ARCHITECTURAL DESIGN ASSOCIATES, P.C.
3410 'O' STREET, SUITE A
LINCOLN, NE. 68510

February 2, 2024

LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGRAM – ENHANCEMENT PROJECT
LINCOLN, NEBRASKA

ADDENDA #2

This addenda is issued by the Architect to all known bidders before receipt of proposals. Bidders shall acknowledge the receipt of this Addendum on their bid form and all information and instructions given herein shall become a part of the Contract Documents.

GENERAL

Item No. 2-1: General Items

A. See attached Pre Bid Meeting agenda and sign-in sheets from the Pre-bid meeting on Jan 25, 2024.

SPECIFICATIONS

Item No. 2-2: Table of Contents

A. Add the Audio Visual Specification Section 27 41 16 to the Table of Contents.

Item No. 2-3: 075200 – Mod. Bit. Membrane Roofing

A. At Section 2.06, Paragraph C, remove the note that says: "C. Roofing Asphalt: ASTM D 312, Type III" and substitute the following:
   1. "C. Roofing Asphalt: ASTM D 312, Type as required to meet manufacturer's requirements for each roof slope."

Item No. 2-4: Section 27 41 16 – Audio Visual Systems and Equipment

B. Add the attached Audio Visual Specification Section 27 41 16

DRAWINGS

Item No. 2-5: Sheet C1.0 – Site Plan & Det's

A. At 'Site Overall Plan – Detail 1', make the following changes:
   1. Add the SS300 Gutter Buddy by Silt Saver or approved equal, to protect the curb inlet.
   2. Revise the extend of the staging area to show both properties 2403 J Street and 2411 J Street included in the staging area.
   3. Add the following note: "EXISTING VACANT PROPERTIES AT 2403 J STREET AND AT 2411 J STREET ARE OWNED BY LPS AND ARE AVAILABLE FOR CONTRACTOR PARKING AND STAGING - FIELD VERIFY LOT SIZES - RESTORE LOTS TO PRE-CONSTRUCTION CONDITION AT END OF PROJECT".
   4. Add a rock pavement construction entrance at the staging area and add the following note: "STABILIZED ROCK CONSTRUCTION ENTRANCE - SEE DETAIL 5 SHEET C1.0".
   5. At the north building wall, at the note that reads: "LPS TO REPAIR EXIST. DAMAGED STORM DRAIN LINE", add a note that this work has been completed by LPS.
   6. At the north building wall, at the note that reads: "LPS TO EXTEND STROM DRAIN TO ABOVE GRADE AND CONTRACTOR TO CONNECT DOWNSPOUTS", add a note that this work has been completed by LPS.
   7. Add the following note at the City water main at the drive east of Grounds 121: "SAWCUT, REMOVE AND PATCH EXIST. CONC. SLAB ON GRADE PAVING TO MATCH EXIST. AND TO MEET CITY OF LINCOLN STANDARDS - AS REQUIRED TO CAP AND ABANDON EXISTING WATER SERVICE PIPE SERVING SPEC. ED ROOM 122M – INCLUDE EXCAVATION AND RE-COMPACT BACKFILL AS NEEDED - COORD. WITH MECH. – COORD. WITH OWNER RE. ACCESS".
   8. Add the following at the City water main: "SAWCUT, REMOVE AND PATCH EXIST. CONC. SLAB ON GRADE PAVING (INCLUDING CONC. CURB IF REQUIRED) TO MATCH EXIST. AND TO MEET CITY OF LINCOLN STANDARDS - AS REQUIRED TO CAP AND ABANDON EXISTING WATER SERVICE PIPE SERVING ENVIRONMENTAL ROOM 104 - – INCLUDE EXCAVATION AND RE-COMPACT BACKFILL AS NEEDED - COORD. WITH MECH. – COORD. WITH OWNER RE. ACCESS. - COORD. WITH MECH. – COORD. WITH OWNER RE.

ACCESS - LOCATION OF PIPE CONNECTION TO CITY MAIN IS UNKNOWN - CONTRACTOR SHALL LOCATE PIPE WHERE IT CONNECTS TO CITY MAIN".

B. Add Detail 5, C1.0 – 'Stabilized Construction Entrance'.

Item No. 2-6: Sheet A1.3 – General Notes

A. Add the following General Notes:

1. "WW. Project Schedule: The Arts and Humanities Focus Program will occupy the current classroom area until May 29, 2024. The Contractor will have access to start renovations in the Arts and Humanities Focus Program areas on May 30, 2024. At the Contractor's option, work in the non-Arts & Humanities areas can be started as early as March 18, 2024 pending contract negotiations. Note that a site superintendent's presence is required when subcontractors are on site."

2. "XX. Jobsite Trailer: The Contractor has the option of establishing an office area inside the Arts and Humanities renovation space instead of providing a job-site office trailer."

3. "YY. Staging Area: The Owner owns the 2 residential properties north of the renovation area. There is currently no structure on the 2403 J Street property. The house at 2411 J Street will be removed within the next few weeks. The Contractor can use both the 2403 J Street and the 2411 J Street properties for staging. The current J Street curb cuts will be infilled as part of the demolition process. The Contractor shall provide and maintain rock paving, on the staging area, as needed for staging access and to control mud on public streets and alley. See the attached Civil Plan C1.0 and the associated 'Stabilized Construction Entrance' detail. The rock paving shall be removed at the end of the project and the staging area returned to its pre-construction condition."

4. "ZZ. Space Availability: The Owner will make Owner occupied and Tenant leased spaces available to the Contractor for installation of conduit and piping during regular working hours. The Owner will relocate movable furnishings as reasonably needed for pipe and conduit installation."

Item No. 2-7: Sheet A4.1 – Roof Plan

A. At Sheet A4.1 - See the attached link below for roof related photos. You can also request this link to be e-mailed to you by sending a request to 'david@adalincoln.com'.
   1. https://www.dropbox.com/scl/fo/3d3xz47upyghdsfhki0bj/h?rlkey=zz15lhdfftk5e3t6mujelhrac&dl=0

B. At Detail 1 'Roof Plan', at the Spray Silicone & Urethane Insulation Roof Replacement Note, Correct the min. slope from 1/8" per foot to 1/4" per foot.

C. At 'General Roof Notes', at note B, change the minimum roof slope from 1/8" per foot to 1/4" per foot.

D. At Detail 1 'Roof Plan', at the Spray Silicone & Urethane Insulation Roof Replacement, add the following note: "FROM LIMITED CORE SAMPLES - EXISTING ROOF CONSISTS OF SILICONE ROOF MEMBRANE ON APPROX. 2.5" OF SPRAY URETHANE INSULATION ON A ROLLED ASPHALT ROOFING LAYER ON PLYWOOD ON MULTIPLE LAYERS OF CORK INSULATION AND 2X WOOD SLEEPERS ON A CONCRETE DECK - TOTAL ROOF THICKNESS AT NORTH END IS APPROX. 9" - AT SOUTH END TOTAL ROOF THICKNESS IS APPROX. 10.5".

E. At Detail 1 'Roof Plan', at the Spray Silicone & Urethane Insulation Roof Replacement, the sloped portion of the roof is noted as 4:12 along with a note to 'Field Verify' the slope. To help determine the roof slope for bidding, the original building truss drawing is attached for the Contractor's reference. See the attached 'Attachment A – Original Building Roof Slope Drawings'.

Item No. 2-8: Sheet S1.2 – Struct. Sched's & Det's

A. Add detail 3, Sheet S1.2. Provide joist reinforcing at any joist attachment load of over 50 pounds that does not occur at a joist panel point.

See Attached Mechanical and Electrical Addenda Items.

END OF ADDENDA NO. 2

Architectural Design Associates

LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGRAM – ENHANCEMENT PROJECT
LINCOLN, NEBRASKA

PRE-BID CONFERENCE
January 25, 2024

PROJECT TEAM REVIEW

Owner's Representatives	**Architect**	**Mech. / Elec. Engineer**
Dan Hohensee / Dan Wild	John Hathaway	Vishal Khanna
Scott Wieskamp / Tim Loseke	David Stirtz	Josh Rich- Elec.
Steve DeGarmo / John Schueth	Architectural Design Assoc.	Kyle Wilkinson- Mech.
Lincoln Public Schools		Advanced Engineering

DOCUMENTS

- Plans and Specifications – Available through A&D Technical

- Summary of Work - Section 01 10 00.
    - Original building constructed in 1920 – many additions and renovations.
    - Site: Staging at property north of construction site.
        - Keep City bike path open.
        - Keep alley open and clean for residential access.
        - Coordinate work outside of construction limits with LPS.
    - Security fencing around staging and construction areas.
    - Arts & Humanities Renovations.

- Work by Owner - Section 01 10 00.

- Schedule - Section 01 10 00:
    - Construction site access: As early as March 18, 2024 – pending contract negotiations.
    - Substantial Completion: May 5, 2025

- Bid Form – Section 00 41 00 in Project Manual.
    - Allowances – Section 01 21 00:
        - $50,000 Discovery Allowance.
        - $10,000 Metal Roof Repair and Silicone Coating Allowance.
    - Unit Prices: See separate form.
    - Alternates: See separate form.

- Alternates Form – Section 00 43 23 (also see Section 01 23 00):
    - A-1: Delete new upper wall cabinets.
    - A-2: Delete replacement of spray urethane/silicone coated roof.
    - A-3: Delete replacement of PVC roof system.
    - A-4: Delete replacement of EPDM roof area.

Architectural Design Associates

PROJECT ORGANIZATION

1. Single Combined Contract - Direct to Lincoln Public Schools.

2. Bid Date - Thursday, February 8, @ 2:00 PM at LPS Operations, 800 South 24th Street, Lincoln.

3. Addenda status: Addenda No. 1 issued on Friday, January 19.

4. Insurance and bond info. – in Section 00 72 00 & AIA A201 General Conditions
   - and in and 00 11 13 Advertisement for Bid.

5. Related work by Owner:
   - Hazardous material abatement - none expected.
   - List of Owner provided items – covered in Summary Section 01 10 00.
   - Salvage Review – walk-through building with Owner prior to starting demolition.

6. Owner Occupancy / Access:
   - Owner and Tenants will occupy the building throughout construction:
     - Maintain egress paths.
     - Maintain utility services.
     - Maintain building security & monitor LPS staff and Tenant safety.
     - Maintain separation between construction and Owner/Tenant traffic.
     - Communication with Owner's representative.

GENERAL INFORMATION

1. Roof photo file is available upon request. E-mail request to 'david@adalincoln.com'.
2. Temporary Facilities Section 01 50 00 – Contractor can use Owner's power and water.
3. Office – Contractor to provide office trailer.
4. Site Superintendent on site when subcontractors are present.
5. Smoking Prohibited.
6. Architect has applied for the building permit and code review:
   - Owner will pay for Building Permit, Code Review and Impact Fees.
   - Contractor will pay for all other permits, fees, licenses and inspections.
7. For site access during bid period: Contact Dan Hohensee at LPS at (402) 436-1072.

MEETING OPEN TO QUESTIONS

SITE TOUR / INSPECTION / QUESTIONS

ADA

Architectural Design Associates

LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGRAM – ENHANCEMENT PROJECT
LINCOLN, NEBRASKA

PRE-BID CONFERENCE
January 25, 2024

NAME	COMPANY	PHONE	E-MAIL
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Elijah Schmal	Hausmann	402-319-5153	estimating@hausmannconstruction.com
Ryan Baumgart	Control Services	402-880-2691	rbaumgart@controlservices.com
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Josh Rich	"	"	Josh.Rich@A-E-Sys.com
Alexey Afanasiev	McKinnis Roofing	402 237 6655	alexey@mckinnisinc.com
Brad Hershiser	Neumann & Sons	402-202-8402	brad.hershiser@neumannandsons.com
Christian Martin	Rogge General Contractors	402-441-3100	bids@roggeinc.com
Craig Sapp	Kidwell	844-233-5114	csap@kidwellinc.com
Scott Wiesland	UPS	436-1072	
Tim Loseke	UPS	" "	
Chad Trompke	CCE	402-440-7652	ctrompke@cce-ne.com
Brian Wehrs	Kingery	402-840-2508	brianw@kccobrickbuilders.com
Nick Collen	IES Electric	402 840 7874	nickc@iceselectricinc.com

SECTION 27 41 16

AUDIO VISUAL SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Section 27 41 16.62 Integrated Audio-Video Systems and Equipment for Auditoriums.

1.02 RELATED DOCUMENTS

A. Section 26 Electrical

1.03 REFERENCES

A. See General and/or Special Conditions.

1.04 SUBMITTALS

A. See General and/or Special Conditions. Including:
   1. Manufacturer's data sheets
   2. Shop drawings showing a schematic of system design on a floor plan showing the quantity, type, and location of components, cabling, and accessories.
   3. Shop drawings of speaker mounting detail.
   4. Shop drawings of equipment racks showing component layout and intended cabling diagram.
   5. Shop drawings of cabling, conduit, or cable tray at racks and any conduit junction boxes, and on the amp room wall behind rack.

1.05 CLOSEOUT SUBMITTALS

A. See 1.4 modify documents to show as constructed.

1.06 QUALITY ASSURANCE

A. The installation contractor is responsible for any needed parts or equipment, even if not shown on the drawings and needed for the system to work as expected.

B. There may be elements that are required for the installation but are not specified that the contractor is expected to supply. This includes assorted connector, components and cables.

C. The contractor will notify the architect of any errors or missing components as soon as discovered, the installer will guarantee and warrant material for a period of one year from first beneficial use.

D. The contractor will supply the warranty card and manufacturer’s warranty statements in a separate folder, two copies, clearly labeled “LPS Bottlers Building, AV Equipment Warranties” with the statements in alphabetical order, by manufacturer. Deliver to Advanced Engineering Systems.

1.07 PRE-INSTALLATION MEETINGS

A. Contact the General Contractor.

1.08 DELIVERY STORAGE AND HANDLING

A. Coordinate with the General Contractor.

1.09 PROJECT CONDITIONS

A. See General and/or Special Conditions.

1.10 PROJECT SEQUENCING

A. Coordinate with the General Contractor.

PART 2 - PRODUCTS

2.01 SYSTEM COMPONENTS

A. See AV schematic on drawings for design intent.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Rack Layout

1. Separate signals types, wherever possible, bundle similar signal types together. Run electrical cords on one side of the rack and input output cabling on the other side of the rack. Take care to not create ground loops. Do not eliminate ground wire or low side signal wires in any cables. Dress out the wiring and cable tie or install wiring in raceway for all low voltage cabling.
2. Populate rack with the specified equipment, generally following the rack detail drawing. Fill all unused rack spaces. With 1 or 2 RU blank Plates.
3. Hang all the new speakers as specified. Verify the transformer taps and document for close out submittal documents.

B. Testing and pre-commissioning

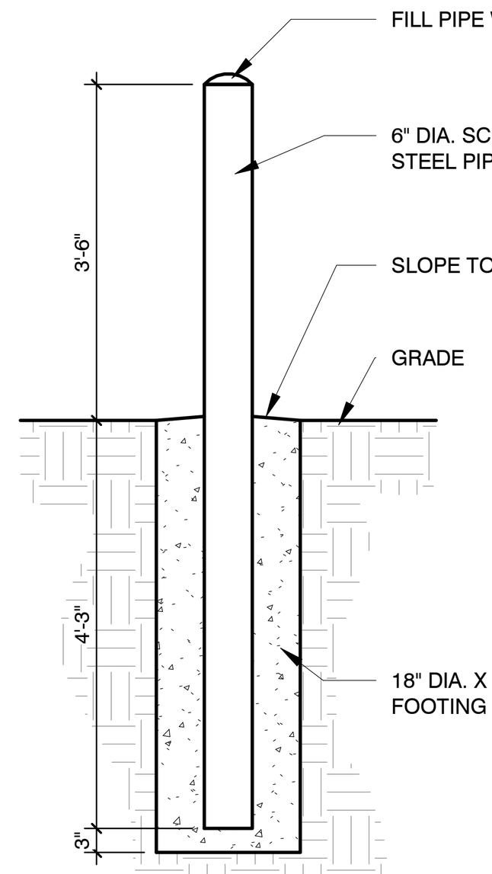
1. Have a fully functional tested system ready for the Consultant to commission. The equipment should receive programming to verify communication and correct wiring.
2. Electrical interference is one of the great causes of problems. Electrical interference can be divided into three categories:
   a. Electrostatic interference
   b. Electromagnetic interference
   c. Common path interference
3. Test cables for shorts and faults before hookup.
4. Test all systems pay special attention to indicator of faulty wiring, ground and electrical interference. Correct the problem.
5. Carefully run a test tone through each speaker at low to moderate low volume to ensure functionality. Listen for any distortion of problems. if there are problems correct them.
6. Document for each speaker all tests of functionality. Note any problems encountered and steps taken to correct the problem.
7. Notify Consultant of any problems that you are not able to correct.
8. Be in communication with the Consultant before, part way through and after completion of Testing and pre-commissioning.

C. Commissioning

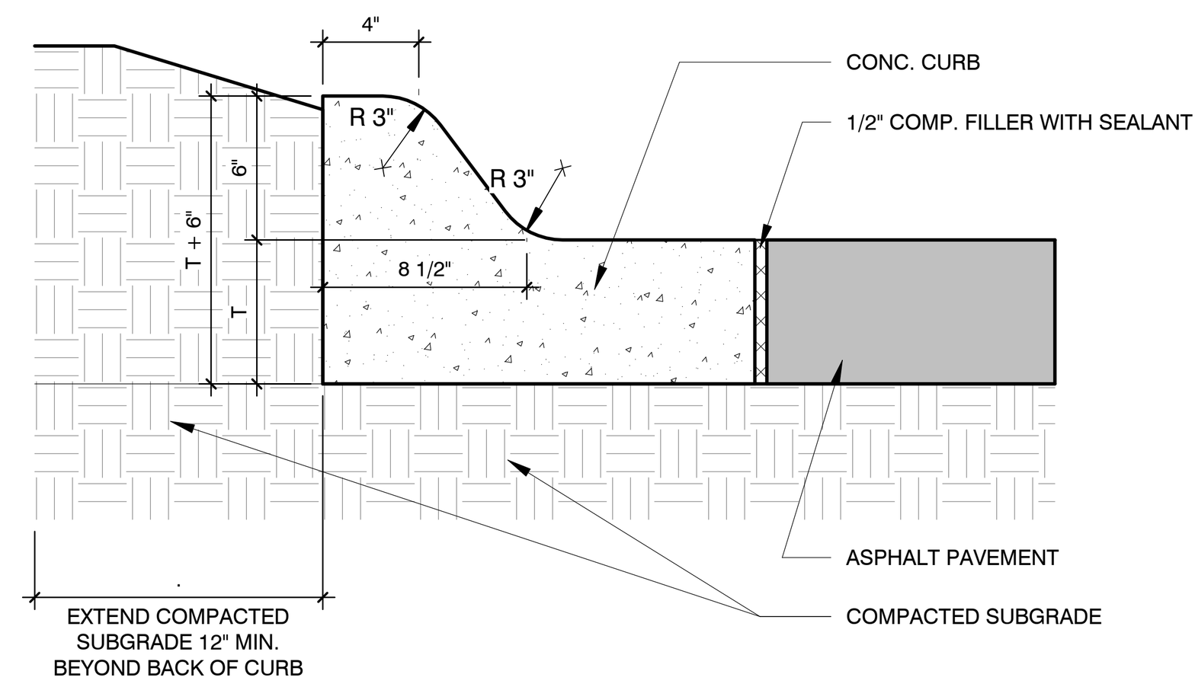
1. Have one of your main technical installers who has been involved with this project, on site when Consultant commissioning and tuning is scheduled. Consultant will supply a list of standard test equipment for this technician to have on hand. Technician will assist in commissioning and correct any problems. Expected to take one day, schedule two days.

D. Consultant will do an inspection of all parts of the installation and will compile a "Punch Out " list of items that need correcting. These items will need to be corrected.

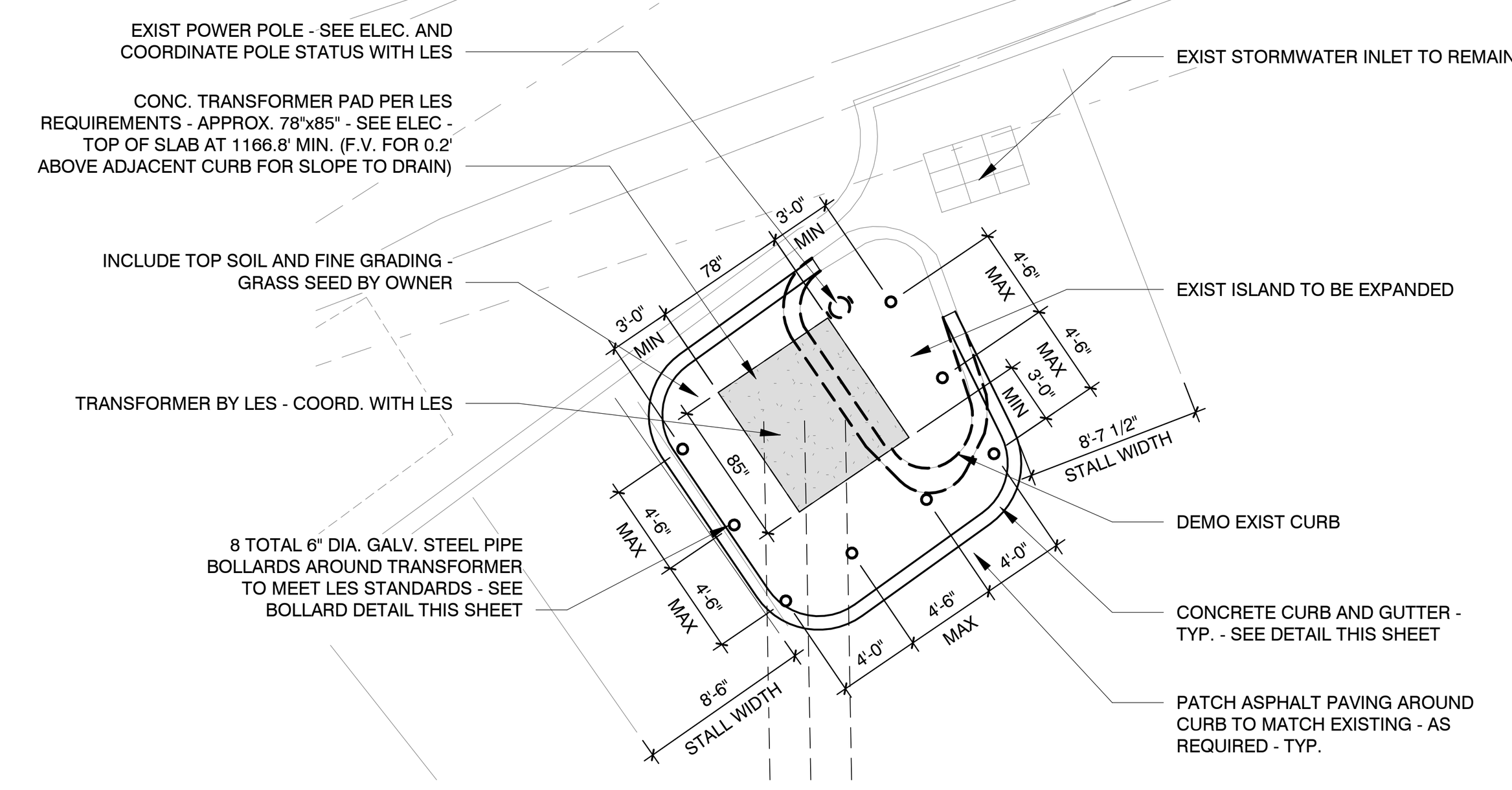
END OF SECTION



4 C1.0 **BOLLARD DETAIL**
1/2" = 1'-0"

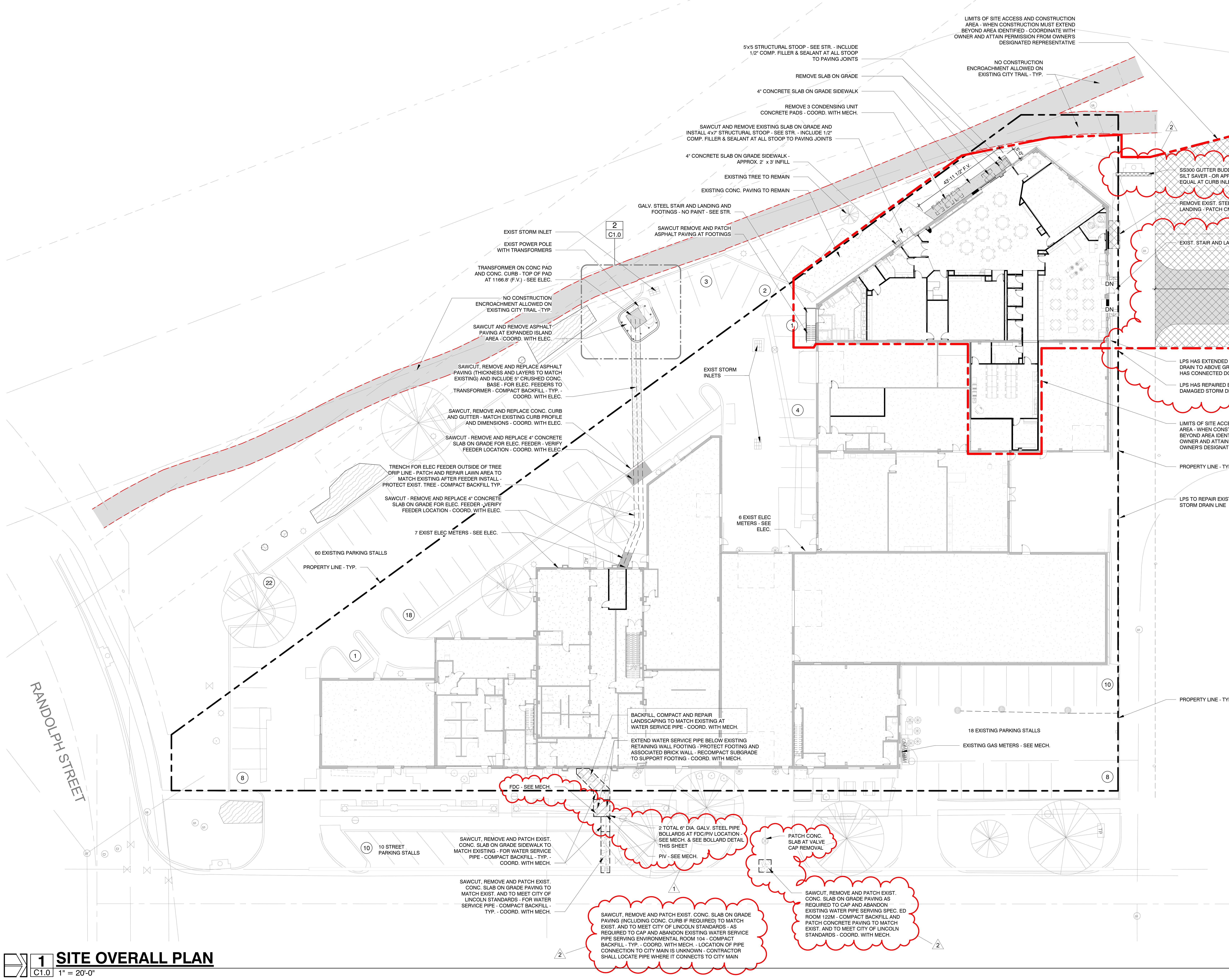


3 C1.0 **CURB SECTION**
1 1/2" = 1'-0"

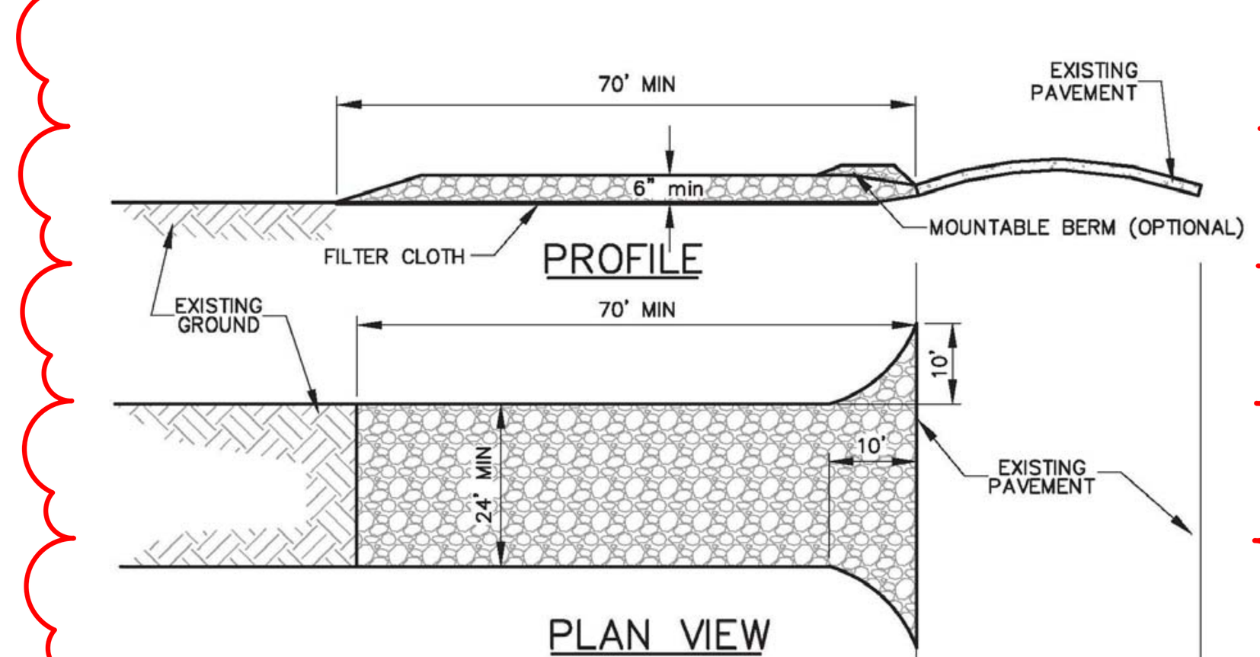


NOTE: BASE FLOOD ELEVATION IS 1164.6 - SET TOP OF TRANSFORMER PAD AT 1166.6' MIN. AND 0.2' ABOVE ADJACENT CURB ELEVATION - F.V. TOP OF TRANSFORMER PAD AT 1166.8'
NOTE: COORDINATE WORK OF THIS DETAIL WITH ELEC.

