of pipe diameter greater than 2 pipe sizes and at all changes of direction with braces, blocks, rodding, or other suitable methods as specified by the coupling manufacturer.
 2. Provide engineered fitting restraints on all DWV and storm pipe no-hub fittings in buildings 2 stories and higher.
 3. Untested field provided restraints are unacceptable.
 4. Fitting restraints to be equal to HoldRite model #117 or similar.

2.3 VALVES

- A. General Duty Hand Valves: Refer to Division 22 Section "General Duty Valves for Plumbing" for valve construction and material requirements.
1. Valves Up to 2-inches:
 - a. Shut-off: 150 lb bronze gate or full-port ball valve.
 - b. Throttling: 150 lb bronze globe.
 2. Valves 2-1/2-inches and Larger:
 - a. 125 lb IBBM OS&Y Gate Valve: Use only as required by local jurisdiction for water meter setting, all others shall be high performance all stainless-steel butterfly valves.
 - b. Shut-off: High performance butterfly valve, all stainless steel, rated for 175 psig and 250 degrees F, bubble-tight shutoff, lug type.

ADDENDUM 01

- B. Mixing Valves:
1. Automatic Shower Mixing Valve:
 - a. Water mixing valve for shower and tub/shower facilities shall be of the thermostatic and pressure balancing type and shall not be subject to failure due to lime build-up or dirt particles. Construction shall not have close fitting, sliding parts which, through wear or binding, may impair operation.
 - b. The thermostatic motor shall be liquid filled with sufficient power to operate properly and to maintain outlet temperature regardless of inlet pressure or temperature fluctuations. All materials shall be suitable for potable water supply systems and comply with recognized approved standards, where applicable.
 - c. Valve shall have an all cast bronze housing. Tub/shower valve shall have a built-in diverter fitting. Valve shall include an adjustable limit stop, factory set at 115 degrees F (46 degrees C). Water inlets and outlets shall be clearly marked on the casting. Valves shall be shut off by returning to the cold water start position.
 - d. Certified for compliance with ASSE 1016 for temperature and pressure balancing for each individual shower head.
 - e. Certified for compliance with ASSE 1069 – Gang Shower Application, Gang Lavatories.
 - f. Manufacturer: Powers (Hydroguard Series E420 T/P); Leonard; Lawler.
 - g.
 2. ASSE 1070 Point of Use Thermostatic Control Valve:
 - a. Certified for compliance with ASSE 1070 for individual fixture temperature control.
 - b. Shall use a wax filled thermostatic element to sense incoming temperature fluctuations and maintain leaving water temperature 3 degrees F of setpoint for flows down to 0.5 gpm.
 - c. Construction:
 - 1) Cast bronze body.
 - 2) Stainless steel internal components.
 - 3) 125 psig rated working pressure.
 - d. Provide tamper resistant setpoint adjustment.
 - e. Provide with integral check valves.
 - f. Watts USG-B, Wilkin.
 3. ASSE 1017 Point of Source Thermostatic Mixing Valve:
 - a. Certified for compliance with ASSE 1017 for point of source multiple fixture temperature control.
 - b. Shall use a liquid filled thermostatic motor to maintain outlet temperature 3 degrees F within temperature fluctuations as defined by ASSE 1017 for flows down to 2 gpm.
 - c. Construction:
 - 1) Cast bronze body.
 - 2) Stainless steel internal components.
 - 3) 125 psig rated working pressure.
 - d. Provide tamper resistant setpoint adjustment.
 - e. Provide with integral check valves.
 - f. Powers Hydroguard Series 490, Conbraco 34A or 34C, or Leonard Type TM.
- C. Water Pressure Regulators:
1. Manufacturers:
 - a. Cla-Val Company.
 - b. Conbraco Industries, Inc.
 - c. FLOMATIC Corporation.
 - d. Honeywell Braukmann.
 - e. Watts Industries, Inc.; Water Products Division.
 - f. Zurn Industries, Inc.; Wilkins Division.

ADDENDUM 01

2. General: ASSE 1003, water regulators, rated for initial working pressure of 200 psig minimum. Include integral factory installed or separate field installed, Y-pattern strainer:
 - a. NPS 2 and Smaller: Bronze body with threaded ends.
 - 1) General Duty Service: Single seated, direct operated, unless otherwise indicated.
 - 2) Booster Heater Water Supply: Single seated, direct operated with integral bypass.
 - b. NPS 2-1/2 and Larger: Bronze or cast iron body with flanged ends. Include AWWA C550 or FDA approved, interior epoxy coating for regulators with cast iron body:
 - 1) Type: Single seated, direct operated.
 - c. Interior Components: Corrosion resistant materials.
 - d. Exterior Finish: Polished chrome plate if used in chrome plated piping system.

- D. Hose Bibbs:
 1. Single unit shall be cast brass faucets with composition washer, metal handle, 3/4-inch hose thread end and vacuum breaker: Finish shall be chrome plated in toilet rooms, rough brass in other areas.
 2. Double unit (hot and cold water) shall be wall mounted combination fixture with integral stops, wall brace, pail hook and wall brace, 3/4-inch hose thread end and rigid vacuum breaker: Finish shall be chrome plated in toilet rooms, rough brass in other areas.
 3. Manufacturer: Based on Chicago Faucet; or equal by Prier:
 - a. Single #387, 3/4-inch IPS inlet, flanged inlet, #293-6 removable tee handle.
 - b. Single #293, 3/4-inch IPS inlet, flanged inlet, #293-6 removable tee handle.
 - c. Double #897, 1/2-inch female inlets, 3/4 inch outlet.

- E. Wall Hydrants:
 1. Unit shall be freeze-proof, chrome finish with vacuum breaker, 3/4-inch hose thread nozzle cast integral, galvanized casing, key operated brass valve, flush mounting wall box. Select to interface with wall thickness. Mount 24 inches above grade.
 2. Manufacturer: Woodford Model B-67; or equal by Wade Manufacturing Company, Prier, or Josam Manufacturing Company.

- F. Floor Drain Trap Seals:
 1. For applications with infrequent drain usage:
 - a. Provide inline drain trap seal, SureSeal Waterless Inline Drain Trap Seal. Green Drain Model GD Inline Drain Trap.
 - b. Must comply with ASSE 1072.
 2. Barrier-type:
 - a. Installed in accordance with Manufacturer's instructions. Must comply with ASSE 1072.
 - b. Manufacturer: Green Drain, IPS Corporation, Jay R, Smith, Rector Seal, Zurn.

2.4 BACKFLOW PREVENTER

- A. Description:
 1. Furnish and install approved backflow preventer(s) in accordance with the following table and as indicated on Drawings. Include a safe waste drain for drip from preventer valves piped to floor drain and install strainers ahead of first gate valve:

Service	Size	Rating	Description
HVAC Equipment	3/4" - 6"	175#	Reduced pressure principle double check/double gate with relief valve. Unit equal to Watts #909LF with strainer.
Domestic Water Services	3/4 - 8"	150#	Reduced pressure zone backflow preventer.
Fire Lines	3" - 8"	150#	Double check/double gate unit equal to Watts #709. Stainless steel check/double butterfly valve equal to Ames Maxim 200/300. Must be UL listed and FM approved.
Hose Bibbs	1/2" - 3/4"	150#	Single check with vacuum breaker equal to Watts #8 or #8A. Use #NF8 for frost proof hydrants
Laundries, Swimming Pools	1/2" - 2"	150#	Anti-syphon pressure type vacuum breaker, equal to Watts #800.

ADDENDUM 01

Service	Size	Rating	Description
NOTE: Requirements of Codes having jurisdiction, that vary from the table requirements, shall be complied with for all services.			

B. Manufacturer: Watts, Hersey, Beeco, Febco, Conbraco.

2.5 CLEANOUTS

A. Description:

1. Furnish and install cleanouts where indicated on drawings in accordance with the following table. Cleanouts subject to vehicular traffic (hi-lo's, etc.) shall be heavy duty type. Wade model numbers are for reference only.
2. Series floor cleanout with NH spigot outlet or ty-seal outlet connection, threaded adjustable housing, flanged ferrule with tapered brass plug and round or square nickel brass or ductile iron vandal resistant secured top for floor finishes as follows:

Location	Wade Number
Unfinished Concrete (Scoriated XH Di Top)	W-6000-Z
Carpet (Textured NB Top with Carpet Marker)	W-6000-CM
Asphalt and Vinyl Tile (Recessed NB Top)	W-6000-TS
Ceramic and Quarry Tile (Scoriated NB Top)	W-6000-XS
Terrazzo (Deep Recessed NB Top)	W-6000-U
Other LT Duty Finishes (Textures NB Top)	W-6000
Other XH Duty Finishes (Scoriated XH NB Top)	W-6000-X
Exterior Areas (Scoriated XH Di Top)	W-6000-Z
Vertical Rough Piping (Exposed)	W-8560-E
Concealed Piping in Walls	W-8560-E with W-8304 - Round stainless steel cover with flush top.
Special Marking	W-6000-83

B. Manufacturer: Wade, Zurn, Josam, Smith, MI-FAB.

2.6 FLOOR DRAINS AND SINKS

A. Furnish and install floor drains at low point of sloped floor or at elevations indicated on the Drawings in accordance with the following.

1. Provide 4-inch deep seal traps on floor drains.

B. Description:

1. Floor Drains:
 - a. FD-1: Wade W-1100-G cast iron floor drain with seepage flange, 6-inch diameter nickel brass adjustable strainer.
 - b. FD-2: Wade W-1100 cast iron floor drain with seepage flange, 12x12 square nickel brass adjustable strainer.
 - c. SD-1: Same as FD-1.

C. Manufacturer: Wade, Josam, Zurn, Smith, MI-FAB, Watts.

PART 3 - EXECUTION

3.1 WATER SUPPLY SERVICE SYSTEM

A. Description: Interconnect into water service main terminating 5'-0" outside building and extend into building as required. Furnish and install water meters of size indicated on the Drawings.

B. Fees, Permits, Inspection and Tests: Pay for all fees, permits, inspections, and tests related to the water meter installation.

ADDENDUM 01

- C. Pipe and Fittings: In accordance with Schedule in Part 3.7 herein.

3.2 DOMESTIC COLD AND HOT WATER SYSTEMS

- A. Description: Provide as indicated on the Drawings and as required to comply with all applicable codes and regulations, complete system of piping, fittings, valves, auxiliaries and accessories as required to connect cold and hot water to all items requiring cold or hot water.
- B. Pipe and Fittings:
1. Above Grade: Galvanized steel in accordance with Division 22 Section "Steel Pipe and Fittings for Plumbing" or Type L and drawn copper in accordance with ASTM B88 and Division 22 Section "Copper Pipe and Fittings for Plumbing" (maximum pressure of 75 psig). Exposed pipe and fittings at fixtures shall be chrome plated.
 2. Below Grade: Ductile iron in accordance with ANSI 16.9 A234 WPA Type K soft temper copper in accordance with ASTM B88 and Division 22 Section "Copper Pipe and Fittings for Plumbing" (maximum pressure of 75 psig). or Schedule 80 CPVC in accordance with Division 22 Section "Plastic Pipe and Fittings for Plumbing." (maximum pressure of 60 psig).
- C. Installation:
1. All interior piping shall be run square and straight with the building.
 2. Piping in finished areas shall be concealed within walls, chases, enclosures, etc.
 3. Piping in exposed areas shall be run as high as possible within joists and beam spaces, or below the floor as indicated on the Drawings.
 4. Piping shall follow approved paths as shown or indicated on the Drawings. Connect to existing lines where required or to equipment in an approved manner. Locate pipes, valves and equipment accessible for maintenance, minimum obstruction of passage and work spaces.
 5. Install drain valves at all low points in piping system.
 6. Install all required trap primer systems and piping.
 7. Provide unions at each screwed valve, unions, and at all points in the piping system where necessary to facilitate dismantling.
- D. Hot Water Recirculation System:
1. Where indicated, furnish and install hot and tempered recirculating water systems; return to the cold water side of the heater and provide a gate valve and union in each line. Special requirements as detailed on the Drawings.
 2. Provide supplemental angles, hangers and bracing required for the support of the equipment.
 3. Provide balancing valves on recirculating system return branches to allow complete balancing of all branches.

3.3 BUILDING SANITARY DRAINAGE SYSTEM

- A. Description: Furnish and install the entire building sanitary drainage system as indicated on the Drawings. System includes, but is not necessarily limited to, the following items: Waste and vent piping for all plumbing, fixtures requiring same, floor drains, cleanouts.
- B. Material:
1. Above and below ground piping as defined in Part 2 of this Section.
 2. Drains and cleanouts as defined in Part 2 of this Section.
- C. Installation:
1. General runs of sanitary sewer are indicated on Drawings diagrammatically and every bend, offset, etc., is not necessarily indicated, all of which must be installed to properly drain all stacks, fixtures, vents, etc.
 2. Run horizontal waste lines at a minimum slope of 1/4-inch per foot for pipes less than 3 inches in diameter and 1/8-inch per foot for lines 3 inches and larger, unless indicated otherwise.
 3. Connections between mains and laterals shall be made with wyes and 1/8 bends.
 4. Changes in direction shall be with long radius ells except in stacks where sanitary tees and short radius 1/4 bends may be used in changes from horizontal to vertical.
 5. Flash all vent stacks at the roof.

ADDENDUM 01

6. Cleanouts shall be installed where required by code and as indicated on the Drawings and specified herein. They shall be accessibly located, set flush with finish surface or finish grade, and shall be same nominal pipe size as line served, but no larger than 4 inches. Stainless steel flush cover plates required for wall accessed cleanouts.
7. Cleanouts indicated for lines outside of building shall be installed with a Y connection and a 4 degree elbow extending to grade with bell set in concrete collar not less than 12 inches square and 12 inches thick.
8. Provide cleanouts located in waterproof above grade floors with flashing flange and clamp device. Flash with 60 mil PVC membrane minimum 4-foot square.
9. Furnish and install stack base fittings at the base of each riser set on a concrete or brick base on firm soil. All vertical risers shall be supported at floors.
10. Pitch vent lines to gravity drain to waste pipe.
11. Provide no-hub fitting restraints on piping greater than 4 inches and in all buildings 2 stories and taller.

3.4 COOLING COIL CONDENSATE DRAINAGE SYSTEM

- A. Each above-the-ceiling cooling unit shall have its condensate collection pan piped to nearest sanitary drain riser.
- B. Piping shall be trapped as indicated on Drawings and pitched 1/8-inch per foot minimum.
- C. Pipe size to match drain pan connection.
- D. Use Type L copper pipe and hangers where necessary as defined in this Section.
- E. Insulation required for all condensate drain piping.

3.5 CONDENSATE FROM HIGH EFFICIENCY GAS FIRED APPLIANCES

- A. Refer to specific manufacturer installation guidelines for all piping and installation requirements.
- B. Piping from the appliance to condensate trap and from condensate trap to acid neutralization kit must be CPVC, high-temperature silicone tubing, galvanized, or stainless steel, and be free of leaks.
 1. Copper pipe, carbon steel/iron pipe or PVC pipe are not acceptable.
- C. Piping from the acid neutralization kit to the floor drain may use PVC or CPVC piping in lieu of other types listed above.

3.6 CLEANING, TESTING, CHLORINATION

- A. As piping material is erected, the inside of all piping shall be thoroughly cleaned of foreign material. Flush and test piping before operation in accordance with Division 22 Section "Testing and Cleaning of Plumbing Systems."
- B. On completion of the domestic water piping systems, chlorinate the system using methods acceptable to and approved by Engineer. Furnish all chlorine and chlorinating equipment.
- C. After system chlorination is complete, submit water Samples to the governing health department for testing. Take Samples as directed by Engineer, and provide Engineer with a letter from the governing health department indicating test results.

The Ohio State School for the Blind
Natatorium Renovation

ADDENDUM 01

3.7 SCHEDULES

Storm and Sanitary				
System	Schedule	Material	Specifications	Remarks
Underground				
Sanitary: Minimum Size 3-Inches Unless Noted Otherwise				
	S.V.	C.I.	ASTM A74	Bell & Spigot with Elastomeric Gasket or Lead & Oakum
	S.V.	C.I.	ASTM C564, A888	No Hub with Heavy Duty Couplings
	DWV	PVC	ASTM F891 ASTM D2665	Socket type "Push on" joint with solvent 4-inch to 15-inch
Forced Main	Class 54	Ductile Iron	ANSI A21.50	ANSI A21.11
Storm: Minimum Size 3 inches				
	<u>S.V.</u>	<u>C.I.</u>	<u>ASTM A74</u>	<u>Bell & Spigot with (Elastomeric Compression Gasket)</u>
	<u>S.V.</u>	<u>C.I.</u>	<u>ASTM C564, A888</u>	<u>No Hub with Heavy Duty Couplings</u>
	<u>DWV</u>	<u>PVC</u>	<u>ASTM F891</u> <u>ASTM D2665</u>	<u>"Push on" joint</u> <u>4-inch to 15-inch</u>
	<u>DWV</u>	<u>ABS</u>	<u>ASTM D2661, F628</u>	
Above Ground				
Sanitary	S.V.	C.I.	ASTM A74	Bell & Spigot with Elastomeric Compressive Gasket. Lead & Oakum
	S.V.	C.I.	ASTM C564, A888	No Hub
	DWV	Copper	ASTM B306	ANSI B16.23 Soldered
	DWV	PVC	ASTM D2665	Size 2 inches or less Cement and Solvent
Storm				
	<u>S.V.</u>	<u>C.I.</u>	<u>ASTM C564, A888</u>	<u>No HUB [with heavy duty couplings]</u>
	<u>DWV</u>	<u>PVC</u>	<u>ASTM D2665</u>	<u>Cement and Solvent Recommended by Manufacturer</u>
	<u>40</u>	<u>Galvanized Steel</u>	<u>ASTM A53</u>	<u>Threaded and Coupled</u>

Domestic Water Above Ground 125 PSI Maximum Pressure					
Pipe Size	Schedule	Material	Spec	Grade	Remarks
1/4" - 1-1/2"	40	Steel Galvanized	ASTM A53	B	Threaded & Coupled
2" - 6"	40	Steel Galvanized	ASTM A53	B	Plain End
1/4" - 6"	Type L	Copper	ASTM B88	--	Solder 95/5, Silvabrite
2" - 6"	Type L	Copper	AWS A5.8	--	Silver Solder/Brazed

Domestic Water Below Ground				
Pipe Size	Schedule	Materials	Spec	Remarks
1/2" - 2"	Type K	Soft Copper	ASTM B88	Flared Fittings
2-1/2" - 12"	Class 52	Ductile Iron	ANSI 16.9 A234 WPA	ANSI A21.11 Mechanical Joint
1 - 4	80	CPVC	ASTM F438, D2846	Socket, Solvent Welded For Use in Corrosive Soils Only

END OF SECTION 22 10 00

The Ohio State School for the Blind
Natatorium Renovation

ADDENDUM 01

ADDENDUM 01

SECTION 22 10 29 – PLUMBING PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the furnishing and installation of all materials, labor, equipment, supervision, fees, and services incidental to proper completion of all plumbing system pumps:
 - 1. Domestic cold-water system.
 - 2. Domestic hot water system.
 - 3. Waste and vent piping.
 - 4. Storm drain piping.
 - 5. Cooling coil condensate drainage system.
 - 6. Domestic water supply.

1.3 REFERENCES

- A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the ASHRAE 90.1 – 2019 Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings, with state amendments.

1.4 SUBMITTALS

- A. Manufacturer's Literature: For all products required in Part 2 of this Section:
 - 1. Required Information:
 - a. General:
 - 1) Name of Manufacturer.
 - 2) Model number.
 - 3) Dimensions.
 - 4) Details of construction and installation.
 - b. Performance Data:
 - 1) Pumps.
 - c. Project specific wiring diagrams including controls wiring.
 - d. Control components

1.5 QUALITY ASSURANCE

- A. Fabrication and Installation Personnel Qualifications:
 - 1. Trained and experienced in the fabrication and installation of the materials and equipment.
 - 2. Knowledgeable of the design and the reviewed Shop Drawings.
- B. Regulatory Agencies Requirements:
 - 1. All state and local codes and ordinances shall have jurisdiction.
 - 2. All related electrical devices shall be housed in suitable enclosures as defined by the National Electrical Manufacturers' Association (NEMA).
 - 3. All gas-fired appliances and installation shall be in accordance with American Gas Association (AGA) guidelines.
 - 4. All components in contact with drinking water shall comply with the requirements of NSF/ANSI 372 – Drinking Water System Components – Lead Content.

ADDENDUM 01

PART 2 - PRODUCTS

2.1 DOMESTIC WATER PUMPS

- A. Manufacturers:
 - 1. Bell & Gossett.
 - 2. Grundfos.
 - 3. Amitrol.
 - 4. Syncroflo.
 - 5. Armstrong.

- B. Domestic Hot Water Circulator:
 - 1. Circulator shall be in-line, flanged, all bronze, lead-free centrifugal pump equal to B&G Model NBF. Refer to Drawings for size and capacities.
 - 2. Motor with built-in thermal overload protection.

2.2 SUBMERSIBLE SUMP PUMPS

- A. Manufacturers:
 - 1. Bell & Gossett Domestic Pump: ITT Corporation.
 - 2. Goulds Pumps: ITT Corporation.
 - 3. Zoeller Pump Company.
 - 4. Aurora.
 - 5. Myers.

- B. Submersible Sump Pump:
 - 1. Description: Simplex submersible sump pump complete with automatic operation, 1.5-inch discharge.
 - 2. 1/2 HP with Class F insulation, 115 V, 1725 rpm, built-in overload with automatic reset.
 - 3. 9-foot power cord with NEMA 5-15P 3-prong grounding plug.
 - 4. Stainless steel fasteners, stainless steel shaft and stainless steel motor casing with handle and float attachment points, glass filled thermoplastic impeller and volute.
 - 5. Rated for 20 gpm at 20 feet of head.
 - 6. 24-inch diameter by 48-inch deep fiberglass basin with heavy duty steel cover, and discharge check valve with shut-off valve
 - 7. Pump equal to Zoeller Model M98 submersible sump pump.