2 C1.0 **TRANSFORMER PAD**
1/8" = 1'-0"



1 C1.0 **SITE OVERALL PLAN**
1" = 20'-0"



NOTES:
1. STONE SIZE – USE 2" MINIMUM, BUT NOT MORE THAN 3.5" CLEAN CRUSHED STONE.
2. LENGTH – AS REQUIRED, BUT NOT LESS THAT 70 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS – NOT LESS THAT SIX (6) INCHES.
4. WIDTH – TWENTY FOUR (24) FOOT MINIMUM, BUT NOT LESS THAT THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. FILTER WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5H:1V SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
8. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
10. ONLY ONE CONSTRUCTION ENTRANCE IS SHOWN ON THE PLAN. IF CONTRACTOR ELECTS TO HAVE TWO ACCESS POINTS, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AT BOTH ACCESS POINTS.

5 C1.0 **STABILIZED CONSTRUCTION ENTRANCE**
NO SCALE

CURRENT PARKING COUNT
TOTAL EXISTING: 88 STALLS - 1 STALL (TRANSFORMER)
= 87 EXISTING STALLS

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ARCHITECT ... HATHAWAY A-4244 STATE OF NEBRASKA

LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGRAM
BOTTLERS BUILDING
LINCOLN, NE

Project Number 23-007
Date 1/11/2024
Revisions

#	Date
1	1-18-2024
2	2-1-2024

C1.0
SITE PLAN & DETAILS

GENERAL NOTES

A. PERFORM WORK IN ACCORDANCE WITH LOCAL GOVERNING CODES TO INCLUDE, BUT NOT LIMITED TO BUILDING, FIRE, HEALTH AND ACCESSIBILITY. PROVIDE ALL REQUIRED PERMITS AND INSPECTIONS. PAY ALL ASSOCIATED FEES - UNO.

B. FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN OR OTHERWISE INDICATED ON THE DRAWINGS - COMMUNICATE AND DESCRIBE ANY DISCREPANCIES TO THE ARCHITECT. - DIMENSION SHOWN ON THE EXISTING BUILDING MAY BE BASED ON ORIGINAL BUILDING DRAWINGS AND MAY NOT BE ACCURATE - FIELD VERIFY EXIST. BUILDING DIMENSIONS.

C. COORDINATE WITH THE CITY THE SCHEDULING OF WORK THAT WILL AFFECT ANY PORTION OF CITY OWNED PROPERTY, INCLUDING UTILITIES.

D. COORDINATE WITH THE OWNER THE SCHEDULING OF OWNER PROVIDED AND OWNER INSTALLED PORTIONS OF THE WORK. COORDINATE WITH THE OWNER THE SCHEDULING OF WORK THAT WILL AFFECT ANY PORTION OF THE OWNER OCCUPIED BUILDING

E. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING FINAL FINISH GRADING AND SLOPES - INCLUDING PAVED AREAS, LANDSCAPED AREAS, SWALES, ETC. - TO ENSURE POSITIVE DRAINAGE OF SITE WITHOUT PONDING OF WATER. MEET WITH THE OWNER TO REVIEW SIDEWALK PAVING BEFORE STARTING PAVING WORK.

F. FLOOR PLAN DIMENSION ARE TO FACE OF BRICK, CONCRETE BLOCK AND ROUGH FRAMING UNLESS OTHERWISE NOTED AS CLEAR (CLR) DIMENSIONS BETWEEN FINISHES. ALL DIMENSIONS ARE ACTUAL.

G. DETERMINE LOCATION AND PROTECTION OF ALL UTILITIES, INCLUDING ANY THAT MAY NOT BE SHOWN ON THESE DRAWINGS.

H. INTERIOR CONCRETE SLABS ON GRADE SHALL BE 5" REINFORCED CONCRETE (TO MATCH EXIST.) ON 15 MIL. VAPOR BARRIER OVER 4" GRANULAR FILL UNLESS OTHERWISE NOTED OR DETAILED OTHERWISE - SEE STRUCTURAL FOR REINFORCING INFORMATION.

I. VAPOR BARRIER SHALL BE LOCATED IMMEDIATELY UNDER INTERIOR CONCRETE SLABS UNLESS NOTED OTHERWISE.

J. REFER TO STRUCTURAL NOTES FOR INTERIOR CONCRETE SLAB JOINT PLACEMENT. SUBMIT PROPOSED JOINT LAYOUT PLAN TO ARCHITECT 1 WEEK PRIOR TO STARTING CONC. FLATWORK INSTALLATION.

K. REFER TO SITE / CIVIL PLANS FOR EXTENT OF EXTERIOR CONCRETE AND ASPHALT SLABS, WALKS, DRIVES, ETC.

L. PROVIDE CONTINUOUS SOLID 2x WOOD BLOCKING IN WALLS AS REQUIRED TO ANCHOR NEW DISPLAY BOARDS, CASEWORK, SHELVES, ACCESSORIES, EQUIPMENT, ETC. SHOWN - WHETHER CALLED OUT AS BY CONTRACTOR, BY OWNER OR N.I.C. - REMOVE AND PATCH GYP BOARD AT EXISTING WALLS AS NEEDED.

M. INCLUDE GYP BD CONTROL JOINTS AT 30' O.C. MIN. (AND AT LOCATIONS AS SHOWN) AT ALL GYP BD CEILINGS, WALLS, AND BULKHEADS - INCLUDE 1 CONTROL JOINT AT THE HINGE SIDE OF EACH CORRIDOR DOOR JAMB - VERIFY LOCATIONS WITH ARCHITECT BEFORE INSTALLATION. INCLUDE 1/4" CLEAR JOINT WITH J-BEAD, BACKER ROD AND SEALANT AT EACH LOCATION WERE GYP BOARD ABUTS MASONRY, ALUMINUM OR STRUCTURAL STEEL.

N. PROVIDE TREATED LUMBER, CONFORMING TO CODE REQUIREMENTS, AT ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY.

O. NEW EXTERIOR SIGNAGE IS NOT INTENDED OR PROVIDED UNDER THIS PERMIT. IF NEEDED, A SEPARATE PERMIT WILL BE APPLIED FOR BY THE SIGNAGE COMPANY AT A LATER DATE.

P. IMMEDIATELY PRIOR TO SUBSTANTIAL COMPLETION - THOROUGHLY CLEAN ALL SURFACES IN PROJECT AREAS - AND IN AREAS AFFECTED BY CONSTRUCTION.

Q. IF CONFLICTS EXIST BETWEEN DOCUMENTS, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

R. AT DEMOLITION AREAS, AND AT SURFACES NOTED TO BE PATCHED, SURFACES SHALL BE PATCHED TO MATCH EXISTING ADJACENT SURFACES.

S. INCLUDE 3/8" CONTROL JOINTS AT CMU WALLS AT LOCATIONS SHOWN ON THE DRAWINGS - INCLUDE 3/4" DEEP RAKED JOINTS WITH BACKER ROD AND SEALANT AT EACH CONTROL JOINT. INCLUDE 3/8" EXPANSION JOINTS AT BRICK VENEER AT LOCATIONS SHOWN ON THE DRAWINGS - INCLUDE FULL DEPTH COMPRESSIBLE FILLER WITH SEALANT AT EACH EXPANSION JOINT.

GENERAL NOTES

T. ALL COLD JOINTS AT INTERIOR AND EXTERIOR CONCRETE SLABS SHALL BE KEYED.

U. AT THE JOINT BETWEEN INTERIOR CONCRETE SLABS AND EXTERIOR WALLS INCLUDE 1/2" THICK x 6" TALL COMPRESSIBLE FILLER AND SEALANT - AT ALL INTERIOR CONCRETE SLABS AND ELEVATED SLABS THAT ABUTT INTERIOR WALLS. PROVIDE 2 LAYERS 15LB BLDG. FELT OR 1/4" COMPRESSIBLE FILLER BOND BREAKER.

V. PROTECT EXISTING BUILDING, LANDSCAPING, PAVING, UTILITIES, EQUIPMENT, CASEWORK, WALLS, FLOORS, WATER COOLERS, RAILINGS, STAIRS, DOORS, WINDOWS, FINISHES, ETC. - PHOTO OR VIDEO TAPE ALL EXISTING DAMAGE WHICH MAY BE MISCONSTRUED AS DAMAGED CAUSED DURING THE PROJECT. ANY ITEM OR AREA THAT IS DAMAGED DURING THE PROJECT WILL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.

W. NOT USED.

X. STAINS OR DAMAGE TO EXISTING FINISHES - THAT OCCURS DURING THE WORK - SHALL BE CLEANED OR REPAIRED BY THE CONTRACTOR - TO OWNER'S SATISFACTION.

Y. CUT OPENINGS IN EXISTING FLOOR, MASONRY WALLS AND ROOF DECK AS REQUIRED FOR DUCTWORK OR OTHER PENETRATIONS - SEE STRUCTURAL FOR SUPPORT STRUCTURE AND SEE MECHANICAL AND ELECTRICAL FOR DUCT OR PIPE SIZES AND LOCATIONS.

Z. AT NEW EXTERIOR CONCRETE SLABS - DOWEL NEW SLAB TO EXISTING WITH SMOOTH NO. 4 REBAR. INSTALL AT 24" O.C. EPOXY ANCHOR DOWELS 6" INTO EXISTING AND EXTEND 12" INTO NEW (GREASED AND THIMBLED) U.N.O. = INCLUDE A 1/2" EXPANSION JOINT WITH COMPRESSIBLE FILLER AND SEALANT.

AA. AT NEW INTERIOR CONC. SLABS, DOWEL NEW SLABS TO EXISTING WITH NO. 4 REBAR AT 24" O.C. EPOXY ANCHOR DOWELS 6" INTO EXISTING AND EXTEND 12" INTO NEW U.N.O.

BB. COORDINATE ELEVATION OF EXISTING AND NEW BRICK AND BLOCK COURSING TO MATCH EXISTING.

CC. NOTE TAGS AND NOTES SHOWN ONCE APPLY TO ALL SIMILARLY SHOWN MATERIALS AND CONDITIONS.

DD. INTERIOR METAL STUD WALLS SHALL EXTEND UP TO ROOF DECK UNO - INCLUDE CONTINUOUS RECEPTOR CHANNEL - PACK BATT INSULATION BETWEEN TRACKS AND STRUCTURAL DECK RIBS. RECEPTOR CHANNEL SHALL BE INSTALLED TO ALLOW FOR DEFLECTION IN STRUCTURAL DECK - PACK FIBERGLASS INSULATION AROUND ALL JOIST PENETRATIONS.

EE. AT EXPOSED BRICK PATCHES - 'TOOTH-IN' THE PATCH AT EXISTING EDGES - DO NOT TOOH-IN AT EXPANSION JOINTS. TOOTH-IN IS NOT REQUIRED AT CMU.

FF. EXISTING MOVABLE SHELVING , TABLES, CHAIRS, FILING CABINETS, REFIGERATORS AND OTHER LOOSE FURNITURE WILL BE REMOVED, STORED AND REINSTALLED BY THE OWNER.

GG. NOT ALL MECH., ELEC. AND STR. WALL PENETRATIONS AND ASSOCIATED PATCHING ARE SHOWN ON ARCH. DRAWINGS – SEE MECH./ELEC. AND STRUCT. FOR PENETRATION LOCATIONS AND ASSOCIATED LINTELS - PATCH EXIST. WALLS TO MATCH EXISTING.

HH. AT LOCATIONS WHERE EXISTING STEEL JOIST CROSS BRACING OR HORIZ. JOIST BRIDGING CONFLICTS WITH MECH. DUCT OR PIPING - REMOVE BRACING AND/OR BRIDGING AND REINFORCE LOCATIONS PER STRUCTURAL.

II. SEE DEMOLITION SHEETS FOR FLOORING REMOVAL INFORMATION. FLOORING SCHEDULED TO BE REMOVED DOES NOT NEED TO BE PROTECTED.

JJ. PRIOR TO STARTING DEMOLITION - PHOTOGRAPH AND/OR CREATE VIDEO OF EXISTING BUILDING CONDITIONS THAT MAY BE CONSTRUED AS CONSTRUCTION DAMAGE

KK. STAGING AND CONSTRUCTION VEHICLE PARKING IS TO OCCUR ON THE PROPERTY NORTH OF THE EXISTING BUILDING - SEE SITE PLAN.

LL. OWNER'S PARKING LOT AREAS SHALL NOT BE USED FOR STAGING OR CONTRACTOR PARKING. SEE CIVIL PLANS FOR CONTRACTOR STAGING AREAS. PROTECT EXISTING PAVED AREAS AND REPAIR ANY AREAS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING.

GENERAL NOTES

MM. PROVIDE A MINIMUM OF 2 HYGROMETERS TO MEASURE HUMIDITY LEVELS IN THE RENOVATION AREAS. MONITOR THE HYGROMETERS AND KEEP A DAILY LOG OF HUMIDITY READINGS WHEN THE HUMIDITY LEVELS ARE ABOVE 50%. PROVIDE DEHUMIDIFICATION AND VENTILATION AS REQUIRED TO MAINTAIN HUMIDITY LEVELS AT 70% OR LESS IN THE RENOVATION AREAS.

NN. EXISTING PAVING NOTED TO REMAIN SHALL NOT BE USED FOR STAGING.

OO. OWNER HAS FIRST RIGHT OF REFUSAL ON ALL ITEMS TO BE DEMOLISHED - WALK THROUGH SITE WITH OWNER PRIOR TO START OF DEMOLITION TO IDENTIFY ITEMS TO BE RETURNED TO OWNER.

PP. PROTECT EXISTING CABLING AND WIRING THAT IS TO REMAIN - IF CABLING OR WIRING IS DAMAGED, REPLACE AT NO ADDED COST - NO SPLICING IS ALLOWED.

QQ. AT RUBBER FLOORING INSTALLATION - INCLUDE SEALANT AT THE RUBBER TO WALL JOINT WHERE NO BASE IS SHOWN.

RR. A COST BREAKOUT WILL BE PROVIDED BY THE GENERAL CONTRACTOR - AFTER THE BID - SHOWING THE COST DIFFERENCE BETWEEN THE BUILDING SHELL WORK AND THE ARTS AND HUMANITIES AREA RENOVATION. THIS BREAKOUT IS FOR THE OWNER'S INTERNAL BUDGETING PURPOSES ONLY.

SS. BRICK AND CMU MASONRY MUST ALIGN WITH EXISTING MASONRY COURSING. FIELD VERIFY AND REVIEW COURSING WITH ARCHITECT BEFORE STARTING INSTALLATION.

TT. PATCH GYP BOARD TO MATCH EXISTING AT ALL MECHANICAL AND ELECTRICAL AND OTHER RENOVATION WORK SHOWN AT EXISTING GYP BOARD WALLS.

VV. FOR ELEC POWER AND DATA AT EXISTING WALLS, CUT AND PATCH EXISTING GYP, METAL FURRING, AND INSULATION FOR THE ELEC TO INSTALL CONCEALED CONDUIT AND J-BOXES. EXCEPT AT EXISTING EAST AND NORTH WALLS OF ART ROOM 113 - USE 4000 SERIES WIRE MOLD INSTEAD OF CONCEALED CONDUIT.

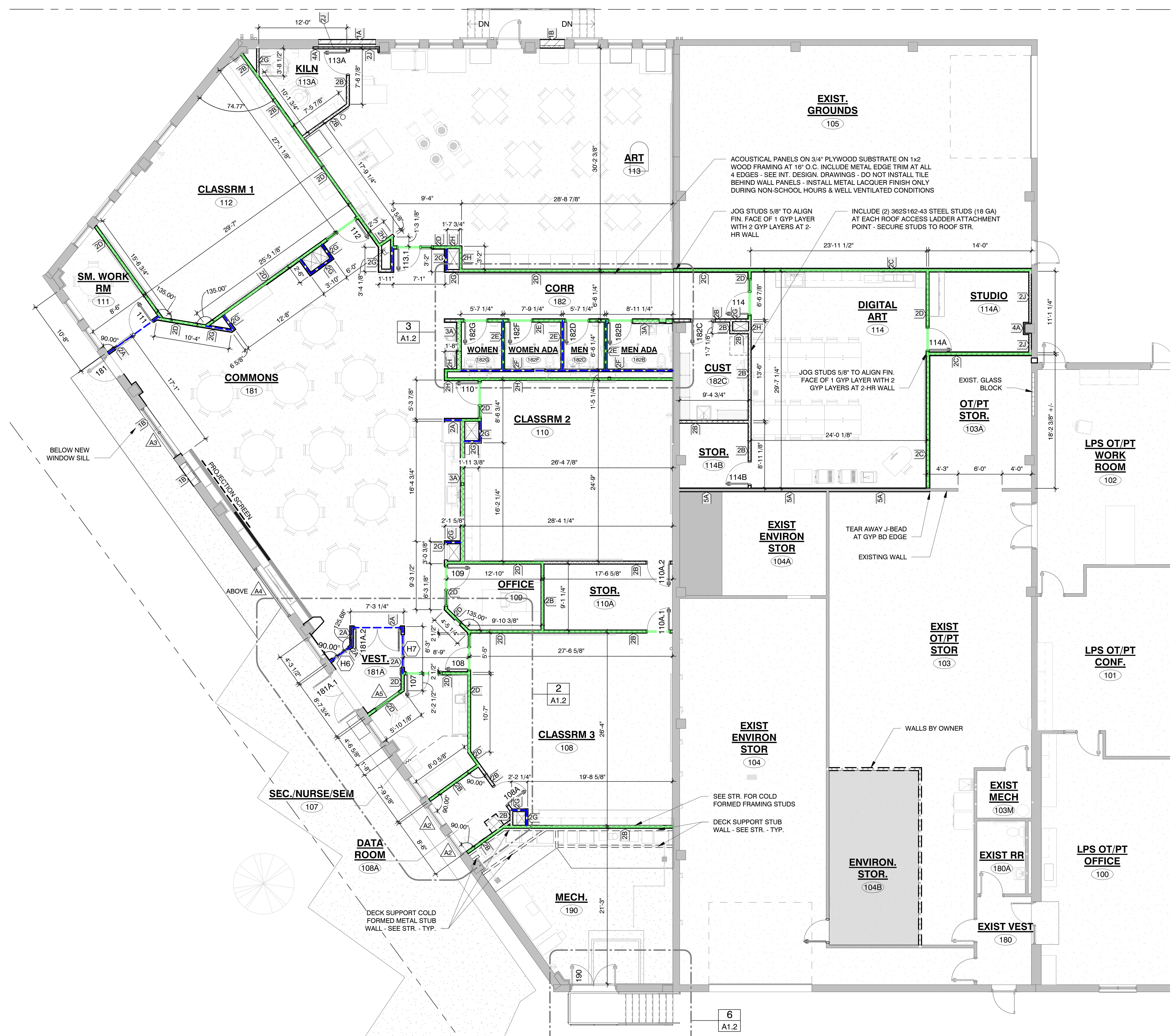
WW. PROJECT SCHEDULE: THE ARTS AND HUMANITIES FOCUS PROGRAM WILL OCCUPY THE CURRENT CLASSROOM AREA UNTIL MAY 29, 2024. THE CONTRACTOR WILL HAVE ACCESS TO START RENOVATIONS IN THE ARTS AND HUMANITIES FOCUS PROGRAM AREAS ON MAY 30, 2024. AT THE CONTRACTOR'S OPTION, WORK IN THE NON-ARTS & HUMANITIES AREAS CAN BE STARTED AS EARLY AS MARCH 18, 2024 PENDING CONTRACT NEGOTIATIONS. NOTE THAT A SITE SUPERINTENDENT'S PRESENCE IS REQUIRED WHEN SUBCONTRACTORS ARE ON SITE.

XX. JOBSITE TRAILER: THE CONTRACTOR HAS THE OPTION OF ESTABLISHING AN OFFICE AREA INSIDE THE ARTS AND HUMANITIES RENOVATION SPACE INSTEAD OF PROVIDING A JOB-SITE OFFICE TRAILER.

YY. STAGING AREA: THE OWNER OWNS THE 2 RESIDENTIAL PROPERTIES NORTH OF THE RENOVATION AREA. THERE IS CURRENTLY NO STRUCTURE ON THE 2403 J STREET PROPERTY. THE HOUSE AT 2411 J STREET WILL BE REMOVED WITHIN THE NEXT FEW WEEKS. THE CONTRACTOR CAN USE BOTH THE 2403 J STREET AND THE 2411 J STREET PROPERTIES FOR STAGING. THE CURRENT J STREET CURB CUTS WILL BE INFILLED AS PART OF THE DEMOLITION PROCESS. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ROCK PAVING, ON THE STAGING AREA, AS NEEDED FOR STAGING ACCESS AND TO CONTROL MUD ON PUBLIC STREETS AND ALLEY. SEE THE ATTACHED CIVIL PLAN C1.0 AND THE ASSOCIATED 'STABILIZED CONSTRUCTION ENTRANCE' DETAIL. THE ROCK PAVING SHALL BE REMOVED AT THE END OF THE PROJECT AND THE STAGING AREA RETURNED TO ITS PRE-CONSTRUCTION CONDITION.

ZZ. SPACE AVAILABILITY: THE OWNER WILL MAKE OWNER OCCUPIED AND TENANT LEASED SPACES AVAILABLE TO THE CONTRACTOR FOR INSTALLATION OF CONDUIT AND PIPING DURING REGULAR WORKING HOURS. THE OWNER WILL RELOCATE MOVABLE FURNISHINGS AS REASONABLY NEEDED FOR PIPE AND CONDUIT INSTALLATION.

2



1 A1.3 **ARTS & HUMANITIES - DIMENSION & WALL TYPE PLAN**
1/8" = 1'-0"

WALL TYPES:

SOUND WALLS WITH SOUND INSULATION - (EXTEND UP TO BOTTOM OF METAL DECK AND INCLUDE SOUND SEALANT AT ALL EDGES AND PENETRATIONS)

NON-SOUND WALLS - FULL HEIGHT - (EXTEND UP TO BOTTOM OF METAL DECK)

NON-SOUND WALLS - (EXTEND TO 6" ABOVE HIGHEST ADJACENT CEILING AND INCLUDE 3-5/8" DIAGONAL BRACING AT 24" O.C. UP TO ROOF STRUCTURE)

SOUND WALLS WITH SOUND INSULATION - (EXTEND TO 6" ABOVE HIGHEST ADJACENT CEILING AND INCLUDE 3-5/8" DIAGONAL BRACING AT 24" O.C. UP TO ROOF STRUCTURE)

EXTERIOR WALLS:

1A EXTERIOR INFILL (8"):
INFILL OPENING WITH 8" CMU ALIGNED WITH EXTERIOR WALL FACE - 3" CONT. RIGID INSULATION AT INTERIOR FACE - INCLUDE HORIZ. REINFORCING AT 16" O.C. AND NO. 4 VERT. REBAR AT 16" O.C. IN GROUTED CELLS - EPOXY REBAR 6" INTO EXISTING BASE MATERIAL - INCLUDE CMU BOND BEAM WITH (2) #4 HORIZ. REBAR - EPOXY HORIZ. REBAR 6" INTO EACH JAMB

1B EXTERIOR INFILL (12"):
INFILL OPENING WITH 12" CMU TO MATCH EXISTING - INCLUDE 5/8" TYPE 'X' GYP BD ON 1-1/2" METAL 'Z' FURRING AT 16" O.C. AND 1-1/2" RIGID INSULATION - INCLUDE HORIZ. CMU REINFORCING AT 16" O.C. AND NO. 4 VERT. REBAR AT 16" O.C. IN GROUTED CELLS - EPOXY REBAR 6" INTO EXIST. BASE MATERIAL - INCLUDE CMU BOND BEAM 1 COURSE BELOW TOP OF WALL - WITH (2) #4 HORIZ. REBAR - EPOXY HORIZ. REBAR 6" INTO EACH JAMB

3 5/8" INTERIOR WALLS:

2A INTERIOR PARTITION WALL:
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FINISH EACH SIDE WITH 5/8" TYPE 'X' GYP. BD. - CONTINUE GYP. BD. UP TO DECK ON ONE SIDE OF WALL AND 6" MIN ABOVE CEILING ON OPPOSITE SIDE - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - PAINT

2B INTERIOR PARTITION WALL (1-HR) (SOUND WALL WHERE SHOWN):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3 1/2" SOUND INSUL. UP TO DECK WHERE SHOWN - FINISH EACH SIDE WITH 5/8" TYPE 'X' GYP. BD. - CONTINUE GYP. BD. UP TO DECK ON BOTH SIDES OF WALL - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - FIRE CAULK AND SEAL FULL PERIMETER AND ALL PENETRATIONS - PAINT

2C INTERIOR PARTITION WALL (2-HR) (SOUND WALL):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3 1/2" SOUND INSUL. UP TO DECK - FINISH EACH SIDE WITH 2-LAYERS OF 5/8" TYPE 'X' GYP. BD. - CONTINUE GYP. BD. UP TO DECK ON BOTH SIDES OF WALL - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS ON OUT-MOST LAYER (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - FIRE CAULK AND SEAL FULL PERIMETER AND ALL PENETRATIONS - PAINT

2D INTERIOR PARTITION - SOUND WALL:
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3 1/2" SOUND INSUL. - FINISH EACH SIDE WITH 5/8" TYPE 'X' GYP. BD. - CONTINUE GYP. BD. UP TO DECK ON ONE SIDE OF WALL AND 6" MIN ABOVE CEILING ON OPPOSITE SIDE - SUPPORT SOUND INSUL. UP TO DECK WITH 2" WIDE 20 GA. METAL STRAPS AT 24" O.C. ABOVE GYP. BD. - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - INCLUDE SOUND CAULK FULL PERIMETER AND ALL PENETRATIONS - PAINT

2E INTERIOR PARTITION - SOUND WALL (RR):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3 1/2" SOUND INSUL. - FINISH RR SIDE WITH TILE ON 5/8" CEMENT BOARD AND 5/8" TYPE 'X' GYP. BD. ON NON-RR SIDE - CONTINUE GYP. BD. UP TO DECK ON ONE SIDE OF WALL AND EXTEND CEMENT BOARD 6" MIN ABOVE CEILING ON OPPOSITE SIDE - SUPPORT SOUND INSUL. UP TO DECK WITH 2" WIDE 20 GA. METAL STRAPS AT 24" O.C. ABOVE GYP. BD. - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - INCLUDE SOUND CAULK FULL PERIMETER AND ALL PENETRATIONS - PAINT

2F INTERIOR PARTITION - SOUND WALL (RR CHASE WALL):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3 1/2" SOUND INSUL. - FINISH RR SIDE WITH TILE ON 5/8" CEMENT BOARD UP TO 6" MIN ABOVE CEILING INCLUDE 5/8" TYPE 'X' GYP BOARD FROM 6" ABOVE CEILING TO ROOF DECK - SUPPORT SOUND INSUL. UP TO DECK WITH 2" WIDE 20 GA. METAL STRAPS AT 24" O.C. ON OPPOSITE SIDE - INCLUDE SOUND CAULK FULL PERIMETER AND ALL PENETRATIONS - PAINT

2G INTERIOR PARTITION WALL (CHASE WALL):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - 1 LAYER 5/8" TYPE 'X' GYP. BD. ON FINISH SIDE - CONTINUE GYP. BD. UP TO DECK - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - PAINT

2H INTERIOR PARTITION WALL (SOUND CHASE WALL):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3 1/2" SOUND INSUL. - 1 LAYER 5/8" TYPE 'X' GYP. BD. ON FINISH SIDE - SUPPORT SOUND INSUL. UP TO DECK WITH 2" WIDE 20 GA. METAL STRAPS AT 24" O.C. - CONTINUE GYP. BD. UP TO DECK - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - PAINT

2J FURRING WALL (INSULATED):
3 5/8" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 3.5" RIGID INSULATION - 1 LAYER 5/8" TYPE 'X' GYP. BD. ON FINISH SIDE - PAINT

6" INTERIOR WALLS:

3A INTERIOR PARTITION SOUND WALL:
6" METAL STUDS AT 16" O.C. UP TO ROOF DECK U.N.O. - FILL CAVITY WITH 6" SOUND INSUL. - FINISH EACH SIDE WITH 5/8" TYPE 'X' GYP. BD. - CONTINUE GYP. BD. UP TO DECK ON ONE SIDE OF WALL AND 6" MIN ABOVE CEILING ON OPPOSITE SIDE - SUPPORT SOUND INSUL. UP TO DECK WITH 2" WIDE 20 GA. METAL STRAPS AT 24" O.C. ABOVE GYP. BD. - SUBSTITUTE TYPE 'X' CEMENT BOARD IN LIEU OF GYP. BD. BEHIND TILE LOCATIONS (SEE INTERIOR DRAWINGS FOR LOCATIONS AND HEIGHTS) - SOUND CAULK AND SEAL FULL PERIMETER AND ALL PENETRATIONS - PAINT

1 5/8" INTERIOR WALLS:

4A INTERIOR FURRING WALL (INSULATED):
1 1/2" METAL 'Z' FURRING AT 16" O.C. UP TO ROOF DECK - FILL CAVITY WITH 1 1/2" RIGID INSULATION - 1 LAYER 5/8" TYPE 'X' GYP. BD. ON FINISH SIDE OF WALL - PAINT

EXISTING WALL MODIFICATIONS:

5A INTERIOR PARTITION WALL(2HR):
REMOVE EXISTING PLYWOOD ON ENVIRONMENTAL STORAGE SIDE OF WALL - ADD ADDITIONAL LAYER OF 5/8" TYPE 'X' GYP. BD. ON EACH SIDE OF EXISTING FRAMED WALL - CONTINUE GYP. BD. UP TO DECK ON BOTH SIDES OF WALL - FIRE CAULK AND SEAL FULL PERIMETER AND ALL PENETRATIONS - PAINT

WALL TYPE GENERAL NOTES:

HORIZONTAL GYP BOARD CONTROL JOINTS:
1. AT ART ROOM 113 - INCLUDE HORIZONTAL GYP BD CONTROL JOINT AT EACH WALL AT 9'-0" AFF - CUT CONTROL JOINT INTO EXISTING GYP BOARD WALLS.

2. AT COMMONS ROOM 181 - INCLUDE HORIZONTAL GYP BD CONTROL JOINT AT EACH NEW GYP BOARD WALL AT 9'-0" AFF - NO CONTROL JOINT AT EXISTING WEST WALL.

3. AT CLASSROOMS 108, 110, 112 AND 114 - INCLUDE HORIZONTAL GYP BD CONTROL JOINT AT EACH WALL AT 7'-2" AFF - CUT CONTROL JOINT INTO EXISTING GYP BOARD WALLS.

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LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGRAM
BOTTLERS BUILDING
LINCOLN, NE

Project Number
23-007
Date
1/11/2024
Revisions
Date
2 2-1-2024

A1.3
FLOOR PLAN - DIMENSIONS, WALL TYPES AND GENERAL NOTES

GENERAL ROOF NOTES:

A. SEE MECHANICAL AND ELECTRICAL FOR NEW ROOF PENETRATIONS NOT SHOWN ON THIS ROOF PLAN - INCLUDE BOOTS AND FLASHINGS AS NEEDED FOR WEATHER-TIGHT CONDITION AT NEW ROOF PENETRATIONS.