2.3 SEWAGE PUMPS

- A. Submersible Sewage Pump:
 - 1. Description: Duplex submersible pump, size and capacity indicated on the Drawings.
 - 2. Pump: Cast iron body and impeller, bronze fitted, screenless, nonclogging, to pass 2-inch solids and rags. Bearings with forced grease lubrication.
 - 3. Motor: Hermetically sealed, non-overloaded at any point on operating characteristic curve. See schedule on the Drawings for motor characteristics.
 - 4. Control: Pumps and alarms shall be activated in response to mercury float switches.
 - 5. Control Panel: Prewired in NEMA 1 enclosure with magnetic starters, disconnect and Hand-Off-Auto switch:
 - a. Automatic alternation of 2 pumps.
 - b. Simultaneous operation of both pumps under peak load conditions.
 - c. Automatic operation of both pumps if active pump fails to function.
 - d. Try switch to simulate float operation for test purposes.
 - e. Remote alarm station, including panel mounted alarm light, alarm silencing relay, bell relay and alarm bell, for high water alarm. Mount as directed. Panels are to be labeled and flush mounted.
 - f. Cast aluminum junction box, NEMA Type 4 with gasketed cover, cable sealing fittings and terminal blocks for heat and power circuits.
 - 6. Sump: Concrete with cover, with all required openings of size and location indicated.

ADDENDUM 01

2.4 SUMP-PUMP BASINS AND BASIN COVERS

- A. Basins: Factory-fabricated, watertight, cylindrical, basin sump with top flange and sidewall openings for pipe connections.
 - 1. Material: Fiberglass and Concrete.
 - 2. Reinforcement: Mounting plates for pumps, fittings, and accessories.
 - 3. Basin Covers: Fabricate metal cover with openings having gaskets, seals, and bushings; for access to pumps, pump shafts, control rods, discharge piping, vent connections, and power cables.
 - 4. Reinforcement: Steel or cast iron, capable of supporting foot traffic for basins installed in foot-traffic areas.

2.5 MOTORS

- A. Motors 1/3 HP and smaller shall be 120 volts, single phase. Motors 1/2 HP and larger shall be 208, 230, or 460 volts, 3 phase. Motors shall be size and rating as indicated on the drawing. Motors that are an integral part of special equipment may vary from above to meet manufacturing standards.
- B. Motors shall be NEMA Design B, Class B, 1.15 S.F. at 40 degrees C ambient or 1.00 S.F. at 65 degrees C ambient.
- C. Motors 1-1/2 HP and larger shall be cast iron heavy duty premium efficiency inverted rated T Frame.
- D. Motors shall be grounded with manufacturer's supplied grounding kit.
- E. All motors shall be ball bearing type. Ball bearings shall be sealed on both sides, manufactured by Fafnir, FAG, or SKF.
- F. Motor enclosure shall be suitable for the service conditions.
- G. Motors shall be Super-E manufactured by Baldor; EQP manufactured by Toshiba or approved equal.
- H. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
- I. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.
- J. Motors for submersible pumps shall be hermetically sealed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for plumbing piping to verify actual locations of storm drainage piping connections before sump pump installation.

3.2 INSTALLATION

- A. Pump Installation Standards: Comply with HI 1.4 for installation of sump pumps.

ADDENDUM 01

3.3 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.
- C. Install vibration isolators on discharge of pumps.

3.4 FIELD QUALITY CONTROL

- A. Perform Tests and Inspections:
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection.
 - 2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Pumps and controls will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

3.5 START-UP SERVICE

- A. Complete installation and start-up check according to Manufacturer's written instructions.

3.6 ADJUSTING

- A. Adjust pumps to function smoothly and lubricate as recommended by Manufacturer.
- B. Adjust control setpoints.

3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain controls and pumps.

END OF SECTION 22 10 29

ADDENDUM 01

SECTION 23 84 16 – DEHUMIDIFIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the furnishing and installation of package dehumidification equipment.
- B. Division of Work:
 - 1. In accordance with the General Conditions, Contractor is responsible for dividing the Work among the Subcontractors and Suppliers and for delineating the work to be performed by specific trades.
 - 2. The following are suggestions as to how the Work may be divided. This is not a complete list of all the work:
 - a. General Contractor: Provide concrete equipment pads.
 - b. Mechanical Subcontractor: Provide equipment installation and start-up.

1.3 SYSTEM DESCRIPTION

- A. Provide complete factory assembled system ready for external air, electrical and condensate/refrigerant connections.

1.4 REFERENCES

- A. As herein specified, the work of this Section shall comply with the following: ASHRAE Standard: 90.1 – 2019 Energy Efficient Design of New Buildings Except Low Rise Residential Buildings, with state amendments.

1.5 SUBMITTALS

- A. Manufacturer's Literature: For complete unit.
 - 1. Dimensions.
 - 2. Details of construction and installation.
 - 3. Name of Manufacturer.
 - a. Model.
 - b. Design and performance criteria.
 - c. Project specific wiring diagrams including controls wiring.
- B. Operation and Maintenance Manuals: For each different unit model.
 - 1. Equipment function, normal operating characteristics and limiting conditions.
 - 2. Assembly, installation, alignment, adjustment and checking instructions.
 - 3. Operating instructions for start-up, routine and normal operating, regulation and control, and shutdown and emergency conditions.
 - 4. Lubrication and maintenance instructions.
 - 5. Guide to "troubleshooting".
 - 6. Parts lists and predicted life of parts subject to wear.
 - 7. Outline, cross-sections, assembly drawings, engineering data and wiring diagrams.
 - 8. Test data and performance curves.

1.6 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered in original, unbroken, brand marked containers.

ADDENDUM 01

- B. Handle and store all dehumidifier units in a manner which will prevent deterioration or damage, contamination with foreign matter and damage by weather or elements in accordance with Manufacturer's directions.
- C. Reject damaged, deteriorated, or contaminated units and immediately remove from the Site. Replace rejected units with new units at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 HEAT RECOVERY POOL DEHUMIDIFYING UNIT

- A. General Description:
 - 1. A factory assembled package dehumidifying roof mounted HVAC system as described on the Drawings and defined in this Section.
 - 2. All components shall be functionally joined together on a common base.
 - 3. The equipment piece shall be complete in every way, ready for electric, duct, pool water, condensate, tower water, and control connections and designed specifically for swimming pool applications.
- B. Manufacturer:
 - 1. Desert Aire.
 - 2. Dectron.
 - 3. Poolpak.
 - 4. Seresco.
- A. Dehumidifier Description
 - 1. Cabinet
 - a. Base rails and supports constructed of 12-gauge channels.
 - b. Cabinet and removable side panels are made of 16-gauge metal with powder-coat paint on the exterior.
 - c. Panels will be lined with thermal and sound insulation made of engineered polymer cell foam (EPFI) 0.75 inches thick on outdoor units (0.375 inches thick on indoor units).
 - d. Removable panels with insert nut screw sites shall be provided to allow easy access to all internal parts and components. The unit shall be supplied with outdoor air and exhaust air rain hoods with bird screens. The unit should be designed for roof curb mounting, mounting on slab or mounting on equipment rails.
 - 2. Electrical
 - a. The isolated electrical compartment shall include a hinged access door.
 - b. Electrical compartment shall be rated NEMA 4 weatherproof.
 - c. Electrical compartment shall be equipped with door disconnect switch.
 - d. The dehumidification unit shall be provided with single point power connection to serve controls, fans, electric heater (if provided), and compressors, factory wired to the power connection lug set.
 - e. The high and low voltage electrical components shall be located in separate sections with individual access doors.
 - f. The electrical controls shall include low-voltage transformers to supply 24 VAC control power for the unit.
 - g. The electrical cabinet shall include terminal strips for both high voltage and low voltage.
 - h. Safeties must include high pressure cutouts per circuit with manual reset.
 - i. Safeties must include low pressure cutouts per circuit with automatic reset.
 - j. Safeties must include an anti-short cycling timer to protect against compressor cycling.
 - k. Electrical nameplate on the unit shall include, but not limited to the MCA (Minimum Circuit Ampacity), the MOPD (Maximum Over-Current Protection Device) and the Short Circuit Current Rating (SCCR).
 - l. The units shall be compatible with the electrical voltage, phase and hertz requirements as indicated on the dehumidifier schedule.
 - m. Unit shall have a single point power connection.
 - 3. Refrigeration System
 - a. The system's operating refrigerant shall be R-454B.
 - b. Compressors
 - 1) Units shall have two independent refrigerant circuits, an "A" and a "B" circuit.
 - 2) The compressors shall be heavy-duty scroll-type.

ADDENDUM 01

- 3) The circuits shall be staged.
 - 4) The compressor shall be equipped with high and low-pressure safety switches, with internal protection from overheating.
 - 5) Compressor shall include anti-short cycling timer to protect against compressor cycling.
 - 6) Each circuit (of each compressor) shall have a refrigerant sight glass.
 - 7) The compressor shall be externally vibration isolated using rubber-in-shear isolation.
 - 8) Each circuit shall have a replaceable core filter dryer.
 - 9) Each compressor shall be equipped with an electric crankcase heater.
4. Refrigerant Coils
- a. Evaporators
 - 1) The coil shall be a maximum of 30 inches (762 mm) in height to avoid water carryover to the reheat coil and re-evaporation into the air stream.
 - 2) This will ensure that the condensate formed on the fins flows into the condensate drain pan to prevent re-evaporation into the air stream.
 - 3) The evaporator coils shall be designed to maximize moisture removal.
 - 4) Coils shall be leak tested at the factory.
 - 5) All evaporators shall be protected by ElectroFin® E-Coat through electro-deposition immersion process for enhanced corrosion resistance on the complete coil assembly including casing, distributor tubes and header. Phenolic coatings or fin surface only coatings are not acceptable. Manual dip processes or spray application processes will not meet specification.
 - 6) Each evaporator coil shall have a separate condensate drain pan.
 - 7) Evaporative Coil "A"
 - a) Independent refrigeration circuit "A" shall be designed and controlled to increase the air flow over the evaporator coil to increase the sensible performance of this circuit when needed.
 - b) Circuit "A" shall also include a set of outside air and exhaust dampers to recover heat energy from the exhaust air stream when heating is required.
 - c) During heating operation, circuit "A" shall operate as an exhaust air energy recovery heat pump system with a minimum COP of 4.0 at typical operating conditions.
 - 8) Evaporative Coil "B"
 - a) Independent refrigeration circuit "B" shall be designed to be the primary evaporator coil to address the latent performance of the unit.
 - b. Refrigerant Reheat Coil
 - 1) Each of the two circuits shall include a refrigerant reheat coil.
 - 2) The reheat coils shall be positioned with a minimum of 8 inches (203.2 mm) clearance from the evaporator coil to help prevent water re-evaporation.
 - 3) The reheat coils shall be sized for the full heat of rejection.
 - 4) Reheat coils shall be leak tested at the factory.
 - 5) All reheat coils shall be protected by ElectroFin® E-Coat through electro-deposition immersion process for enhanced corrosion resistance on the complete coil assembly including casing, distributor tubes and header. Phenolic coatings or fin surface only coatings are not acceptable. Manual dip processes or spray application processes will not meet specification.
5. Condensate Drain Pans
- a. Drain pans will be sloped and positioned under each evaporator coil.
 - b. The drain pan will be fitted with a 1.5 inch MPT non-corrosive plastic drain pipe extending from the dehumidifier to be connected to by the contractor.
6. Receivers
- a. The unit shall include a refrigerant receiver on each circuit. Receivers shall be sized for year-round operation no matter what method of heat sink is used for the compressor heat of rejection.
 - b. Each circuit in the dehumidifier shall include a refrigerant receiver with ball valves.
 - c. The receivers shall be sufficiently sized to accommodate the differences between winter design conditions and summer design condition and for operating at the highest efficiency over a wide range of load conditions.
 - d. The receivers shall be sized for full-system refrigerant circuit capacity to allow a manual system pump down when servicing.
 - e. The receiver shall be manufactured in accordance with ASME Sec. VIII, Div. 1 and comply with CSA B51
 - f. The receiver shall have a Canadian Registration Number (CRN).

ADDENDUM 01

7. Fans

a. Supply Fans

- 1) The dehumidifier shall have a single supply fan.
- 2) The supply fan shall be driven by a AC motor.
- 3) Fan Type
 - a) Double inlet forward curve fan
 - 1) Galvanized steel impeller and housing, with corrosion protection coating suitable for pool environment.
 - 2) Pillow block bearings with grease fittings.
 - b) Double inlet backward incline air foil fan with true airfoil shaped blades, welded into position.
 - 1) The backward incline air foil fan impeller is coated with an anticorrosive primer and a final layer of synthetic paint.
 - 2) The fan housing is constructed of galvanized steel, with corrosion protection coating suitable for pool environment.
 - 3) Pillow block bearings with grease fittings.
- 4) Supply Fan Assembly
 - a) The shaft bearings shall be self-aligning, deep groove ball type, in pillow blocks housings.
 - b) All bearings are selected for a minimum of a L50 Lifetime of 100,000 hours.
 - c) The blower assembly shall be statically and dynamically balanced.
 - d) The motor sheave will be a variable pitch type to allow for field adjustment of air flow and external static.

b. EC Exhaust Fans

- 1) The dehumidifier shall have a single or two plenum exhaust fans arranged in a fan array.
- 2) Each fan in the fan array shall be driven by a direct-drive electronically commutated (EC) motor.
- 3) To ensure that correct flow rates are maintained, all exhaust fans automatically modulate.
- 4) Exhaust Fan Assembly
 - a) Single-sided intake, rear-curved motor impeller, energy-optimized for operation without spiral housing through special blade design with rotating, vaneless diffuser for high efficiency.
 - b) Inlet nozzle with volume flow rate measuring equipment.
 - c) Shafts: are designed for continuous operation at maximum-rated fan speed and motor horsepower, and with field-adjustable alignment.
 - d) Designed to operate at no more than 70 percent of first critical speed at top of fan's speed range.
 - e) The complete blower assembly shall be statically and dynamically balanced.

8. Filters (Return and Outdoor Air)

- a. All return air filters are 4 inches thick.
- b. All outdoor air filters in units 30 tons and smaller are 2 inches thick.
- c. All outdoor air filters in units larger than 30 tons are 4 inches thick.
- d. Air Filters shall be pleated MERV 10 disposable filters.

9. Dampers

a. Internal Dampers

- 1) Low leakage flat metal control dampers
- 2) Dampers shall be a parallel blade damper with blade and jamb seals.
- 3) Dampers shall have a AMCA leakage classification of 1A.
- 4) Dampers shall be motorized and proportional modulating.
- 5) The controller shall automatically adjust the dampers to maintain the specified flow rates through the use of integral flow measurement devices.

10. Refrigerant Heat Sinks

a. Remote Air-Cooled Condenser

- 1) The remote air-cooled condenser is described in detail in Section 2.2.
- 2) The size and capacity shall be in accordance with and rated at the ambient condition as listed in the remote air-cooled condenser schedule.
- 3) The condenser shall have dual refrigerant headers.
- 4) The system shall be able to reject all the full total heat of rejection to the outdoors.

ADDENDUM 01

- b. Exhaust Air Energy Recovery
 - 1) The first stage of heating shall be the energy recovery heat pump operation.
 - 2) The unit shall include a heat pump heating sequence to heat the ventilation air entering the dehumidifier.
 - 3) The "A" circuit of the unit shall be energized to operate during the programmed hours.
 - 4) The system shall provide a minimum COP of 4.0 which will provide the most efficient method of maintaining the supply air above the space dew point during heating operation.
- c. External Heater:
 - 1) Without Exhaust Air Energy Recovery.
 - a) The external heater shall provide all stages of heating.
 - 2) With Exhaust Air Energy Recovery.
 - a) The external heater shall provide the second and subsequent stages of heating.
 - 3) Contractor shall install an external heater as shown on equipment schedule and drawing.
 - 4) The external heater shall be controlled by dehumidifier's controller by one of these methods.
 - a) On-off control.
 - b) Modulating 0 to 10 VDC signal.
- d. Gas Heat:
 - 1) The gas heater shall have a 20:1 turndown.
 - 2) Without Exhaust Air Energy Recovery.
 - a) The separate gas heater shall provide all stages of heating.
 - 3) With Exhaust Air Energy Recovery
 - a) The separate gas heater shall be the second and subsequent stages of heating.
 - 4) Gas heater enclosure
 - a) All surfaces pre-treated with zinc phosphate pre-treatment before coating.
 - b) The heater module enclosure is double wall with interior and exterior coatings.
 - 5) The gas heat exchanger shall be a multi-pass design with a primary firing drum and tubular secondary.
 - 6) The separate gas heater uses a forced-draft fired system with a nozzle mix power gas burner.
 - 7) The unit shall be equipped with a flue gas stack when specified for outdoor installation to meet building code venting requirements.
 - 8) Unit is listed for indoor and outdoor installation for Category I and Category III venting without the need for additional power ventilation.
 - 9) Tubes are swaged into panels and welded to provide an airtight assembly.
 - 10) Burner to be equipped with an air proving switch to prove combustion air.
 - 11) Burner control sequence to include a pre-purge period sufficient to complete a minimum of four (4) air changes prior to burner start.
 - 12) The ignition system is high voltage spark ignition.
 - 13) Unit shall be IRI Listed.
 - 14) The gas heater capacity shall be in accordance with the dehumidifier schedule.
 - 15) The external gas heater shall have input capacities from 440 to 2,000 MBH (128.9 to 585.8 kW).
 - 16) The minimum combustion efficiency shall be 81
 - 17) %.
 - 18) The modulating gas control shall maintain a supply air temperature (SAT) set point (adjustable) to help prevent short cycling of the burners.
 - 19) The gas heater shall be locked out during compressor operation by the unit controller.
- 11. Control System
 - a. A digital control system using a microprocessor shall be used to accurately and precisely control the dehumidification system and the space environment.
 - b. The controller shall include three (3) levels of password protection.
 - c. The controller shall provide precise system control and feature an easy-to-read display which indicates actual operating conditions and set points.
 - d. The controller shall have a built-in occupancy timer.
 - e. The integral control system shall maintain the correct proportions of return air, supply, exhaust and ventilation air.
 - f. Up to five modes of outdoor air flow rates can be programmed. Negative pressure in the space to be maintained via modulating exhaust blowers in each mode.

ADDENDUM 01

- g. The static pressure, outdoor air flow and exhaust flow can be directly read at the unit's controller.
- h. Compressor safety trips shall be recorded by the controller and include pressures, date, time of day and the ambient condition if available.
- i. Emergency System Shutdown
 - 1) Terminal points are available for a binary contact closure by others to control unit shutdown by smoke detector or another similar device.
 - 2) An open contact in the 24 VAC circuit shall deactivate motors, fans and compressors.
- j. Remote Display
 - 1) The system shall include an remote display terminal (RDT) to allow remote operation and modification of set points of any dehumidifier on the network.
 - 2) The display shall be remote mountable up to 1,640 feet (500 m) from the unit.
- 12. Remote Monitoring (AireGuard)
 - a. The unit or units shall include cloud-based monitoring functionality.
 - b. This feature requires others to field provide an Ethernet connection to the internet for the dehumidification unit.
 - c. The building's existing LAN Firewall shall be maintained with no further action from the buildings IT department as long as the facility has internet service.
 - d. All AireGuard logins are via the cloud-based service. No further local network access is required.
 - e. The dehumidifier shall include a two-year subscription to the cloud-based AireGuard Service. Subscription can be renewed as the end of the initial subscription.
 - f. AireGuard shall allow remote operation and modification of set points of any dehumidifier on the network. This includes access to set points, performance information and alarm alerts.
 - g. AireGuard shall allow remote monitoring and alarming using any internet connected computer or portable device.
 - h. Alarm notification shall be by e-mail or SMS.
 - i. Remote system access by staff and external parties are controlled by the owner.
 - j. Each dehumidifier shall require an Ethernet connection with access to the internet.
- 13. Sensors
 - a. Temperature and humidity sensor.
 - b. Factory installed in the return of the unit.
 - c. Unit shall be equipped with an airflow switch to prevent the compressors from starting or operating on loss of airflow.
 - d. A pressure switch to prove air supply for combustion shall be provided with gas heaters.
 - e. Barometric pressure transducer for room pressure control to maintain the zones pressure with varying amounts of outdoor air.
 - 1) Internal pressure transducer factory installed inside dehumidifier.
 - 2) Outdoor pressure transducer supplied by factory and field installed by contractor along with the tubing.
 - f. The dehumidifier shall have internal transducers for monitoring refrigerant pressures.
- 14. Sequence of Operation
 - a. Supply fan blower runs continuously.
VFD to be provided with unit.
 - b. Air Balancing
 - 1) The integral control system shall automatically maintain the correct proportions of exhaust and ventilation air to maintain a negative pressure in the room.
 - 2) The static pressure, outdoor air flow. and exhaust air flow can be directly read at the unit's controller.
 - 3) Units with Exhaust Aire Energy Recovery
 - a) Up to 50% of the supply air volume can be made up of ventilation air.
 - b) Up to 50% of the supply air volume can be exhausted.
 - 4) The maximum amount of ventilation and exhaust air is listed on the dehumidifier schedule.
 - 5) The system will monitor the differential static pressure at the following locations.
 - a) The ventilation air damper will modulate based on the pressure differential across a ventilation air orifice plate to ensure the correct amount of ventilation air during occupied times.