B. NEW ROOF AREAS SHALL HAVE A MINIMUM SLOPE OF 1/4" PER FOOT TO DRAIN. PONDING NOT ALLOWED (BEYOND THAT ALLOWED BY ROOF MANUFACTURERS).

C. INCLUDE TAPERED POLY-ISO INSULATION CRICKETS AT ROOF AREAS WHERE SHOWN AND AT MECHANICAL ROOF PENETRATIONS AND AS NEEDED TO ENSURE POSITIVE DRAINAGE OF NEW ROOF AREAS.

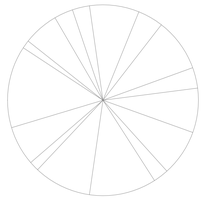
D. PROTECT NEW AND EXISTING ROOF AREAS FROM CONSTRUCTION TRAFFIC WITH MIN. 1/2" PLYWOOD WALKWAYS - WEIGH DOWN PLYWOOD TO PREVENT MOVEMENT CAUSED BY WIND - REPAIR ANY CONSTRUCTION RELATED LEAKS TO OWNER'S STATISFACTION.

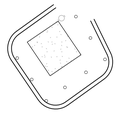
E. INCLUDE CANT STRIPS AT MODIFIED BITUMEN HORIZONTAL-TO-VERTICAL TRANSITIONS.

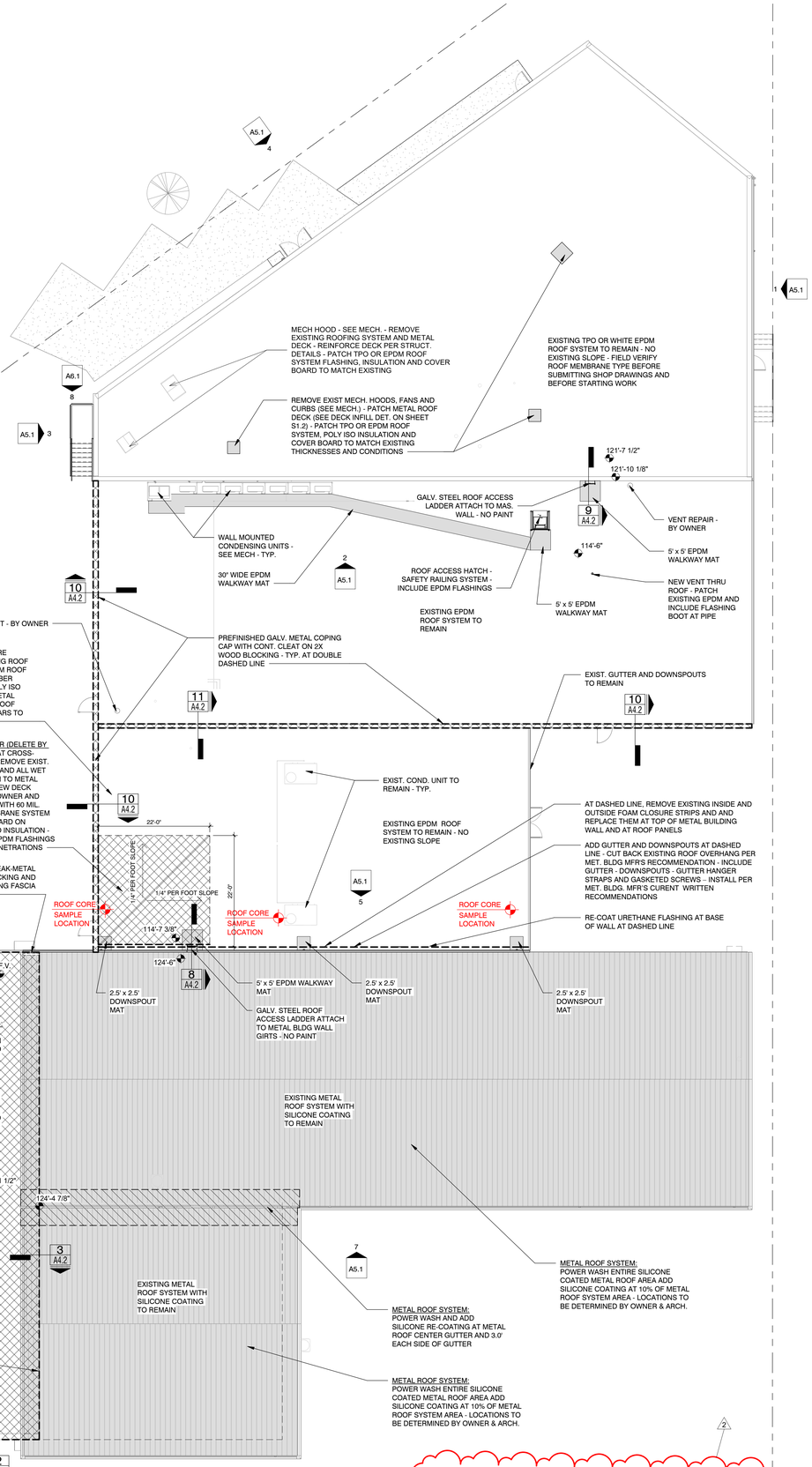
F. PATCH EXISTING ROOF AT NEW MECH. AND ELEC. PENETRATIONS - SEE MECH. AND ELEC. DRAWINGS FOR LOCATIONS.

G. EXISTING ROOF ELEVATIONS SHOWN ARE APPROXIMATE - FIELD VERIFY ROOF ELEVATIONS.

H. AT THE ORIGINAL BUILDING SPRAY URETHANE ROOF - INCLUDE 4 CORE SAMPLES - 1 AT EAST AND WEST ENDS OF EXISTING ROOF ON BOTH THE NORTH AND SOUTH FLAT ROOF AREAS TO DETERMINE DISTANCE FROM CONCRETE ROOF DECK TO BOTTOM OF PARAPET AND VERIFY MAXIMUM POSSIBLE TAPERED INSULATION SLOPE PRIOR TO PREPARING SHOP DRAWINGS - INVITE OWNER AND ARCHITECT TO THE SITE FOR CORE SAMPLE WORK







1 A4.1 **ROOF PLAN**
3/32" = 1'-0"

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Revisions
#	Date
2	2-1-2024

A4.1
ROOF PLAN

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PRODUCTS CENTER

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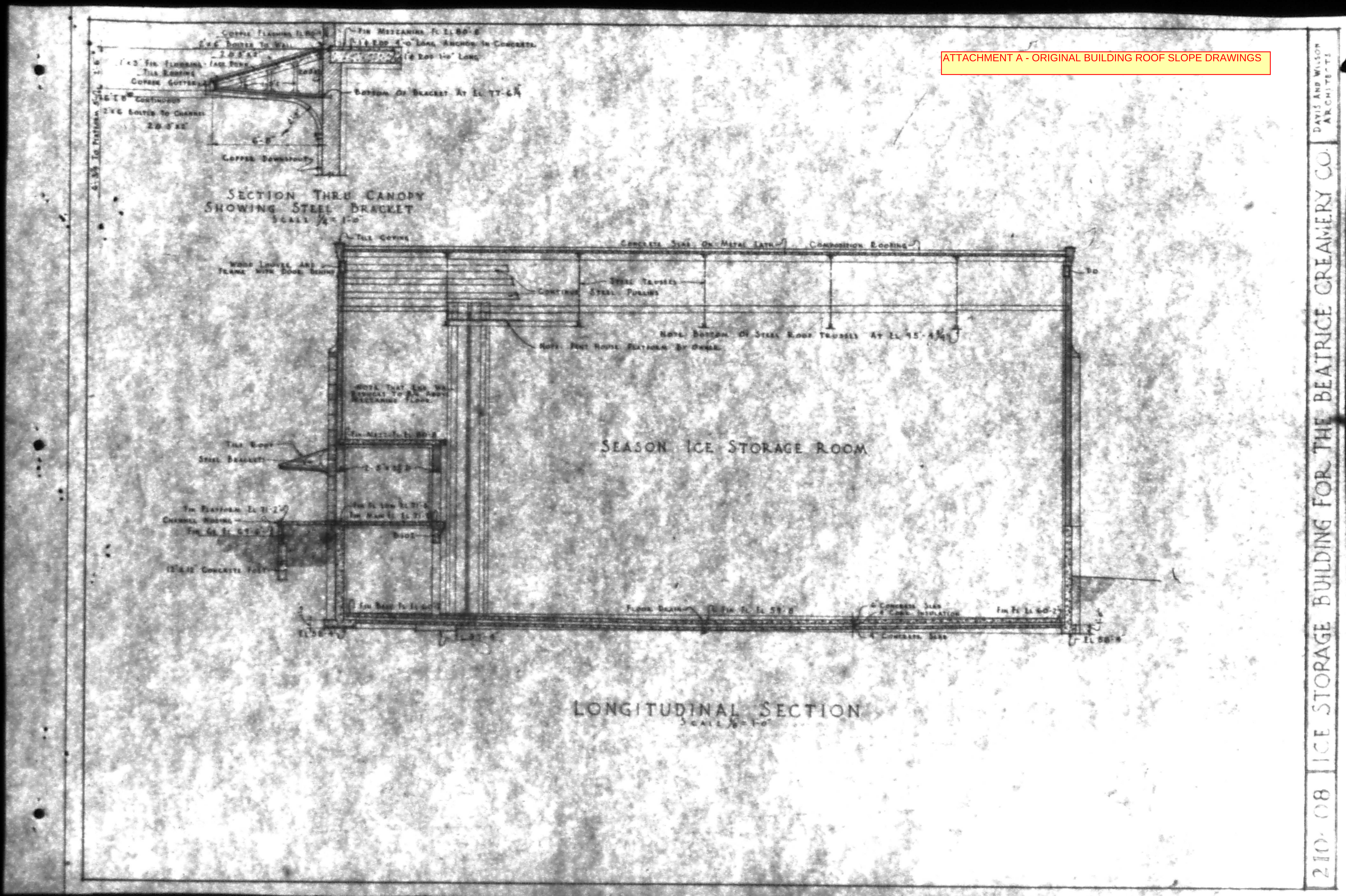
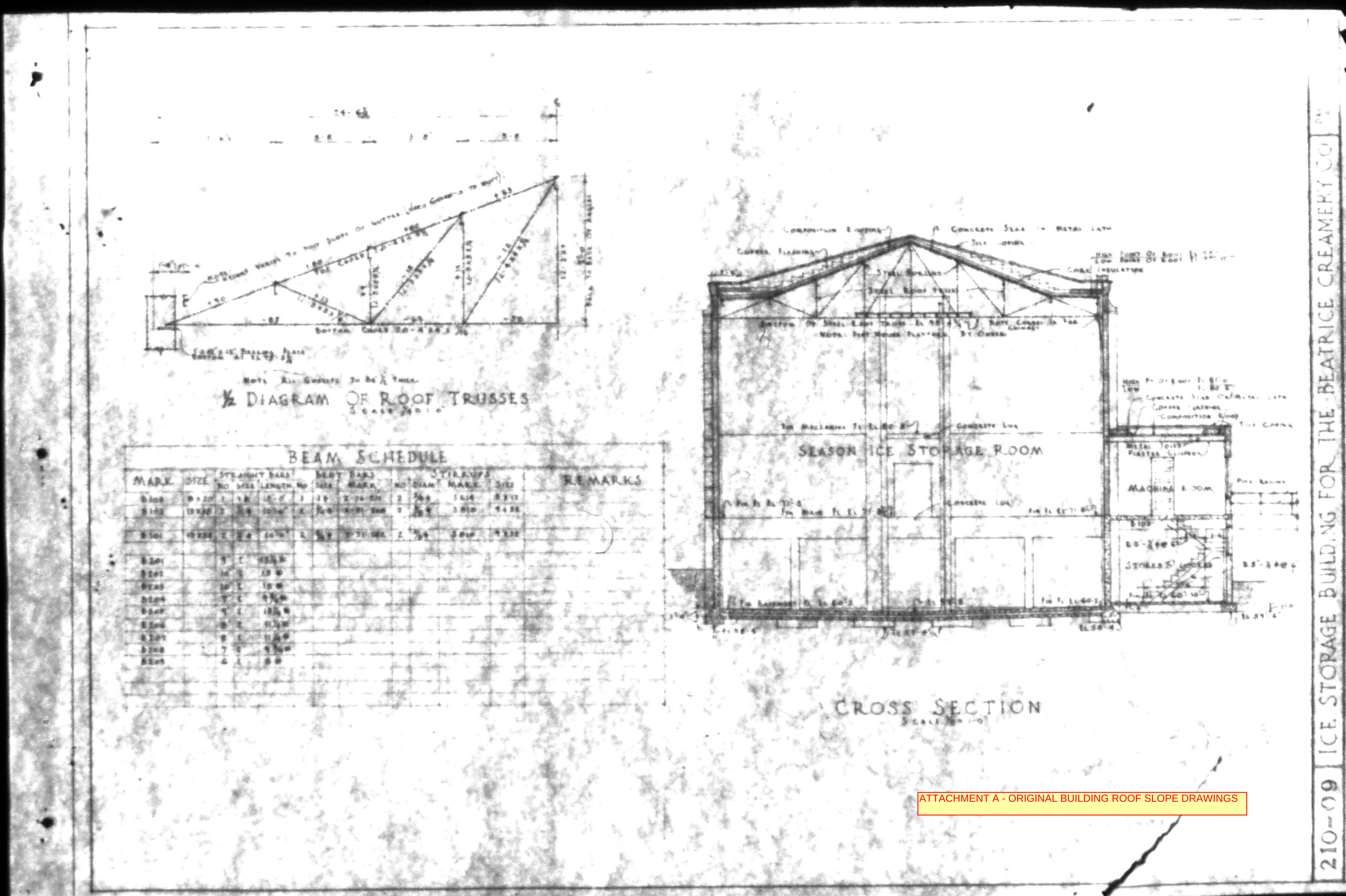
ATTACHMENT A - ORIGINAL BUILDING ROOF SLOPE DRAWINGS





ATTACHMENT A - ORIGINAL BUILDING ROOF SLOPE DRAWINGS

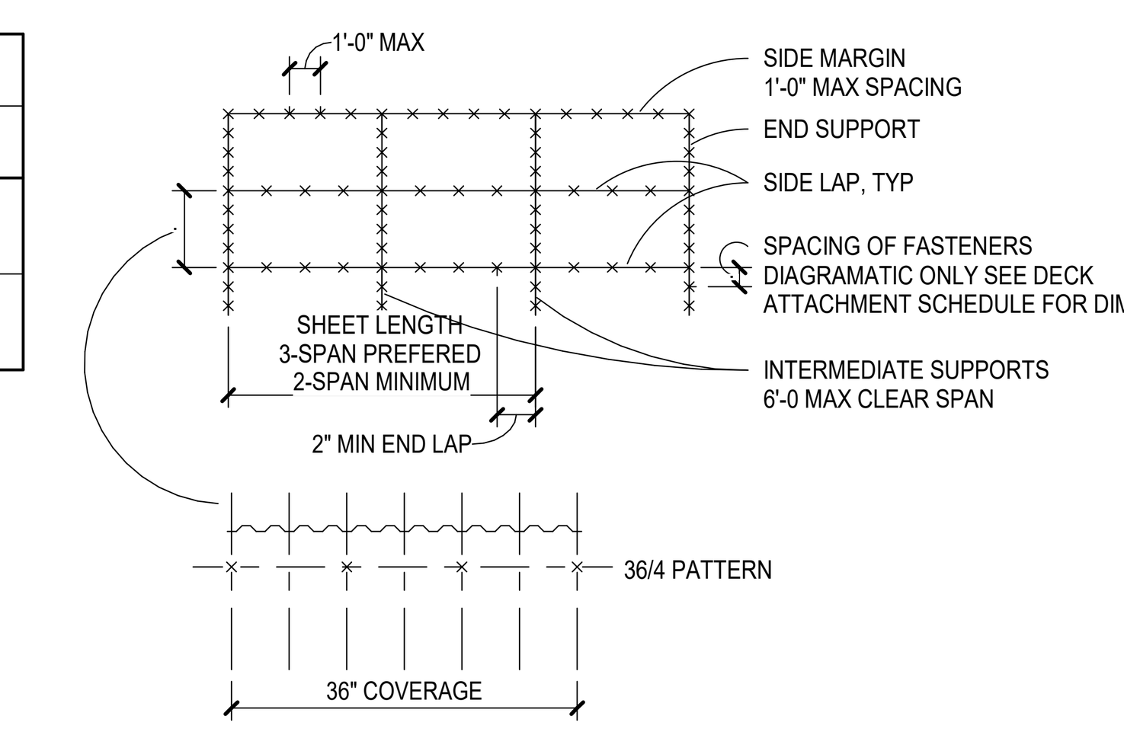
STANDARD STRUCTURAL ABBREVIATIONS

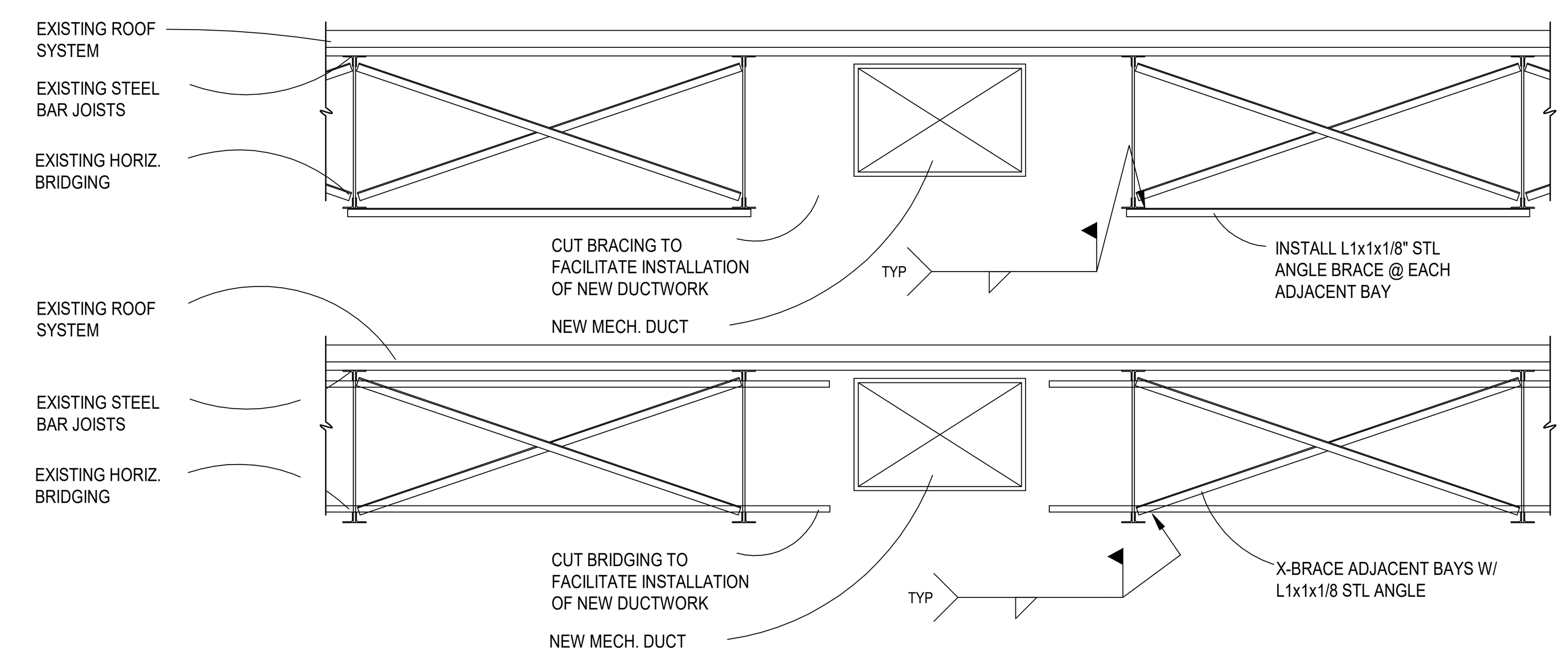
ACI	AM. CONC. INSTITUTE	HORIZ	HORIZONTAL
AISC	AM. INST. OF STL. CONST.	HS	HIGH STRENGTH
ALT	ALTERNATE	INTER	INTERMEDIATE
ASTM	AM. SOCIETY OF TESTING MATERIALS	INT	INTERIOR
AB	ANCHOR BOLT	JST	JOIST
ARCH	ARCHITECTURAL	JT	JOINT
@	AT	K	KIP = 1000 POUNDS
BAL	BALANCE	LLH	LONG LEG HORIZONTAL
BLDG	BUILDING	LLV	LONG LEG VERTICAL
BM	BEAM	MANUF	MANUFACTURER
BOP	BOTTOM OF PIER	MAS	MASONRY
BOT	BOTTOM	MAX	MAXIMUM
BRDG	BRIDGING	MECH	MECHANICAL
BRG	BEARING	MIN	MINIMUM
BTWN	BETWEEN	MISC	MISCELLANEOUS
C	CENTERLINE	MK	MARK
CIP	CAST IN PLACE	MO	MASONRY OPENING
CLR	CLEAR	NSNS	NONSHRINK NONSTAINING
CJ	CONTROL JOINT	NTS	NOT TO SCALE
CJP	COMPLETE JOINT PENETRATION	OC	ON CENTER
COL	COLUMN	OF	OUTSIDE FACE
CONC	CONCRETE	OPNG	OPENING
CONST	CONSTRUCTION	P/C	PRECAST
CONT	CONTINUOUS	PL	PLATE
CTR	CENTER	PLF	POUNDS PER LINEAL FOOT
DBA	DEFORMED BAR ANCHOR	PLYWD	PLYWOOD
DIA	DIAMETER	PROJ	PROJECTION
DIM	DIMENSION	P/S	PRESTRESSED
DN	DOWN	PSF	POUNDS PER SQUARE FOOT
DP	DRILLED PIER	PSI	POUNDS PER SQUARE INCH
DTL	DETAIL	P/T	POST TENSION
DWG	DRAWING	R	RADIUS
EA	EACH	RD	ROOF DRAIN
EBP	ELEVATION BOTTOM OF PIER	RE	REFERENCE
EE	EXTENDED ENDS	REV	REVISION
EF	EACH FACE	REINF	REINFORCEMENT
EL	ELEVATION	SCHED	SCHEDULE
EQ	EQUAL	SECT	SECTION
ETC	ELEVATION TOP OF CAP	SHT	SHEET
ETF	ELEVATION TOP OF FOOTING	SIM	SIMILAR
ETG	ELEVATION TOP OF GRADE BEAM	SJI	STEEL JOIST INSTITUTE
ETP	ELEVATION TOP OF PIER	SOG	SLAB ON GRADE
ETW	ELEVATION TOP OF WALL	SPA	SPACING
EW	EACH WAY	SPECS	SPECIFICATIONS
EXIST	EXISTING	STD	STANDARD
EXT	EXTERIOR	STIFF	STIFFENER
FC	FACE	STIR	STIRRUP
FF	FAR FACE	STL	STEEL
FIN	FINISH	T&B	TOP AND BOTTOM
FND	FOUNDATION	TOS	TOP OF STEEL
FTG	FOOTING	TOW	TOP OF WALL
GA	GAGE	TP	TOP OF PIER
GALV	GALVANIZE	TYP	TYPICAL
GYP	GYPSUM	UNO	UNLESS NOTED OTHERWISE
HAB	HEADED ANCHOR BOLT	VAR	VARIES
HAS	HEADED ANCHOR STUD	VEF	VERTICAL EACH FACE
HEF	HORIZONTAL EACH FACE	W/	WITH
HK	HOOK	WWF	WELDED WIRE FABRIC

STEEL DECK ATTACHMENT SCHEDULE

LOCATION	DECKING	FASTENER/APPLICATION	
		INTERMEDIATE & END SUPPORT	SIDELAP
MECHANICAL RM	.6"C 24 GA	36/4 PATTERN w/ #12 TEKS	(2) #10 TEKS PER SPAN

WELD DECK AT END SUPPORTS AND SIDE LAPS AT ALL DECK EDGES PER SCHEDULE





DUCTWORK SECTION @ EXISTING BRIDGING & BRACING

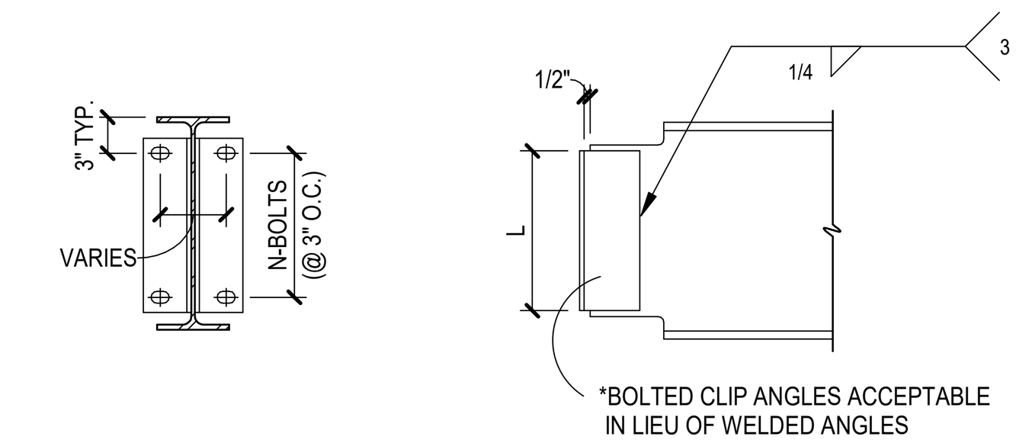
STANDARD BEAM CONNECTION SCHEDULE

BEAM SIZE	NO. OF 3/4" A325N BOLTS	SIZE OF DOUBLE ANGLES
W8, W10	2	L4x4x5/16
W12, W14	3	L4x4x5/16
W16	4	L4x4x5/16
W18, W21, W24	5	L4x4x5/16
W27, W30	6	L4x4x5/16

STANDARD SHEAR TAB CONNECTION SCHEDULE

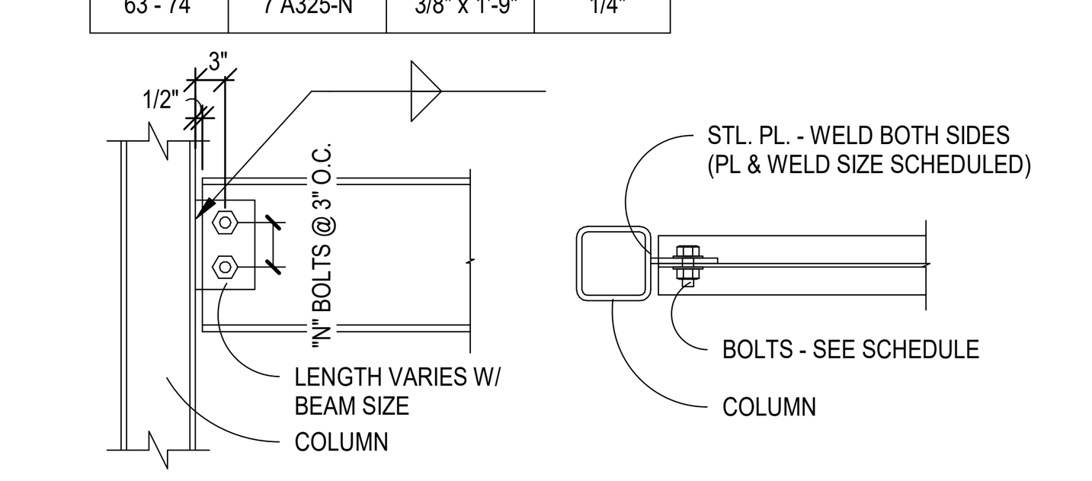
REACTION (KIPS)	NO. OF BOLTS 3/4" DIA.	PLATE	WELD
0 - 11	2 A325-N	3/8" x 6"	1/4"
12 - 22	3 A325-N	3/8" x 9"	1/4"
23 - 35	4 A325-N	3/8" x 1'-0"	1/4"
36 - 49	5 A325-N	3/8" x 1'-3"	1/4"
50 - 62	6 A325-N	3/8" x 1'-6"	1/4"
63 - 74	7 A325-N	3/8" x 1'-9"	1/4"

NOTE: STEEL FABRICATOR HAS THE OPTIN FOR STANDARD SINGLE THROUGH PLATE CONNECTIONS:
OPTION A: THROUGH PLATE CONNECTIONS AT ALL GIRDERS AND EDGE BEAM.
OPTION B: FACE MOUNT SHEAR TABS W/ 20% OF THE WELDS INSPECTED BY AN INDEPENDENT TESTING AGENCY W/ APPROPRIATE MEANS - EOR TO BE NOTIFIED IF THIS OPTIONS IN SELECTED.