ADDENDUM 01

- b) Across the evaporator coil in order to modulate the evaporator by-pass damper and ensure the proper amount of evaporator cfm for optimal moisture removal at all conditions.
- c) The pressure difference between the pressure in the zone and ambient in order to vary the exhaust fan volume to help guarantee a negative pressure within the space.
- 6) Up to four modes of outdoor air flow rates can be programmed.
 - a) Negative pressure in the space to be maintained via modulating exhaust blowers in each mode. These include one or more of the following air flow modes of operation.
 - 1) Occupied mode (ventilation for occupants).
 - 2) Unoccupied mode
 - 3) Event mode (additional ventilation for events that result in additional people in the space).
 - 4) Maximum ventilation mode/ purge mode up to the maximum outdoor air volume to eliminate potential contaminants from human activity.
- 7) Unoccupied Ventilation for Source Capture Exhaust Air
 - a) This is only required if there is a low level, pool adjacent, source capture system operating during the unoccupied hours.
 - b) The source capture equipment is separate and independent of the dehumidifier.
- c. Control of Volatile Organic Compounds (VOC)
 - 1) With coordinated control of any modulating source capture devices (an exhaust fan with a VFD provided by others or a RecoverAire unit).
 - a) During occupied hours, the dehumidifier shall have the ability to exhaust additional air from the zone and introduce the maximum amount of outdoor air when VOC levels are higher than set point.
 - b) The controller will air balance the exhaust fan operation in the dehumidifier and any modulating source capture devices to maintain negative pressure in the room.
 - c) During unoccupied hours, the outdoor air flow and the exhaust air flow shall be reduced to a minimum amount as specified. The dehumidifier's dampers, exhaust fan and any modulating source capture devices will automatically be adjusted to provide the specified negative pressure in the space.
 - 2) No coordinated control of any field provided exhaust fan,
 - a) During occupied hours, the dehumidifier shall have the ability to exhaust additional air from the zone and introduce the maximum amount of outdoor air when VOC levels are higher than set point.
 - b) The controller will air balance the exhaust fan operation in the dehumidifier to maintain negative pressure in the room.
 - c) During unoccupied hours, the outdoor air flow and the exhaust air flow shall be reduced to a minimum amount as specified. The dehumidifier's dampers, exhaust fan will automatically be adjusted to provide the specified negative pressure in the space.
- d. Cooling Mode
 - 1) First Stage
 - a) The exhaust damper located before the evaporator coils opens and exhausts room air before the evaporator coils.
 - b) Circuit "A" compressor(s) will start and operate.
 - c) The reheat coil will be inactive during cooling operation.
 - d) The heat of rejection shall be directed to the heat sink or sinks in the priority they are assigned as defined in the controller by the building operator. (Note: The order is typically pool heating and then either an air-cooled condenser or a water-cooled condenser).
 - 2) Second Stage:
 - a) Circuit "B" compressor(s) will start and operate.
 - b) The reheat coil will be inactive during cooling operation.
 - c) The heat of rejection shall be directed to the heat sink or sinks in the priority they are assigned as defined in the controller by the building operator. (Note: The order is typically pool heating and then either an air-cooled condenser or a water-cooled condenser).

ADDENDUM 01

- e. Dehumidification
 - 1) First Stage
 - a) The exhaust damper located before the evaporator coils opens and exhausts room air before the evaporator coils.
 - b) The reheat coil will be active.
 - c) Any remaining heat of rejection not used by the reheat coil shall be directed to the heat sink or sinks in the priority they are assigned as defined in the controller by the building operator. (Note: The order is typically pool heating and then either an air-cooled condenser or a water-cooled condenser).
 - 2) Second Stage:
 - a) Circuit "A" compressor(s) will start and operate.
 - b) The reheat coil will be active.
 - c) Any remaining heat of rejection not used by the reheat coil shall be directed to the heat sink or sinks in the priority they are assigned as defined in the controller by the building operator. (Note: The order is typically pool heating and then either an air-cooled condenser or a water-cooled condenser).
 - f. Heating
 - 1) Units with Exhaust Air Energy Recovery
 - a) First Stage – Exhaust Air Energy Recovery Heat Pump Operation
 - 1) On a call for heating, energy is recovered from the exhaust air by passing it through the circuit "A" evaporator.
 - 2) The cooled exhaust air is then expelled from the unit.
 - 3) The recovered energy from the exhaust air stream and the refrigerant heat of rejection are sent to the circuit "A" reheat coil where outside air is heated.
 - 4) This heat pump operation shall provide a COP of 4.0 at typical operating conditions to maintain the supply air above the space dew point.
 - b) Any heat not required by the reheat coil shall be directed to the heat sink or sinks in the priority they are assigned as defined by the operator in the controller.
 - c) Second Stage
 - 1) If additional heat is required to maintain the space set point, the heating system shall be energized.
 - 2) If an electric heater is included in the unit, a Silicon Controlled Rectifier (SCR) output shall be provided for modulating control of the heater.
 - 3) If a separately provided and field installed electric heater is provided in lieu of an integral electric heater, the heater shall be controlled by a signal from the dehumidifier in one of two ways.
 - a) An enable/disable signal.
 - b) A 0 to 10 VDC signal.
 - 4) If a hot water coil is included, a 0 to 10 VDC signal will be provided to a field supplied and field installed modulating water valve.
15. Source Capture Coordination
- a. Third party low source capture device provided by others.
 - 1) The dehumidifier shall provide a low-voltage 0 to 10 VDC output to control a low source capture exhaust provided and installed by others to maintain a negative pressure in the space.
 - 2) The dehumidifier shall control a Variable Frequency Drive (VFD) provided by the manufacturer of the dehumidifier. This VFD shall be field installed by the contractor.

2.2 Remote Air-Cooled Condenser

A. Manufacturer

- 1. Basis of Design: Desert Aire Air-Cooled RCE Series and RCF Series Remote Condensers.

B. Remote Air-Cooled Condenser Description

- 1. The size and capacity shall be in accordance with the unit schedule. The system shall be able to reject all the recovered heat (T.H.R.) from both circuit A and circuit B to the outdoor condenser. The outdoor condenser shall have dual headers.
- 2. The system shall be able to reject all the recovered heat (T.H.R.) from circuit A to the outdoor condenser. The size and capacity shall be in accordance with the unit schedule.

ADDENDUM 01

3. The system shall be able to reject all the recovered heat (T.H.R.) from circuit B to the outdoor condenser. The size and capacity shall be in accordance with the unit schedule.
4. The fan motors are direct drive external rotor type. Swept fan blades are designed as part of the motor.
5. The fans shall be cycled based on internal head pressure.
6. Remote Air-Cooled condenser coil shall be protected by ElectroFin® E-Coat through electro-deposition immersion process for enhanced corrosion resistance. Phenolic coatings or fin surface only coatings are not acceptable. Manual dip processes or spray application processes will not meet specification.
7. Electrical
 - a. The remote air-cooled condenser shall be provided with a weatherproof electrical panel with factory mounted door interrupt disconnect switch.
 - b. Motor lead raceways shall be fully enclosed to protect wiring.
 - c. Electrical nameplate on the unit shall include, but not limited to the MCA (Minimum Circuit Ampacity), the MOPD (Maximum Over-Current Protection Device) and the Short Circuit Current Rating (SCCR).
 - d. The units shall be compatible with the electrical voltage, phase and hertz requirements as indicated on the dehumidifier schedule.
8. Refrigeration system
 - a. The system's operating refrigerant shall match the refrigerant used by the dehumidifier in Section 2.1.
9. Coil
 - a. Round Tube Coils-Enhanced tubing with advanced sinusoidal fin design
 - b. Coils shall be factory leak-tested and sealed with caps.
10. Fans
 - a. Swept fan blades are designed as part of the motor assemblies, not an addition to them.
 - 1) The condenser will be provided with a 540 RPM motor combined with a specially designed fan blade to produce 52 dbA or less noise @ 3 meters in accordance with AHRI standard 370-2001.
11. Controls
 - a. Fan(s) shall be controlled based on the refrigerant head pressure.
 - b. Condenser shall continue to operate and automatically maintain condensing temperature at ambient conditions as low as -20°F (-17°C) Control
 - c. The condenser fans shall operate based on the refrigerant pressure measured at the condenser.
 - d. The maximum ambient temperature is per the schedule.
12. Sensors
 - a. Each circuit in the air-cooled remote condenser shall be equipped with a refrigerant pressure transducer.
13. Sequence of Operation
 - a. For energy savings, fans should be sequenced in response to increasing or decreasing refrigerant pressure and not all run at the same time.
14. Material
 - a. Cabinet
 - 1) The remote air-cooled condenser cabinet shall be constructed of G90 galvanized steel.
 - 2) Fan guards shall be heavy-gauge, closed-mesh steel wire with vinyl coating. Guards shall be contoured for maximum rigidity.
 - b. Coil
 - 1) the condenser coil shall be fabricated from seamless drawn copper. Aluminum tubes will not be allowed.
 - 2) The fin surface on the refrigerant coils shall be continuous plate type aluminum.
 - 3) The condenser heat exchangers shall be coated with ElectroFin® E-Coat through electro-deposition immersion process for enhanced corrosion resistance. Dry film thickness shall be 0.6-1.2 mils (15-25 µm). Heat transfer coefficient loss shall be less than 1% after coating. Minimum salt spray resistance per ASTM B117-97 / DIN 53167 after coating shall be 6,000 hours. Phenolic coatings or fin surface only coatings are not acceptable. Manual dip processes or spray application processes will not meet specification.

ADDENDUM 01

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install all dehumidification units in conformance with:
 - 1. The Shop Drawings reviewed by Engineer.
 - 2. The Manufacturer's recommendations.
 - 3. As indicated on the Drawings.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Arrange and pay for Manufacturer's engineer to provide the services indicated below for a minimum onsite time of 1 day. Schedule the following as soon as practicable after installation and at times approved by Engineer and Owner.
 - 1. Manufacturer's Engineer: Check work, assist in startup, demonstrate operation and maintenance manual with Owner's personnel, and provide lifetime desiccant solution analysis service.
- B. Promptly make all changes and additions required by Manufacturer's engineer.
- C. Submit Manufacturer's engineer's written approval of installation.

END OF SECTION 23 84 16

5220 N. High Street
Columbus, OH 43214

ARCHITECT
Legat Architects, Inc.
22 East Gay Street, Suite 500
Columbus, OH 43215
P: 614.228.7758
www.legat.com

CIVIL / STRUCTURAL ENGINEER
Korda/Nemeth Engineering
1650 Watermark Drive
Columbus, OH 43215
P: 614.487.1650
www.korda.com

MEP/FP ENGINEER
Fishbeck
1 East Campus View Blvd,
Columbus, OH 43235
P: 614.363.1001
www.fishbeck.com

AQUATICS CONSULTANT
WTI
100 Park Avenue
Beaver Dam, WI 53916
P: 920.887.7375
www.watertechnologyinc.com

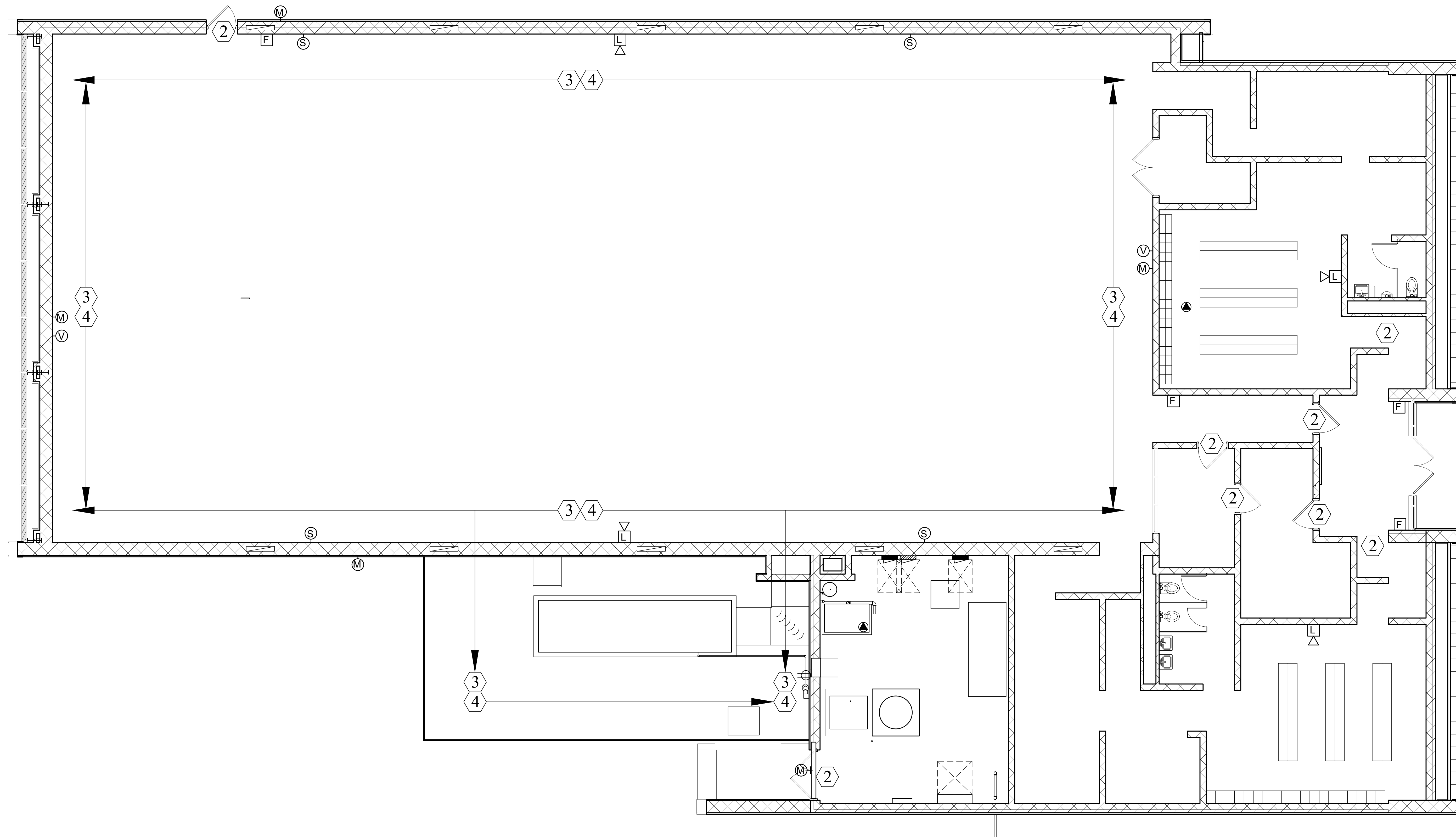
ENVIRONMENTAL CONSULTING & ENGINEERING
Lawhon & Associates, Inc.
1441 King Avenue
Columbus, OH 43212
P: 614.481.8600
www.lawhon-assoc.com

CODED NOTES

1. ACCESS, REMOVE AND DISPOSE OF ASBESTOS CONTAINING INTERIOR WINDOW GLAZING COMPOUND APPROXIMATELY 2 SQUARE FEET.
2. ACCESS, REMOVE AND DISPOSE OF ASSUMED ASBESTOS CONTAINING FIRE DOORS, APPROXIMATELY 7 EACH.
3. ACCESS, REMOVE AND DISPOSE OF ASSUMED ASBESTOS CONTAINING TRANSITE DUCTS, APPROXIMATELY 400 LINEAR FEET. SEE GENERAL NOTE M BELOW.
4. ACCESS, REMOVE AND DISPOSE OF ASSUMED ASBESTOS CONTAINING VAPOR BARRIER, APPROXIMATELY 6,730 SQUARE FEET. SEE GENERAL NOTE M BELOW.
5. ACCESS, REMOVE AND DISPOSE OF ASSUMED ASBESTOS CONTAINING BACKINGS IN ELECTRICAL COMPONENTS, APPROXIMATELY 60 SQUARE FEET.
6. ACCESS, REMOVE AND DISPOSE OF ASSUMED ASBESTOS CONTAINING PIPE GASKETS APPROXIMATELY 100 SQUARE FEET.

GENERAL NOTES

- A. LEAD BASED DUST/PAINT: DUE TO THE DATE OF CONSTRUCTION AND USE OF THE BUILDING, LEAD BASED PAINT AND LEAD DUST MAY BE LOCATED THROUGHOUT THE BUILDING. ALL WORK PRACTICES THAT ENCOUNTER DUST AND/OR IMPACT PAINTED SURFACES IN THE BUILDING SHALL COMPLY WITH THE OSHA STANDARD 29 CFR 1926.62 LEAD EXPOSURE. IN CONSTRUCTION, ADDITIONALLY, ALL MATERIALS REMOVED FROM THE BUILDING/SITE SHALL BE DISPOSED PROPERLY BY THE CONTRACTOR.
- B. BULK LEAD: IT IS PRESUMED THAT BULK LEAD MATERIALS MAY BE PRESENT IN THE BUILDING. THESE INCLUDE BUT ARE NOT LIMITED TO LEAD SOLDER JOINTS. ANY BULK LEAD ITEMS ENCOUNTERED DURING RENOVATION SHALL BE SEPARATED FROM C&D WASTE STREAM AND PROPERLY RECYCLED.
- C. REFRIGERANTS - REFRIGERANTS, SUCH AS FREON, WHICH MAY BE LOCATED IN A/C UNITS, WATER FOUNTAINS, CHILLERS, ETC SHALL BE PROPERLY RECLAIMED BY A PROPERLY TRAINED AND LICENSED CONTRACTOR PRIOR TO IMPACT.
- D. BULBS/ BALLASTS - ALL FLUORESCENT, CFL (MERCURY VAPOR) BULBS/TUBES SHALL BE REMOVED, PACKAGED AND PROPERLY DISPOSED THROUGHOUT THE BUILDING. ALL LIGHT BALLASTS SHALL BE INVESTIGATED AND SEPARATED INTO PCB VS NON-PCB CONTAINING AND PROPERLY DISPOSED OF ACCORDINGLY.
- E. MERCURY - ALL MERCURY THERMOSTATS' PRESSURE GAUGES SHALL BE REMOVED, PACKAGED AND PROPERLY DISPOSED OF PRIOR TO IMPACT.
- F. STORED CHEMICALS, CLEANERS AND GAS CYLINDERS WILL BE REMOVED FROM THE FACILITY BY THE OWNER PRIOR TO RENOVATION ACTIVITIES.
- G. ALL QUANTITIES AND LOCATIONS ARE ESTIMATES. THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES AND EXACT LOCATIONS IN PREPARING BIDS AND EXECUTING WORK.
- H. THE OWNER/OWNER'S REPRESENTATIVE HAVE THE RIGHT TO CONTROL LOCATION OF ALL ABATEMENT CONTRACTOR'S SUPPLIES AND STORAGE.
- I. THE ABATEMENT CONTRACTOR SHALL COORDINATE ON SITE WORK WITH THE OWNER'S REPRESENTATIVE AND OWNER TO FACILITATE THE PROMPT COMPLETION OF ALL ASPECTS OF THE ABATEMENT/DEMOLITION PROJECT.
- J. THE ABATEMENT CONTRACTOR IS RESPONSIBLE FOR MOVING THE OWNER'S EQUIPMENT AND/OR MATERIALS LEFT IN THE WORK AREAS AS NECESSARY TO COMPLETE ABATEMENT WORK.
- K. SPECIAL CARE SHOULD BE TAKEN WHEN WORKING NEAR ELECTRIC, WATER, STEAM, AND GAS SUPPLY LINES.
- L. ABATEMENT CONTRACTOR IS RESPONSIBLE FOR FOLLOWING AND ADHERING TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS INCLUDING, BUT NOT LIMITED TO, THOSE SET FORTH BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), OHIO EPA, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND THE OHIO DEPARTMENT OF HEALTH (ODH).
- M. ABATEMENT CONTRACTOR SHALL DECONTAMINATE ALL BUILDING MATERIALS, WHICH BECOME CONTAMINATED OR ARE DISTURBED FROM ASBESTOS AND OTHER HAZARDOUS MATERIAL. ANY METHOD OF DEMOLITION TO GET TO ACM MATERIAL, WHICH RENDER ANY CATEGORY I OR CATEGORY II MATERIALS FRIABLE MUST BE CONDUCTED IN A FULL NEGATIVE PRESSURE ENCLOSURE, INCLUDING A FALSE CEILING, WITH -0.02" OF PRESSURE DIFFERENTIAL.
- N. ABATEMENT CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF OSHA REGARDING CONFINED SPACE ENTRY INCLUDING ASSOCIATED PROGRAMS, PERMITS, TRAINING AND TESTING.
- O. ABATEMENT CONTRACTOR IS RESPONSIBLE FOR REMOVING BUILDING MATERIALS TO ACCESS ALL ACM'S. THIS INCLUDES, BUT NOT LIMITED TO WALL SYSTEMS, FLOOR LAYERS, AND OTHER BUILDING MATERIALS.
- P. ABATEMENT CONTRACTOR MAY UTILIZE THE OWNER'S WATER AND POWER SUPPLY FOR ALL ABATEMENT RELATED ACTIVITIES.



HAZARDOUS MATERIALS ABATEMENT PLAN
NTS

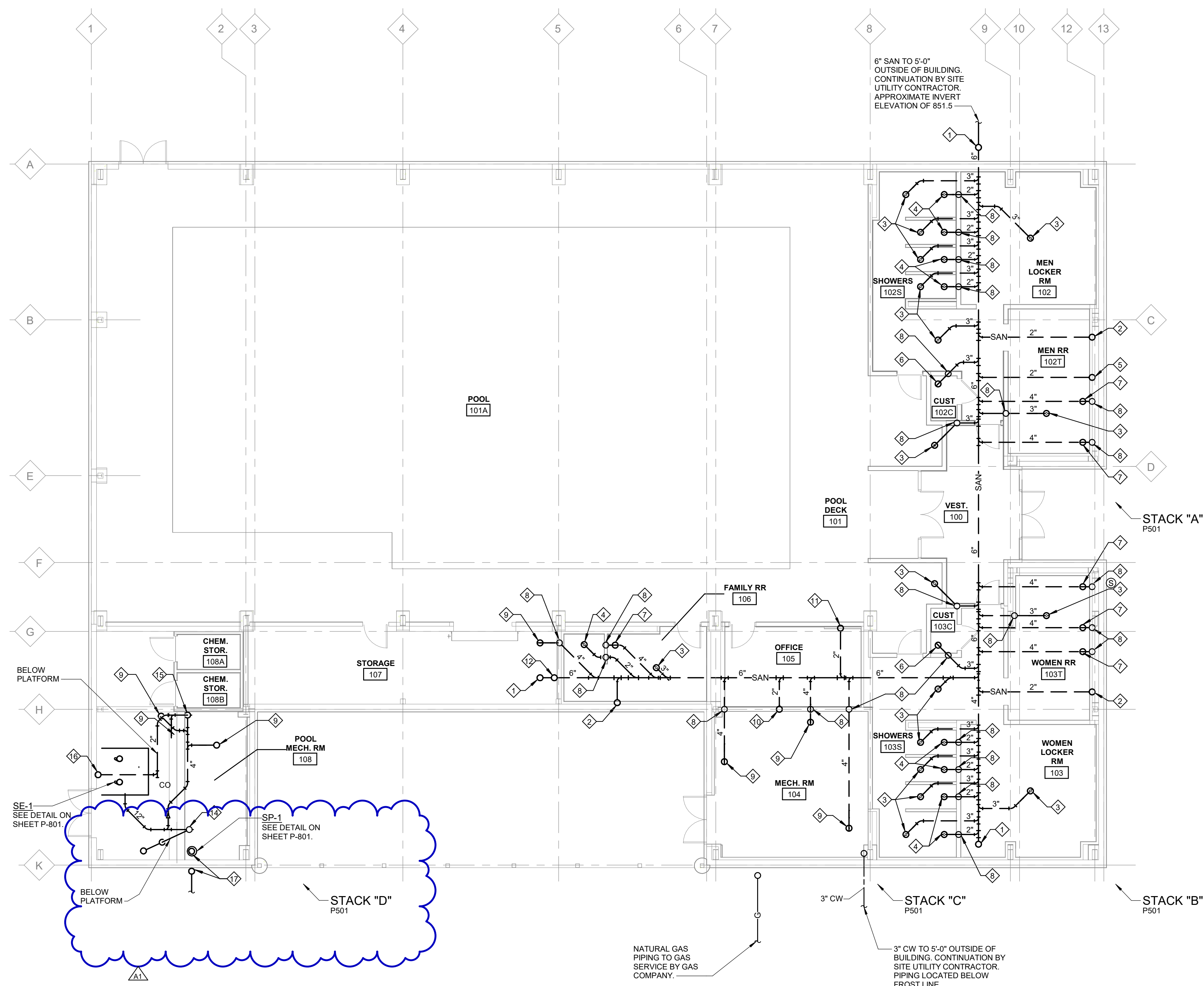
SIGNATURE _____
DATE _____

REVISIONS		
NO.	DESCRIPTION	DATE
A1	ADDENDUM 1	07/08/25

PROJECT NUMBER 223121.00
DATE OF ISSUE 06/18/25
DRAWN BY AF
REVIEWED BY JM

**HAZARDOUS MATERIALS
ABATEMENT PLAN**

HM-101
Bid Set



- KEY NOTES**
- 4" SAN DOWN FROM CLEANOUT.
 - 2" SAN DOWN FROM LAVATORY.
 - 3" SAN DOWN FROM FLOOR DRAIN.
 - 2" SAN DOWN FROM SHOWER DRAIN.
 - 2" SAN DOWN FROM URINAL.
 - 3" SAN DOWN FROM JANITORS RECEPTOR.
 - 4" SAN DOWN FROM WATER CLOSET.
 - 2" VENT UP IN WALL.
 - 4" SAN DOWN FROM FLOOR DRAIN.
 - 2" SAN DOWN FROM GUY GRAY BOX. GUY GRAY BOX TO BE INSTALLED CENTERED IN ROOM.
 - 2" SAN DOWN FROM WATER COOLER.
 - 4" SAN DOWN FROM PUMPED DISCHARGE. CONNECT TO HORIZONTAL MAIN THROUGH A WYE FITTING INTO THE TOP OF THE PIPE. LOCATE WYE FITTING A MINIMUM OF 10 PIPE DIAMETERS FROM ANY FIXTURE DRAIN.
 - 12" SAN DOWN FROM HUB DRAIN.
 - 3" VENT UP.
 - 4" SAN RISER FROM BELOW PLATFORM TO BELOW PIT SLAB. PROVIDE WITH CLEANOUT AT BASE.
 - 12" SAN DOWN FROM SHOWER.
 - 12" PUMPED DISCHARGE UP AND OUT THRU SIDE OF BUILDING. 3" PIPING DOWN BELOW GRADE AND ROUTE TO 10" STORM MAIN. SEE SHEET P-100 AND CIVIL DRAWINGS FOR MORE INFORMATION.

FOUNDATION PLUMBING PLAN
SCALE: 1/8" = 1'-0"
NORTH

SIGNATURE _____
DATE _____

REVISIONS		
NO	DESCRIPTION	DATE
A1	ADDENDUM 1	7/8/25

PROJECT NUMBER 223121.00
DATE OF ISSUE 6/16/2025
DRAWN BY JBF
REVIEWED BY GAT

FOUNDATION PLUMBING PLAN

5220 N. High Street
Columbus, OH 43214

ARCHITECT
Legat Architects, Inc.
22 East Gay Street, Suite 500
Columbus, OH 43215
P: 614.228.7758
www.legat.com

CIVIL/STRUCTURAL ENGINEER
Korda/Nemeth Engineering
1650 Watermark Drive
Columbus, OH 43215
P: 614.487.1650
www.korda.com

MER/FP ENGINEER
Fishbeck
1 East Campus View Boulevard
Columbus, OH 43235
P: 614.363.1001
www.fishbeck.com

AQUATICS CONSULTANT
WTI
100 Park Avenue
Beaver Dam, WI 53916
P: 920.887.7375
www.watertechnologyinc.com

ENVIRONMENTAL CONSULTING & ENGINEERING
Lawhon & Associates, Inc.
1441 King Avenue
Columbus, OH 43212
P: 614.481.8600
www.lawhon-assoc.com

NOTES

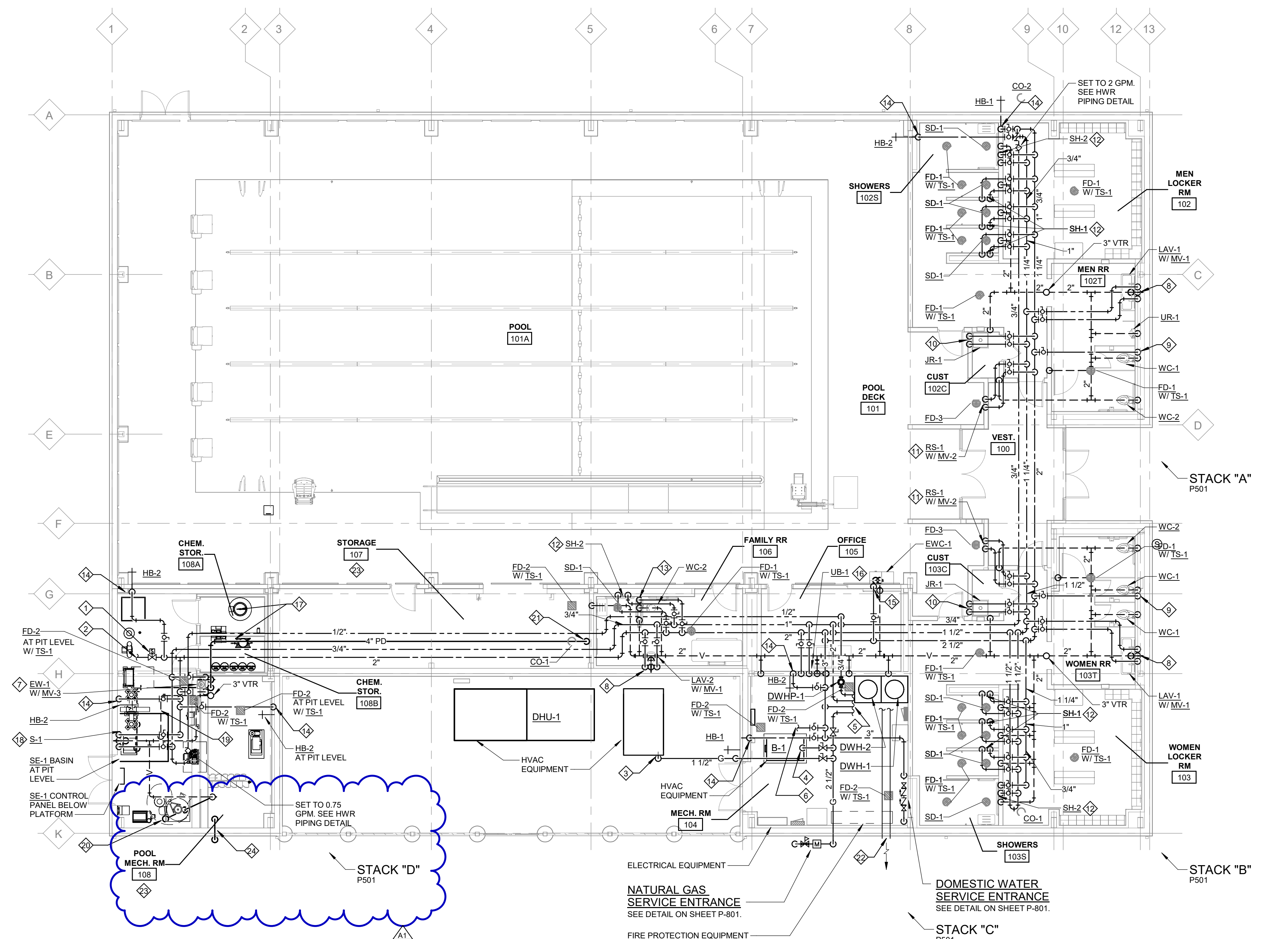
- REFER TO SPECIFICATIONS FOR EPOXY COATING OF PLUMBING ESCUTCHEONS AND PIPE HANGER SYSTEMS.
- REFER TO POOL CONSULTANT AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL WORK.
- NO PLUMBING PIPING IS TO BE ROUTED IN POOL ROOM.

ALTERNATE 01 - SHOWER PARTITIONS

- ALTERNATE INCLUDES RELOCATING SHOWER VALVE AND HEAD FROM WING WALL TO MAIN WALL. CW AND HW PIPING TO ALSO BE RELOCATED. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

KEY NOTES

- POOL AUTOFILL ASSEMBLY. REFER TO DETAIL ON P-801 FOR MORE INFORMATION.
- 2" COLD WATER LINE TO POOL AUTOFILL. SEE POOL CONSULTANT DRAWINGS FOR EXACT LOCATION.
- 1 1/2" GAS PIPING TO DHU HEATER SECTION. PROVIDE WITH SHUT-OFF VALVE AND 6" DIRT LEG AT CONNECTION.
- 1 1/2" GAS PIPING TO BOILER. PROVIDE WITH SHUT-OFF VALVE AND 6" DIRT LEG AT CONNECTION.
- 1" GAS, 2" CW, 2" HW, AND 3/4" HW PIPING TO WATER HEATERS. SEE DETAIL ON SHEET P-801 FOR MORE INFORMATION.
- 3/4" HVAC MAKE-UP WATER CONNECTION WITH BACKFLOW PREVENTER AND PRESSURE REGULATOR. SEE DETAIL ON SHEET P-801 FOR MORE INFORMATION.
- 1/2" CW AND 1/2" HW TO MIXING VALVE. CONTINUE 1/2" TPW DOWN ALONG PLATFORM RAILING TO EMERGENCY EYE/FACE WASH. UNIT TO BE LOCATED IN UNOBSTRUCTED AND ACCESSIBLE LOCATION AND REQUIRE NO MORE THAN 10 SECONDS FOR THE INJURED PERSON TO REACH. VERIFY REQUIREMENT WITH ARCHITECTURAL AND POOL CONSULTANT DRAWINGS.
- 1/2" CW AND 1/2" HW DOWN IN WALL TO MIXING VALVE. CONTINUE 1/2" CW AND 1/2" TW TO LAVATORY.
- 2" CW DOWN IN WALL TO WATER CLOSETS AND URINAL. ROUTE PIPING IN WALL TO EACH FIXTURE. PROVIDE WITH WATER HAMMER ARRESTER. SEE SCHEDULE ON SHEET P-801.
- 1/2" CW AND 1/2" HW DOWN IN WALL TO JANITOR RECEPTOR.
- 1/2" CW AND 1/2" HW TO MIXING VALVE. CONTINUE 1/2" TW DOWN IN WALL TO RINSE STATION.
- 1/2" CW AND 1/2" HW DOWN IN WALL TO SHOWER.
- 1 1/4" CW DOWN IN WALL TO WATER CLOSET. PROVIDE WITH WATER HAMMER ARRESTER. SEE SCHEDULE ON SHEET P-801.
- 3/4" CW DOWN IN WALL TO HOSE BIBB.
- 1/2" CW DOWN IN WALL TO ELECTRIC WATER COOLER.
- 1/2" CW AND 1/2" HW DOWN IN WALL TO GUY GRAY BOX. PROVIDE WITH WATER HAMMER ARRESTER. SEE SCHEDULE ON SHEET P-801. GUY GRAY BOX TO BE INSTALLED CENTERED IN ROOM.
- PIPING IN THIS AREA TO BE ROUTED ABOVE STORAGE ROOMS. DO NOT ROUTE PIPING IN STORAGE ROOMS.
- 1/2" CW AND 1/2" HW DOWN ALONG WALL TO SINK.
- VENT AND PUMPED DISCHARGE PIPING LOCATED BELOW PLATFORM.
- 12" HUB DRAIN TO TERMINATE 1" TO 2" AFF. COORDINATE EXACT LOCATION WITH POOL CONSULTANT DRAWINGS.
- 4" PUMPED DISCHARGE DOWN ALONG WALL SEE SHEET P-100 FOR CONTINUATION.
- WATER HEATER COMBUSTION AIR AND VENT PIPING THRU WALL. COORDINATE LOCATION WITH HVAC INTAKES TO MAINTAIN MINIMUM 10 FT SEPARATION.
- ALL PLUMBING ESCUTCHEONS AND PIPE HANGER SYSTEMS IN THIS AREA TO BE PROVIDED WITH A PAINTED OR SPRAYED EPOXY COATING. PLUMBING PIPING IN THIS AREA TO BE PLASTIC.
- 1 1/2" PUMPED DISCHARGE OUT THRU SIDE OF BUILDING. PROVIDE CLEANOUT ON VERTICAL PIPING EXTERIOR OF BUILDING. INCREASE PIPING ABOVE GRADE TO 3" AND ROUTE DOWN BELOW GRADE. SEE SHEET P-100 FOR CONTINUATION.



FIRST FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"
FINISHED FLOOR ELEVATION 856.00



24. 1 1/2" PUMPED DISCHARGE OUT THRU SIDE OF BUILDING. PROVIDE CLEANOUT ON VERTICAL PIPING EXTERIOR OF BUILDING. INCREASE PIPING ABOVE GRADE TO 3" AND ROUTE DOWN BELOW GRADE. SEE SHEET P-100 FOR CONTINUATION.