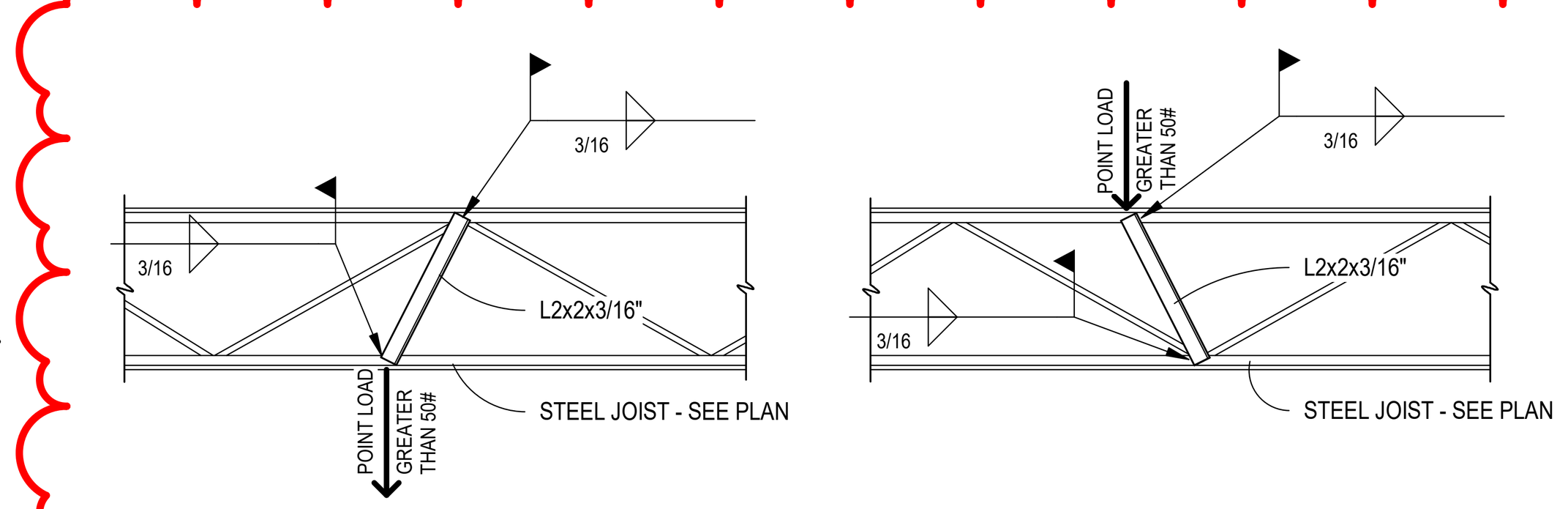
SECTION

ELEVATION

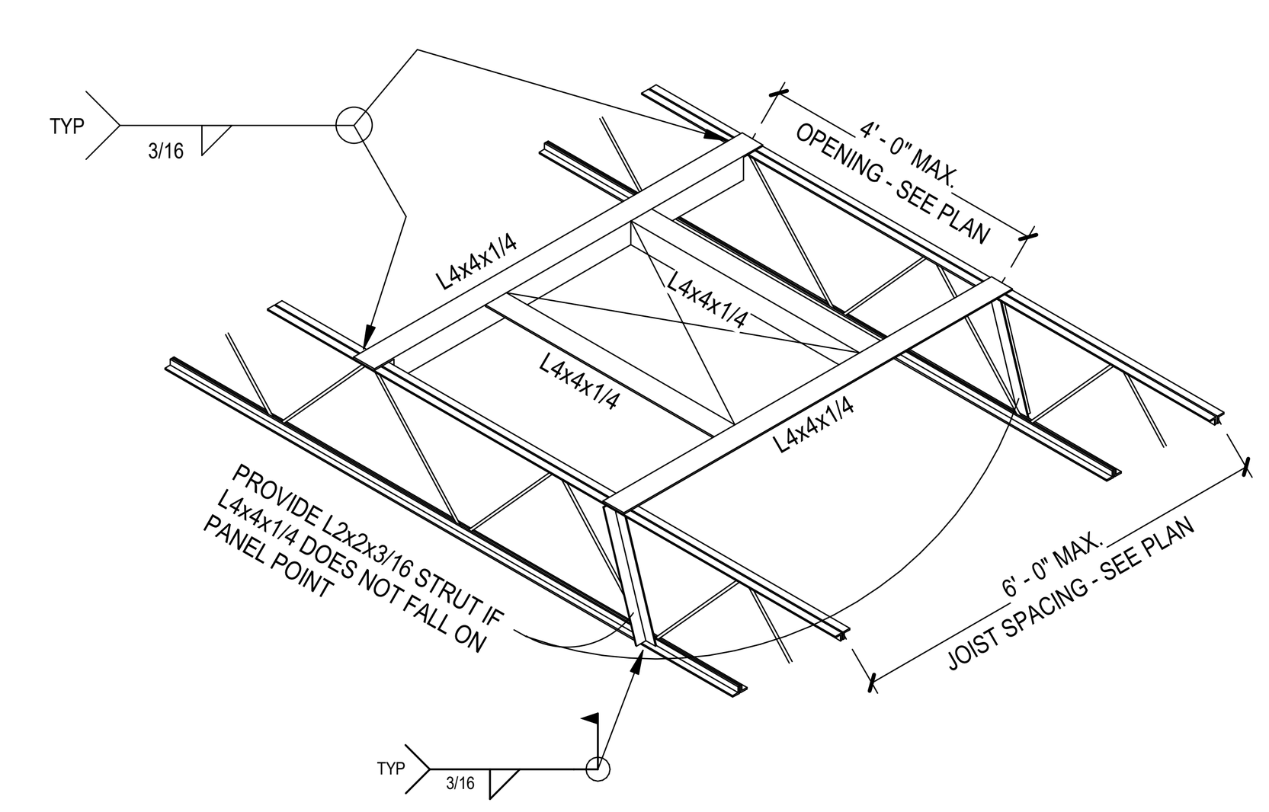


ELEVATION

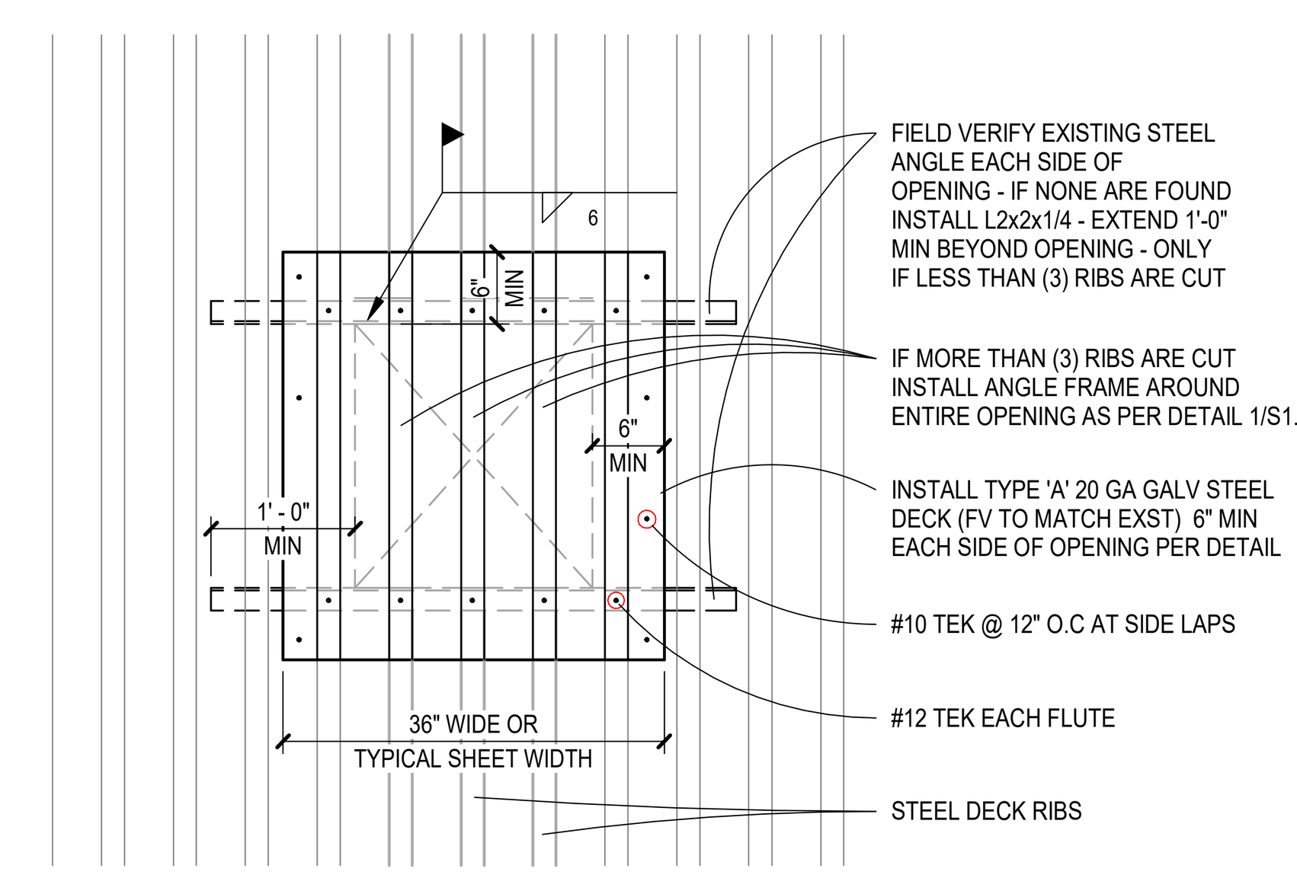
PLAN



3 | JOIST REINFORCING DETAIL
S1.2 | SCALE: 3/4" = 1'-0"



1 | METAL ROOF DECK FRAMED OPENING
S1.2 | SCALE: 3/8" = 1'-0"



2 | INFILL OF UNFRAMED OPNG IN STL DECK
S1.2 | SCALE: 3/4" = 1'-0"

1/29/2024 2:49:13 PM

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LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES
BOTTLERS BUILDING
Lincoln, NE

Project Number
23-357
Date
01-11-2024
Revisions
#	Date
2	01-29-2024

S1.2
SCHEDULES & TYPICAL DETAILS

ADDENDUM

Date:	01-31-2024	**Project:**	LPS Arts & Humanities Focus Program – Bottlers Building
To:	David Stirtz Architectural Design Associates	**Project No.:**	23042
		Addendum No.:	2
		CC:	

This addendum is issued by the Architect/Engineer to all known bidders before receipt of proposals. Bidders shall acknowledge the receipt of this Addendum on their bid form and all information and instructions given herein shall become a part of the Contract Documents.

CHANGES TO PROJECT DRAWINGS/SPECIFICATIONS

All work shall be in accordance with the terms, stipulations, and conditions of the original contract.

Mechanical

1. **P0.0 – PLUMBING GENERAL PROJECT INFORMATION**
   - A. GENERAL PROJECT NOTES
     - General Coordination, Add I.; ATTACHEMENT POINTS FOR PIPE, DUCT AND CONDUIT, WITH AN ATTACHEMENT POINT LOAD OF 50 LB OR GREATER, NEED TO BE LOCATED AT JOIST PANEL POINTS OR ELSE JOIST REINFORCING IS REQUIRED PER THE ATTACHED DETAIL 3 ON S1.2.

2. **P1.1 – OVERALL PLUMBING PLANS**
   - A. OVERALL PLUMBING PLAN
     - Grounds 120; 2" DCW pipe running east/west in room, Added Keynote #6: "SUPPORT PIPE FROM METAL BUILDING FRAME WHERE PIPING RUNS IN EAST/WEST DIRECTION."
     - Keynote #4, revise to read: ROUTE PIPING AS HIGH AS POSSIBLE THROUGH AREAS WITHOUT CEILING, COORDINATE EXACT LOCATION AND ROUTING WITH EXISTING CONDITIONS. ROUTE PIPING THROUGH JOIST SPACE WHERE POSSIBLE. CONTRACTOR TO VERIFY PIPE SUPPORT TYPE REQUIRED IN EACH SPACE.

3. **P2.1 - FIRE PROTECTION PLANS & DETAILS**
   - A. OVERALL FIRE PROTECTION & SITE PLUMIBNG PLAN (Renamed plan view)
     - Added existing 3"W running adjacent to new fire service piping. Existing 3" shown for information and coordination only, no changes to piping required.
     - Added existing 1"W located on site, serving water meter to be removed in LPS Special Ed. Office space (Mech. Rm 122M) in building (see PD1.1). Water Service piping on site to be abandoned. Contractor to cap piping at existing connection to city main.
     - Added existing 1"W located on site, serving water meter to be removed in LPS Environmental Storage space (Room 104) in building (see PD1.1). Water service piping on site to be abandoned. Contractor to field locate pipe route on site and cap at existing connection to city main.
     - Grounds 120; 4"F pipe running east/west in room, Added Keynote #11: "SUPPORT PIPE FROM METAL BUILDING FRAME WHERE PIPING RUNS IN EAST/WEST DIRECTION."
     - Grounds 120; 4"F pipe running north/south in room, added Keynote #12: "PIPE RUNNING IN NORTH/SOUTH DIRECTION MUST BE CENTERED BETWEEN 2 ROOF PURLINES AND MUST BE ATTACHED SO THE WEIGHT IS DISTRIBUTED EQUALLY BETWEEN THE 2 PURLINS. NO OTHER PIPING OR CONDUIT CAN BE ATTACHED TO THE 2 PURLINS."

- Keynote #3, revise to read: ROUTE PIPING AS HIGH AS POSSIBLE THROUGH AREAS WITHOUT CEILING, COORDINATE EXACT LOCATION AND ROUTING WITH EXISTING CONDITIONS. ROUTE PIPING THROUGH JOIST PACE WHERE POSSIBLE. CONTRACTOR TO VERIFY PIPE SUPPORT TYPE REQUIRED IN EACH SPACE.

4. P3.1 – PLUMBING SCHEDULES & DETAILS

A. D1 – FAUCET/HOSE BIBB DETAIL

- Revised backflow preventer note to read; "PROVIDE 1/2" RPZ BACKFLOW PREVENTER FOR HOSE BIBB AT AN EASILY ACCESSIBLE LOCATION. ALL BACKFLOW PREVENTERS TO BE TESTED PER AWWA M14 CROSS CONNECTION CONTROL AND LOCAL AUTHORITY BY A REGISTERED GRADE VI WATER OPERATOR AND PROVIDE SUMMARY REPORT AT PROJECT CLOSEOUT."

5. M0.0 – HVAC GENERAL PROJECT INFORMATION

A. GNERAL PROJECT NOTES

- General Coordination, Add I.; ATTACHEMENT POINTS FOR PIPE, DUCT AND CONDUIT, WITH AN ATTACHEMENT POINT LOAD OF 50 LB OR GREATER, NEED TO BE LOCATED AT JOIST PANEL POINTS OR ELSE JOIST REINFORCING IS REQUIRED PER THE ATTACHED DETAIL 3 ON S1.2.

6. M3.1 – HVAC SCHEDULES

A. DIFFUSERS, GRILLES, REGISTERS AND LOUVERS

- Deleted "Dryer Vent", item displayed erroneously.

Electrical

1. E0.0 – ELECTRICAL GENERAL PROJECT NOTES & SYMBOLS

A. ELECTRICAL GENERAL NOTES

- Added notes O and P to Project General Notes, addressing shut-down and switch-over of electrical gear and attachment points for pipes and conduit.
- Existing Conduit Used for Equipment Ground: If existing conduit to be reused is currently used as a ground path, contractor shall verify the continuity of the ground path. If the existing conduit fails a continuity test, a cost change will be issued to address the associated work to provide a complete ground path.

2. ED1.0 – OVERALL BUILDING DEMO – ELEC. EQUIPMENT PLANS – LOWER & MAIN LEVELS

A. OVERALL MAIN FLOOR PLAN – ELECTRICAL DEMO

- Added fiber line from existing data rack which feeds the LPS Special Ed (Area E – Existing data rack is in Special Ed Storage 122D). Field verify complete conduit run. Fiber line to be extended to new rack location and reconnected after relocation.

3. ED2.1 – ARTS & HUMANITIES SCHOOL, OT/PT, CONFERENCE & STORAGE DEMO POWER

A. ARTS & HUMANTIES SCHOOL DEMOLITION - POWER

- Added 'Existing FACP and fire alarm system to be removed' to floor plan note.
  - **Please note – fire alarm system will be removed in its entirety. New fire alarm system will not need to tie into existing system.**

4. **E1.0 – OVERALL BUILDING NEW – ELEC. EQUIPMENT PLANS – LOWER & MAIN LEVELS**
   A. OVERALL MAIN FLOOR PLAN – ELECTRICAL NEW
      - Removed fiber line between groundskeeping fiber box and new data rack for A&H area. New data rack in A&H is to be fed from relocated data rack for OT/PT.
      - Added fiber line from existing data rack which feeds the LPS Special Ed area. Field verify complete conduit run. Fiber line to be extended to new rack location and reconnected after relocation.

5. **E2.1 – ARTS & HUMANITIES SCHOOL, OT/PT, CONFERENCE & STORAGE POWER**
   A. ARTS & HUMANITIES SCHOOL – POWER
      - Added relocated data rack to floor plan. See sheet E1.0 for fiber routing. Added note to rack 'Location of relocated data rack. Power for rack is by LPS.'

6. **E4.1 – ELECTRICAL RISER DIAGRAMS & DETAILS**
   A. NEW ELECTRICAL RISER DIAGRAMS
      - Corrected riser diagram. New panel 'S' is to subfeed from panel AH2, not AH1.

7. **E5.1 – ELECTRICAL DETAILS**
   A. DATA RACK POWER RECEPTACLES
      - Removed all nomenclature related to Emergency Power from detail. Emergency power is not present at this facility.

8. **Electrical Specifications**
      - Added section 27 – 41 - 16 Audio Visual Systems and Equipment
      - Modified section 28 – 31 – 11 Digital Addressable Fire Alarm System
        -Deleted Section 3.01 B.

By:	**Date:**
Mike Wilkinson, Noel Murphy	01/31/2024

SECTION 27 41 16
AUDIO VISUAL SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Section 27 41 16.62 Integrated Audio-Video Systems and Equipment for Auditoriums.

1.02 RELATED DOCUMENTS

A. Section 26 Electrical

1.03 REFERENCES

A. See General and/or Special Conditions.

1.04 SUBMITTALS

A. See General and/or Special Conditions. Including:
   1. Manufacturer's data sheets
   2. Shop drawings showing a schematic of system design on a floor plan showing the quantity, type, and location of components, cabling, and accessories.
   3. Shop drawings of speaker mounting detail.
   4. Shop drawings of equipment racks showing component layout and intended cabling diagram.
   5. Shop drawings of cabling, conduit, or cable tray at racks and any conduit junction boxes, and on the amp room wall behind rack.

1.05 CLOSEOUT SUBMITTALS

A. See 1.4 modify documents to show as constructed.

1.06 QUALITY ASSURANCE

A. The installation contractor is responsible for any needed parts or equipment, even if not shown on the drawings and needed for the system to work as expected.

B. There may be elements that are required for the installation but are not specified that the contractor is expected to supply. This includes assorted connector, components and cables.

C. The contractor will notify the architect of any errors or missing components as soon as discovered, the installer will guarantee and warrant material for a period of one year from first beneficial use.

D. The contractor will supply the warranty card and manufacturer’s warranty statements in a separate folder, two copies, clearly labeled “LPS Bottlers Building, AV Equipment Warranties” with the statements in alphabetical order, by manufacturer. Deliver to Advanced Engineering Systems.

1.07 PRE-INSTALLATION MEETINGS

A. Contact the General Contractor.

1.08 DELIVERY STORAGE AND HANDLING

A. Coordinate with the General Contractor.

1.09 PROJECT CONDITIONS

A. See General and/or Special Conditions.

1.10 PROJECT SEQUENCING

A. Coordinate with the General Contractor.

PART 2 - PRODUCTS

2.01 SYSTEM COMPONENTS

A. See AV schematic on drawings for design intent.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Rack Layout

1. Separate signals types, wherever possible, bundle similar signal types together. Run electrical cords on one side of the rack and input output cabling on the other side of the rack. Take care to not create ground loops. Do not eliminate ground wire or low side signal wires in any cables. Dress out the wiring and cable tie or install wiring in raceway for all low voltage cabling.
2. Populate rack with the specified equipment, generally following the rack detail drawing. Fill all unused rack spaces. With 1 or 2 RU blank Plates.
3. Hang all the new speakers as specified. Verify the transformer taps and document for close out submittal documents.

B. Testing and pre-commissioning

1. Have a fully functional tested system ready for the Consultant to commission. The equipment should receive programming to verify communication and correct wiring.
2. Electrical interference is one of the great causes of problems. Electrical interference can be divided into three categories:
   a. Electrostatic interference
   b. Electromagnetic interference
   c. Common path interference
3. Test cables for shorts and faults before hookup.
4. Test all systems pay special attention to indicator of faulty wiring, ground and electrical interference. Correct the problem.
5. Carefully run a test tone through each speaker at low to moderate low volume to ensure functionality. Listen for any distortion of problems. if there are problems correct them.
6. Document for each speaker all tests of functionality. Note any problems encountered and steps taken to correct the problem.
7. Notify Consultant of any problems that you are not able to correct.
8. Be in communication with the Consultant before, part way through and after completion of Testing and pre-commissioning.

C. Commissioning

1. Have one of your main technical installers who has been involved with this project, on site when Consultant commissioning and tuning is scheduled. Consultant will supply a list of standard test equipment for this technician to have on hand. Technician will assist in commissioning and correct any problems. Expected to take one day, schedule two days.

D. Consultant will do an inspection of all parts of the installation and will compile a "Punch Out " list of items that need correcting. These items will need to be corrected.

END OF SECTION

SECTION 28 31 11

DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Heat detectors.
5. Notification appliances.
6. Magnetic door holders.
7. Remote annunciator.
8. Addressable interface device.
9. Digital alarm communicator transmitter.

B. Related Requirements:
1. Section 280513 "Conductors and Cables for Electronic Safety and Security" for cables and conductors for fire-alarm systems.

1.02 ACTION SUBMITTALS

A. General Submittal Requirements:
1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
2. Shop Drawings shall be prepared by persons with the following qualifications:
a. Trained and certified by manufacturer in fire-alarm system design.
b. NICET-certified, fire-alarm technician; Level III minimum.
c. Licensed or certified by authorities having jurisdiction.

B. Product Data: For each type of product, including furnished options and accessories.

C. Shop Drawings: For fire-alarm system.
1. Comply with recommendations and requirements in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
2. Include plans, elevations, sections, details, and attachments to other work.
3. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes, indicate termination locations and requirements, and distinguish between factory and field wiring.
4. Detail assembly and support requirements.
5. Include voltage drop calculations for notification-appliance circuits.
6. Include battery-size calculations.
7. Include input/output matrix.
8. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this Specification and in NFPA 72.
9. Include performance parameters and installation details for each detector.
10. Verify that each duct detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
11. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale; coordinate location of duct smoke detectors and access to them.
a. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators.

b. Show field wiring required for HVAC unit shutdown on alarm.
c. Locate detectors according to manufacturer's written recommendations.

12. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits and point-to-point wiring diagrams.

D. Delegated-Design Submittal: For notification appliances and smoke and heat detectors, in addition to submittals listed above, indicate compliance with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Drawings showing the location of each notification appliance and smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the device.
2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72. Calculate spacing and intensities for strobe signals and sound-pressure levels for audible appliances.
3. Indicate audible appliances required to produce square wave signal per NFPA 72.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Data: Certificates, for fire-alarm control unit, accessories, and components, from manufacturer.

C. Field quality-control reports.

D. Sample warranty.

1.04 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
   a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
   b. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
   c. Complete wiring diagrams showing connections between all devices and equipment.
   d. Riser diagram.
   e. Record copy of site-specific software.
   f. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:
      1) Equipment tested.
      2) Frequency of testing of installed components.
      3) Frequency of inspection of installed components.
      4) Requirements and recommendations related to results of maintenance.
      5) Manufacturer's user training manuals.
   g. Manufacturer's required maintenance related to system warranty requirements.
   h. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.

B. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: On magnetic media or compact disk, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level III technician.

C. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL (nationally recognized testing laboratory).

D. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

E. NFPA Certification: Obtain certification according to NFPA 72 in the form of a placard by an FM Global-approved alarm company.

F. NFPA Certification: Obtain certification according to NFPA 72 by.

1.06 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.
1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Source Limitations for Fire-Alarm System and Components: Provide system manufacturer's certification that all components provided have been tested as, and will operate as, a system.

B. Noncoded, UL-certified addressable system, with multiplexed signal transmission and speaker/strobe evacuation.

C. Automatic sensitivity control of certain smoke detectors.

D. All components provided shall be listed for use with the selected system.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.02 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices:
1. Manual stations.
2. Heat detectors.
3. Smoke detectors.
4. Duct smoke detectors.
5. Carbon monoxide detectors.
6. Automatic sprinkler system water flow.
7. Fire-extinguishing system operation.
8. Fire standpipe system.
9. Dry system pressure flow switch.

B. Fire-alarm signal shall initiate the following actions:
1. Continuously operate alarm notification appliances.

2. Identify alarm and specific initiating device at fire-alarm control unit.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Unlock electric door locks in designated egress paths.
5. Release fire and smoke doors held open by magnetic door holders.
6. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
7. Close smoke dampers in air ducts of designated air-conditioning duct systems.
8. Activate preaction system.
9. Recall elevators to primary or alternate recall floors.
10. Activate elevator power shunt trip.
11. Activate emergency lighting control.
12. Activate emergency shutoffs for gas and fuel supplies.
13. Record events in the system memory.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:
1. Valve supervisory switch.
2. High- or low-air-pressure switch of a dry-pipe or preaction sprinkler system.
3. Elevator shunt-trip supervision.
4. Loss of communication with any panel on the network.

D. System trouble signal initiation shall be by one or more of the following devices and actions:
1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of communication with any addressable sensor, input module, relay, control module, or remote annunciator.
4. Loss of primary power at fire-alarm control unit.
5. Ground or a single break in internal circuits of fire-alarm control unit.
6. Abnormal ac voltage at fire-alarm control unit.
7. Break in standby battery circuitry.
8. Failure of battery charging.
9. Abnormal position of any switch at fire-alarm control unit or annunciator.

E. System Supervisory Signal Actions:
1. Initiate notification appliances.
2. Identify specific device initiating the event at fire-alarm control unit and remote annunciators.
3. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.

2.03 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

2.04 FIRE-ALARM CONTROL UNIT

A. General Requirements for Fire-Alarm Control Unit:
1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864.
2. Addressable Initiation Device Circuits: The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliance by building communication zone.
3. Addressable Control Circuits for Operation of Notification Appliances and Mechanical Equipment: The FACP shall be listed for releasing service.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.
   1. Annunciator and Display: Liquid-crystal type, 80 characters, minimum.
   2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

C. Initiating-Device, Notification-Appliance, and Signaling-Line Circuits:
   1. Pathway Class Designations: NFPA 72, Class B.
   2. Pathway Survivability: Level 0.

D. Notification-Appliance Circuit:
   1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.
   2. Where notification appliances provide signals to sleeping areas, the alarm signal shall be a 520-Hz square wave with an intensity 15 dB above the average ambient sound level or 5 dB above the maximum sound level, or at least 75 dBA, whichever is greater, measured at the pillow.
   3. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

E. Elevator Recall:
   1. Elevator recall shall be initiated only by one of the following alarm-initiating devices:
      a. Elevator lobby detectors except the lobby detector on the designated floor.
      b. Smoke detector in elevator machine room.
      c. Smoke detectors in elevator hoistway.
   2. Elevator controller shall be programmed to move the cars to the alternate recall floor if lobby detectors located on the designated recall floors are activated.
   3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.
      a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

F. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke-barrier walls shall be connected to fire-alarm system.

G. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory.

H. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

I. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals shall be powered by 24-V dc source.
   1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

J. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

2.05 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38.

1. Single-action mechanism, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key- or wrench-operated switch.

2.06 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:
1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be two or four wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type, indicating detector has operated.
7. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition.
   a. Rate-of-rise temperature characteristic of combination smoke- and heat-detection units shall be selectable at fire-alarm control unit for 15 or 20 deg F per minute.
   b. Fixed-temperature sensing characteristic of combination smoke- and heat-detection units shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F.
   c. Multiple levels of detection sensitivity for each sensor.
   d. Sensitivity levels based on time of day.

B. Photoelectric Smoke Detectors:
1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
   a. Primary status.
   b. Device type.
   c. Present average value.
   d. Present sensitivity selected.
   e. Sensor range (normal, dirty, etc.).

C. Ionization Smoke Detector:
1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
   a. Primary status.
   b. Device type.
   c. Present average value.
   d. Present sensitivity selected.
   e. Sensor range (normal, dirty, etc.).

D. Duct Smoke Detectors: Photoelectric type complying with UL 268A.
1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

a. Primary status.
b. Device type.
c. Present average value.
d. Present sensitivity selected.
e. Sensor range (normal, dirty, etc.).

3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector for smoke detection in HVAC system ducts.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Fully programmable relay rated to interrupt fan motor-control circuit.

2.07 CARBON MONOXIDE DETECTORS

A. General: Carbon monoxide detector listed for connection to fire-alarm system.
1. Mounting: Adapter plate for outlet box mounting.
2. Testable by introducing test carbon monoxide into the sensing cell.
3. Detector shall provide alarm contacts and trouble contacts.
4. Detector shall send trouble alarm when nearing end-of-life, power supply problems, or internal faults.
5. Comply with UL 2075.
6. Locate, mount, and wire according to manufacturer's written instructions.
7. Provide means for addressable connection to fire-alarm system.
8. Test button simulates an alarm condition.

2.08 HEAT DETECTORS

A. General Requirements for Heat Detectors: Comply with UL 521.
1. Temperature sensors shall test for and communicate the sensitivity range of the device.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature or a rate of rise.
1. Mounting: Adapter plate for outlet box mounting.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

C. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature.
1. Mounting: Adapter plate for outlet box mounting.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.09 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.
1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

B. Chimes: Vibrating type.

C. Voice/Tone Notification Appliances:
1. Comply with UL 1480.
2. Speakers for Voice Notification: Locate speakers for voice notification to provide the intelligibility requirements of the "Notification Appliances" and "Emergency Communications Systems" chapters in NFPA 72.
3. High-Range Units: Rated 2 to 15 W.

4. Low-Range Units: Rated 1 to 2 W.
5. Speakers, Low-Level Output: Vibrating type, 75-dBA minimum rated output.
6. Speakers, High-Level Output: Vibrating type, 81-dBA minimum rated output.
7. Mounting: Flush, semirecessed, or surface mounted and bidirectional.
8. Matching Transformers: Tap range matched to acoustical environment of speaker location.

D. Mounting Faceplate and Device: Factory finished, white. Verify color with owner.

E. Speakers, Low-Level Output: Vibrating type, 75-dBA minimum rated output.

F. Speakers, High-Level Output: Vibrating type, 81-dBA minimum rated output.

G. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.
1. Mounting: Wall mounted unless otherwise indicated.
2. Flashing shall be in a temporal pattern, synchronized with other units.
3. Strobe Leads: Factory connected to screw terminals.
4. Mounting Faceplate: Factory finished, red.

2.10 MAGNETIC DOOR HOLDERS

A. Description: Units are equipped for wall or floor mounting as indicated and are complete with matching doorplate.
1. Electromagnets: Require no more than 3 W to develop 25-lbf holding force.
2. Wall-Mounted Units: Flush mounted unless otherwise indicated.
3. Rating: 24-V ac or dc.
4. Rating: 120-V ac.

B. Material and Finish: Match door hardware.

2.11 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.
1. Mounting: Flush or Surface cabinet, NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.12 ADDRESSABLE INTERFACE DEVICE

A. General:
1. Include address-setting means on the module.
2. Store an internal identifying code for control panel use to identify the module type.
3. Listed for controlling HVAC fan motor controllers.

B. Monitor Module: Microelectronic module providing a system address for alarm-initiating devices for wired applications with normally open contacts.

C. Integral Relay: Capable of providing a direct signal to elevator controller to initiate elevator recall.
1. Allow the control panel to switch the relay contacts on command.
2. Have a minimum of two normally open and two normally closed contacts available for field wiring.

D. Control Module:
1. Operate notification devices.
2. Operate solenoids for use in sprinkler service.

2.13 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632.

B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.

C. Local functions and display at the digital alarm communicator transmitter shall include the following:
   1. Verification that both telephone lines are available.
   2. Programming device.
   3. LED display.
   4. Manual test report function and manual transmission clear indication.
   5. Communications failure with the central station or fire-alarm control unit.