SIGNATURE _____
DATE _____

REVISIONS		
NO	DESCRIPTION	DATE
A1	ADDENDUM 1	7/8/25

PROJECT NUMBER 223121.00
DATE OF ISSUE 6/16/2025
DRAWN BY JBF
REVIEWED BY GAT

FIRST FLOOR PLUMBING PLAN

SIGNATURE
DATE

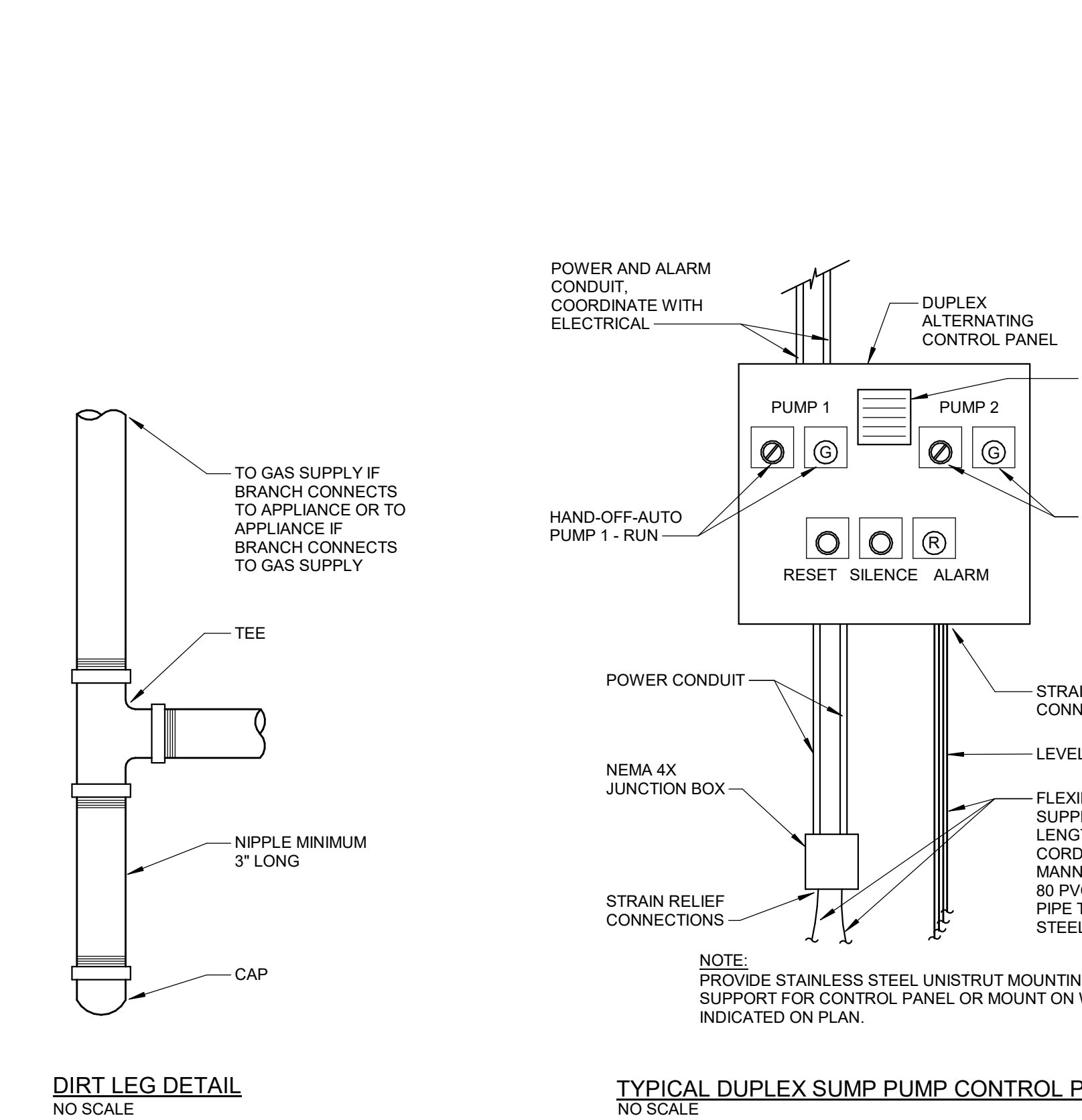
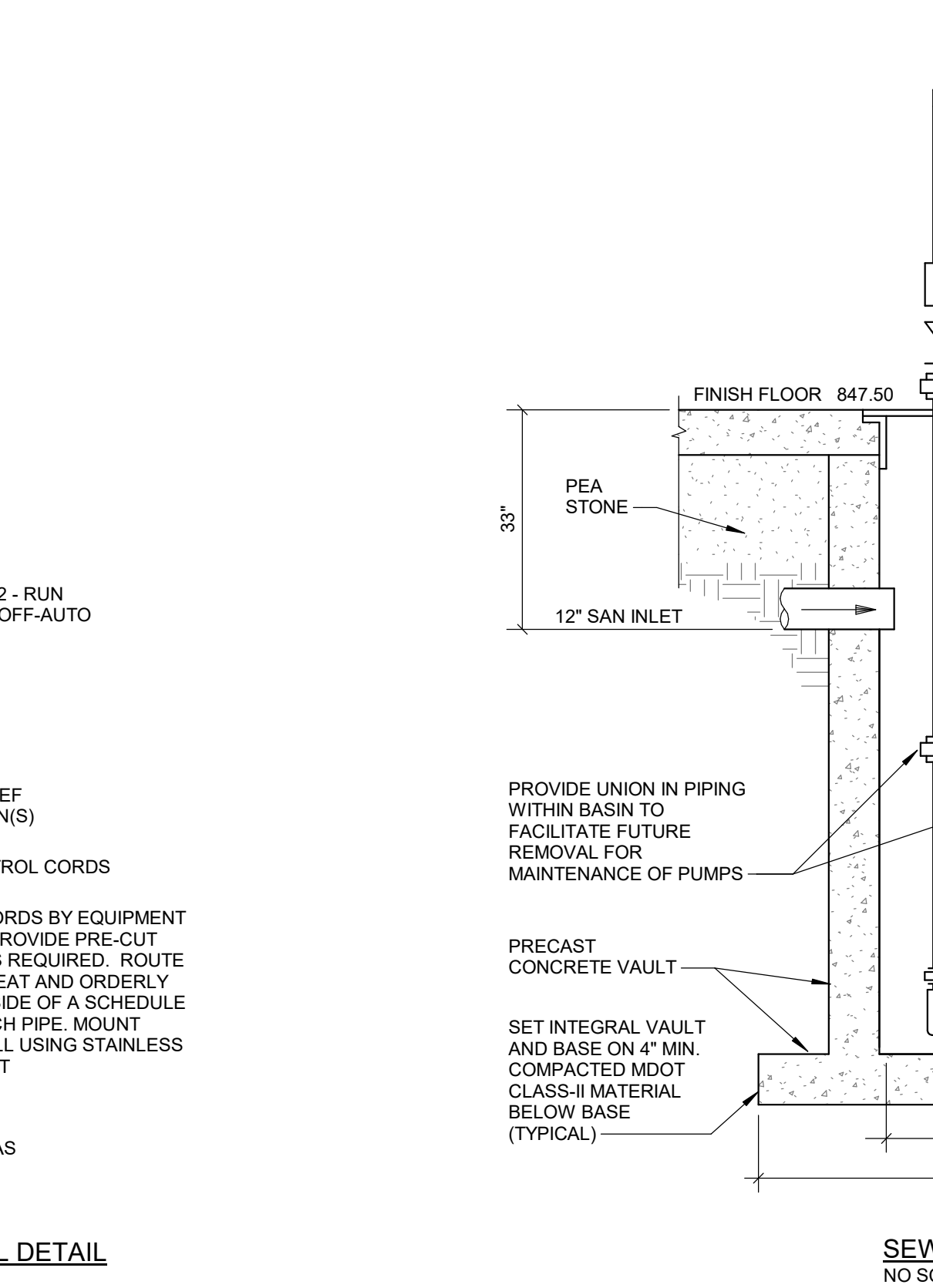
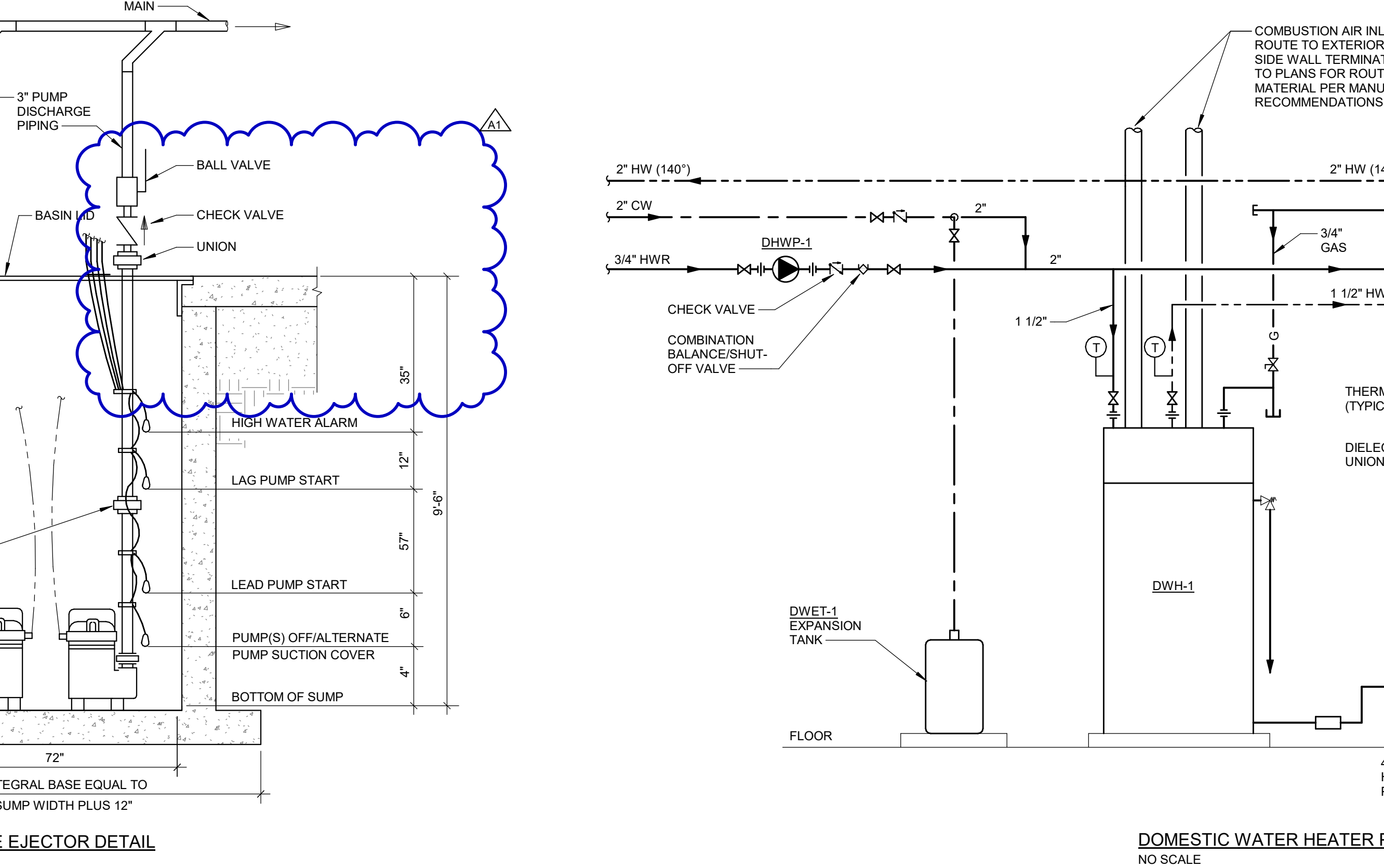
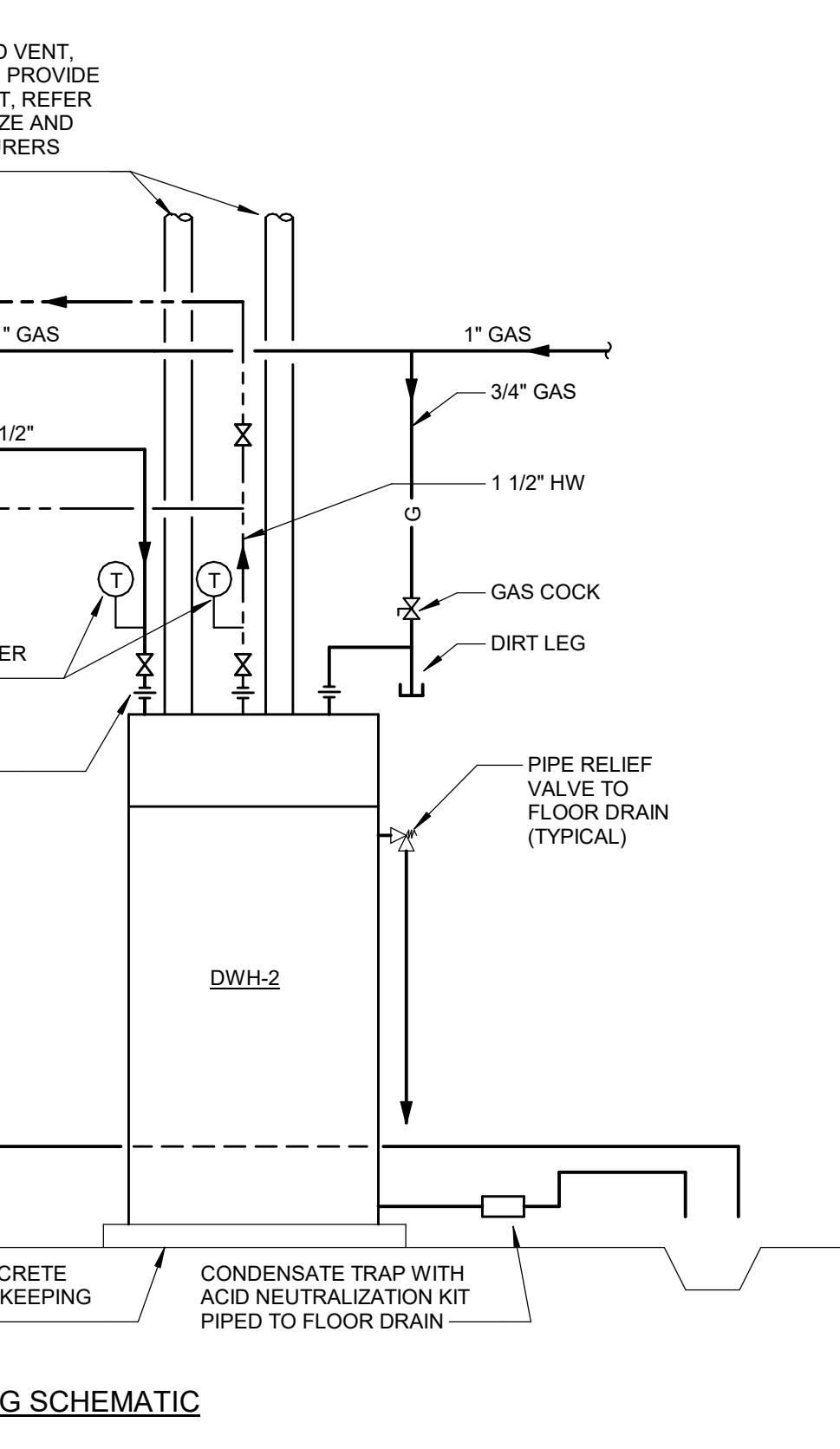
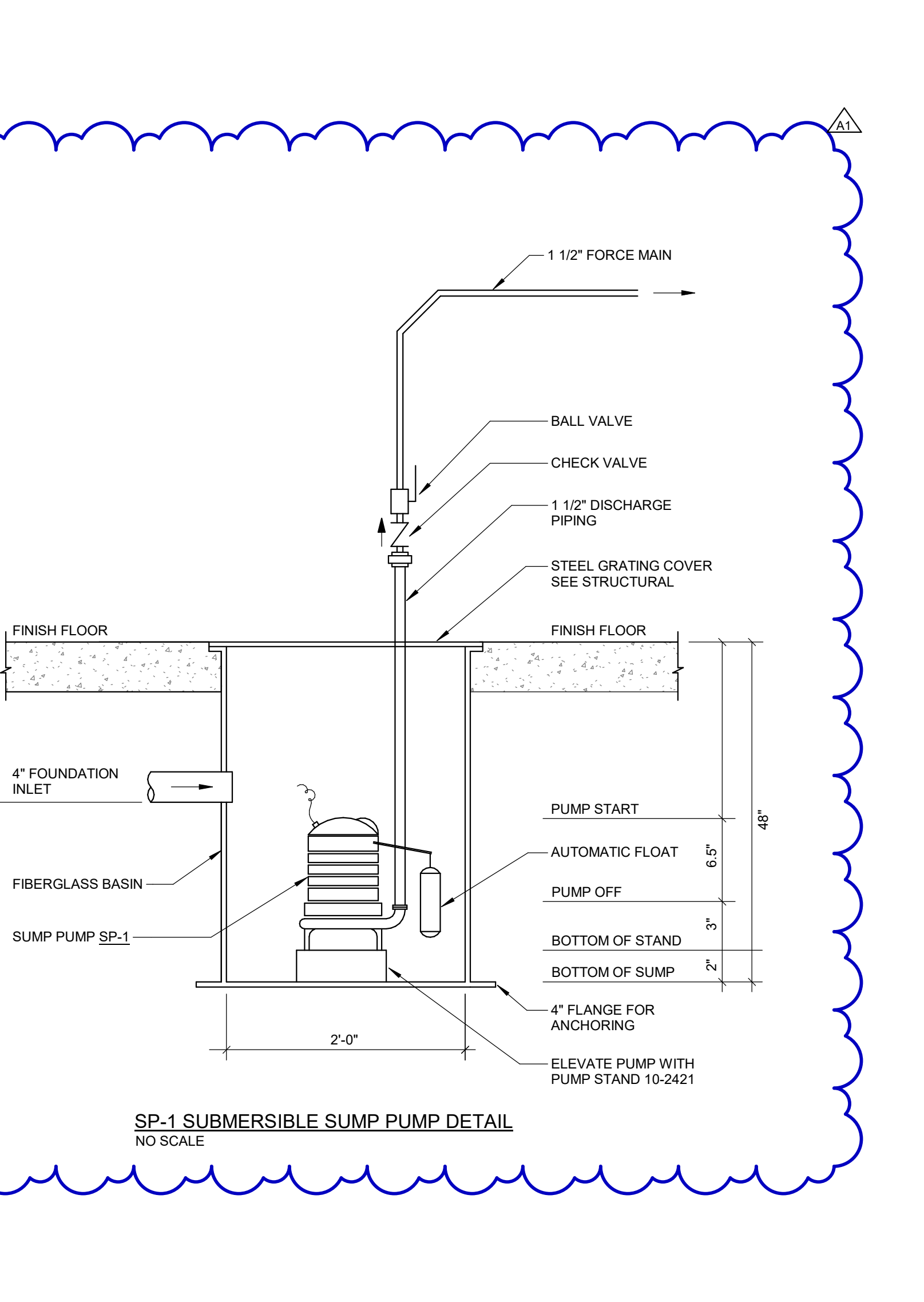
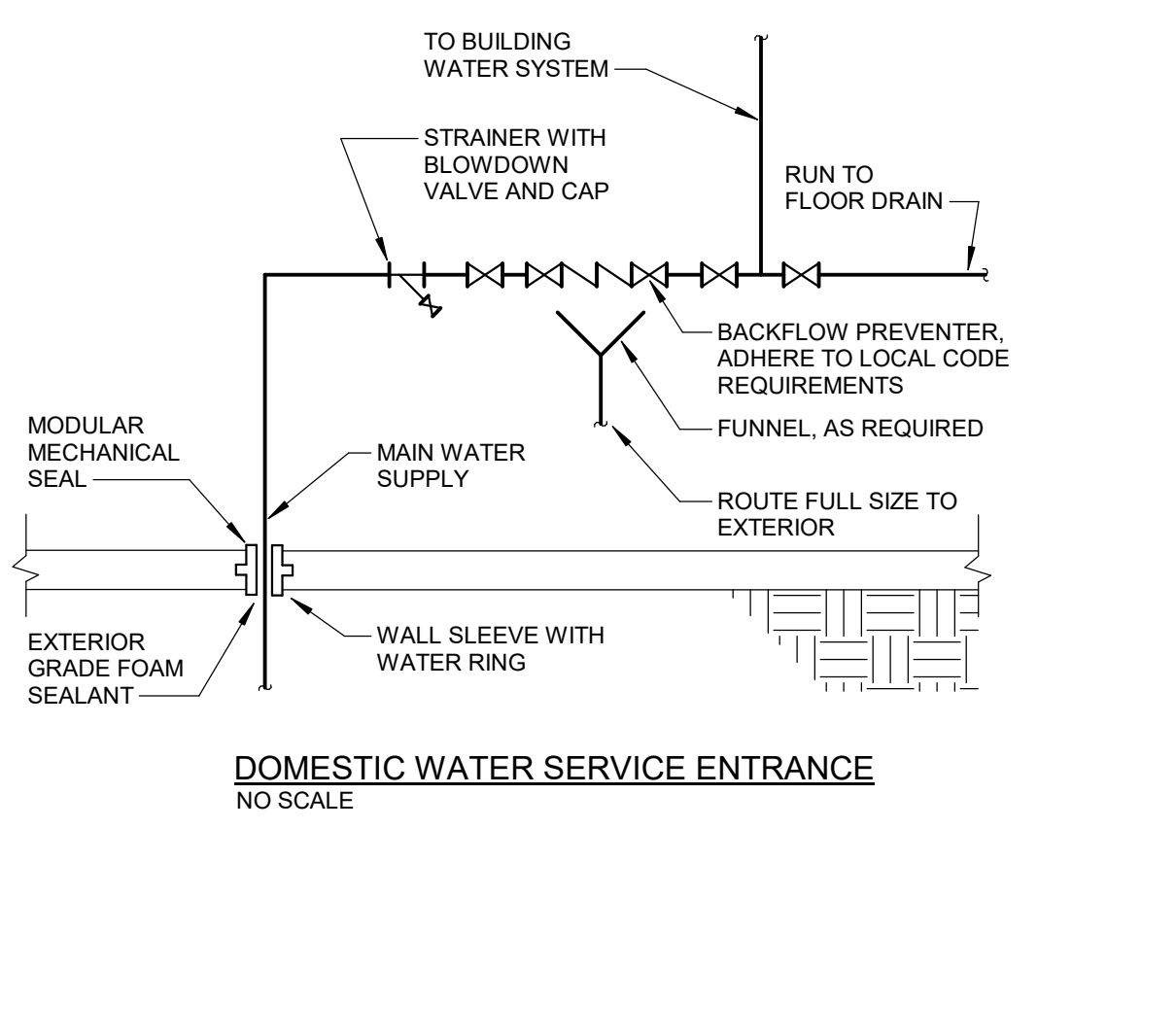
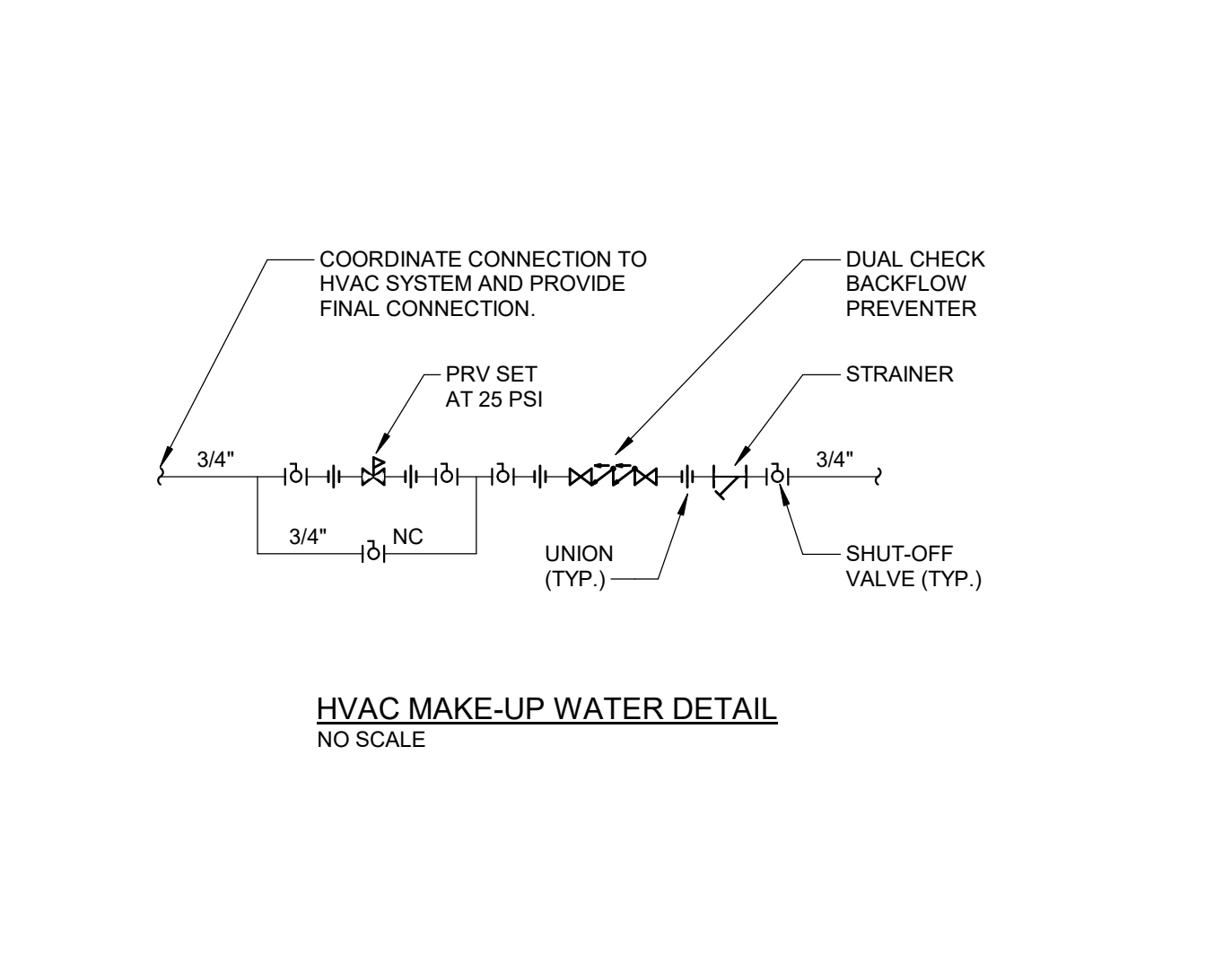
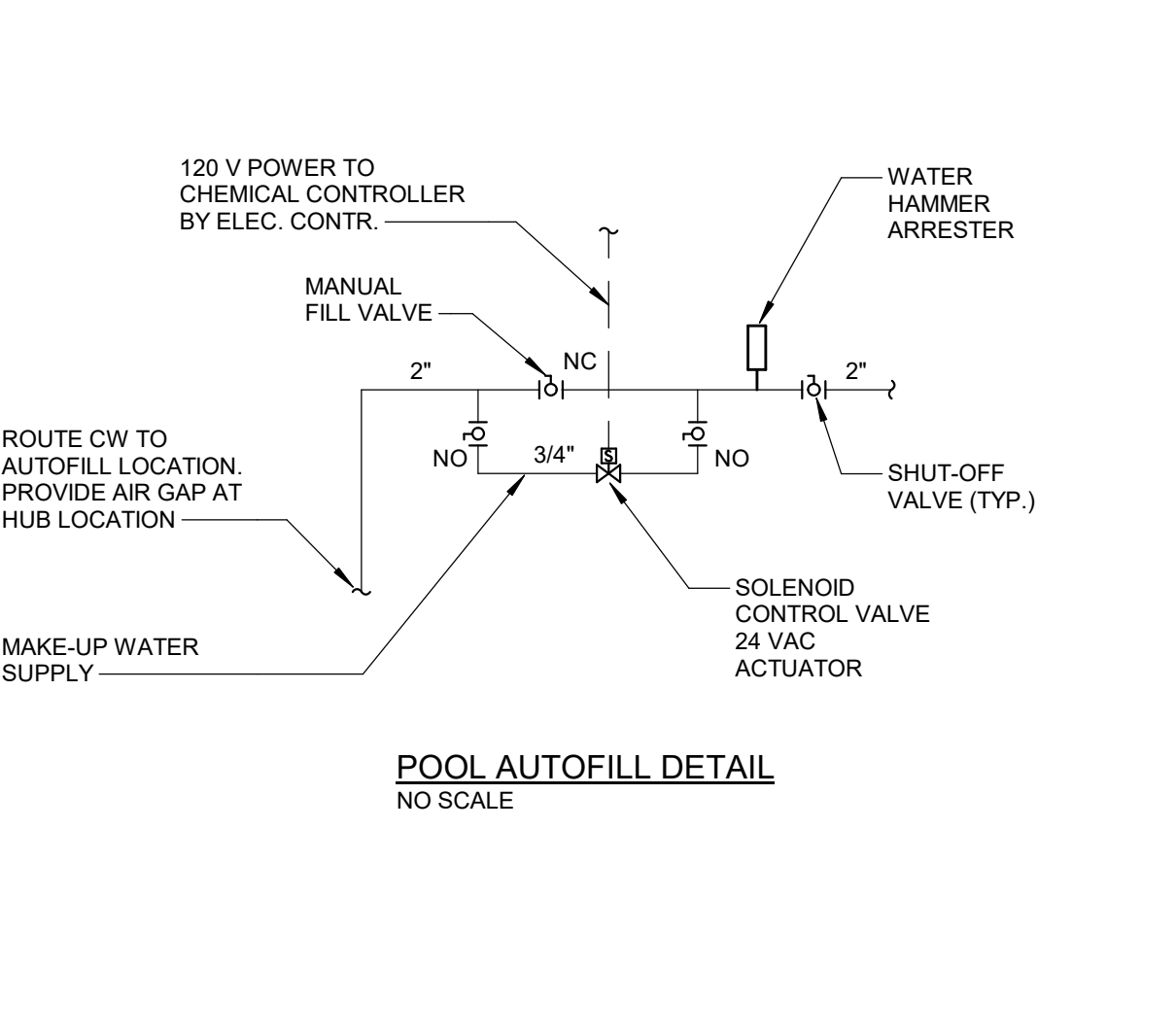