D. Digital data transmission shall include the following:
   1. Address of the alarm-initiating device.
   2. Address of the supervisory signal.
   3. Address of the trouble-initiating device.
   4. Loss of ac supply.
   5. Loss of power.
   6. Low battery.
   7. Abnormal test signal.
   8. Communication bus failure.

E. Secondary Power: Integral rechargeable battery and automatic charger.

F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

PART 3 - EXECUTION

3.01 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

B. Equipment Mounting: Install fire-alarm control unit on finished floor.
   1. Comply with requirements for seismic-restraint devices specified in Section 270548.16 "Seismic Controls for Communications Systems."

C. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.
   1. Comply with requirements for seismic-restraint devices specified in Section 270548.16 "Seismic Controls for Communications Systems."

D. Manual Fire-Alarm Boxes:
   1. Install manual fire-alarm box in the normal path of egress within 60 inches of the exit doorway.
   2. Mount manual fire-alarm box on a background of a contrasting color.
   3. The operable part of manual fire-alarm box shall be between 42 inches and 48 inches above floor level. All devices shall be mounted at the same height unless otherwise indicated.

E. Smoke- or Heat-Detector Spacing: Comply with NFPA 72.

F. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct. Tubes more than 36 inches long shall be supported at both ends.

G. Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location. Do not install smoke detectors in sprinklered elevator shafts.

H. Single-Station Smoke Detectors: Where more than one smoke alarm is installed within a dwelling or suite, they shall be connected so that the operation of any smoke alarm causes the alarm in all smoke alarms to sound.

I. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

J. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.

K. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.

L. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.02 PATHWAYS

A. Pathways above recessed ceilings and in nonaccessible locations may be routed exposed.
   1. Exposed pathways located less than 96 inches above the floor shall be installed in EMT.

B. Pathways shall be installed in EMT.

C. Exposed EMT shall be painted red enamel.

3.03 CONNECTIONS

A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Section 087100 "Door Hardware." Connect hardware and devices to fire-alarm system.
   1. Verify that hardware and devices are listed for use with installed fire-alarm system before making connections.

B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
   1. Smoke dampers in air ducts of designated HVAC duct systems.
   2. Magnetically held-open doors.
   3. Electronically locked doors and access gates.
   4. Alarm-initiating connection to elevator recall system and components.
   5. Alarm-initiating connection to activate emergency lighting control.
   6. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
   7. Supervisory connections at valve supervisory switches.
   8. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
   9. Supervisory connections at elevator shunt-trip breaker.
   10. Supervisory connections at fire-extinguisher locations.

3.04 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 270553 "Identification for Communications Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.05 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.06 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Visual Inspection: Conduct visual inspection prior to testing.
    a. Inspection shall be based on completed record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter.
    b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

D. Fire-alarm system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

F. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

G. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.07 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.08 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION

MECHANICAL ABBREVIATIONS

(E)	EXISTING
(R)	RELOCATED
(D)	DEMOLISHED
ACH	AIR CHANGES PER HOUR
ADJ	ADJACENT, ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURE
ASHRAE	AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BFP	BACKFLOW PREVENTER
BJS	BELOW JOIST SPACE
BLDG	BUILDING
BTU	BRITISH THERMAL UNITS
BTUH	BRITISH THERMAL UNITS PER HOUR
CAP	CAPACITY
CFM	CUBIC FEET PER MINUTE
CLG	COOLING
CUFT	CUBIC FEET
DB	DRY BULB
DCW	DOMESTIC COLD WATER
DECO	DOUBLE EXTERIOR CLEANOUT
DEG, °	DEGREE(S)
DEMO	DEMOLITION
DFU	DRAINAGE FIXTURE UNITS
DIA, ø	DIAMETER
DHW	DOMESTIC HOT WATER
DN	DOWN
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
ECO	EXTERIOR CLEANOUT
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
F	FAHRENHEIT
FDC	FIRE DEPARTMENT CONNECTION
FPM	FEET PER MINUTE
FSC	FOOD SERVICE CONTRACTOR
FT	FOOT, FEET
FUT	FUTURE
GAL	GALLON(S)
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HTG	HEATING
HVAC	HEATING, VENTILATION, & AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IFC	INTERNATIONAL FIRE CODE
IJS	IN JOIST SPACE
IN	INCH(ES)
IMC	INTERNATIONAL MECHANICAL CODE
IPC	INTERNATIONAL PLUMBING CODE
INSUL	INSULATION
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU'S PER HOUR
MECH	MECHANICAL
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOP	MAXIMUM OVER CURRENT PROTECTION
MTL	METAL
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OPNG	OPENING
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH, ø	PHASE
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
QTY	QUANTITY
RCP	REFLECTED CEILING PLAN
RECIRC	RECIRCULATION
REQD	REQUIRED
REV	REVISION
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
SCHED	SCHEDULE
SENS	SENSIBLE
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SPEC	SPECIFICATION
SQFT, FTý	SQUARE FEET
STD	STANDARD
SURF	SURFACE
SUSP	SUSPENDED
TD	TEMPERATURE DIFFERENTIAL
TEMP	TEMPERATURE
TJS	THROUGH JOIST SPACE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UF	UNDER FLOOR
UL	UNDERWRITERS LABORATORIES
UMC	UNIFORM MECHANICAL CODE
UPC	UNIFORM PLUMBING CODE
W	WATTS
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WGHT	WEIGHT
WPD	WATER PRESSURE DROP
WSFU	WATER SUPPLY FIXTURE UNITS
V	VOLT
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF

PLUMBING SYMBOLS

(#)	KEY NOTE
XX/X	CROSS SECTION INDICATOR
XX/X	D = DETAIL DRAWING P = PARTIAL DRAWING R = RISER DIAGRAM S = CROSS SECTION DRAWING
	NEW TO EXISTING CONNECTION
X" (E)	EXISTING PIPE ABOVE GRADE
X" (E)	EXISTING PIPE BELOW GRADE
	DEMOLITION HATCH
	PIPING BREAK MARK
	PIPING ABOVE GROUND/FLOOR
	PIPING BELOW GROUND/FLOOR
W	WATER SERVICE PIPING
SAN	SANITARY SEWER PIPING
F	FIRE SERVICE PIPING
	DOMESTIC COLD WATER PIPING
	DOMESTIC HOT WATER PIPING
	DOMESTIC HOT WATER CIRCULATING PIPING
	BELOW GRADE SANITARY WASTE PIPING
	ABOVE GRADE SANITARY WASTE PIPING
V	VENT PIPING
G	GAS PIPING
	FLOW ARROW
	WASTE PIPING CONNECTION
	WASTE PIPING ELBOW 90ø
	WASTE PIPING ELBOWS UP AND DOWN
	PIPING ELBOWS 45° AND 90°
	PIPING ELBOWS UP AND DOWN
	PIPING TEES UP, DOWN AND STRAIGHT
	BALL VALVE
	GATE VALVE
	BUTTERFLY VALVE
	CALIBRATED BALANCE VALVE
	UNION
	CHECK VALVE
	STRAINER
	VALVE IN VERTICAL PIPING
	WALL HYDRANT
	BELOW AND ABOVE GRADE CLEAN OUT
	FLOOR DRAIN AND COVER
	SINK P-TRAP
	BELOW AND ABOVE GRADE P-TRAP
	ROOF DRAIN (REGULAR AND OVERFLOW)
X-X	EQUIPMENT DESIGNATION

GENERAL PROJECT NOTES

GENERAL NOTES

A. ALL PIPING SHALL BE CUT TO LENGTH AND REAMED TO FULL INSIDE DIAMETER WITH THE PROPER TOOLS, SPRINGING OR RUBBING OF PIPES ARE NOT ALLOWED.

B. NO BUSHINGS ARE BE ALLOWED, ONLY ECCENTRIC FITTINGS ARE ALLOWED.

C. ALL PIPE PENETRATIONS THROUGH; WALLS, CEILINGS, FLOORS, AND STRUCTURE SHALL BE COMPLETELY SEALED. FIRE CAULK SHALL BE USED IN FIRE RATED WALLS AND ESCUTCHEONS (LARGE ENOUGH TO COVER OPENING IN WALL) SHALL BE USED IN ALL EXPOSED LOCATIONS (MECHANICAL ROOMS AND JANITORS CLOSET NOT INCLUDED).

D. CONTRACTOR IS RESPONSIBLE FOR ALL TRANSITIONS, ELBOWS, OFFSETS IN PIPING TO MAKE SYSTEMS FIT WITHIN SPACE AND STRUCTURE PROVIDED.

E. ALL PIPE, FIXTURES, AND EQUIPMENT (INSTALLED AND NOT INSTALLED) SHALL BE PROTECTED DURING CONSTRUCTION AND CLEANED BEFORE USE. PIPING SHALL BE COVERED AND HAVE THE ENDS TAPED SHUT WHILE BEING STORED.

F. NO PIPING EXCLUDING PLUMBING VENT AND GAS PIPING SHALL BE INSTALLED IN AN UNCONDITIONED SPACE.

G. THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, CITY, STATE AND NATIONAL CODES, LAWS, ACTS AND ORDINANCES AND ALL AUTHORITIES HAVING JURISDICTION, THE OWNERS INSURANCE COMPANY REQUIREMENTS, UTILITY COMPANY REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS OF GOOD PRACTICE AND SAFETY, THE MANUFACTURER'S STRICTEST REQUIREMENTS AND RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.

H. DRAWINGS ARE LARGELY SCHEMATIC IN NATURE. THOUGH A LOT OF DETAILS MAY BE SHOWN THEY ARE NOT INTENDED TO SHOW EVERY DETAIL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL OTHER TRADES AND EXISTING/SITE CONDITIONS TO PROVIDE A FULLY FUNCTIONAL SYSTEM PER THE INTENT OF DESIGN. ALL REQUIRED PIPING, SUPPORTS AND DUCTS SHALL BE PROVIDED FOR A FULLY FUNCTIONAL SYSTEM PER THE DESIGN INTENT. IF ROUTING IS NOT SHOWN ON THE PLANS, COORDINATE WITH THE ENGINEER PRIOR TO BIDDING.

I. IF ANY CONFLICTING INFORMATION IS PROVIDED ON THE DRAWINGS, THE MORE STRINGENT/EXPENSIVE SHOULD BE BID UNLESS A ADDENDUM CAN BE ISSUED IN TIME TO CORRECT THE SITUATION.

GENERAL COORDINATION

A. ALL WORK SHALL BE COORDINATED BETWEEN TRADES BEFORE ANY CONSTRUCTION/ FABRICATING BEGINS IN A "KICK-OFF" MEETING. CONTACT ENGINEER/ ARCHITECT FOR QUESTIONS.

B. PHASING OF PROJECT SHALL BE CLOSELY COORDINATED WITH THE GENERAL CONTRACTOR AND ARCHITECTURAL PLANS. ANY ADDITIONAL DAMPER, VALVE, OR ACCESSORY SHALL BE PROVIDED AT NO ADDITIONAL COST. EACH PHASE SHALL BE 100% COMPLETE WHEN TURNED OVER TO THE OWNER.

C. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE WITH THE ELECTRICAL CONTRACTOR ON ALL ELECTRICAL REQUIREMENTS FOR THE EQUIPMENT PRIOR TO ORDERING. ALL REQUIREMENT CHANGES SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR / SUPPLIER AT NO ADDITIONAL COST TO THE PROJECT.

D. NO PIPING SHALL BE INSTALLED ABOVE ANY ELECTRICAL PANEL.

E. EXACT LOCATION OF ALL PIPING AND SUPPORTS SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, CEILING GRID, HVAC, PLUMBING FIXTURES. COORDINATE LOCATION WITH FIRE SPRINKLER PIPING IF APPLICABLE. SEE ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR COORDINATION.

F. EXACT ROUTING OF ALL PIPING THROUGH THE ROOF/CEILING SHALL BE COORDINATED WITH STRUCTURE. VERIFY LOCATION WITH GC/ ARCHITECT PRIOR TO CUTTING HOLES.

G. WHEN ALL WORK IS COMPLETED NO MATERIALS SHALL BE LEFT ON SITE UNLESS SPECIFICALLY REQUESTED BY THE OWNER. ALL MATERIALS TO BE DISPOSED OF PROPERLY.

H. CONTRACTOR TO FIRE SEAL WALLS, CEILINGS AS REQUIRED AND MAINTAIN ALL FIRE RATINGS.

2

I. ATTACHEMENT POINTS FOR PIPE, DUCT AND CONDUIT, WITH AN ATTACHEMENT POINT LOAD OF 50 LB OR GREATER, NEED TO BE LOCATED AT JOIST PANEL POINTS OR ELSE JOIST REINFORCING IS REQUIRED PER THE ATTACHED DETAIL 3 ON S1.2.

PRIOR APPROVALS AND FILE SHARING

A. ALL REQUESTED REVIT MODELS (.RVT) SHALL BE PROVIDED AT A CHARGE OF $500. PRIOR TO TRANSMISSION OF FILES, THE REQUESTIING PARTY MUST SIGN AND RETURN "DOCUMENT DISCLAIMER" TO AES.

B. ALL SHEETS REQUESTED IN CAD (.DWG) FORMAT SHALL BE PROVIDED AT A CHARGE OF $25/SHEET (MINIMUM $250). FOR FIRE ALARM AND FIRE SPRINKLER CONTRACTORS. ALL OTHERS REQUESTING CAD FILES SHALL BE CHARGED $50/SHEET (MINIMUM $250). PRIOR TO TRANSMISSION OF FILES, THE REQUESTING PARTY MUST SIGN AND RETURN "DOCUMENT DISCLAIMER" TO AES.

C. MECHANICAL, ELECTRICAL AND PLUMBING SUBSTITUTION PRODUCTS MUST BE ON LPS APPROVED LIST.

D. PROPOSED SUBSTITUTIONS OF MECHANICAL, ELECTRICAL AND PLUMBING PRODUCTS MAY BE SUBMITTED FOR REVIEW DURING THE SHOP DRAWING/ PRODUCT DATA SUBMITTAL STAGE.

E. PROPOSED SUBSTITUTIONS SHALL BE EQUAL TO OR SUPERIOR IN ALL RESPECTS TO THE SPECIFIED PRODUCT.

F. PROPOSED SUBSTITUTIONS SHALL HAVE THE SAME WARRANTY AS THE SPECIFIED PRODUCT.

G. PROPOSED SUBSTITUTIONS WILL HAVE NO ADVERSE EFFECT ON THE OTHER TRADES.

H. PROPOSED SUBSTITUTION WILL NOT AFFECT DIMENSIONS AND FUNCTIONAL CLEARANCES.

I. PRODUCT DATA AND SHOP DRAWING FOR PROPOSED SUBSTITUTIONS MUST BE PROJECT SPECIFIC AND INCLUDING ALL COMPONENTS IDENTIFIED FOR COMPARISON TO THE ORIGINAL PRODUCT.

J. THE BURDEN OF PROOF OF THE EQUIVALENCE ON THE PROPOSED SUBSTITUTION IS ON THE PROPOSER.

EQUIPMENT

A. ALL EQUIPMENT SHALL BE SUPPORTED BY: A HOUSEKEEPING PAD, METAL STAND, OR SUPPORTED FROM THE STRUCTURE. NO EQUIPMENT SHALL SIT DIRECTLY ON THE FLOOR.

B. SHUT-OFF VALVES SHALL BE PROVIDED IN HOT AND/OR COLD WATER PIPING AT CONNECTION TO EQUIPMENT AT AN ACCESSIBLE LOCATION.

C. PROVIDE APPROVED MANUFACTURER'S ACCESS DOOR IN ALL HARD CEILINGS ADJACENT TO ANY EQUIPMENT/CONTROLS THAT IS NOT ACCESSIBLE FROM BELOW BY ITSELF. COORDINATE FINISH COLOR WITH ARCHITECT PRIOR TO ORDERING.

D. THE MINIMUM MANUFACTURER RECOMMENDED CLEARANCE OR 48" CLEARANCE, WHICHEVER IS GREATER MUST BE MAINTAINED FOR ALL EQUIPMENT/VALVING NEEDING ACCESS. ALL ACCESS PANELS SHALL HAVE ADEQUATE CLEARANCE. CONSULT THE ENGINEER IF THIS IS NOT POSSIBLE.

E. IT IS THE RESPONSIBILITY OF THE MANUFACTURER / SUPPLIER TO MAKE SURE ALL UNITS FIT IN THE REQUIRED SPACE INTENDED WITH RECOMMENDED MAINTENANCE AND ACCESS CLEARANCES. ANY CHANGES NEEDED WILL BE THE RESPONSIBILITY OF THE MANUFACTURER AT NO ADDITIONAL COST TO THE PROJECT.

F. ALL PIPING CONNECTING TO EQUIPMENT SHALL HAVE FLEXIBLE CONNECTIONS INSTALLED AT CONNECTION TO EQUIPMENT.

G. ALL EQUIPMENT SHALL BE THOROUGHLY CLEANED AND ALL BARE, SCRATCHED OR MARRED AREAS SHALL BE PAINTED WITH FACTORY PAINT OR AN OWNER APPROVED EQUAL.

H. ALL EQUIPMENT SHALL BE PROPERLY ALIGNED, LUBRICATED AND OILED BEFORE START UP AND FINAL ACCEPTANCE BY OWNER.

I. ANY SPECIAL TOOL NEEDED FOR ASSEMBLY, MAINTENANCE OR ADJUSTMENT OF ANY EQUIPMENT SHALL BE SUPPLIED TO THE OWNER AT NO ADDITIONAL COST.

J. PROVIDE A PREVENTATIVE/ PREDICTIVE MAINTENANCE SCHEDULE IN MICROSOFT WORD FORMAT FOR ALL EQUIPMENT TO OWNER/ ENGINEER AT THE COMPLETION OF THE PROJECT.

K. ALL MOTORS BEING CONTROLLED BY VFDS ON PUMPS, FANS, ETC. SHALL BE COMPATIBLE FOR USE WITH A VFD, SHALL BE INVERTER DUTY RATED AND PROVIDED WITH A SHAFT GROUNDING KIT.

L. ALL EQUIPMENT WITH ELECTRICAL HARD WIRED CONNECTIONS MUST BE UL LISTED ASSEMBLIES OR THE PROPER FIELD TESTING FOR FIELD RATINGS TO A UL LISTED ASSEMBLY MUST BE INCLUDED WITH DOCUMENTATION PROVIDED TO THE AUTHORITY HAVING JURISDICTION, OWNER AND DESIGN TEAM UPON COMPLETION.

EXISTING PROJECT

A. IT IS STRONGLY RECOMMENDED THAT EACH CONTRACTOR VISIT JOB SITE PRIOR TO BIDDING TO SEE SPECIFIC JOB SITE CONDITIONS FOR THIS PROJECT.

B. FIELD VERIFY EXACT LOCATION OF EXISTING PIPING AND DUCT BEFORE BEGINNING CONSTRUCTION.

C. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, STOP WORK IMMEDIATELY AND INFORM THE OWNER'S REPRESENTATIVE IN WRITING. THE OWNER'S REPRESENTATIVE WILL THEN BE RESPONSIBLE TO TAKE THE APPROPRIATE ACTIONS.

D. THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW SUPPORTS AND HANGERS FOR ALL EXISTING PIPING, CABLING AND WIRING (HIGH AND LOW VOLTAGE) THAT ARE TO REMAIN. THIS INCLUDES RESUPPORTING ANYTHING THAT IS SUPPORTED BY ANY ITEM SCHEDULED TO BE REMOVED. ANY DAMAGE TO THE EXISTING SYSTEMS TO REMAIN MUST BE REPAIRED AND TESTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

E. DURING SMOKE/DUST PRODUCING OPERATIONS, SMOKE DETECTORS SHALL BE COVERED AND TEMPORARY FANS SHALL BE USED TO EXHAUST AREA OF SMOKE/DUST. COORDINATE WITH OWNER.

F. MAINTAIN ALL EXISTING ROOF WARRANTIES AS APPLICABLE

LPS

A. CURRENT LPS DESIGN GUIDELINES AT THE TIME OF BIDING SHALL BE FOLLOWED. THESE ARE AVAILABLE AT WWW.LPS.ORG

B. IN ALL MECHANICAL SPACES: MAINTAIN A FOUR FOOT ZERO INCH (4'-0") MINIMUM CLEARANCE BETWEEN MECHANICAL EQUIPMENT AND ACCESSORIES; AND A MINIMUM HEAD HEIGHT OF SEVEN FOOT ZERO INCH (7'-0") AS WELL. WHERE NOT POSSIBLE CONSULT ENGINEER PRIOR TO INSTALLATION.

C. ALL GREASE PORTS TO BE EXTENDED TO OUTSIDE THE CABINET FOR MAINTENANCE PURPOSES. OIL/GREASE FILL PORTS SHALL BE VERTICAL. COORDINATE WITH LPS PRIOR TO INSTALLATION.

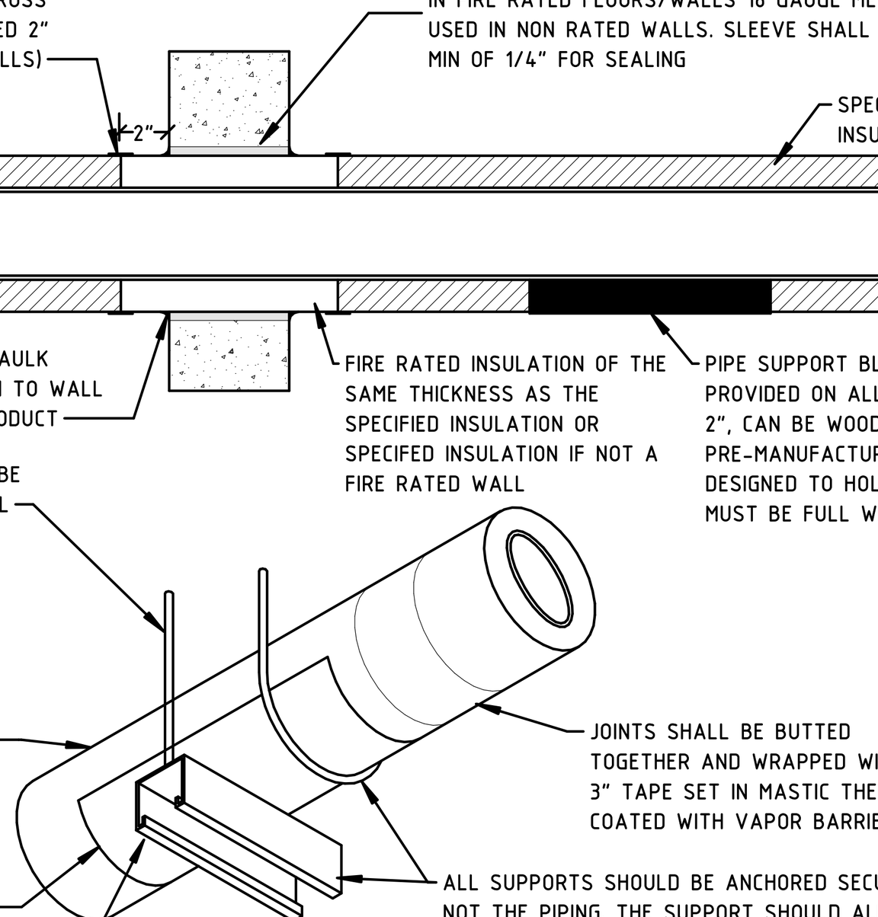
PLUMBING

A. A 10'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL PLUMBING VENTS AND EXHAUST VENTS AND ALL MECHANICAL FRESH AIR INTAKES, DOORS, AND OTHER OPERABLE OPENINGS INTO THE BUILDING.

B. PROVIDE 2" CLEANOUT UNDER ALL SINKS AT AN ACCESSIBLE LOCATION.

C. SHUT-OFF VALVES SHALL BE PROVIDED IN HOT AND/OR COLD WATER PIPING AT CONNECTION TO PLUMBING FIXTURE AT AN ACCESSIBLE LOCATION.

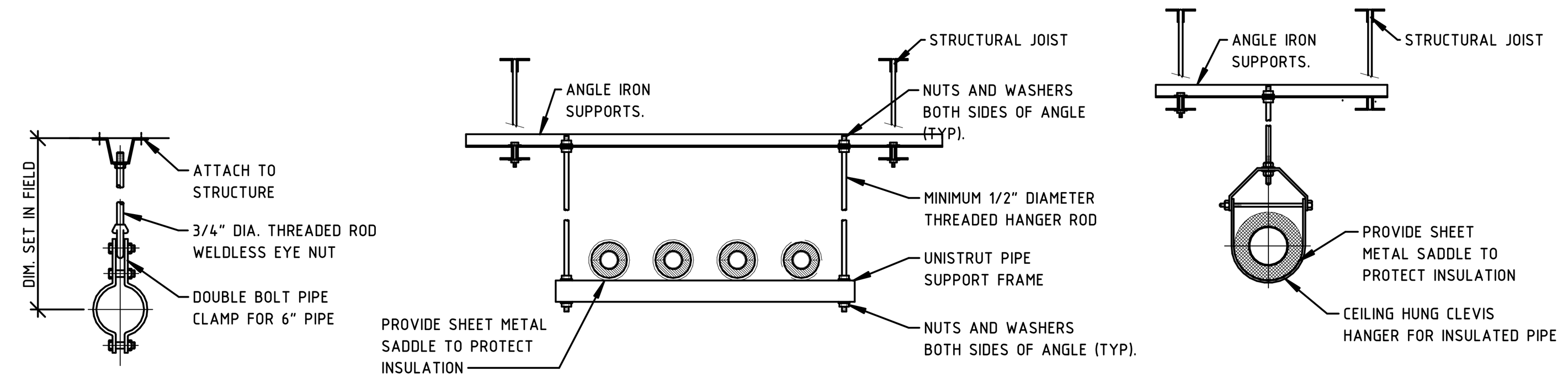
D. A 18" COPPER VERTICAL AIR CHAMBER SHALL BE INSTALLED ON ALL FLUSH VALVE FIXTURES.



1 / P0.0 — **FIBERGLASS INSULATION PIPING DETAIL**
NTS

DETAIL NOTES

1. INSULATION SHOULD BE INSTALLED IN A NICE, CLEAN WORKMANSHIP LIKE MANNER.
2. INSULATION SHOULD NOT BE APPLIED UNTIL AFTER THE PIPING SYSTEM HAS BEEN PROPERLY TESTED.
3. VAPOR BARRIER IS REQUIRED ON ALL INSULATION.
4. INSULATION SHOULD BE FULL THICKNESS WITH NO JOINTS THROUGH WALLS. INSULATION SHALL BE CARRIED THROUGH ALL WALLS.
5. FITTINGS:
   - 2" AND SMALLER SHALL BE WRAPPED WITH INSULATION, AND COVERED WITH PVC.
   - OVER 2" SHALL HAVE PREMOLDED INSULATION FITTINGS AND WRAPPED WITH PVC.
6. PIPING SLEEVES ARE NOT TO BE USED AS SUPPORTS.
7. INSULATION SHALL BE WRAPPED WITH A ONE-PIECE PVC JACKET SEALED WITH PVC TAPE IN EXPOSED APPICATIONS.
8. ALL PIPE SLEEVES IN NEW CONCRETE SHALL BE CAST IN PLACE AND NOT CORE DRILLED. PIPE SLEEVES SHALL EXTEND 2" PAST FLOOR AND BE CUT FLUSH WTIH WALLS.



2 / P0.0 — **PIPE SUPPORT DETAIL**
NTS

SHEET LIST - PLUMBING

SHEET NUMBER	SHEET NAME
P0.0	PLUMBING GENERAL PROJECT INFOMATION
PD1.1	OVERALL PLUMBING DEMO PLANS
PD1.2	PLUMBING DEMOLITION PLANS - ARTS & HUMANITIES
P1.1	OVERALL PLUMBING PLANS
P1.2	ARTS & HUMANITIES PLUMBING PLAN - SANITARY WASTE & VENT
P1.3	ARTS & HUMANITIES PLUMBING PLAN - DOMESTIC WATER
P2.1	FIRE PROTECTION PLANS & DETAILS
P3.1	PLUMBING SCHEDULES & DETAILS

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AES — ADVANCED ENGINEERING SYSTEMS

LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGARM
BOTTLERS BUILDING
Lincoln, NE

Project Number
23-007
Date
1/11/2024
Revisions

#	Date
2	1-31-2024

P0.0

PLUMBING GENERAL PROJECT INFOMATION

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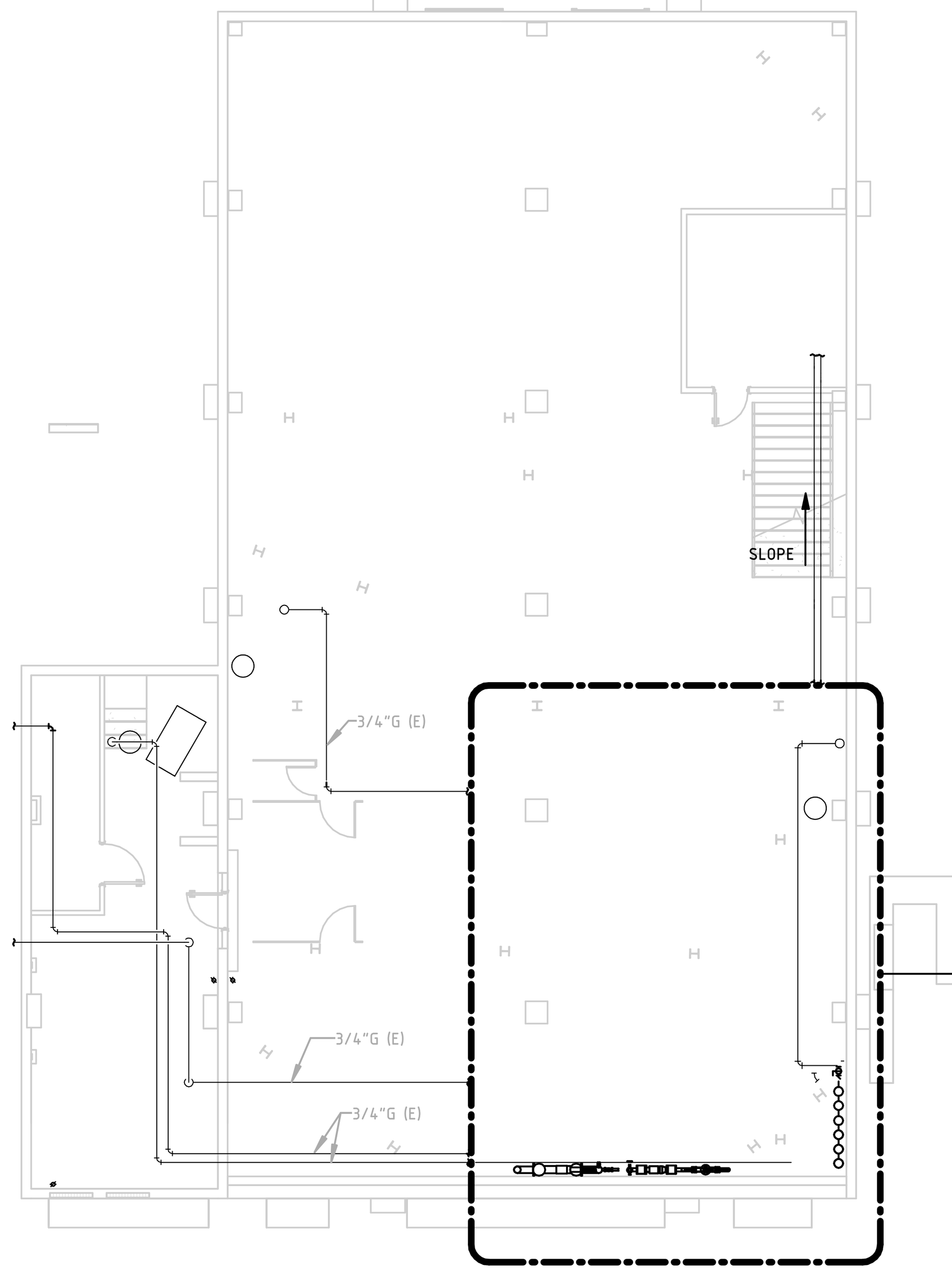
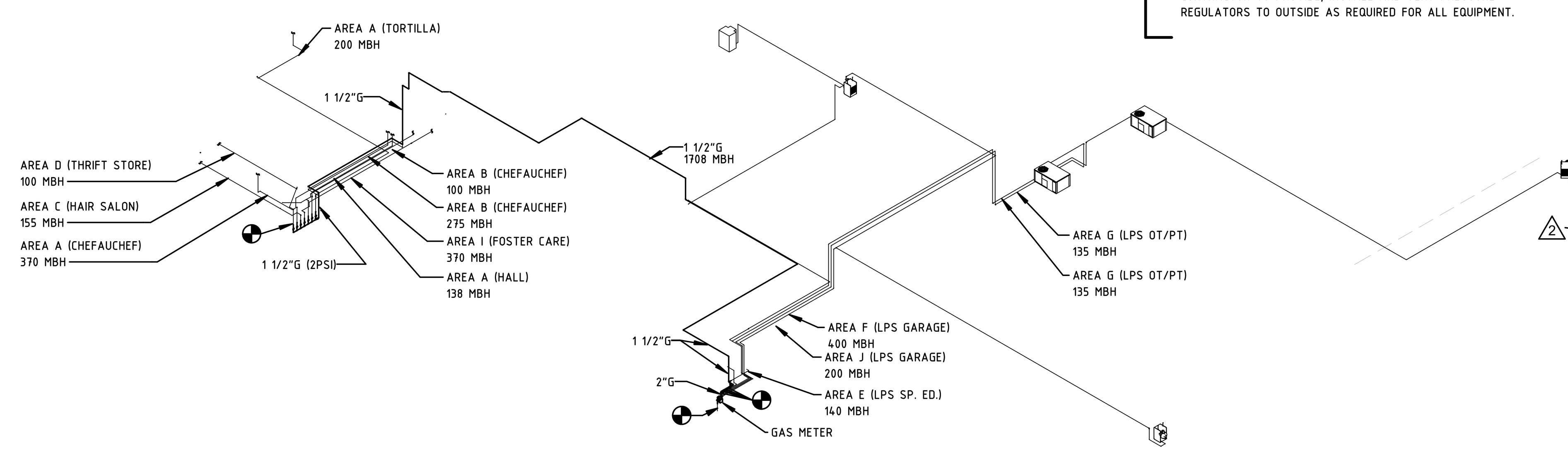


2 P1.1 **BASEMENT - PLUMBING PLAN**
3/32" = 1'-0"



3 P1.1 **GAS RISER**
NTS

GAS RISER DESIGN CRITERIA

SYSTEM BASED ON

- 2988 MBH TOTAL INPUT LOAD.
- 350' LONGEST RUN.
- 2 PSI SYSTEM INLET PRESSURE.
- CONTRACTOR TO PROVIDE, INSTALL AND VENT PRESSURE REGULATORS TO OUTSIDE AS REQUIRED FOR ALL EQUIPMENT.

KEY NOTES

SYMBOL = ⟨X⟩

1 SEE "NEW GAS METER DETAIL" ON THIS SHEET FOR MORE INFORMATION.

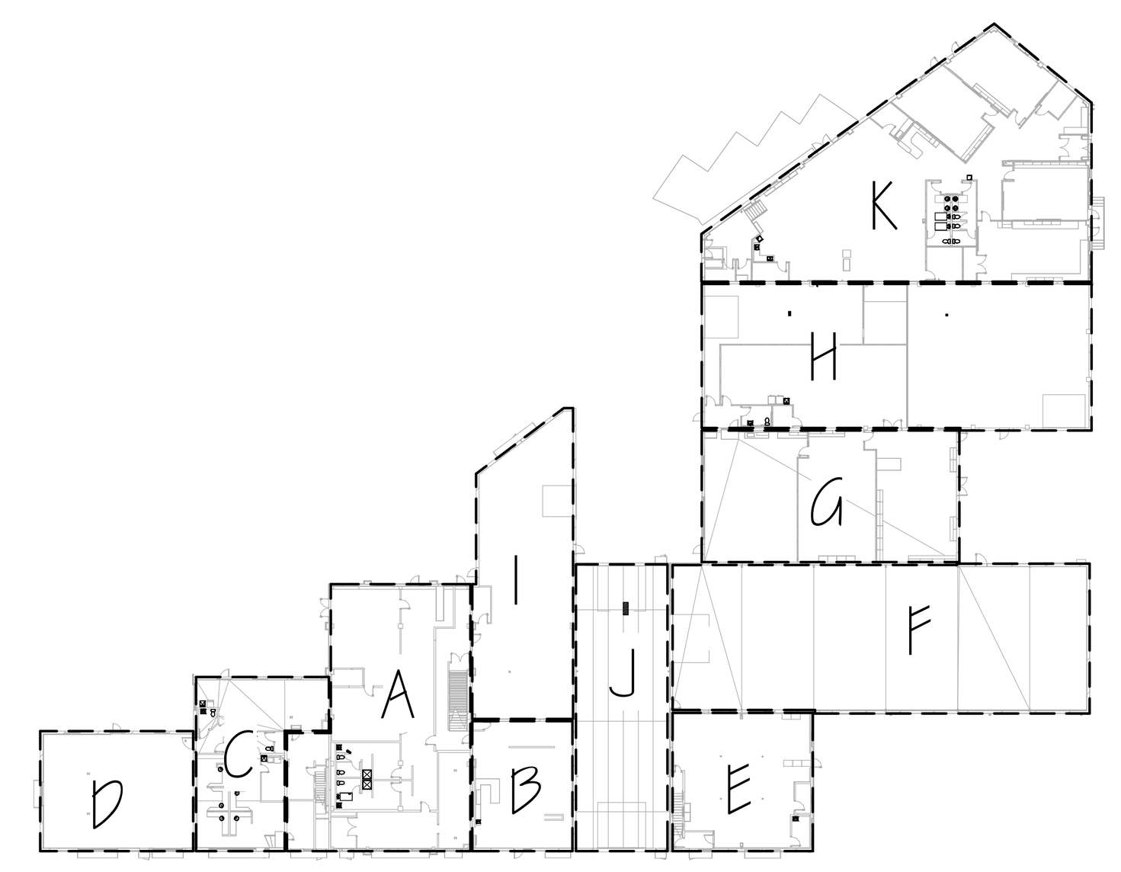
2 EXTEND NEW 1" DOMESTIC COLD WATER PIPING DN AND CONNECT TO EXISTING DOMESTIC WATER MAIN SERVING LPS SPECIAL EDUCATION OFFICE (CONNECT TO EXISTING PIPING AT POINT WATER METER WAS REMOVED).

3 EXTEND PIPING VERTICALLY AS TIGHT IN CORNER AS POSSIBLE. PIPE PENETRATIONS TO AVOID EXISTING CONCRETE BEAMS, JOISTS AND METAL REINFORCEMENT. LOCATE PRIOR TO DRILLING.

4 ROUTE PIPING AS HIGH AS POSSIBLE THROUGH AREAS WITHOUT CEILING, COORDINATE EXACT LOCATION AND ROUTING WITH EXISTING CONDITIONS. ROUTE PIPING THROUGH JOIST PACE WHERE POSSIBLE. CONTRACTOR TO VERIFY PIPE SUPPORT TYPE REQUIRED IN EACH SPACE.

5 WORK THROUGH EXISTING LAY-IN CEILING IN AREA, REMOVE AND REPLACE CEILING TILES AS REQUIRED FOR INSTALLATION OF NEW PIPING.

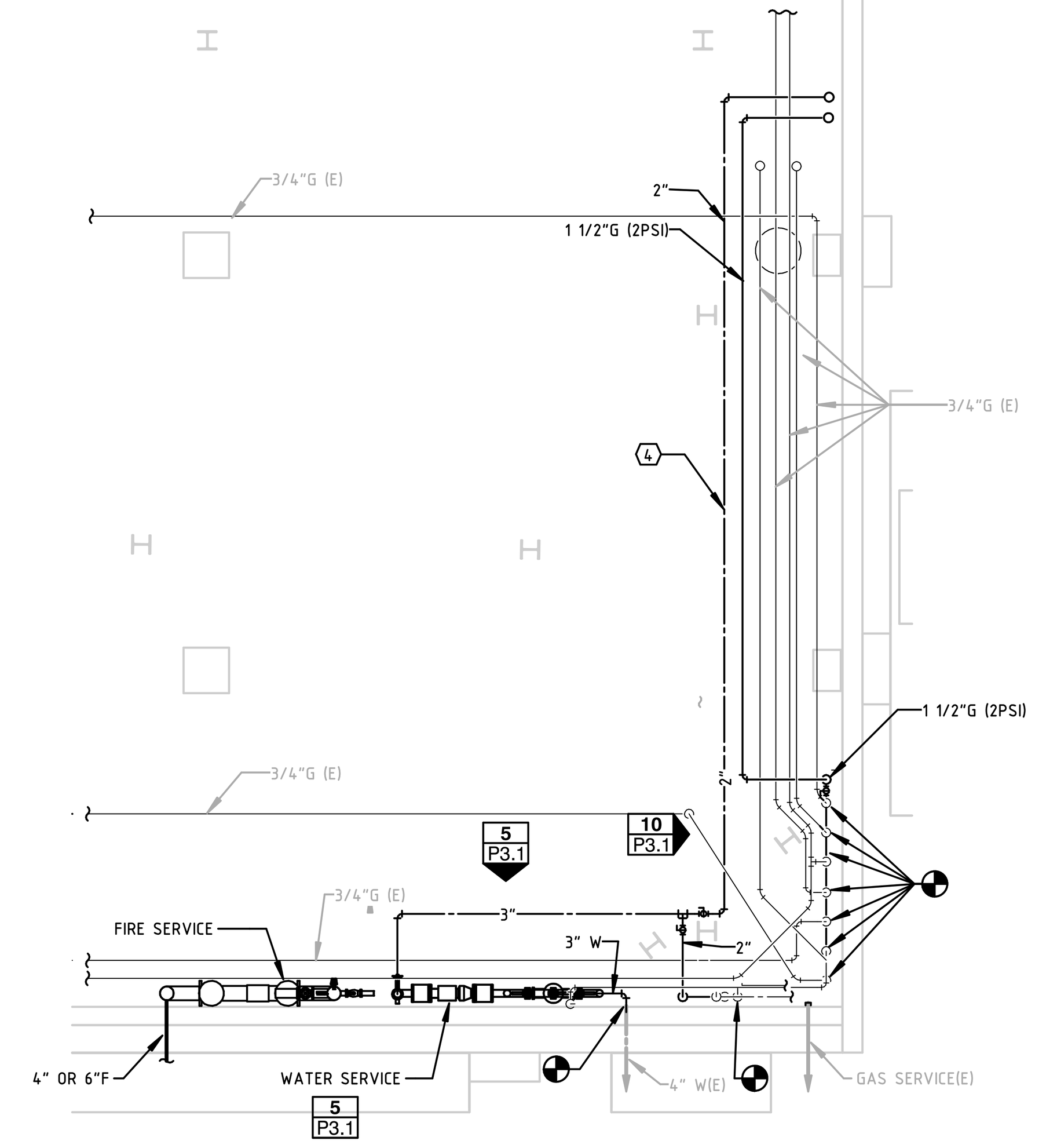
6 SUPPORT PIPE FROM METAL BUILDING FRAME WHERE PIPING RUNS IN EAST/WEST DIRECTION.



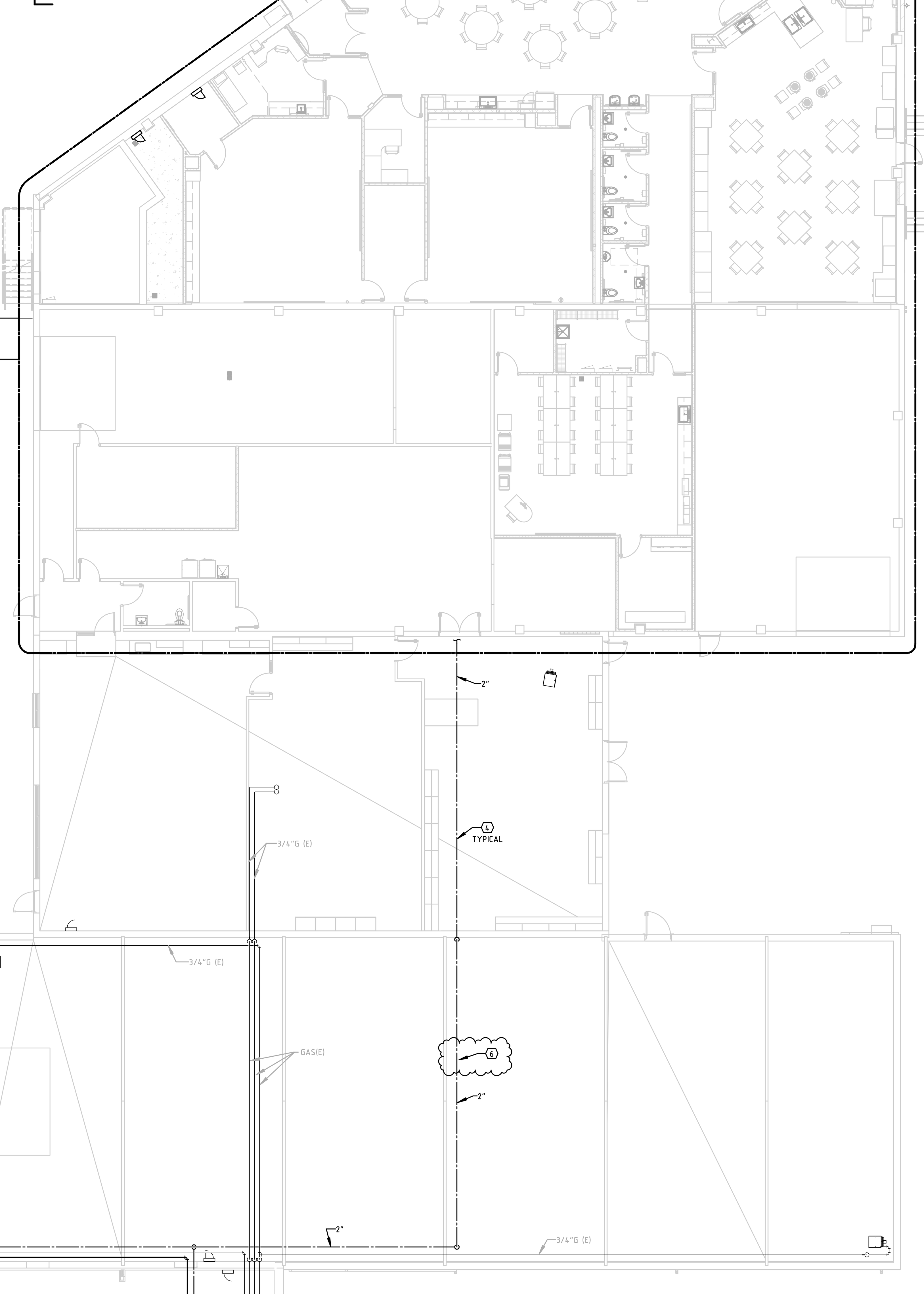
7 P1.1 **KEY PLAN**
NTS

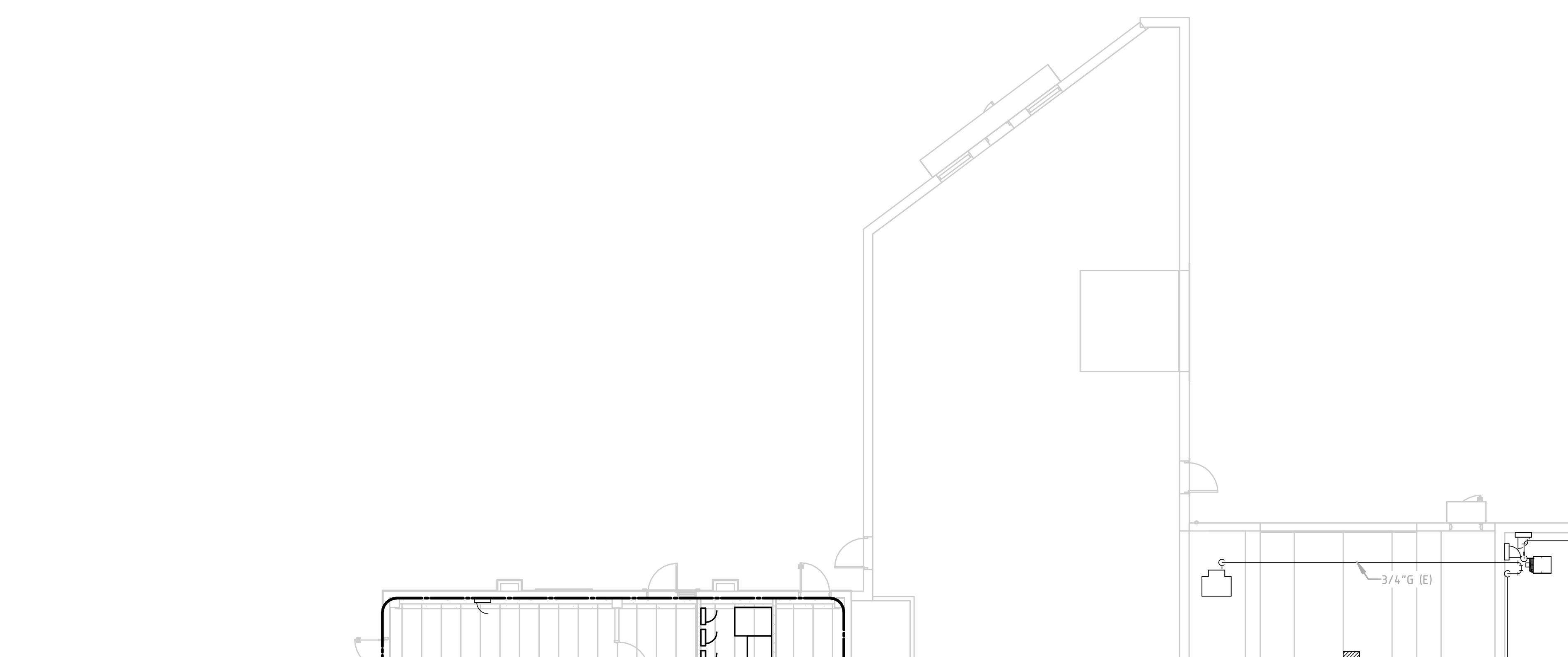
GAS EQUIPMENT

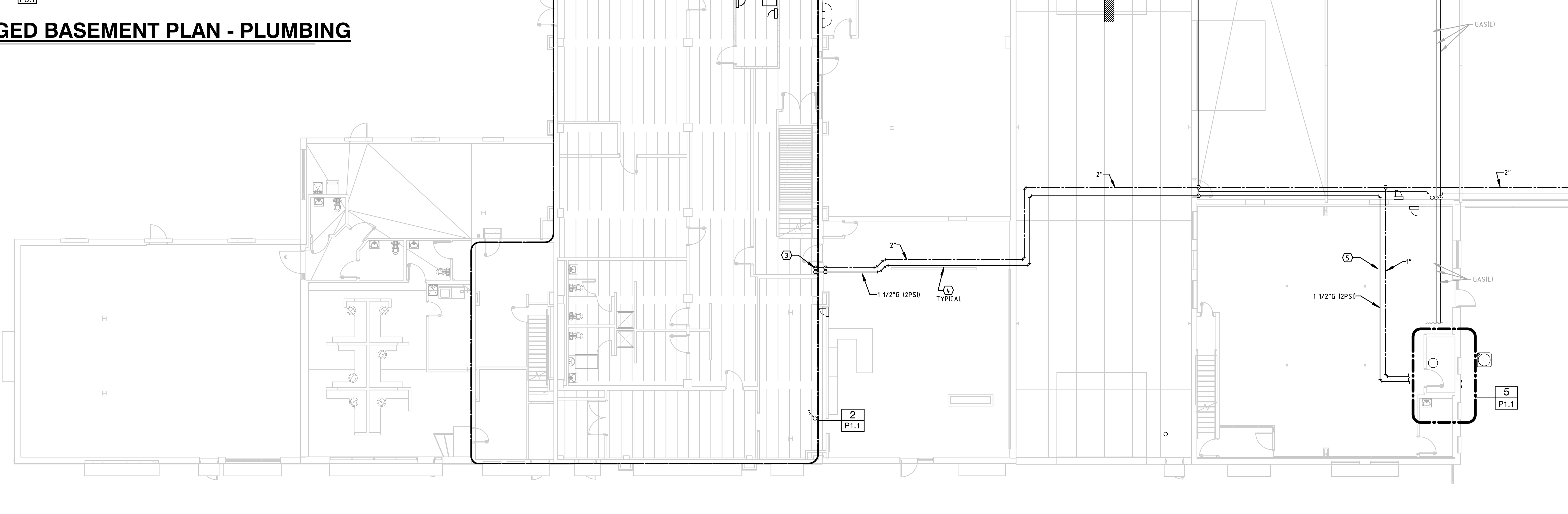
AREA	EQUIPMENT	MBH
A	BLOWER COIL	120
A	WATER HEATER	38
A	OVEN/STOVE	170
A	OVEN	200
A	OVEN	200
B	BLOWER COIL	100
B	MAKE-UP AIR	275
C	WATER HEATER	55
C	BLOWER COIL	100
D	BLOWER COIL	100
E	BLOWER COIL	100
E	WATER HEATER	40
F	HEATER UNIT	250
F	HEATER UNIT	250
G	ROOF TOP UNIT	135
G	ROOF TOP UNIT	135
H	HEATER UNIT	200
I	ROOF TOP UNIT	135
I	ROOF TOP UNIT	135
J	HEATER UNIT	250



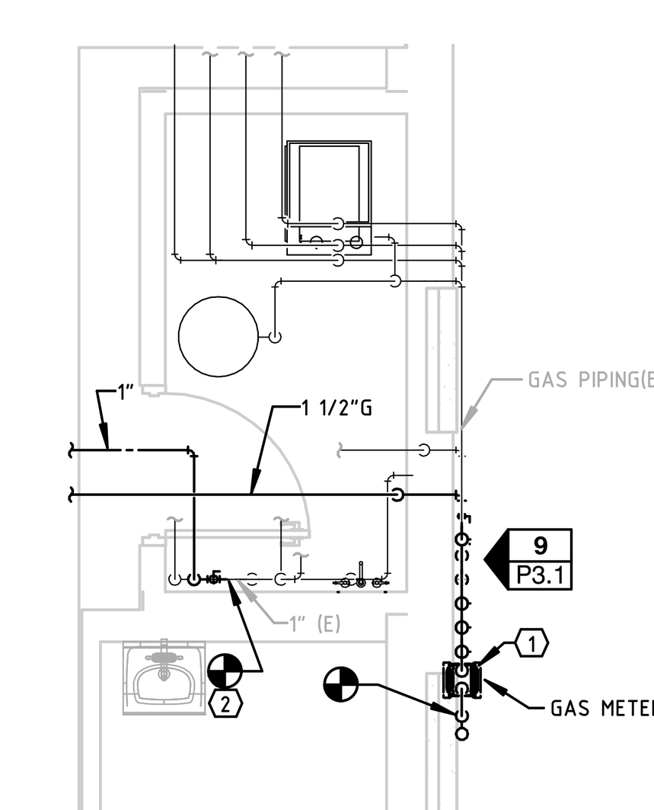
4 P1.1 **ENLARGED BASEMENT PLAN - PLUMBING**
3/16" = 1'-0"







1 P1.1 **OVERALL PLUMBING PLAN**
3/32" = 1'-0"



5 P1.1 **ENLARGED PLUMBING PLAN - MECH**
1/4" = 1'-0"

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P1.1

OVERALL PLUMBING PLANS

MECHANICAL SCHEDULES

FIRE SPRINKLER PIPE MATERIAL AND INSULATION

PROVIDE SPECIFIED OR APPROVED EQUAL

	PIPING							PIPING INSULATION				"K VALUE"		
PIPE	PIPE SIZE	RELATION TO GRADE	MATERIAL	FITTING TYPE	MIN. SLOPE	VALVES	COMPLY WITH	INSULATION TYPE	INSULATION MATERIAL	INSULATION THICKNESS	DENSITY LBS/FT^3	MIN.	AT TEMP	NOTES
FIRE SPRINKLER SERVICE	3"-UP	BELOW	DUCTILE IRON	GROOVED OR MECHANICAL	-	NONE EXCEPT PIV'	ANSI/AWWA C151	-	-	-	-	-	-	2,3
FIRE SPRINKLER SERVICE	3"-UP	ABOVE	DUCTILE IRON	FLANGED	-	NONE EXCEPT PIV'	ANSI/AWWA C151	-	-	-	-	-	-	-
WET FIRE SPRINKLER	1"-2"	ABOVE	SCHEDULE 40 BLACK STEEL	THREADED	-	BALL, BUTTERFLY	ASTM A 135	-	-	-	-	-	-	1,3,4
WET FIRE SPRINKLER	2-1/2"-UP	ABOVE	SCHEDULE 40 BLACK STEEL	VICTAULIC COUPLING	-	BALL, BUTTERFLY	ASTM A 135	-	-	-	-	-	-	1,3,4
WET FIRE SPRINKLER	1" - 3"	ABOVE	LISTED CPVC	ASTM F433 & F439 SOCKET/SPIGOT	-	BALL, BUTTERFLY	ASTM F-442	-	-	-	-	-	-	4

PIPE MATERIAL AND INSULATION GENERAL NOTES

- INSTALL ALL PIPING ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- ALL PIPING SHALL BE TESTED, CLEANED AND CERTIFIED FOR INTENDED USE. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED WITH 1-1/2 TIMES THE OPERATING PRESSURE FOR NO LESS THAN 4 HOURS. PIPING TO BE CLEANED AND FLUSHED WITH CRITICAL CONTROL VALVES BYPASSED.
- ALL FITTINGS CONNECTING TO DI-ELECTRIC FITTINGS SHALL BE SOFT SOLDERED TO THE PIPING. NO DI-ELECTRIC UNIONS SHALL BE USED.
- ALL WELDED PIPE AND FUSION WELDED SHALL BE WELDED BY A CERTIFIED WELDER/FUSION CONTRACTOR. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER (CERTIFICATED MUST BE SUBMITTED) AND ALL WORK SHALL BE STAMPED. BOLTED FLANGES SHALL BE INSTALLED ON 2" AND LARGER PIPE TO SECTIONALIZE SYSTEM INTO WORKABLE SECTIONS, INSULATION SHALL GO AROUND FLANGES.

VALVE SCHEDULE

- CALIBRATED BALANCE VALVES: SHALL BE A BRONZE OR BRASS BALL VALVE WITH A SET SCREW STOP.
- BALL VALVE: SHALL BE NSF RATED FOR POTABLE WATER, BRASS OR BRONZE BODY WITH CHROME PLATED BRONZE BALL.
- BUTTERFLY VALVE: SHALL BE CAST IRON BODY WITH FLANGED ENDS, WAFFER STYLE VALVES ARE NOT ALLOWED.
- GATE VALVE: SHALL BE A BRONZE OR CAST IRON BODY WITH A RISING STEM AND SOLID BRONZE WEDGE.
- GLOBE VALVE: SHALL BE A BRONZE OR CAST IRON BODY WITH A BRONZE DISC
- ALL VALVES SHALL BE INSTALLED WITH FULL STEM MOVEMENT

PIPE MATERIAL AND INSULATION SCHEDULE NOTES

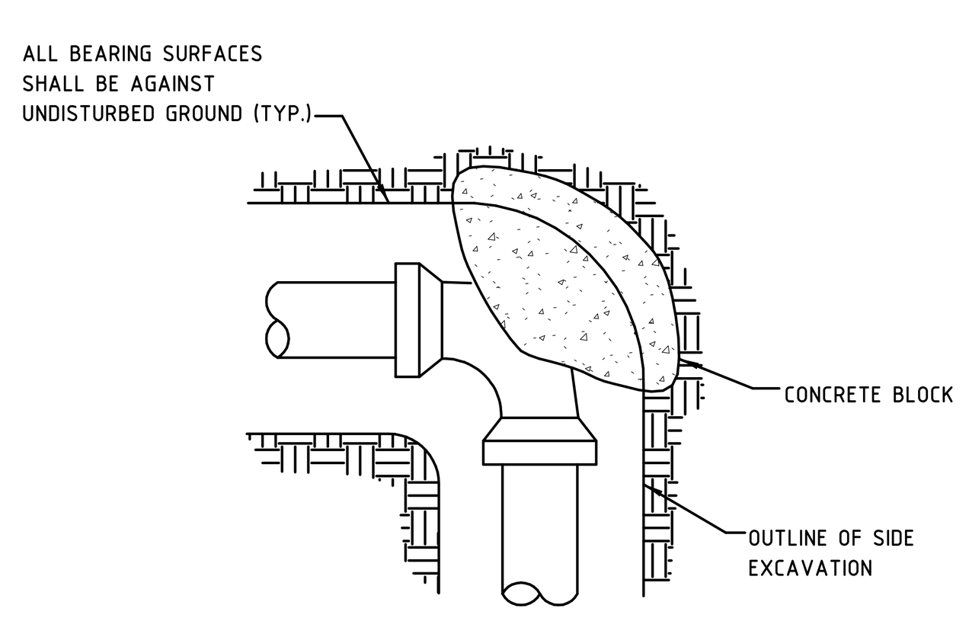
1. NO INSULATION IS REQUIRED UNLESS PIPING IS A PLASTIC MATERIAL NOT MEETING 25 / 50 FLAME AND SMOKE RATING IN A RETURN AIR PLENUM.
2. SCHEDULE 80 CPVC PIPING WITH SOLVENT WELDED FITTINGS IS AN ACCEPTABLE ALTERNATIVE ONLY IF ALLOWED BY LOCAL CODES. CPVC PIPING MAY NOT BE USED IN ANY MECHANICAL, ELECTRICAL, JANITORIAL ROOM WHERE 212° HEADS ARE SPECIFIED OR AREAS/ROOMS WITHOUT CEILINGS. INSTALL INSULATION ON PIPING IN A CEILING PLENUM RETURN ACCORDING TO REQUIREMENTS OF LOCAL JURISDICTION - 1 HOUR FIRE WRAP SHALL BE USED UNLESS LOCAL JURISDICTION ALLOWS ALTERNATIVE PRODUCTS.
3. ALL BRANCH OUTLETS SHALL BE WELDED TO MAIN PIPING BY A CERTIFIED WELDER. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER AND ALL WORK SHALL BE STAMPED.
4. CPVC - LISTED PIPING WITH SOLVENT WELDED FITTING IS AN ACCEPTABLE ALTERNATIVE ONLY IF ALLOWED BY LOCAL CODES. CPVC PIPING MAY NOT BE USED IN ANY MECHANICAL, ELECTRICAL, JANITORIAL ROOM OR AREAS/ROOMS WITHOUT CEILINGS. INSTALL PIPING ACCORDING TO NFPA 13 & MANUFACTURER. SEE: SPECIFICATIONS FOR FURTHER INFORMATION.