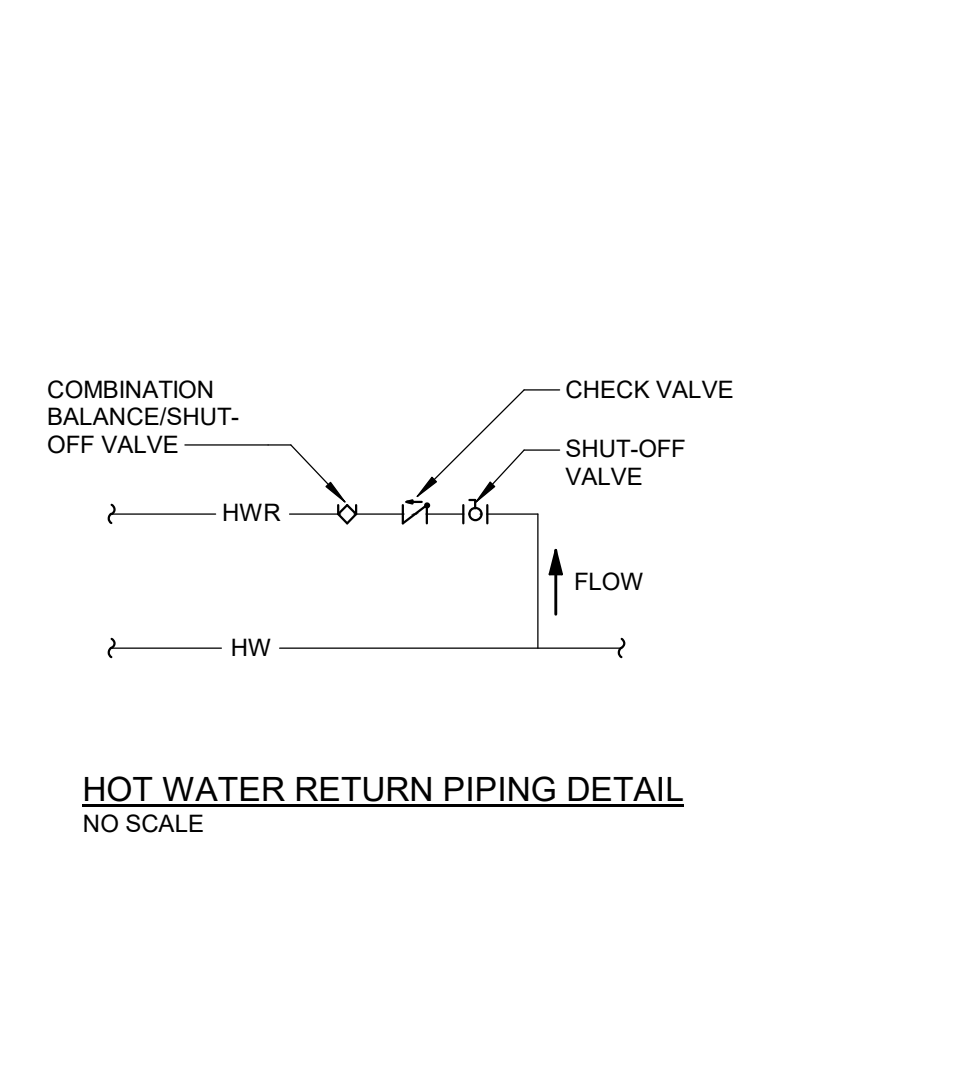
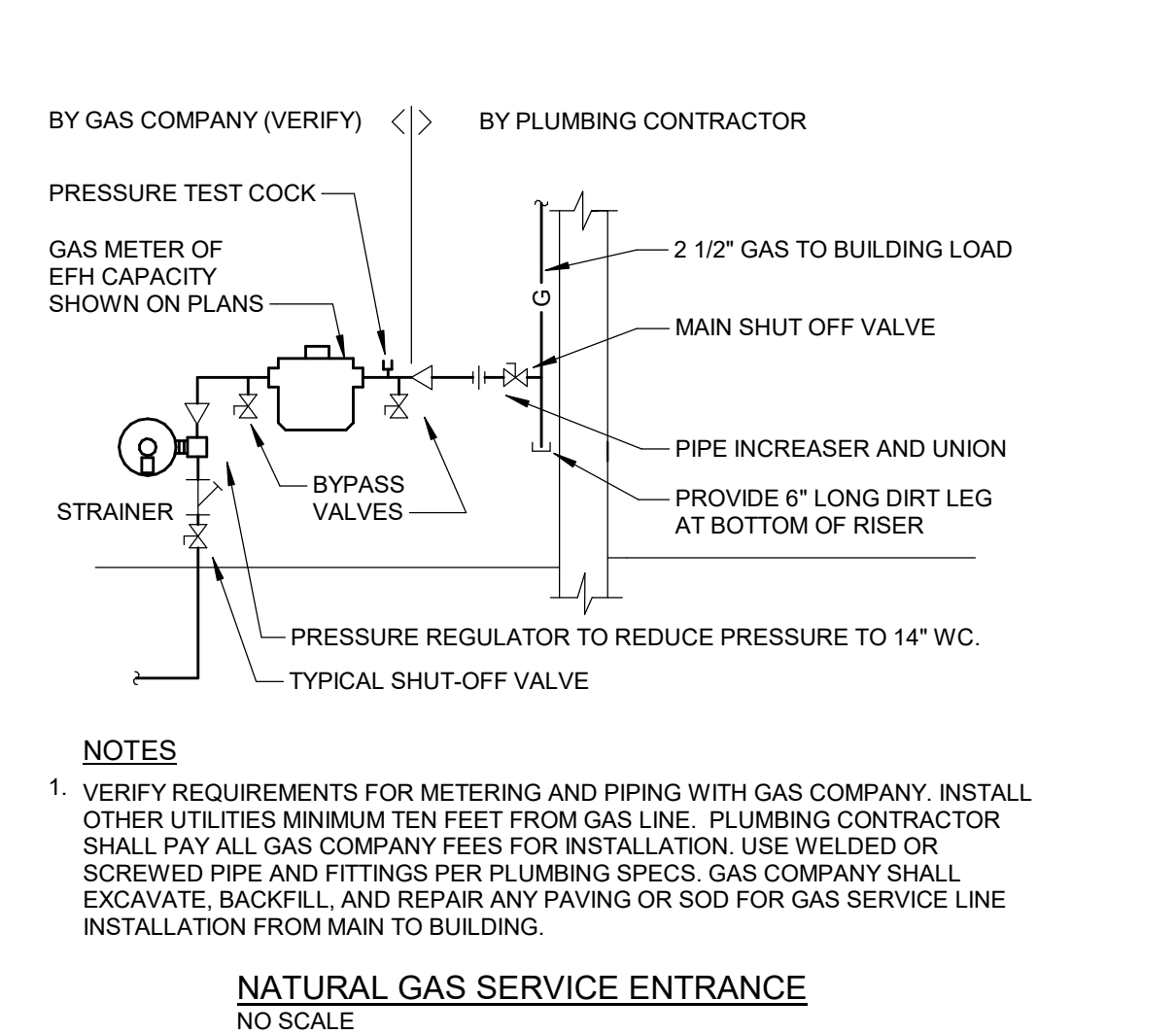
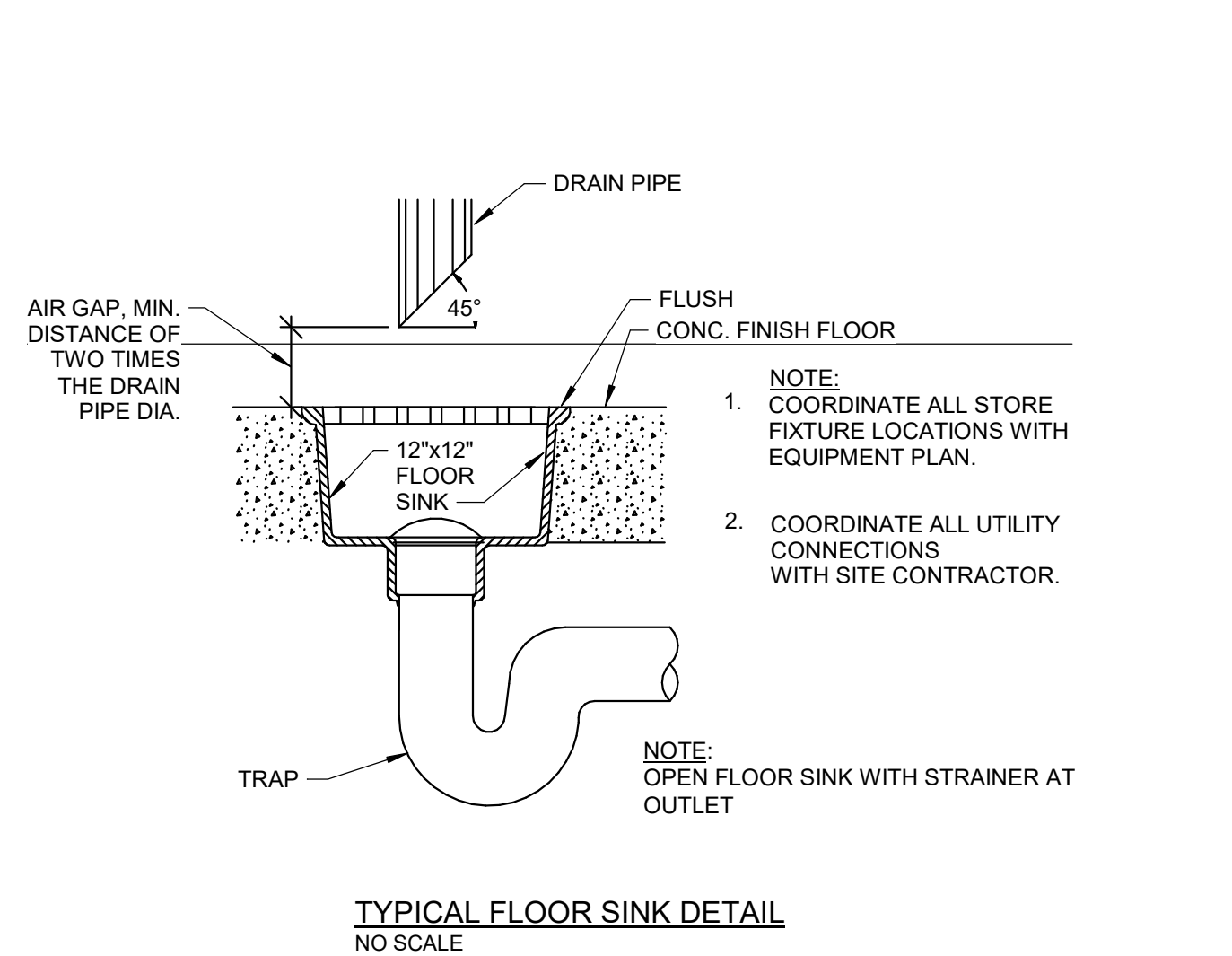
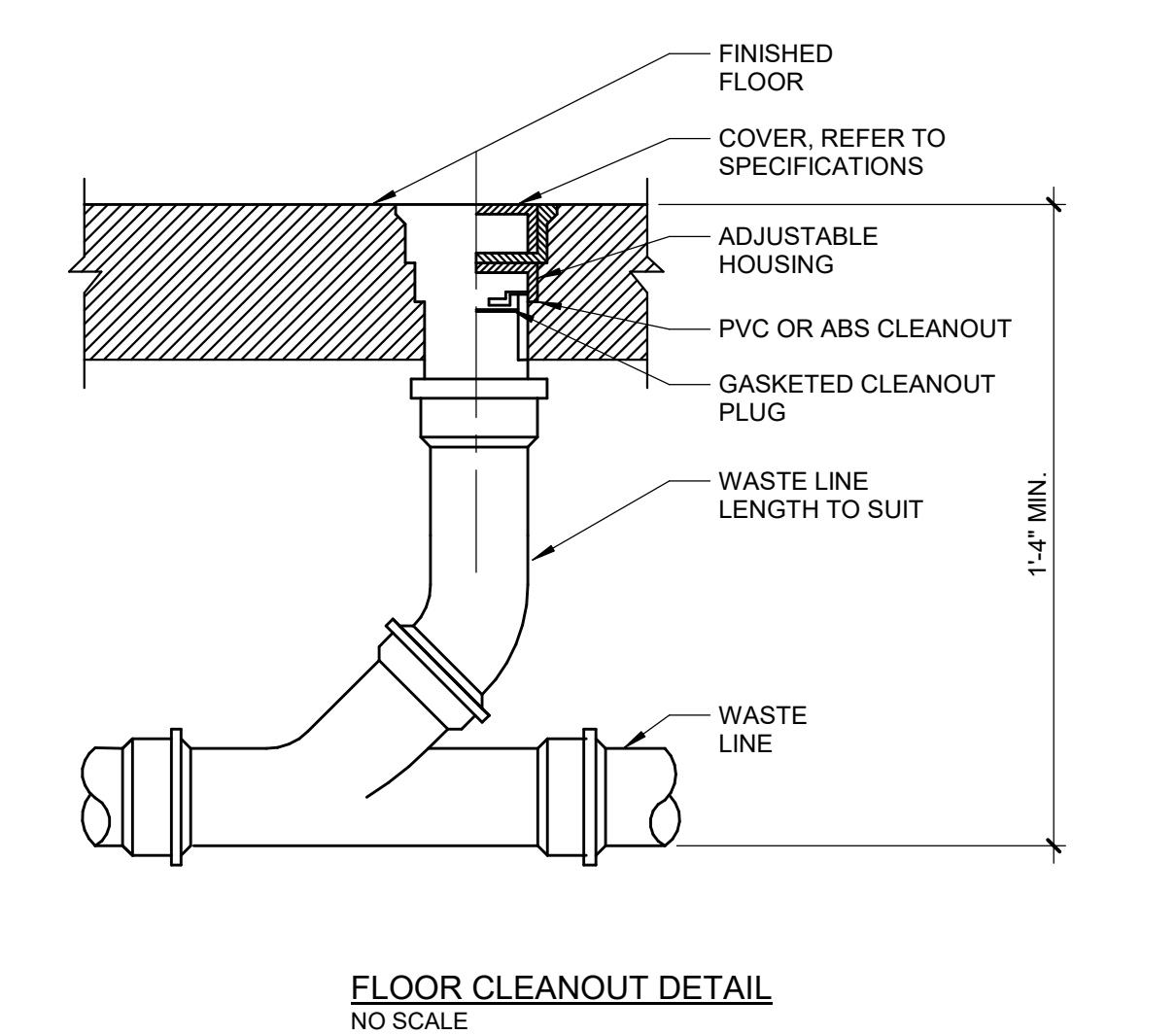
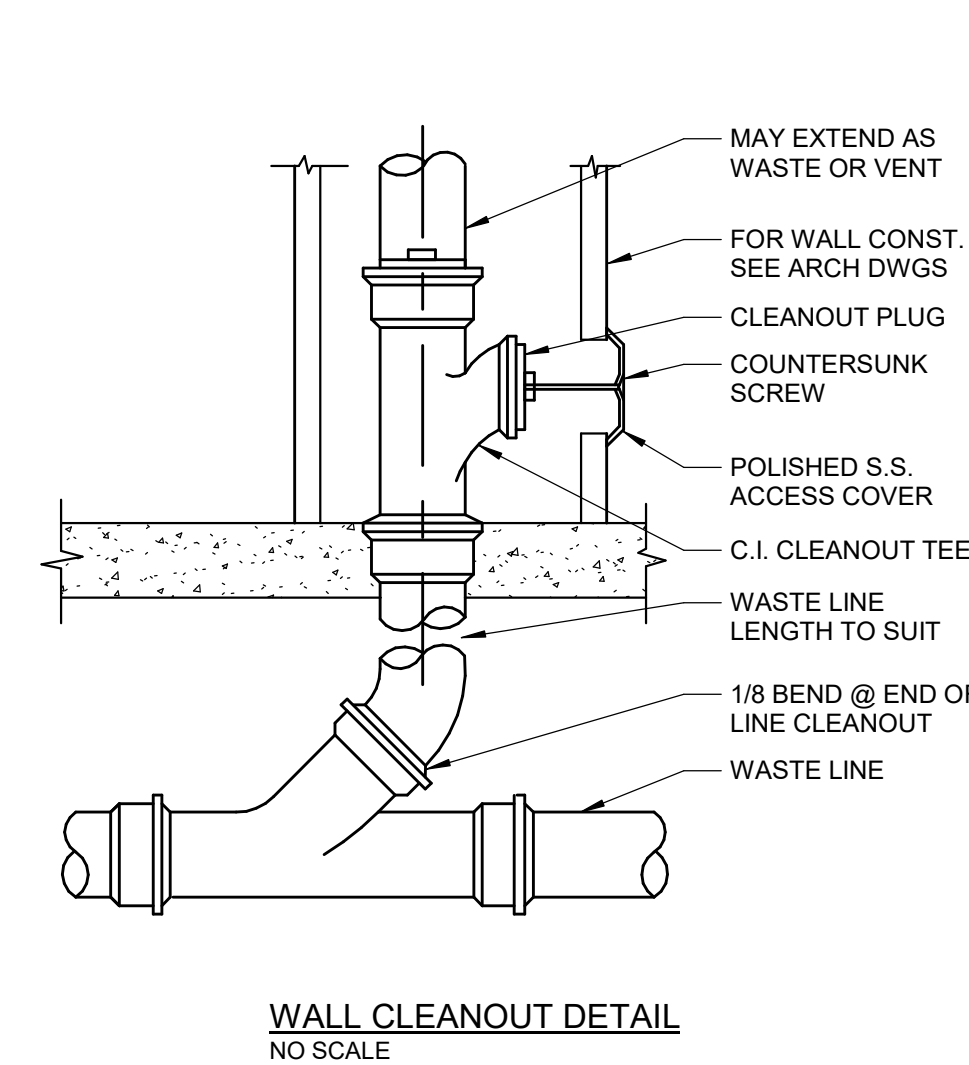
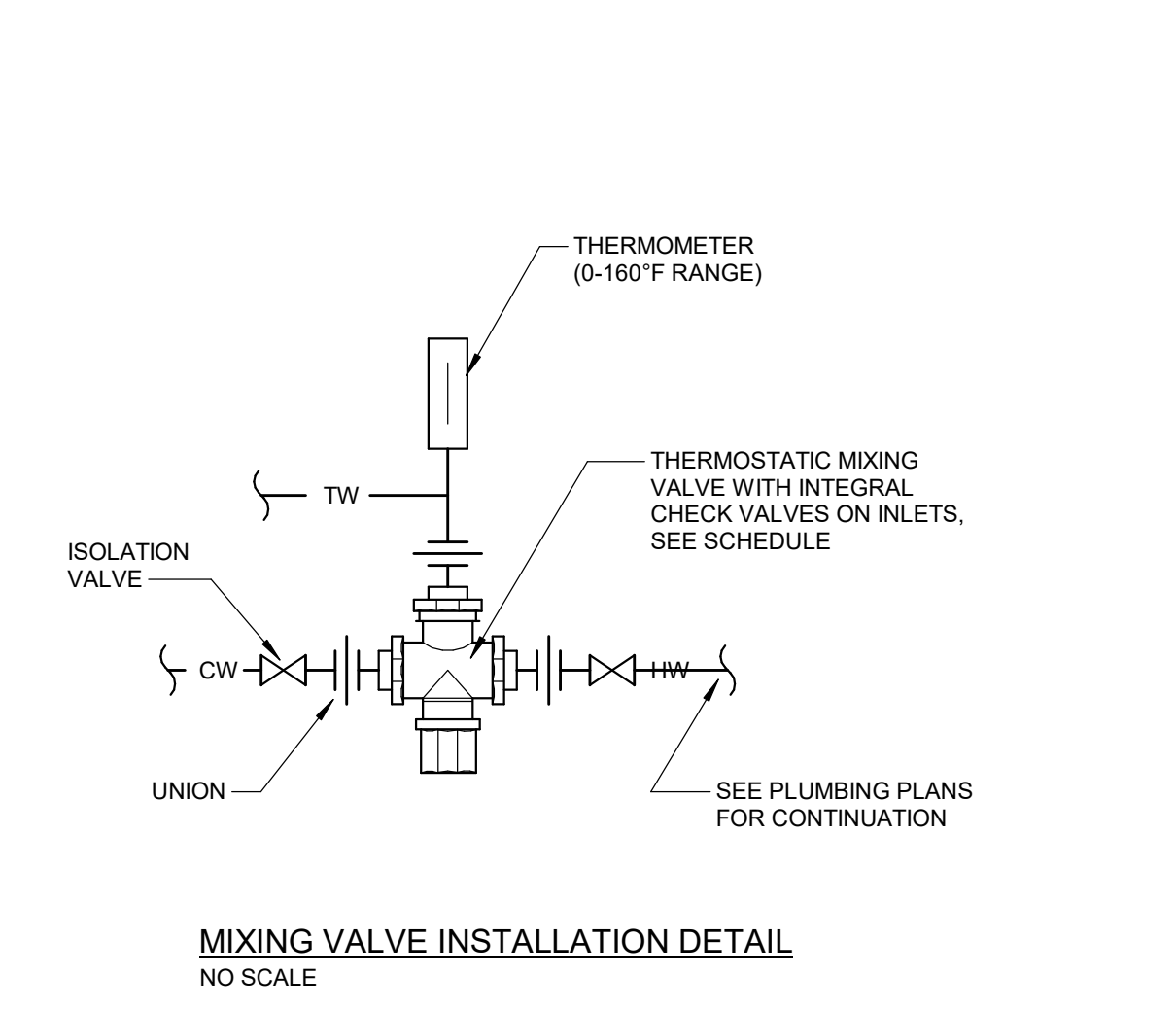
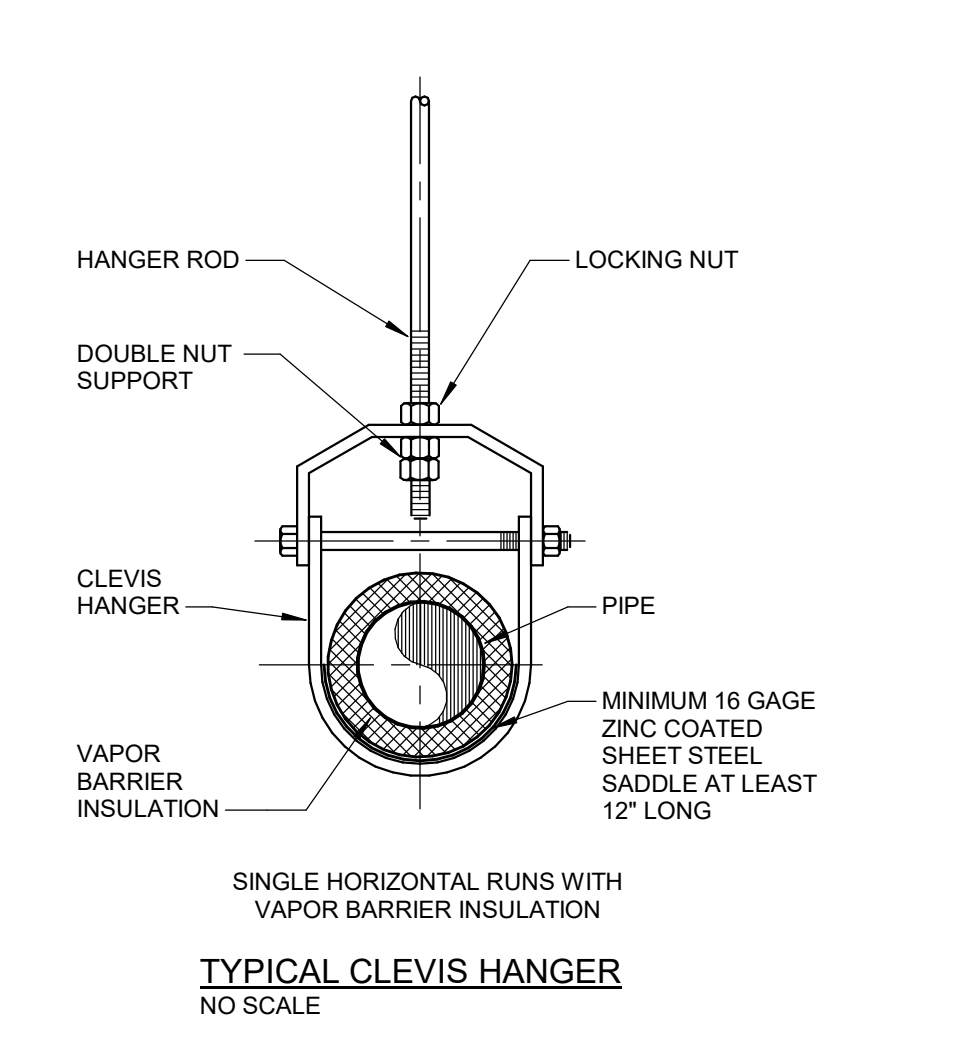
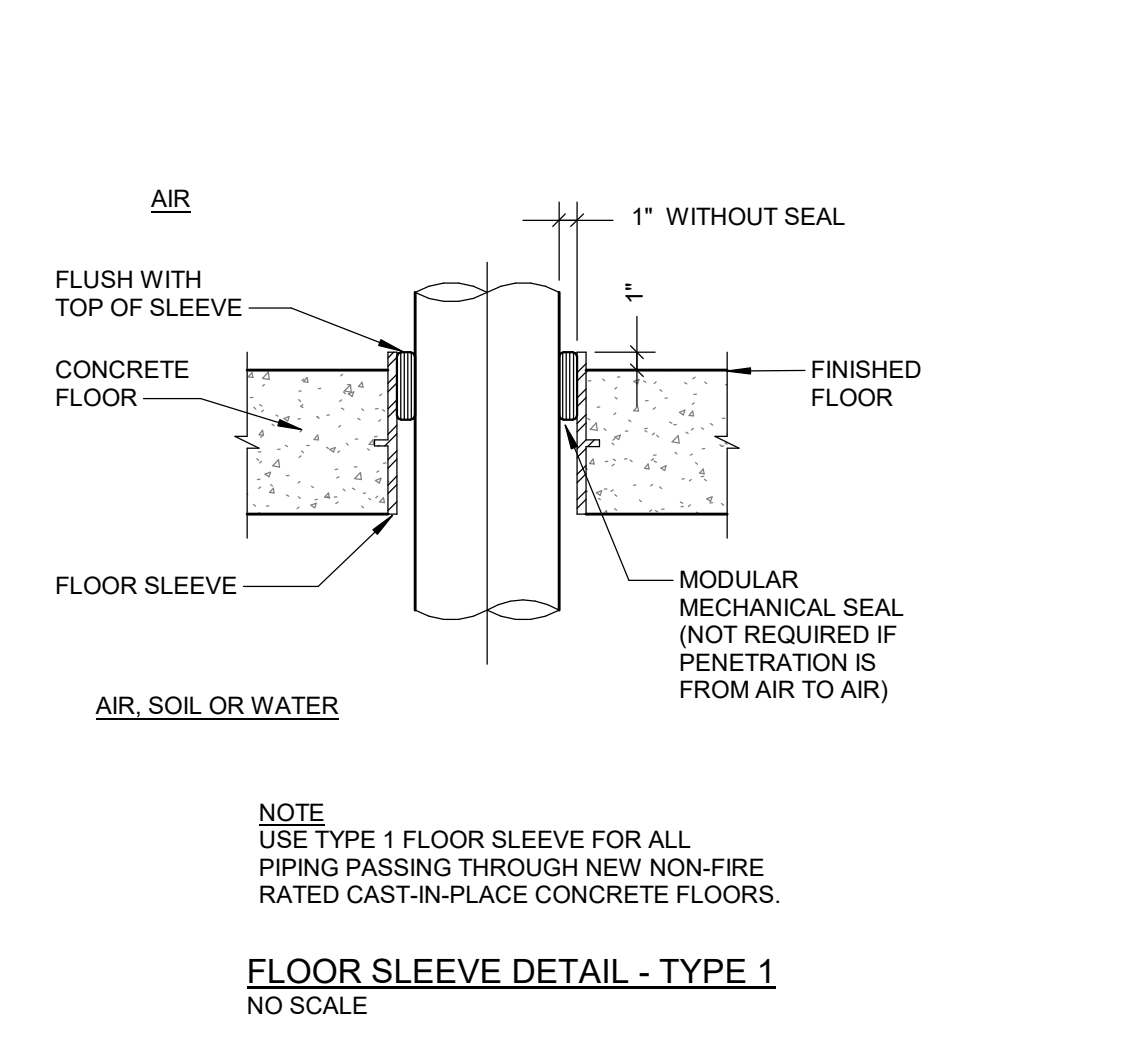
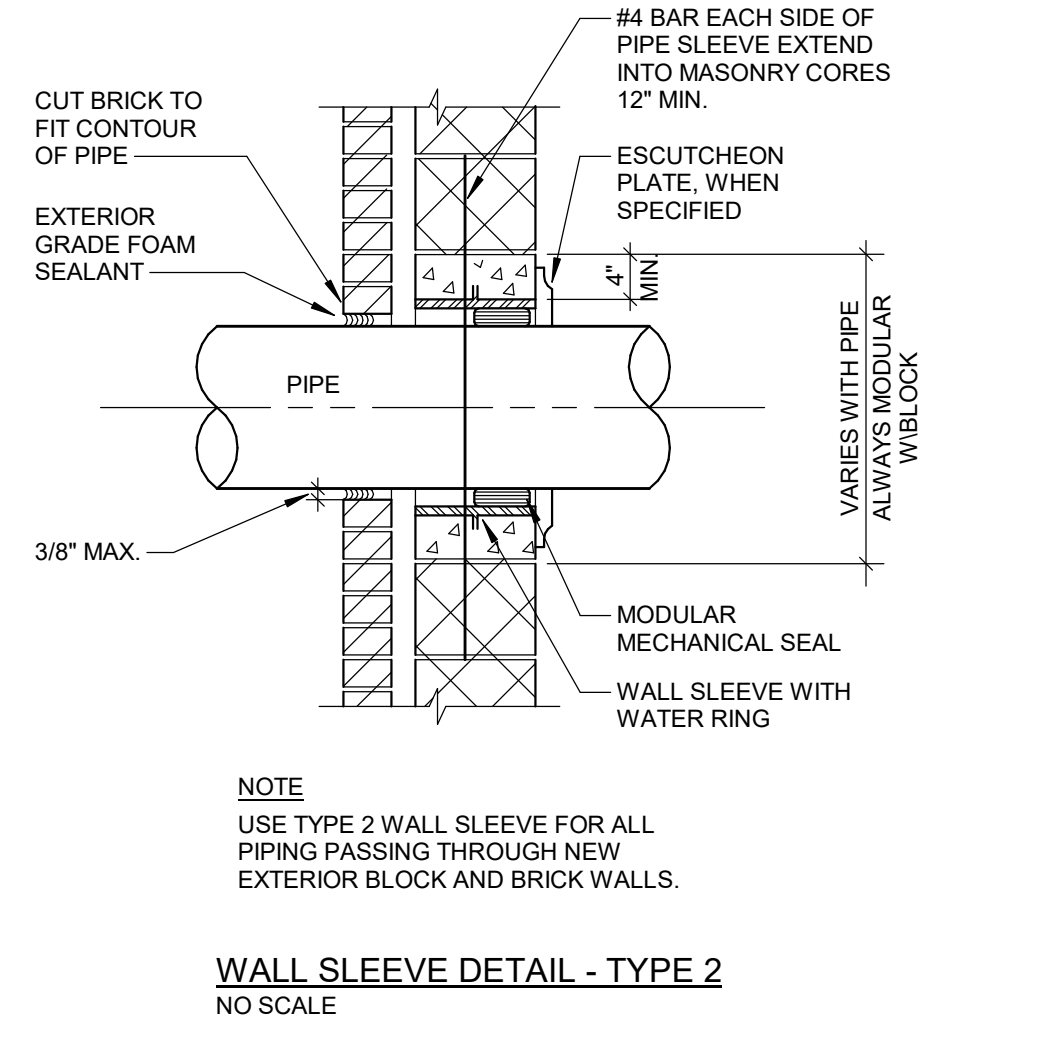
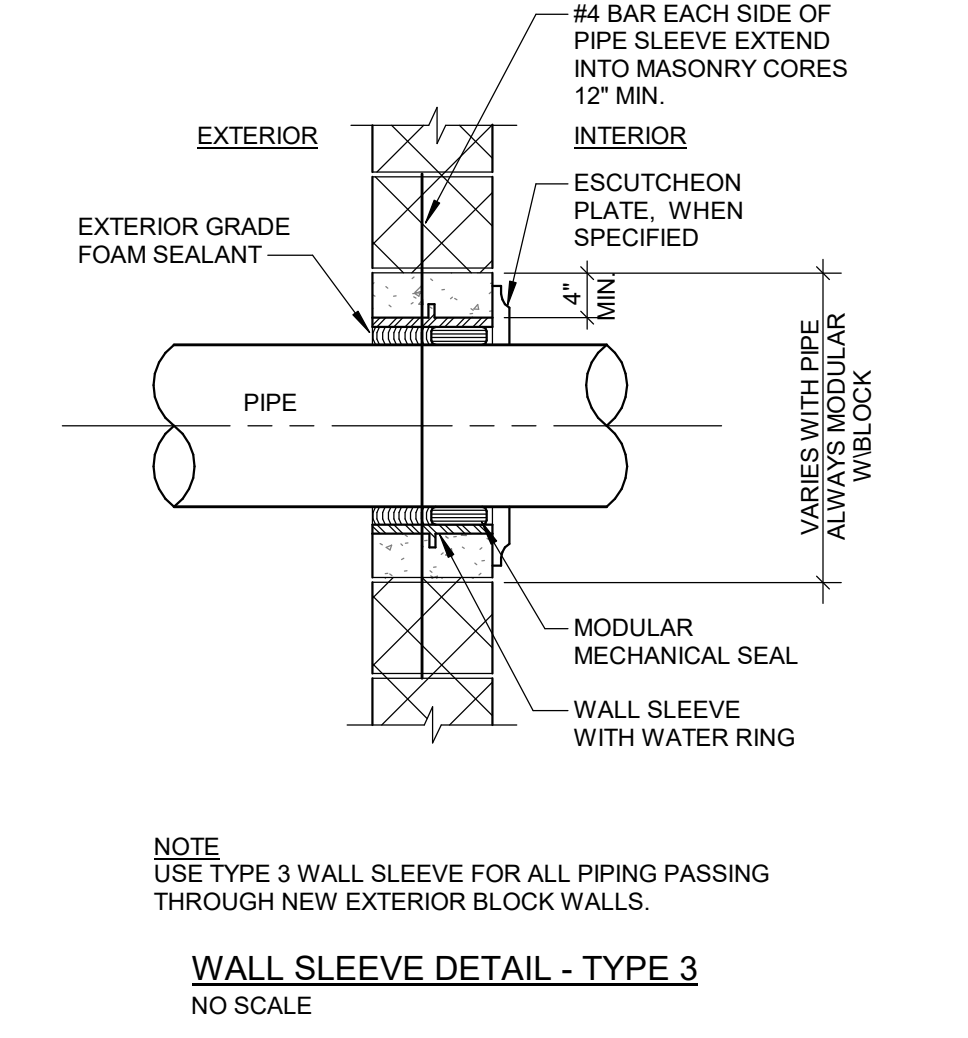
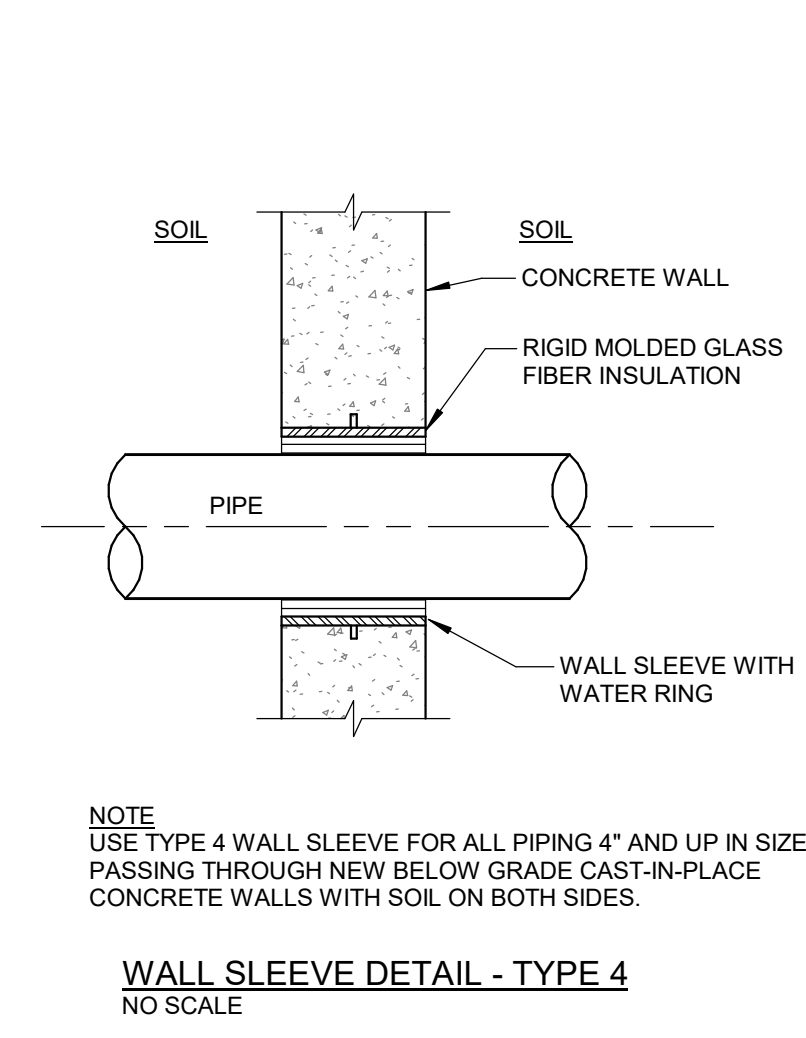
REVISIONS		
NO	DESCRIPTION	DATE
A1	ADDENDUM 1	7/8/25