SPRINKLER HEAD LEGEND

AREA PATTERN	AREA DESCRIPTION	SET TEMP °F	SPRINKLER HEADS			SYSTEM PIPING		NOTES
			TYPE	FINISH	WET/DRY	LOCATION	WET/DRY	
(horizontal lines)	MECHANICAL SPACE	155°	PENDANT WITH PROTECTIVE CAGE	BRASS	WET	CONDITIONED, EXPOSED	WET	-
(cross-hatch)	OCCUPIABLE CONDITIONED AREA (CEILING)	155°	CONCEALED	PAINTED WHITE	WET	CONDITIONED, CONCEALED	WET	-
(diagonal hatch)	OCCUPIABLE CONDITIONED AREA (NO CEILING)	155°	UPRIGHT	PAINTED BLACK	WET	EXPOSED, CONCEALED	WET	1,2

SPRINKLER HEAD LEGEND NOTES

1. COLOR TO BE BY INTERIOR DESIGNER.
2. EXPOSED PIPING TO BE PAINTED BY GENERAL CONTRACTOR.



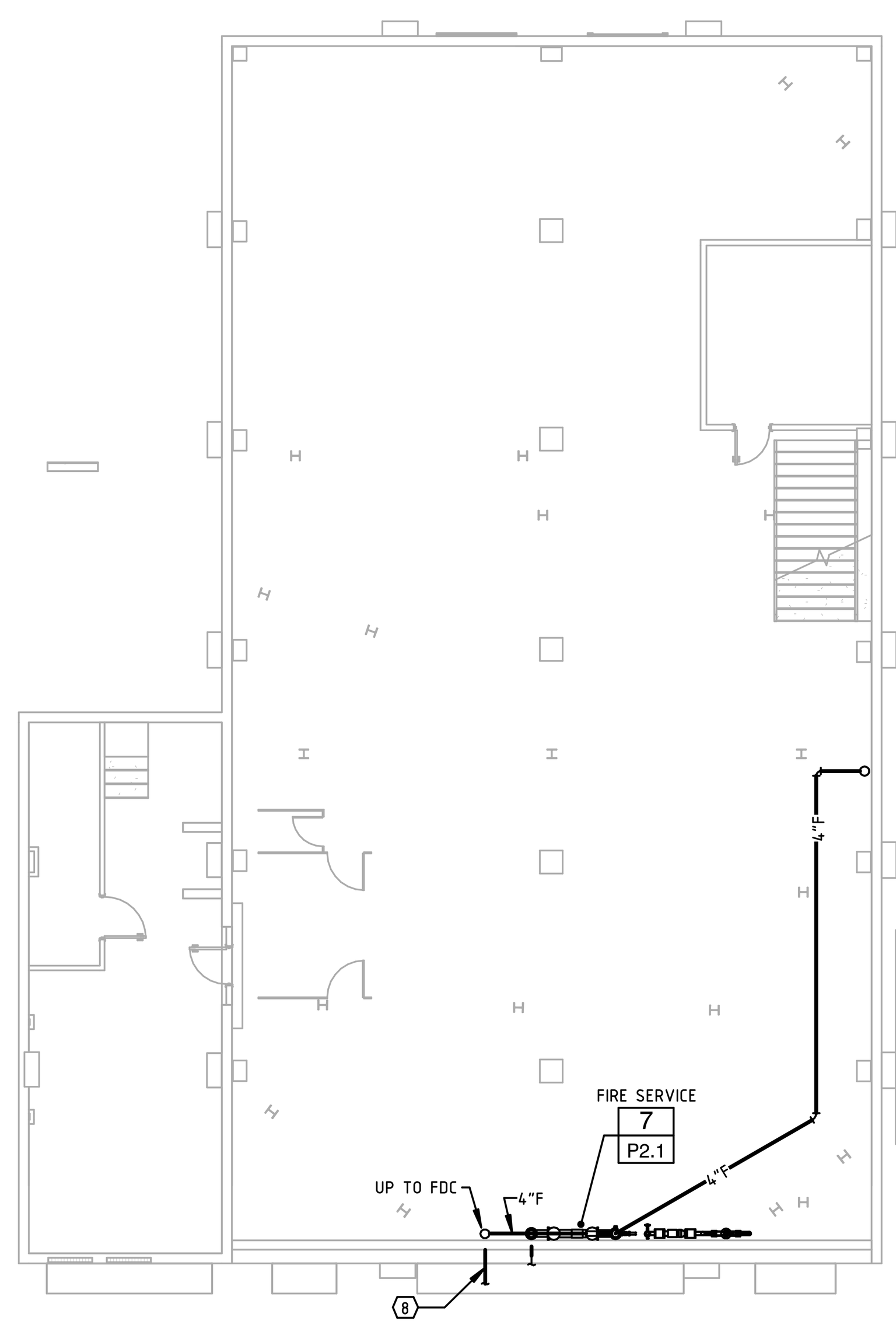
THRUST BLOCKING

PIPE SIZE	BEARING AREA OF BLOCK SQ FT.				
	TEE & END	90° BEND	45° BEND	22.5° BEND	11.25° BEND
4	4.9	6.9	3.8	1.9	1.0
6	8.4	11.8	6.4	3.3	1.8

THRUST BLOCKING NOTES

1. THRUST BLOCK BEARING AREA IS THE AREA THAT IS AGAINST UNDISTURBED EARTH.
2. THRUST BLOCK MUST ENCASE AT LEAST 50% OF THE DIAMETER OF THE PIPE.
3. THRUST BLOCKS MUST NOT RESTRICT MECHANICAL JOINT BOLT REMOVAL OR BE EXTENDED PAST BELL FITTING.
4. THRUST BLOCK AREAS ARE BASED ON A SOIL BEARING PRESSURE OF 2000 PSF AND A DESIGN PRESSURE OF 250 PSI.

3 / P2.1 TRUST BLOCK DETAIL
NTS



2 / P2.1 BASEMENT - FIRE PROTECTION PLAN
3/32" = 1'-0"

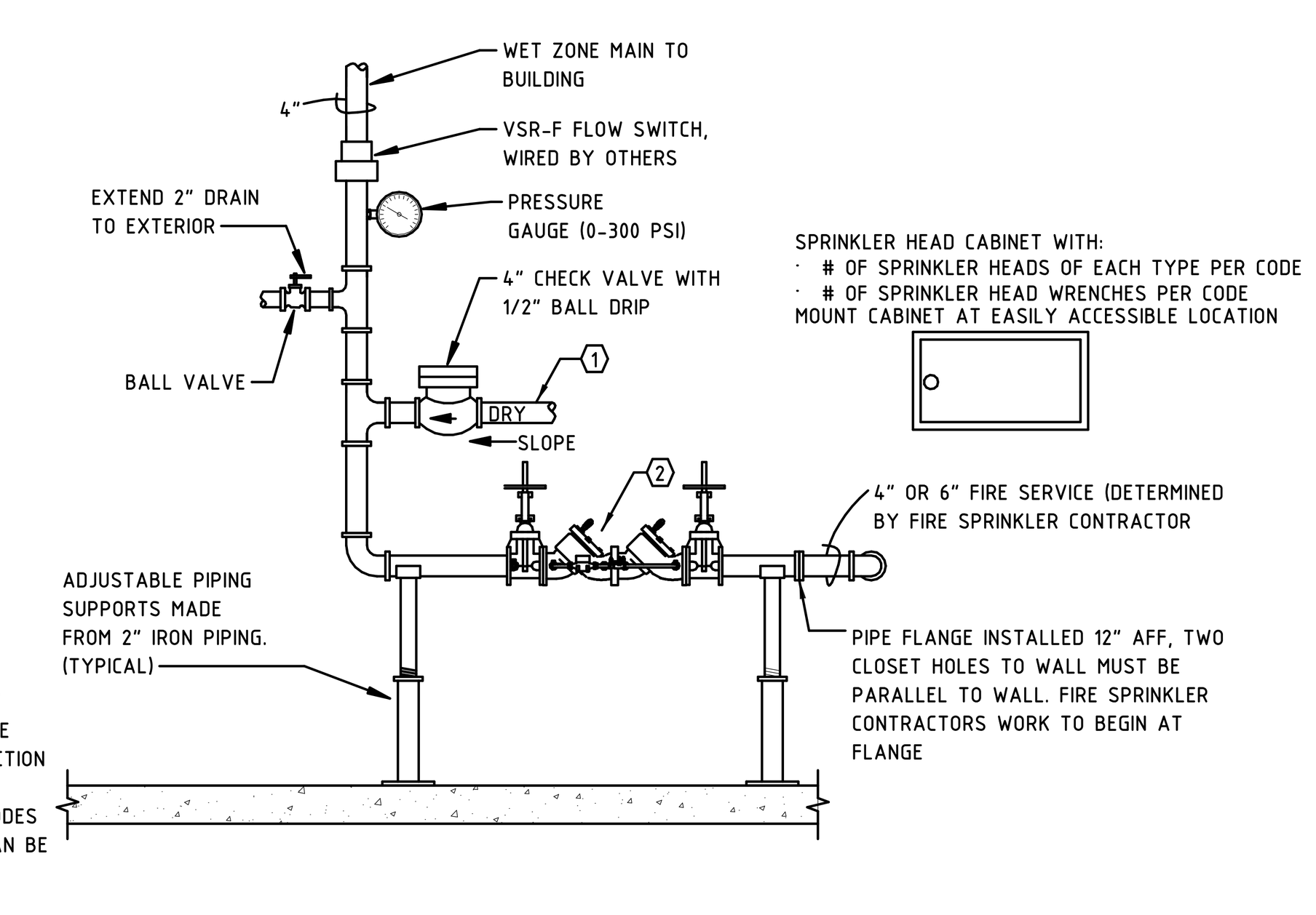
DETAIL NOTES

GENERAL NOTES

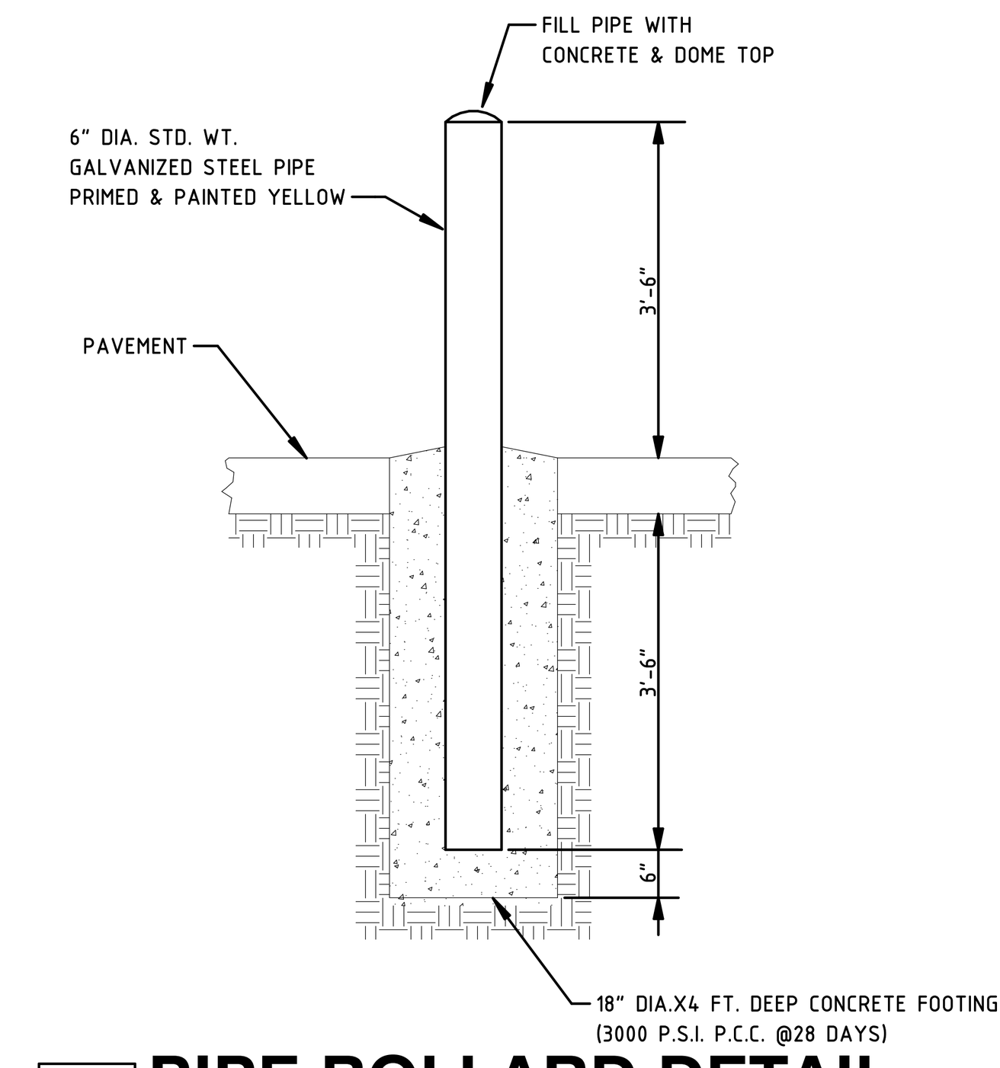
A. ALL PIPING FITTINGS AND BENDS MUST BE RESTRAINED AGAINST MOVEMENT, PIPE CLAMPS, TIE RODS AND THRUST BLOCKS ARE APPROVED RESTRAINTS. PUMPS SHALL BE INSTALLED LEVEL AND ALIGNED PER FACTORY RECOMMENDATIONS.
B. FIRE SERVICE ENTRANCE PIPING MUST BE FLUSHED AND TESTED PER NFPA 24 STANDARDS BY OTHERS. FIRE PUMP MUST BE FLUSHED, INSTALLED AND TESTED PER NFPA 20, 24 AND ALL AUTHORITIES HAVING JURISDICTION. ALL REQUIRED INSPECTIONS SHOULD BE COMPLETED BEFORE BACKFILL.
C. ALL PIPING, FITTINGS AND ACCESSORIES SHALL BE GROOVED CONSTRUCTION. ALL VALVES EXCEPT DRAINS AND TEST VALVES SHALL BE SUPERVISED BY THE ALARM PANEL. ALL VALVES TO BE LABELED.
D. LOCATION OF FIRE DEPARTMENT CONNECTION AND PIV SHALL BE COORDINATED WITH ALL AUTHORITIES HAVING JURISDICTION.

KEY NOTES

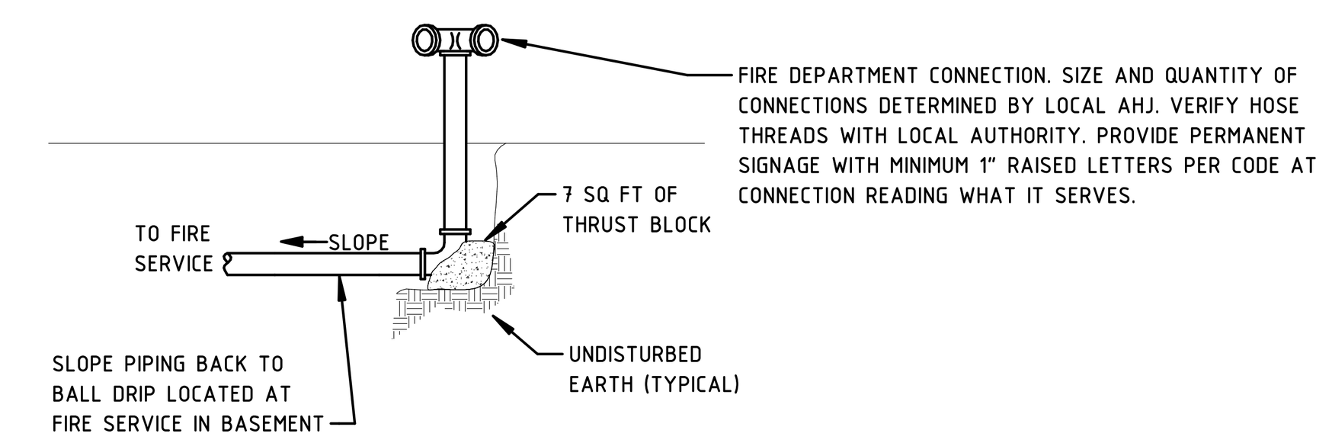
1. EXTEND FULL SIZE PIPE TO 2-1/2" X 2-1/2" X 4" FIRE DEPARTMENT CONNECTION, VERIFY HOSE THREADS WITH LOCAL AUTHORITY.PROVIDE METAL SIGN WITH MINIMUM 1" RAISED LETTERS PER CODE AT CONNECTION READING WHAT IT SERVES.
2. NEW DOUBLE CHECK BACKFLOW PREVENTER. VERIFY WITH LOCAL CODES EXACT REQUIREMENTS FOR INSTALLATION. BACKFLOW PREVENTER CAN BE INSTALLED IN VERTICAL POSITION IF ALLOWED BY LOCAL CODE.



7 / P2.1 NFPA 13 FIRE SERVICE ENTRANCE DETAIL
NTS



8 / P2.1 PIPE BOLLARD DETAIL
NTS



6 / P2.1 FIRE DEPARTMENT CONNECTION DETAIL
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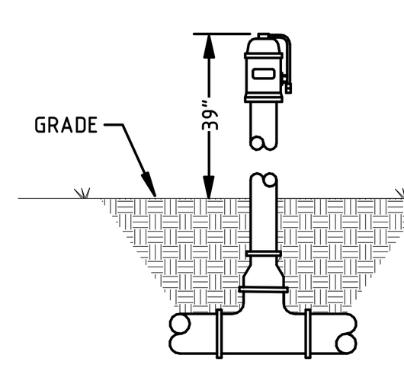
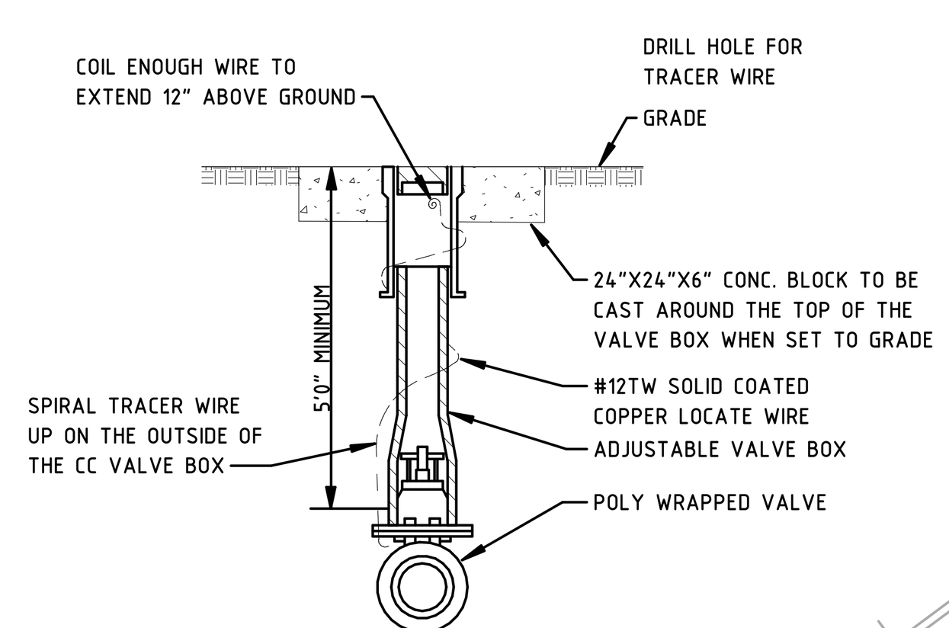
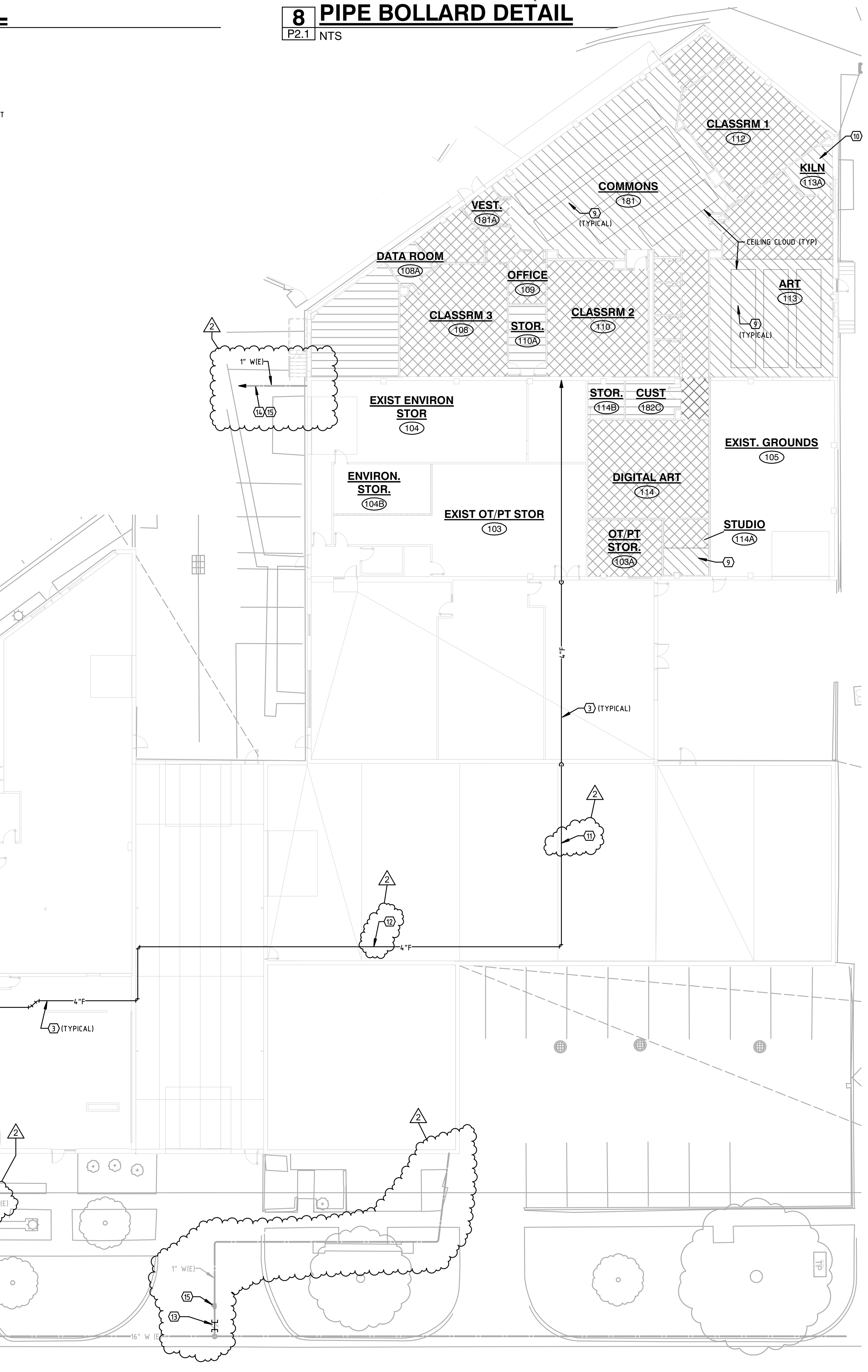


5 / P2.1 POST INDICATOR VALVE DETAIL
NTS



4 / P2.1 VALVE BOX DETAIL
NTS



1 / P2.1 OVERALL FIRE PROTECTION & SITE PLUMBING PLAN
1/16" = 1'-0"

KEY NOTES

SYMBOL = (X)

1. SEE "BASEMENT - FIRE PROTECTION PLAN" ON THIS SHEET FOR CONTINUATION.
2. EXTEND PIPING VERTICALLY AS TIGHT IN CORNER AS POSSIBLE. PIPE PENETRATIONS TO AVOID EXISTING CONCRETE BEAMS, JOISTS AND METAL REINFORCEMENT. LOCATE PRIOR TO DRILLING.
3. ROUTE PIPING AS HIGH AS POSSIBLE THROUGH AREAS WITHOUT CEILING, COORDINATE EXACT LOCATION AND ROUTING WITH EXISTING CONDITIONS. ROUTE PIPING THROUGH JOIST PACE WHERE POSSIBLE. CONTRACTOR TO VERIFY PIPE SUPPORT TYPE REQUIRED IN EACH SPACE.
4. CONTRACTOR TO EXTEND NEW FIRE SERVICE TO CITY WATER MAIN AND TAP MAIN PER CITY REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR ALL BORING, TRENCHING AND CONCRETE REMOVAL REQUIRED FOR THE COMPLETE INSTALLATION. CONTRACTOR SHALL BACKFILL ALL TRENCH/ HOLES AND COMPACT SOIL TO RETURN SITE TO ORIGINAL CONDITIONS BY REPLACING ANY CONCRETE AND LANDSCAPING DISTURBED BY THE CONSTRUCTION PROCESS, CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES IN AREA OF WORK AND CALLING DIGGERS HOT LINE.
5. PROVIDE ALUMINUM OR PLASTIC SIGN IDENTIFYING THE FIRE DEPARTMENT CONNECTION (FDC). SIGN SHALL BE AFFIXED TO THE BUILDING OR FDC BY DURABLE, WEATHER PROOF CHAIN. ENSURE FDC IS CLEAR OF ALL OBSTRUCTIONS AND CLEARLY VISIBLE.
6. TERMINATE MAIN DRAIN OVER SPLASH BLOCK IN LANDSCAPING AREA.
7. POST INDICATOR VALVE. INSTALL PER MANUFACTURER RECOMMENDATIONS. COORDINATE EXACT LOCATION WITH AHJ PRIOR TO INSTALL. PROVIDE 3/4"C. WITH PULL STRING AND FIRE ALARM WIRING AND ROUTE TO FIRE ALARM PANEL AT INTERIOR OF BUILDING. FIELD VERIFY ROUTING AND CONDITIONS PRIOR TO ROUGH-IN. INSTALL 3'X3'X6" DEEP CONCRETE PAD.
8. EXTEND DUCTILE IRON PIPING FROM ~36" MIN OUTSIDE OF THE BUILDING TO INSIDE THE BUILDING.
9. ALL PIPING IN ROOM TO BE PAINTED WHETHER EXPOSED OR ABOVE CEILING CLOUD. COORDINATE WITH GC. ALL SPRINKLER HEADS IN CLOUDS SHALL BE WHITE CONCEALED HEADS. ALL HEADS NOT IN THE CLOUDS SHALL BE UPRIGHT WHITE HEADS.
10. ALL HEADS IN KILN ROOM SHALL BE RATED UP TO 212°.
11. SUPPORT PIPE FROM METAL BUILDING FRAME WHERE PIPING RUNS IN EAST/WEST DIRECTION.
12. PIPE RUNNING IN NORTH/SOUTH DIRECTION MUST BE CENTERED BETWEEN 2 ROOF PURLINES AND MUST BE ATTACHED SO THE WEIGHT IS DISTRIBUTED EQUALLY BETWEEN THE 2 PURLINS. NO OTHER PIPING OR CONDUIT CAN BE ATTACHED TO THE 2 PURLINS.
13. EXISTING WATER SERVICE TO BE ABANDONED, CAP AND ABANDON PIPING AT EXISTING CONNECTION TO CITY MAIN. COORDINATE EXACT REQUIREMENTS WITH WATER COMPANY.
14. EXISTING WATER SERVICE TO BE ABANDONED, CAP AND ABANDON PIPING AT EXISTING CONNECTION TO CITY MAIN. COORDINATE EXACT REQUIREMENTS WITH WATER COMPANY. CONTRACTOR TO FIELD LOCATE WATER SERVICE PIPE CONNECTION TO CITY MAIN.
15. REMOVE TOP OF CURB STOP/VALVE AND ABANDON. FINISH OVER WITH CONCRETE.

GENERAL UTILITY NOTES:

A. LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE SHALL BE CONFIRMED BY THE CONTRACTOR THROUGH FIELD EXPLORATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REPORT TO THE ENGINEER ANY DISCREPANCIES BETWEEN HIS MEASUREMENTS AND THESE PLANS.
B. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY LINES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY SEARCH OF AVAILABLE RECORDS AND, TO THE BEST OF OUR KNOWLEDGE, CONSTITUTES ALL KNOWN FACILITIES. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE AND ANY OTHER EXISTING LINES OF RECORD NOT SHOWN ON THESE PLANS.
C. BEFORE EXCAVATING FOR THIS CONTRACT, THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF NECESSARY DUE THE THE ACTUAL LOCATION OF EXISTING FACILITIES.
D. ALL EXCESS SPOIL MATERIAL FROM UTILITY TRENCHES SHALL BE DISPOSED OF BY THE CONTRACTOR.
E. UTILITY TRENCH EXCAVATIONS TO BE OCCUPIED BY PERSONNEL SHALL BE MADE IN ACCORDANCE WITH OSHA CONSTRUCTION STANDARDS - 29 CFR PART 1926, SUBPART P - EXCAVATIONS.
F. UTILITY TRENCH BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698, STANDARD PROCTOR DENSITY AT A MOISTURE CONTENT BETWEEN 0% AND +4% OF OPTIMUM.