PROJECT NUMBER: 223121.00
DATE OF ISSUE: 6/16/2025
DRAWN BY: JBF
REVIEWED BY: GAT

DETAILS

P-801

Bid Set



NO	REVISIONS	
	DESCRIPTION	DATE
A1	ADDENDUM 1	07/08/25

PROJECT NUMBER: 223121.00
DATE OF ISSUE: 06/16/25
DRAWN BY: MDENTON
REVIEWED BY: JRUMPING

**POWER AND SYSTEMS
PLAN**

NOTES

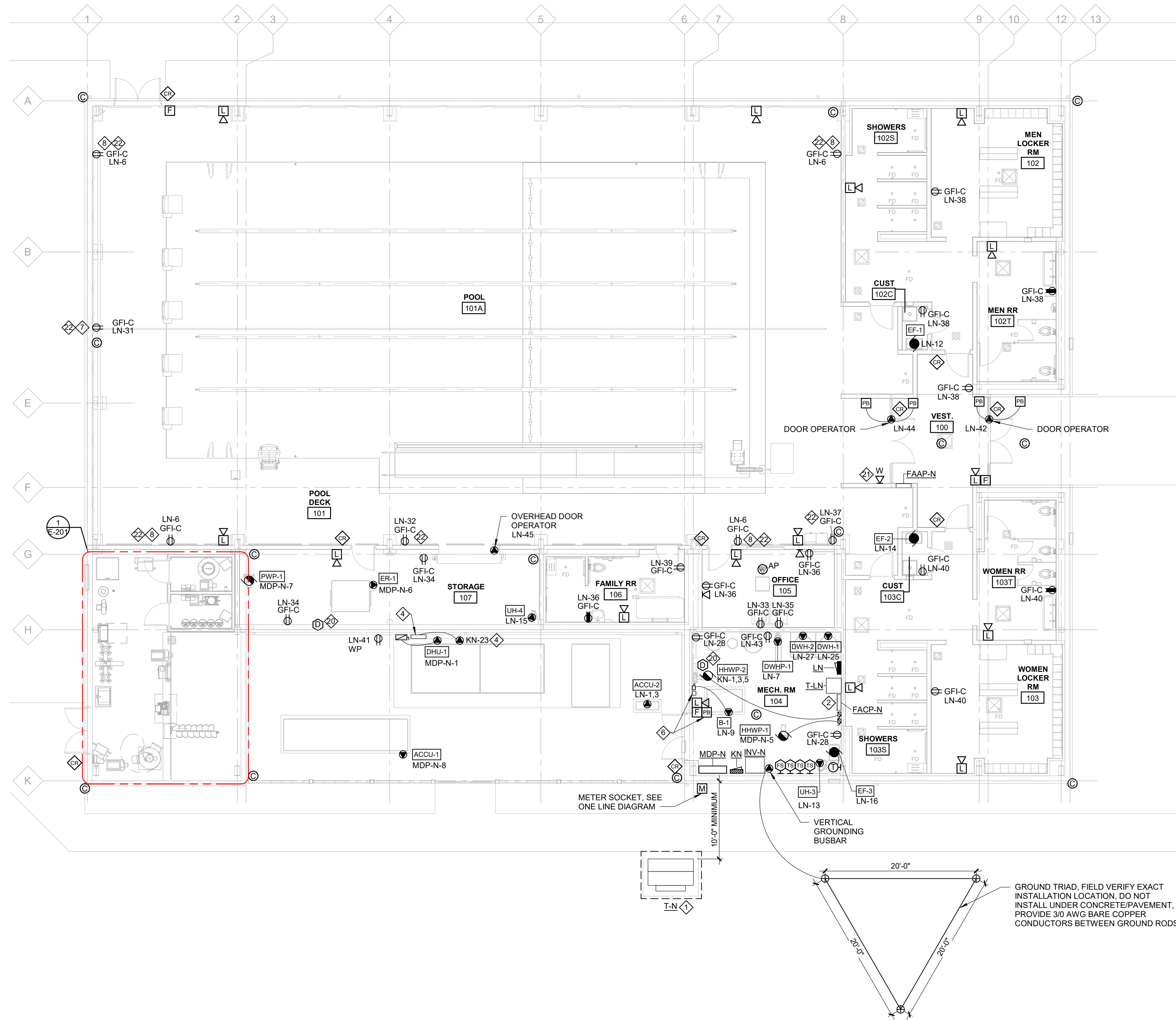
- COORDINATE EXACT LOCATION AND WIRING REQUIREMENTS OF POOL AND MECHANICAL EQUIPMENT WITH OTHER TRADES, NEC, AND MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR A COMPLETE AND OPERABLE SYSTEM.
- PROVIDE FIRE ALARM DEVICES RATED FOR NATATORIUM APPLICATIONS IN POOL AREA, POOL, MECHANICAL ROOMS, AND POOL CHEMICAL CLOSURES.
- WHERE EQUIPMENT IS SHOWN WITHOUT A LOCAL DISCONNECT SWITCH, DISCONNECT SWITCH IS PROVIDED BY OTHERS, SEE ONE LINE DIAGRAM.
- ALL EQUIPMENT INDICATED IN UNDERLINED AND ITALIZED FONT TO BE PROVIDED BY POOL CONTRACTOR, UNO. REFER TO WIRING DIAGRAMS AND SEQUENCE OF OPERATIONS PROVIDED IN FL-SERIES DRAWINGS. COORDINATE FINAL INSTALLATION WITH POOL CONTRACTOR.
- PROVIDE EQUIPMENTAL BONDING GRID IN ACCORDANCE WITH NEC ARTICLE 680.26. SEE GROUNDING AND BONDING SPECIFICATION, COORDINATE BONDING GRID REQUIREMENTS WITH DECK ENGINEER. COORDINATE EQUIPMENTAL BONDING POINTS WITH ARCHITECTURAL PLANS FOR EXACT LOCATION OF METALLIC DOOR FRAMES, FENCING, GATES, ETC.
- BOND AND GROUND ALL POOL MECHANICAL EQUIPMENT, UNDERWATER POOL LIGHTS, POOL REINFORCING STEEL, ACTIVITIES, DECK EQUIPMENT, AND ALL OTHER EMBEDDED METALLIC ITEMS IN COMPLIANCE WITH NEC REQUIREMENTS.
- PROVIDE PROVISIONS FOR ALL CARD READERS, CAMERAS, AND SECURITY DEVICES INDICATED INCLUDING CONDUITS, JUNCTION BOXES, ETC. COORDINATE REQUIREMENTS AND FINAL LOCATIONS WITH ARCHITECT AND SECURITY SYSTEM INSTALLER.

KEY NOTES

- MAINTAIN CLEARANCE REQUIREMENTS AS DEFINED BY NEC. COORDINATE FINAL TRANSFORMER LOCATION WITH LANDSCAPE ARCHITECT AND CIVIL ENGINEER. PROVIDE SCREENING AS REQUIRED BY AHJ.
- FIRE ALARM SYSTEM AT NATATORIUM BUILDING TO BE CONNECTED TO MAIN BUILDING FIRE ALARM CONTROL PANEL. REUSE EXISTING COMMUNICATIONS FEED FROM MAIN BUILDING. PROVIDE NEW CIRCUITRY AND CONDUIT AT NATATORIUM SERVICE ENTRANCE. FIELD VERIFY LOCATION AND COORDINATE WITH OWNER.
- ALL ELECTRICAL EQUIPMENT, DEVICES, AND CONDUITS PROVIDED IN THE POOL MECHANICAL ROOM & CHEMICAL STORAGE ROOMS MUST BE RESISTANT TO POOL CHEMICALS INCLUDING CHLORINE. PROVIDE NEMA 4X COVERS FOR EQUIPMENT AND DEVICES WHERE REQUIRED.
- PROVIDE 277V HARD WIRED CONNECTION AND NEMA 4X FRP ENCLOSURE FOR HEAT TRACE CABLES AND CONTROLLER. SEE DETAIL ON SHEET E-01. PROVIDE SINGLE PHASE 120V CIRCUIT TO CONTACTOR FROM PANEL LN. PROVIDE CLEAR, HEAVY DUTY, PLASTIC COVER AT PUSHBUTTON AND LABEL PER CODE REQUIREMENTS. MOUNT ADJACENT TO DOORWAY.
- PROVIDE 3 PHASE, 480V HARDWIRED CONNECTION FOR SEWAGE EJECTOR DUPLEX CONTROL PANEL (LOCATED AT PIT LEVEL). COORDINATE WITH DIVISION 22.
- EMERGENCY BOILER SHUTDOWN PUSHBUTTON AND RELAY. SEE DETAIL ON SHEET E-01. PROVIDE SINGLE PHASE 120V CIRCUIT TO CONTACTOR FROM PANEL LN. PROVIDE CLEAR, HEAVY DUTY, PLASTIC COVER AT PUSHBUTTON AND LABEL PER CODE REQUIREMENTS. MOUNT ADJACENT TO DOORWAY.
- DEDICATED RECEPTACLE FOR SCOREBOARD. SURFACE MOUNT RECEPTACLE TO WET LISTED JUNCTION BOX. COORDINATE FINAL RECEPTACLE LOCATION AND ELEVATION WITH ARCHITECT AND OWNER.
- LABEL RECEPTACLE "POOL VACUUM" RECEPTABLES DEDICATED TO POOL VACUUM USE SHALL BE INSTALLED NO MORE THAN 100'-0" APART.
- PROVIDE RECEPTACLE AND LOCAL SWITCH AS INDICATED FOR AIR COMPRESSOR. AIR COMPRESSOR PROVIDED BY POOL CONTRACTOR.
- EC TO PROVIDE RECEPTACLE FOR ACID BOOSTER PUMP. LABEL RECEPTACLE "ACID FEED SYSTEM POWER".
- FILTRATION PUMP VFD TO PROVIDE LOW VOLTAGE POWER TO FLOW METER SENSOR. PROVIDE A 4-20 mA SIGNAL LINE FROM FLOW METER SENSOR TO VFD FOR DISPLAY SYSTEM. PROVIDE AN ADDITIONAL 4-20 mA LINE FROM VFD ANALOG OUTPUT TO REPEAT SIGNAL TO CHEMICAL CONTROLLER. SEE SPECIFICATIONS FOR LOW VOLTAGE CABLING REQUIREMENTS.
- FILTRATION PUMP VFD FURNISHED BY POOL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR. INSTALL IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
- EC TO PROVIDE MINIMUM 1-1/2" CONDUIT FOR LAMP POWER FROM CONTROL CABINET TO CHAMBER. EC TO INSTALL POWER CORD (FURNISHED WITH UV SYSTEM). EC TO PROVIDE MINIMUM 1" CONDUIT FOR LOW VOLTAGE/SIGNAL CABLING FROM CONTROL CABINET TO CHAMBER. EC TO INSTALL LOW VOLTAGE/SIGNAL CABLING (FURNISHED WITH UV SYSTEM). SEE SPECIFICATIONS FOR LOW VOLTAGE CABLING REQUIREMENTS.
- PROVIDE ETHERNET CABLE TO CHEMICAL CONTROLLER TO ENSURE CONTINUOUS INTERNET CONNECTION. PROVIDE LOW VOLTAGE CONTROL CABLING FROM MAIN DRAIN DIGITAL POSITION VALVE TO CHEMICAL CONTROLLER. SEE SPECIFICATIONS FOR LOW VOLTAGE CABLING REQUIREMENTS.
- CHEMICAL CONTROLLER TO PROVIDE 120V POWER TO CHEMICAL FEEDER DEDICATED RECEPTACLE. EC TO PROVIDE RECEPTACLE. HARDWIRE RECEPTACLE DIRECTLY TO CHEMICAL FEED RELAYS AT CHEMICAL CONTROLLER TERMINAL BLOCK LABEL RECEPTACLE "CHLORINE FEED POWER".
- CHEMICAL CONTROLLER TO PROVIDE 120V POWER TO AUTO FILL WATER LEVEL CONTROL VALVE. HARDWIRE CONTROL VALVE DIRECTLY TO AUTO FILL RELAY AT CHEMICAL CONTROLLER TERMINAL BLOCK.
- PROVIDE UNISTRUT STRUCTURE FOR DEVICES SHOWN. SEE TYPICAL EQUIPMENT MOUNTING DETAIL. PUSH BUTTON AND SWITCHES TO BE MOUNTED AT 42" AFF. MOUNT RECEPTACLE AT 18" AFF.
- DUCT SMOKE DETECTOR. COORDINATE FINAL LOCATION WITH DIVISION 23.
- PROVIDE EMERGENCY SERVICES TELEPHONE IN ACCORDANCE WITH STATE AND LOCAL CODE REQUIREMENTS.
- PROVIDE WATER TIGHT, CORROSION RESISTANT, WHILE-IN-USE COVER FOR ALL RECEPTABLES IN POOL AREA.

WIRING DEVICES - RECEPTACLE SCHEDULE				
SYMBOL	DESCRIPTION	MANUFACTURER	CATALOG NO.	REMARKS
GFCI	GFCI DUPLEX RECEPTACLE-CORROSION RESISTANT	HUBBELL	GF5362SGYEL, HBLSS264X	MOUNT 18" AFF. UNO; PROVIDE CORROSION RESISTANT COVERPLATE
WP	WEATHERPROOF, GFCI DUPLEX RECEPTACLE WITH WEATHERPROOF WHILE-IN-USE, EXTRA DUTY COVER	HUBBELL	GF5362SGW, WP26EH	MOUNT 18" AFF. UNO
GFCI	GFCI DUPLEX RECEPTACLE-CORROSION RESISTANT, ABOVE COUNTER	HUBBELL	GF5362SGYEL, HBLSS264X	MOUNT HORIZONTALLY ABOVE COUNTER; 2-INCHES ABOVE BACKSPASH, UNO

FIRE ALARM DEVICES SCHEDULE				
SYMBOL	DESCRIPTION	MANUFACTURER	CATALOG NO.	REMARKS
F	MANUAL PULL STATION	(SEE SPECIFICATIONS)	(SEE SPECIFICATIONS)	MOUNT AT 46-INCHES TO CENTER OF BOX, UNO. PROVIDE BACKBOX AS RECOMMENDED BY FIRE ALARM SYSTEM MANUFACTURER
Ⓢ	DUCT TYPE SMOKE DETECTOR	(SEE SPECIFICATIONS)	(SEE SPECIFICATIONS)	PROVIDED BY DIVISION 23. EXACT PLACEMENT TO BE DETERMINED BY DIVISION 23.
Ⓢ	COMBINATION AUDIO SPEAKER / VISUAL STROBE SIGNAL, WALL MOUNTED	(SEE SPECIFICATIONS)	(SEE SPECIFICATIONS)	MOUNT AT 80-INCHES AFF TO BOTTOM OF BOX, UNO. PROVIDE BACKBOX AS RECOMMENDED BY FIRE ALARM SYSTEM MANUFACTURER.



PANEL ID		PANEL DESCRIPTION										
LN		NEW THREE PHASE BRANCH PANELBOARD										
Location: MECH RM 104		Voltage: 208/120 Vye		A.I.C. Rating: 10K		Supply From: T-LN		Mains Type: MAIN BREAKER		MCB Rating: 225 A		
Mounting: SURFACE		Phase: 3		Wires: 4		Enclosure: NEMA 1		No. of Poles: 3		Bussing: COPPER		
CKT	Rev. No.	Circuit Description	Trips	Poles	A	B	C	Poles	Trips	Circuit Description	Rev. No.	CKT
1	--	ACCU-2 (8 SS-1)	--	2	1456 VA / 1250 VA	1456 VA / 1250 VA	--	2	30 A	UV CNTRL CBNT & CHMBR * 1	--	2
3	--	AP1A-2 RECEPT	25 A	1	122 VA / 168 VA	2300 VA / 1800 VA	--	1	40 A	POOL VACUUM RECEPT	--	6
7	--	DWHP-1*	20 A	1	122 VA / 168 VA	--	--	1	20 A	UH-1	--	8
9	--	BOILER (B-1)	20 A	1	1320 VA / 168 VA	--	--	1	20 A	UH-2	--	10
11	--	BOILER (B-1) RELAY	20 A	1	300 VA / 1820 VA	100 VA / 1920 VA	--	1	30 A	EF-1*	--	12
13	--	UH-3	20 A	1	300 VA / 1820 VA	--	--	1	30 A	EF-2*	--	14
15	--	UH-4	20 A	1	300 VA / 700 VA	--	--	1	20 A	EF-3*	--	16
17	--	ACT RECEPT	20 A	1	1000 VA / 864 VA	1800 VA / 864 VA	--	1	20 A	EF-4*	--	18
19	--	UNDERWATER POOL LIGHTS*	20 A	1	1000 VA / 864 VA	--	--	1	20 A	ES-3*	--	20
21	--	UNDERWATER POOL LIGHTS*	20 A	1	1500 VA / 1440 VA	--	--	1	20 A	F1A (CONTROL PANEL)*	--	22
23	--	UNDERWATER POOL LIGHTS*	20 A	1	1500 VA / 1600 VA	--	--	1	20 A	SV1A (SURGE EXHAUST FAN)*	--	24
25	--	DWHP-2*	20 A	1	600 VA / 1908 VA	--	--	1	20 A	CTA (CHEM CONTROLLER)*	--	26
27	--	EV1A (DRAIN VALVE)*	20 A	1	600 VA / 360 VA	50 VA / 900 VA	--	1	20 A	GEN RECEPT - MECH RM	--	28
29	--	SCOREBOARD	20 A	1	180 VA / 0 VA	--	--	1	20 A	GEN RECEPTS - POOL AREA	--	32
33	--	OFFICE WASHER	20 A	1	500 VA / 360 VA	--	--	1	20 A	GEN RECEPTS - STORAGE	--	34
35	--	OFFICE DRYER	20 A	1	500 VA / 540 VA	--	--	1	20 A	GEN RECEPTS - OFFICE & FAM RR	--	36
37	--	DRINKING FOUNTAINS	20 A	1	0 VA / 720 VA	--	--	1	20 A	GEN RECEPTS - MENS RR	--	38
39	--	ADULT CHANGING STATION	20 A	1	180 VA / 540 VA	--	--	1	20 A	GEN RECEPTS - WOMENS RR	--	40
41	--	OUTDOOR CON/RECEPT	20 A	1	180 VA / 0 VA	--	--	1	20 A	OUTER DOOR OPERATOR	--	42
43	--	MECH RM RECEPT	20 A	1	180 VA / 0 VA	--	--	1	20 A	INNER DOOR OPERATOR	--	44
45	--	OVERHEAD DOOR OPERATOR	20 A	1	1000 VA / 1200 VA	--	--	1	20 A	SP-1*	--	A1
47	--	SPARE	20 A	1	0 VA / 0 VA	0 VA / 0 VA	--	1	20 A	SPARE	--	48
49	--	SPARE	20 A	1	0 VA / 0 VA	0 VA / 0 VA	--	1	20 A	SPARE	--	50
51	--	SPARE	20 A	1	0 VA / 0 VA	0 VA / 0 VA	--	1	20 A	SPARE	--	52
53	--	SPARE	20 A	1	0 VA / 0 VA	0 VA / 0 VA	--	1	20 A	SPARE	--	54
Total Load:		10668 VA		12874 VA		14854 VA		120 A				
Total Amps:		59 A		110 A		120 A						
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals								
Motor	1920 VA	125.00%	2400 VA	Total Connected Load: 37598 VA								
Recept	12948 VA	88.62%	11474 VA	Total Estimated Demand: 36602 VA								
Equip.	22728 VA	100.00%	22728 VA	Total Connected Current: 1104 A								
				Total Est. Demand Current: 102 A								

PANEL ID		PANEL DESCRIPTION										
KN		NEW THREE PHASE BRANCH PANELBOARD										
Location: MECH RM 104		Voltage: 480/277 Vye		A.I.C. Rating: 12K		Supply From: MDP-N		Mains Type: MLO		MCB Rating: 100 A		
Mounting: SURFACE		Phase: 3		Wires: 4		Enclosure: NEMA 1		No. of Poles: 42		Bussing: COPPER		
CKT	Rev. No.	Circuit Description	Trips	Poles	A	B	C	Poles	Trips	Circuit Description	Rev. No.	CKT
1	--	HHWP-2*	20 A	3	1267 VA / 1386 VA	1267 VA / 1386 VA	--	3	20 A	UH-5	--	2
3	--	UH-6	20 A	3	1267 VA / 1386 VA	1267 VA / 1386 VA	--	3	20 A	UH-6	--	4
5	--	UH-7	20 A	3	266 VA / 1386 VA	266 VA / 1386 VA	--	3	20 A	UH-7	--	6
7	--	UH-8	20 A	3	266 VA / 1386 VA	266 VA / 1386 VA	--	3	20 A	UH-8	--	8
9	--	UH-9	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-9	--	10
11	--	UH-10	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-10	--	12
13	--	UH-11	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-11	--	14
15	--	UH-12	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-12	--	16
17	--	UH-13	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-13	--	18
19	--	UH-14	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-14	--	20
21	--	UH-15	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-15	--	22
23	--	UH-16	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-16	--	24
25	--	UH-17	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-17	--	26
27	--	UH-18	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-18	--	28
29	--	UH-19	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-19	--	30
31	--	UH-20	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-20	--	32
33	--	UH-21	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-21	--	34
35	--	UH-22	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-22	--	36
37	--	UH-23	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-23	--	38
39	--	UH-24	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-24	--	40
41	--	UH-25	20 A	3	400 VA / 2502 VA	400 VA / 2502 VA	--	3	20 A	UH-25	--	42
Total Load:		8055 VA		8476 VA		8742 VA		31 A				
Total Amps:		29 A		31 A		32 A						
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals								
Motor	3800 VA	125.00%	4750 VA	Total Connected Load: 25283 VA								
Lighting	7872 VA	125.00%	9841 VA	Total Estimated Demand: 25011 VA								
Equip.	13811 VA	100.00%	13811 VA	Total Connected Current: 30 A								
				Total Est. Demand Current: 34 A								

PANEL ID		PANEL DESCRIPTION										
MDP-N		NEW THREE PHASE DISTRIBUTION PANELBOARD										
Location: MECH RM 104		Voltage: 480/277 Vye		A.I.C. Rating: SEE ONE LINE		Supply From: T-N		Mains Type: MAIN BREAKER		MCB Rating: 400 A		
Mounting: SURFACE		Phase: 3		Wires: 4		Enclosure: NEMA 1		No. of Poles: 42		Bussing: COPPER		
CKT	Rev. No.	Circuit Description	Trips	Poles	A	B	C	Poles	Trips	Circuit Description	Rev. No.	CKT
1	--	DHLU-1*	20 A	3	125 A	75.688 VA	--	3	125 A	75.688 VA	--	2
2	--	P1A*	20 A	3	60 A	22.030 VA	--	3	60 A	22.030 VA	--	4
3	--	PANEL KN	20 A	3	100 A	35.283 VA	--	3	100 A	35.283 VA	--	6
4	--	T-1N	20 A	3	125 A	37.586 VA	--	3	125 A	37.586 VA	--	8
5	--	HHWP-1*	20 A	3	20 A	1.600 VA	--	3	20 A	1.600 VA	--	10
6	--	ER-1	20 A	3	25 A	16.628 VA	--	3	25 A	16.628 VA	--	12
7	--	PWP-1*	20 A	3	20 A	1.700 VA	--	3	20 A	1.700 VA	--	14
8	--	ACCU-1*	20 A	3	15 A	9.322 VA	--	3	15 A	9.322 VA	--	16
9	--	INVN	20 A	1	15 A	2.800 VA	--	1	15 A	2.800 VA	--	18
10	--	SURGE PROTECTIVE DEVICE	20 A	3	20 A	0 VA	--	3	20 A	0 VA	--	20
11	--	SPARE	20 A	3	20 A	0 VA	--	3	20 A	0 VA	--	22
12	--	SPARE	20 A	3	20 A	0 VA	--	3	20 A	0 VA	--	24
13	--	SPARE	20 A	1	--	--	--	1	--	--	--	26
14	--	SPARE	20 A	1	--	--	--	1	--	--	--	28
15	--	SPARE	20 A	1	--	--	--	1	--	--	--	30
16	--	SPARE	20 A	1	--	--	--	1	--	--	--	32
17	--	SPARE	20 A	1	--	--	--	1	--	--	--	34
18	--	SPARE	20 A	1	--	--	--	1	--	--	--	36
19	--	SPARE	20 A	1	--	--	--	1	--	--	--	38
20	--	SPARE	20 A	1	--	--	--	1	--	--	--	40
Total Load:		64 kVA		64 kVA		65 kVA		232 A				
Total Amps:		232 A		232 A		232 A						
Load Classification	Connected Load	Demand Factor	NEC Calc. Load	Panel Totals								
Equip.	14687 VA	100.00%	14687 VA	Total Connected Load: 193 kVA								
Motor	2200 VA	125.00%	2750 VA	Total NEC Calc. Load: 199 kVA								
Spans	2800 VA	100.00%	2800 VA	Total Connected Current: 232 A								
RECEPT	12948 VA	88.62%	11474 VA	Total NEC Calc. Current: 239 A								
Lighting	7872 VA	125.00%	9841 VA	Total Connected Current: 239 A								

- ### KEY NOTES
- INSTALL GROUNDING ELECTRODE CONDUCTOR IN SCHEDULE 40 PVC CONDUIT.
 - SUPPLY SIDE BONDING JUMPER: SIZE IN ACCORDANCE WITH NEC TABLE 250.66 AND NEC ARTICLES 250.28(D) AND 250.102(C).
 - GROUND GRID RESISTANCE SHALL BE 5 OHMS OR LESS. PROVIDE ADDITIONAL GROUND RODS AS REQUIRED.
 - MAKE CONNECTION WITHIN 5 FEET OF WATER SERVICE ENTRANCE. IF METAL UNDERGROUND WATER PIPE IS NOT AVAILABLE, THE PRIMARY GROUNDING ELECTRODE SHALL BE THE CONCRETE ENCASED ELECTRODE.
 - SEE ONE LINE DIAGRAM FOR CONDUCTOR SIZE.
 - CONNECT TO BUILDING STEEL ONLY IF EFFECTIVELY GROUNDING METAL FRAME OF THE BUILDING IS AVAILABLE ON THE PREMISES.
 - THE SIZE OF THE COMMON GROUNDING ELECTRODE CONDUCTOR IS BASED ON THE TOTAL CIRCULAR MIL AREA OF THE SECONDARY PHASE CONDUCTORS FROM ALL OF THE SEPARATELY-DERIVED SYSTEMS THAT WILL BE CONNECTED TO THE COMMON GROUNDING ELECTRODE CONDUCTOR AND TABLE 250.68.
 - BUSBAR MINIMUM SIZE IS 1/4" THICK BY 4" WIDE BY 12" WIDE.
 - DISCONNECT SWITCH PROVIDED BY DIVISION 23.
 - COORDINATE CONTROL WIRING REQUIREMENTS FOR ACCU-2 AND SS-1 WITH DIVISION 23.

NO	REVISIONS DESCRIPTION	DATE
A1	ADDENDUM 1	07/08/25

PROJECT NUMBER	223121.00
DATE OF ISSUE	06/16/25
DRAWN BY	MDENTON
REVIEWED BY	JRUMPING

ONE LINE DIAGRAM, PANELBOARD SCHEDULES, AND DETAILS

E401
Bid Set