SITE REMOVAL NOTES:

A. ALL CONCRETE PAVEMENT REMOVALS SHALL BE MADE TO EXISTING JOINTS UNLESS OTHERWISE SPECIFIED.
B. ALL PAVEMENTS TO BE REMOVED SHALL BE ISOLATED FROM ADJACENT PAVEMENTS WITH A FULL DEPTH SAW CUT.
C. PAVEMENT REMOVAL SHALL INCLUDE FULL DEPTH REMOVAL OF EXISTING PAVEMENT AND/OR CONCRETE CURB AND GUTTER.
D. ALL REMOVED MATERIAL NOT IDENTIFIED FOR SALVAGE SHALL BE PROPERLY AND LEGALLY DISPOSED OF OFF-SITE BY THE CONTRACTOR.
E. PAVEMENTS DAMAGED BY CONSTRUCTION ACTIVITY BEYOND THAT SHOWN ON THIS PLAN SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.
F. THE CONTRACTOR SHALL PROVIDE NECESSARY TRAFFIC AND PEDESTRIAN CONTROL MEASURES TO PROTECT THE PUBLIC DURING CONSTRUCTION.
G. UTILITIES ARE SHOWN AS A CONVENIENCE FOR THE CONTRACTOR. THE LOCATIONS OF ALL AERIAL AND UNDERGROUND UTILITY FACILITIES MAY NOT BE INDICATED ON THESE PLANS. UNDERGROUND UTILITIES, WHETHER INDICATED OR NOT, WILL BE LOCATED AND FLAGGED BY THE UTILITY COMPANIES AT THE CONTRACTOR'S REQUEST. NO EXCAVATION SHALL BE PERMITTED IN THE AREA OF UNDERGROUND UTILITIES UNTIL ALL FACILITIES HAVE BEEN LOCATED AND IDENTIFIED TO THE SATISFACTION OF ALL PARTIES, AND THEN, ONLY WITH EXTREME CARE 0 AVOID ANY POSSIBILITY OF DAMAGE TO THE FACILITIES.

FIRE SERVICE NOTES:

A. FIRE SERVICE LINES SHALL BE INSTALLED AT A DEPTH TO PROVIDE MINIMUM OF 5' OF COVER FROM FINISHED GRADE.
B. PROVIDE A MINIMUM OF 3' OF HORIZONTAL SEPARATION BETWEEN FIRE SERVICE AND GAS SERVICE LINES, MEASURED TO THE OUTSIDE OF THE PIPES.
C. WATER MAIN MUST BE SEPARATED BY AT LEAST 10'-0" HORIZONTALLY AND 1'-6" VERTICALLY FROM ANY EXISTING OR PROPOSED PARALLEL SANITARY SEWER AND/OR SRORM SEWER, MEASURE EDGE TO EDGE.
D. ALL FITTINGS FOR WATER LINE CONSTRUCTION SHALL BE DUCTILE IRON WITH MECHANICAL JOINT CONNECTIONS.
E. ALL DUCTILE IRON BENDS, TEE, AND TAPPINGS SLEEVES SHALL BE RESTRAINED WITH RETAINER GLANDS.
F. ALL DUCTILE IRON FITTINGS SHALL BE DOUBLE WRAPPED (TWO LAYERS) AND TAPED WITH LINEAR LOW DENSITY POLYETHYLENE. POLYWRAP SHALL BE A MINIMUM OF 8 MILS THICK AND MANUFACTURED OF VIRGIN POLYETHYLENE MATERIAL.

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Lincoln, NE

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Revisions

#	Date
1	1-17-2024
2	1-31-2024

P2.1

FIRE PROTECTION PLANS & DETAILS

PLUMBING SCHEDULES

PROVIDE SPECIFIED OR APPROVED EQUAL

PLUMBING FIXTURES

MARK	FIXTURE	MANUFACTURER	MODEL #	PIPING SIZE TO FIXTURE CW	HW	WASTE	VENT	ACCESSORIES	FIXTURE DESCRIPTION AND OPTIONS
AFV-1	AUTOFLOW VALVE	GRISWOLD	K VALVE	-	3/4"	-	-	-	LEAD FREE PRESSURE INDEPENDENT FLOW LIMITING DEVICE, SEE PLANS FOR GPM.
CO-1	CLEAN OUT	JAY R. SMITH	4020	-	-	4"	-	-	CAST IRON FIXTURE, PROVIDE NICKEL BRONZE ROUND ADJUSTABLE TOP, VERIFY TYPE OF FLOORING FOR TYPE OF TOP REQUIRED. FOR CARPET MARKER USE SUFFIX X
CO-2	CLEAN OUT	JAY R. SMITH	4710	-	-	4"	-	-	CHROME WALL COVER
EWC-1	ELECTRIC WATER COOLER	ELKAY	EZS8	1/2"	1/2"	2"	1-1/2"	-	ADA COMPLIANT, ONE LEVEL, 9.6 GPH CAPACITY, 120V, 3.7 FLA.
FD-1	FLOOR DRAIN	JAY R. SMITH	2005	-	-	2"	1-1/2"	-	PROVIDE FLASHING COLLAR, SEEPAGE OPENING AND NICKEL BRONZE ROUND ADJUSTABLE STRAINER.
FS-1	FLOOR SINK	JAY R. SMITH	3110	-	-	2"	1-1/2"	WITH 2'X2' CHLORALOY MEMBRANE (NOT REQUIRED FOR SLAB ON GRADE INSTALLATION)	CAST IRON 12"X12"X6" DEEP, WHITE PORCELAIN COATED INTERIOR. ALUMINUM DOME STRAINER, SEEPAGE OPENINGS, CLAMPING DEVICE AND 3/4 NICKEL BRONZE GRATE.
HB-1	HOSE BIBB	WOODFORD	24	1/2"	-	-	-	-	ANTI-SIPHON VACUUM BREAKER, 3/4" MALE HOSE THREAD, WITH WALL FLANGE
L-1	LAVATORY	KOHLER	"KINGSTON" K-2005	1/2"	1/2"	2"	1-1/2"	MOEN CA 8434 SINGLE HANDLE FAUCET, WITH GRID DRAIN, DEARBORN 510 TRAP, CONCEALED WALL CARRIER, TRUEBRO LAV GUARD 2 INSULATION KIT.	VITREOUS CHINA, 4" CENTER FIXTURE. VERIFY MOUNTING HEIGHT WITH ARCHITECTURAL.
MV-1	MIXING VALVE	POWERS	LFE480	1/2"	1/2"	-	-	-	LEAD FREE ROUGH BRONZE CONSTRUCTION, MINIMUM FLOW .5 GPM AND MAXIMUM FLOW 4 GPM. SET AT 105° OUTLET TEMPERATURE.
PT-1	PLASTER TRAP	STRIEM	USI-118015	-	-	2"	-	-	POLYETHYLENE SOLIDS INTERCEPTOR WITH REMOVABLE BUCKET, FILTER AND GASKETED COVER.
S-1	ART ROOM SINK (ADA)	ELKAY	LRADQ312265	1/2"	1/2"	2"	1-1/2"	MOEN 8799 TWO-HANDLE FAUCET, ELKAY LK35 3-1/2" BASKET STRAINER AND TAILPIECE, TRUEBRO LAV GUARD 2 INSULATION KIT.	18 GA. 304 STAINLESS STEEL, SINGLE BOWL, DROP-IN, ADA COMPLAINT, 31"X22"X6.5" DEEP, (3) HOLES ON 4" CENTERS, REAR CENTER DRAIN
S-2	HEALTH OFFICE SINK	ELKAY	LRAD191865	1/2"	1/2"	2"	1-1/2"	MOEN M-POWER SINGLE HOLE, SENSOR FAUCET WITH HARD WIRED CONNECTION. DEARBORN OPEN GRID DRAIN WITH TAIL PIECE AND P-TRAP (CHROME FINISH), TRUEBRO LAV GUARD 2 INSULATION KIT.	18 GA. 304 STAINLESS STEEL, SINGLE BOWL, DROP-IN, ADA COMPLIANT, 16"X11.5"X6.5" DEEP, (1) HOLE, CENTER DRAIN
S-3	ART ROOM SINK	ELKAY	DLRS332210	1/2"	1/2"	2"	1-1/2"	MOEN 8799 TWO-HANDLE FAUCET, ELKAY LK35 3-1/2" BASKET STRAINER AND TAIL PIECE.	18 GA. 304 STAINLESS STEEL, SINGLE BOWL, DROP-IN, 33"X22"X10.125" DEEP, (3) HOLES ON 4" CENTERS, CENTER DRAIN
S-4	SINK	ELKAY	DLSR272210	1/2"	1/2"	2"	1-1/2"	MOEN 8799 TWO-HANDLE KITCHEN FAUCET, DEARBORN OPEN GRID DRAIN WITH TAILPIECE AND P-TRAP (BOTH CHROME FINISHED), TRUEBRO LAV GUARD 2 INSULATION KIT.	18 GA. 304 STAINLESS STEEL, SINGLE BOWL, DROP IN, 27"X22"X10" DEEP, (3) HOLES ON 4" CENTERS, CENTER DRAIN
SS-1	SERVICE SINK	FIAT	TSB3010	1/2"	1/2"	3"	2"	AMERICAN STANDARD 8344.212 WALL MOUNTED SERVICE FAUCET WITH VACUUM BREAKER.	TERRAZZO, 24"X24" BASIN WITH FIAT 889-CC WALL MOUNTED STAINLESS STEEL MOP BRACKET WITH 3 RUBBER GRIPS.
U-1	URINAL	KOHLER	"BARDON" K-4904-ET	3/4"	-	2"	2"	SLOAN EBV-89A-P SMO BATTERY POWERED SENSOR FLUSH VALVE, CONCEALED WALL CARRIER.	VITREOUS CHINA, WALL HUNG, TOP SPUD, 0.5 GPF, VERIFY ROUGH-IN HEIGHT TO LIP WITH ARCHITECTURAL ELEVATIONS.
WC-1	WATER CLOSET	KOHLER	"KINGSTON" K-4325 3351.101	1"	-	4"	2"	KOHLER "STRONGHOLD" K-4371-GC ELONGATED BLACK SOLID PLASTIC OPEN FRONT SEAT, SLOAN ROYAL 111 1.6 GPF FLUSH VALVE, CONCEALED WALL CARRIER WITH THRUST BEARING NUTS & WASHERS	VITREOUS CHINA, BACK OUTLET, WALL HUNG, TOP SPUD FLUSH VALVE, ELONGATED BOWL, SIPHON JET ACTION, 16-1/8" RIM HEIGHT, FLUSH LEVER SHALL BE ON OPEN SIDE OF WATER CLOSET TO MEET ADA STANDARRDDS.
WH-1	WALL HYDRANT	WOODFORD	67 WITH C INLET	3/4"	-	-	-	-	CHROME PLATE WITH ANTI-SIPHON VACUUM BREAKER, AUTOMATIC DRAINING

PLUMBING FIXTURE SCHEDULE NOTES

A. ALL VENT/WASTE PIPING UNDERGROUND MUST BE 2" OR LARGER IF NOT SHOWN ON DRAWINGS.
B. FOLLOW PIPING SIZES AS SHOWN ON SCHEDULE UNLESS INDICATED OTHERWISE ON DRAWINGS.
C. (H) INDICATES HANDICAP FIXTURE.
D. HAVE ALL PLUMBING FIXTURES APPROVED BY OWNER, ARCHITECT PRIOR TO ORDERING.
E. PROVIDE TRUEBRO LAV GUARD 2 INSULATION KIT ON ALL EXPOSED WASTE, HOT AND COLD WATER PIPING AND QUARTER TURN BALL VALVES UNDER ALL SINKS, COUNTER AND WALL HUNG LAVATORIES.
F. PROVIDE QUARTER TURN BALL VALVE AT SUPPLY CONNECTION TO EACH PLUMBING FIXTURE.
G. PROVIDE 2" CLEANOUT UNDER SINK AT AN ACCESSIBLE LOCATION.
H. A 18" COPPER VERTICAL AIR CHAMBER SHALL BE INSTALLED ON ALL FLUSH VALVE FIXTURES.

PUMPS

MARK	MANUFACTURER	MODEL #	GPM	FT. HEAD	MIN. PUMPING EFFICIENCY	MOTOR DATA HP	VOLT	PHASE	RPM	PUMP TYPE	DIRECT OR SPLIT COUPLING TYPE	SYSTEM SERVED	NOTES
P-1	TACO	011-CF	4.0	15	-	0.125	120	1	3250	INLINE CIRCULATOR	DIRECT	DHW RECIRCULATION	1

PUMP SCHEDULE NOTES

1. BRONZE OR STAINLESS STEEL CONSTRUCTION. PUMP SHALL HAVE INLET/OUTLET TEST PORTS AND BE BALANCED AND ALIGNED.

DOMESTIC WATER HEATERS

MARK	MANUFACTURER	MODEL #	STORAGE GALLONS	ELECTRIC HEATER VOLT	PHASE	KW	EFF. %	GAS HEATER GAS TYPE	MBH INPUT	EFF. %	1ST HR RATING GALLONS	GALLONS/HR RECOVERY AT 90° TEMP. RISE	TEMP. SET POINT	LOCATION	AREA SERVED	NOTES
DWH-1	A.O. SMITH	DSE-20-12	20.0	208	3	12			0.0		71.0	55	140 °F	CUST-182C	A&H	1,2,3,4

DOMESTIC WATER HEATER SCHEDULE NOTES

1. ALL DOMESTIC WATER HEATERS SHALL BE UL LISTED
2. PROVIDE LISTED PRESSURE AND TEMPERATURE DEVICE, SIZED PER HEATER INPUT, WITH WATER HEATER. PROVIDE WITH AUTOMATIC TEMPERATURE CONTROL.
3. VERIFY PH LEVEL OF WATER IN AREA AND PROVIDE MANUFACTURER RECOMMENDED ZYNC COATED ANODE ROD.
4. INSTALL HEAT TRAPS IN BOTH INLET AND OUTLET PIPING AT CONNECTION TO WATER HEATER.

PIPE SUPPORT SCHEDULE

PIPE MATERIAL	1/2"-1-1/4" MAX. SPACING	ROD SIZE	1-1/2" MAX. SPACING	ROD SIZE	2" MAX. SPACING	ROD SIZE	2-1/2" MAX. SPACING	ROD SIZE	3" MAX. SPACING	ROD SIZE	4" MAX. SPACING	ROD SIZE	6" MAX. SPACING	ROD SIZE	8" MAX. SPACING	ROD SIZE	10" MAX. SPACING	ROD SIZE	12"-UP MAX. SPACING	ROD SIZE	NOTES
STEEL	8'	3/8"	9'	3/8"	10'	3/8"	11'	1/2"	12'	1/2"	12'	5/8"	12'	3/4"	12'	7/8"	12'	7/8"	12'	7/8"	1,2,3
COPPER	6'	3/8"	6'	3/8"	8'	3/8"	10'	1/2"	10'	1/2"	10'	5/8"	10'	3/4"	10'	7/8"	10'	7/8"	10'	7/8"	1,2,3
PVC/CPVC	4'	3/8"	4'	3/8"	4'	3/8"	4'	3/8"	4'	3/8"	4'	1/2"	4'	1/2"	4'	5/8"	4'	3/4"	4'	7/8"	1,2,3
POLYETHYLENE	3'	3/8"	3'	3/8"	3'	3/8"	NA	3/8"	4.5'	3/8"	6'	1/2"	6'	1/2"	6'	5/8"	6'	3/4"	6'	7/8"	1,2,3

PIPE SUPPORT SCHEDULE NOTES

1. PIPING SUPPORT VERTICALLY EVERY 12' OR EVERY LEVEL WHICH EVER IS LESS.
2. SPACING SCHEDULED IS THE MAXIMUM DISTANCE, SUPPORTS CAN BE INSTALLED IN SMALLER INTERVALS AND MAY NEED TO BE IF THE STRUCTURE CAN NOT HANDLE THE LOAD AT THE MAXIMUM SPACING, VERIFY WITH STRUCTURAL. A MINIMUM OF ONE SUPPORT FOR EVERY BRANCH OR PIPE SEGMENT IN EACH DIRECTION CHANGE SHALL BE PROVIDED.
3. ALL SUPPORTS SHOULD BE ANCHORED SECURELY TO THE STRUCTURE BUT NOT THE PIPING. THE SUPPORT SHOULD ALLOW FREE MOVEMENT CAUSED BY THERMAL EXPANSION. PIPING STRAPS AND CLAMPS THAT HOLD THE PIPING TIGHT TO THE STRUCTURE WILL NOT BE ALLOWED. TYPICAL ACCEPTABLE SUPPORTS INCLUDE BUT ARE NOT LIMITED TO CLEVIS HANGERS, ADJUSTABLE SWIVEL RING SUPPORT, ROLLER HANGER AND DOUBLE BOLT PIPE CLAMP.

PIPE MATERIAL AND INSULATION

PIPE	PIPING PIPE SIZE	RELATION TO GRADE	MATERIAL	FITTING TYPE	MIN. SLOPE	VALVES	COMPLY WITH	PIPING INSULATION INSULATION TYPE	INSULATION MATERIAL	INSULATION THICKNESS	DENSITY LBS/FT^3	"K VALUE" MIN.	AT TEMP	NOTES
DOMESTIC COLD WATER	1/2"-1"	ABOVE	POLYETHYLENE (PEX)	CRIMPED	-	PLASTIC BALL	ASTM F 876	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75	1
DOMESTIC COLD WATER	1-1/4"-2"	ABOVE	TYPE "L" COPPER	LEAD FREE SOLDER	-	BALL	ASTM B 88	MOLDED SECTION	JACKETED FIBERGLASS	1/2"	3	.22	75	1,3
DOMESTIC COLD WATER	2"-UP	ABOVE	TYPE "L" COPPER	BRAZED	-	BALL, BUTTERFLY	ASTM B 88	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75	1,3
DOMESTIC HOT WATER	1/4"-1"	ABOVE	POLYETHYLENE (PEX)	CRIMPED	-	PLASTIC BALL	ASTM F 876	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75	1
DOMESTIC HOT WATER	1-1/4"-1-1/2"	ABOVE	TYPE "L" COPPER	LEAD FREE SOLDER	-	BALL	ASTM B 88	MOLDED SECTION	JACKETED FIBERGLASS	1"	3	.22	75	1,3
DOMESTIC WATER	1/2"-UP	BELOW	TYPE "K" SOFT COPPER	NONE	-	NONE	ASTM B 88	-	-	-	-	-	-	2
GAS (<5 PSI)	1/2"-1-1/2"	ABOVE	SCHEDULE 40 BLACK STEEL	THREADED	-	BALL	ASTM A 53	-	-	-	-	-	-	2
SANITARY WASTE	2"-3"	BELOW	SCHEDULE 40 PVC	PRIMED AND GLUED	1/4"/12"	-	ASTM A 74 ASTM C564	-	-	-	-	-	-	2,4
SANITARY WASTE	4"-UP	BELOW	SCHEDULE 40 PVC	PRIMED AND GLUED	1/4"/12"	-	ASTM A 74 ASTM C564	-	-	-	-	-	-	2,4
SANITARY WASTE	1-1/2"-3"	ABOVE	SCHEDULE 40 PVC	PRIMED AND GLUED	1/4"/12"	-	ASTM A 74 ASTM C564	-	-	-	-	-	-	2,4
SANITARY WASTE	4"-UP	ABOVE	SCHEDULE 40 PVC	PRIMED AND GLUED	1/4"/12"	-	ASTM A 74 ASTM C564	-	-	-	-	-	-	2,4
WASTE VENT	2"-UP	BELOW	SCHEDULE 40 PVC	PRIMED AND GLUED	-	-	-	-	-	-	-	-	-	2,4
WASTE VENT	1-1/2"-UP	ABOVE	SCHEDULE 40 PVC	PRIMED AND GLUED	-	-	-	-	-	-	-	-	-	2,4
HUMIDITY CONDENSATE	ALL	ABOVE	TYPE "L" COPPER	CAST SOLDER	1/8"/12"	-	ASTM B 88	NON-SPLIT CLOSED CELL	FLEXIBLE ELASTOMERIC	1/2"	3	.25	75	1,4
REFRIGERANT (SPLIT SYSTEMS)	ALL	ABOVE	TYPE "L" COPPER	BRAZED	-	-	ASTM B 88	NON-SPLIT CLOSED CELL	FLEXIBLE ELASTOMERIC	1/2"	3	.22	75	1,6

PIPE MATERIAL AND INSULATION GENERAL NOTES

- INSTALL ALL PIPING ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. ALL INSTALLERS SHALL BE CERTIFIED, WITH DOCUMENTATION SUBMITTED WITH SHOP DRAWINGS.
- ALL PIPING SHALL BE TESTED, CLEANED AND CERTIFIED FOR INTENDED USE. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED WITH 1-1/2 TIMES THE OPERATING PRESSURE FOR NO LESS THAN 4 HOURS. PIPING TO BE CLEANED AND FLUSHED WITH CRITICAL CONTROL VALVES BYPASSED.
- DIELECTRIC FITTINGS SHALL BE USED AT ALL CONNECTIONS BETWEEN DISSIMILAR METALS. FITTINGS SHALL BE SOFT SOLDERED TO THE PIPING.
- ALL WELDED PIPE AND FUSION WELDED PIPE SHALL BE WELDED BY A CERTIFIED WELDER/ FUSION CONTRACTOR. ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER (CERTIFICATES MUST BE SUBMITTED) AND ALL WORK SHALL BE STAMPED. BOLTED FLANGES SHALL BE INSTALLED ON 2" AND LARGER PIPE TO SECTIONALIZE THE SYSTEM INTO WORKABLE SECTIONS, INSULATION SHALL GO AROUND FLANGES.

VALVE SCHEDULE

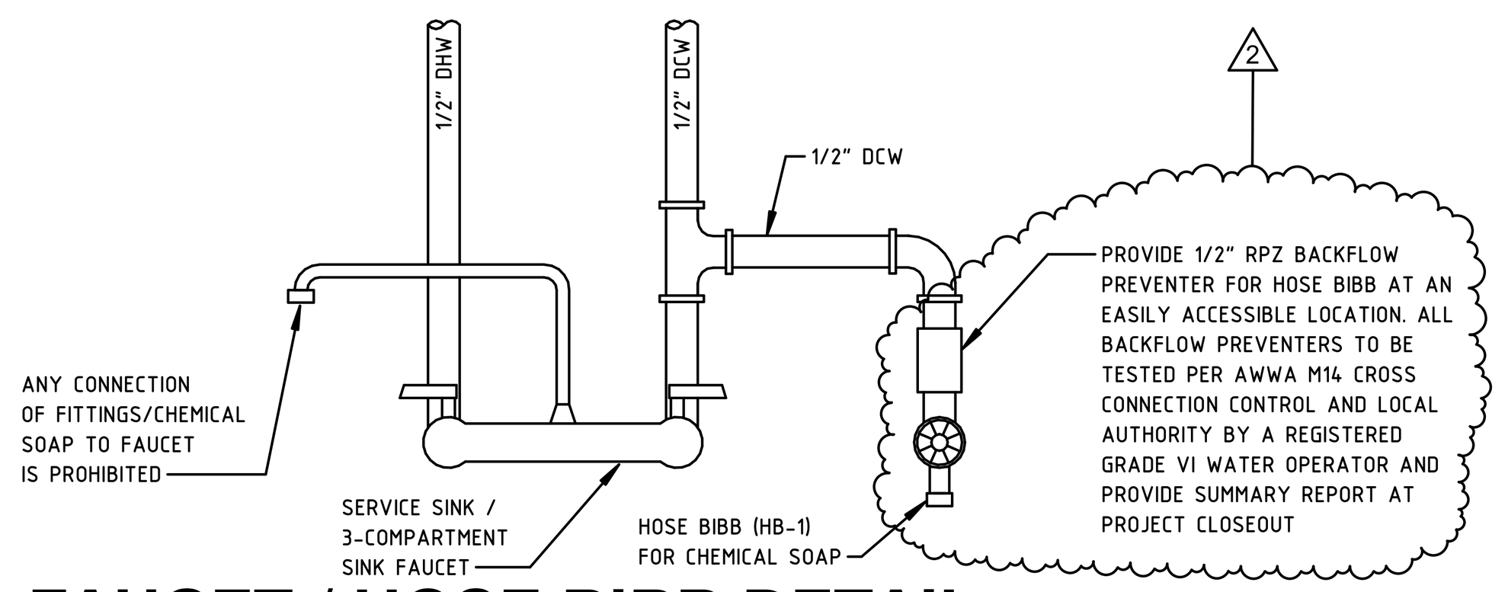
- CALIBRATED BALANCE VALVES: SHALL BE A BRONZE OR BRASS BALL VALVE WITH A SET SCREW STOP.
- BALL VALVE: SHALL BE NSF RATED FOR POTABLE WATER, BRASS OR BRONZE BODY WITH CHROME PLATED BRONZE BALL.
- BUTTERFLY VALVE: SHALL BE CAST IRON BODY WITH FLANGED ENDS, WAFFER STYLE VALVES ARE NOT ALLOWED.
- GATE VALVE: SHALL BE A BRONZE OR CAST IRON BODY WITH A RISING STEM AND SOLID BRONZE WEDGE.
- GLOBE VALVE: SHALL BE A BRONZE OR CAST IRON BODY WITH A BRONZE DISC
- ALL VALVES SHALL BE LINE SIZE FULL PORT INSTALLED WITH FULL STEM/HANDLE MOVEMENT. HANDLES SHALL NEVER BE INSTALLED VERTICALLY DOWN.

PIPE MATERIAL AND INSULATION SCHEDULE NOTES

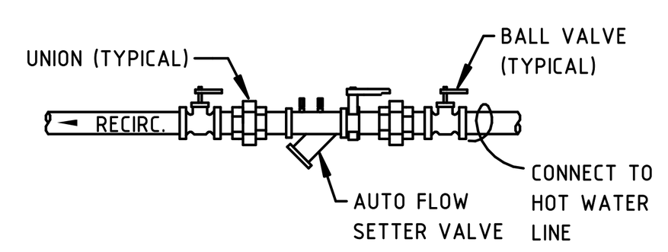
1. INSULATION & ADHESIVE SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS ACCORDING TO ASTM STANDARD AND NFPA 255. INSULATION SHALL BE INSTALLED BY A SKILLED INSTALLER IN A CLEAN WORKMANSHIP LIKE MANNER AFTER THE SYSTEM HAS BEEN PROPERLY TESTED. ALL JOINTS SHALL BE PROPERLY SEALED TO KEEP INTEGRITY OF VAPOR BARRIER INTACT. ALL INSULATION SHALL HAVE PVC JACKETS ON ALL ELBOWS AND THE ENTIRE PIPING SHALL BE JACKETED WITH PVC WHERE EXPOSED IN PUBLICLY ACCESSIBLE AREAS.
2. NO INSULATION IS REQUIRED UNLESS PIPING IS A PLASTIC MATERIAL NOT MEETING 25 / 50 FLAME AND SMOKE RATING IN A RETURN AIR PLENUM (SEE NOTE 1 IF INSULATION IS REQUIRED).
3. CROSS-LINKED POLYETHYLENE (PEX) PIPING WITH CRIMPED FITTINGS IS AN ACCEPTABLE ALTERNATIVE ONLY IF ALLOWED BY LOCAL CODES. INSULATION WILL STILL BE REQUIRED.
4. SCHEDULE 40 PVC DWV PIPING WITH PRIMED AND GLUED FITTINGS IS AN ACCEPTABLE ALTERNATIVE ONLY IF PIPING IS NOT SERVING ANY DRAINS THAT MAY HAVE WATER HOTTER THAN 140° IN IT OR EXPOSED IN ANY KITCHEN AND ALLOWED BY LOCAL CODES. ALL EXPOSED PIPING IN KITCHENS SHALL BE COPPER. INSTALL INSULATION ON PIPING IN A CEILING PLENUM RETURN ACCORDING TO REQUIREMENTS OF LOCAL JURISDICTION - 1 HOUR FIRE WRAP SHALL BE USED UNLESS LOCAL JURISDICTION ALLOWS ALTERNATIVE PRODUCTS. ALL UNDERGROUND PIPING SHALL BE INSTALLED PER ASTM D2321
5. PIPING MUST HAVE TRACER WIRE INSTALLED ON PIPING.
6. AFTER PIPING HAS BEEN INSTALLED, ENDS MUST BE CAPPED TO ENSURE THAT DEBRIS DOES NOT ENTER PIPING. PIPING MUST BE BRAZED WITH NITROGEN FLOWING IN THE SYSTEM. ALL OUTDOOR REFRIGERANT PIPING SHALL BE PAINTED WITH UV RESISTANT PAINT AND SHALL BE CLEARLY LABELED WITH PLASTIC / PVC PIPE TAGS TO WHICH UNIT THE PIPING SERVES.

2

ATTACHEMENT POINTS FOR PIPE, DUCT AND CONDUIT, WITH AN ATTACHEMENT POINT LOAD OF 50 LB OR GREATER, NEED TO BE LOCATED AT JOIST PANEL POINTS OR ELSE JOIST REINFORCING IS REQUIRED PER THE ATTACHED DETAIL 3 ON S1.2.



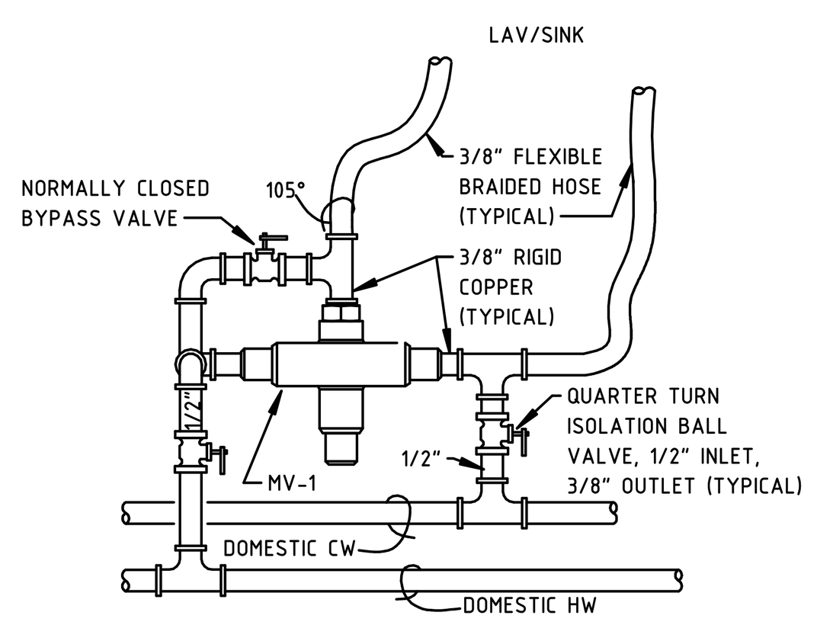
1 P3.1 **FAUCET / HOSE BIBB DETAIL**
NTS



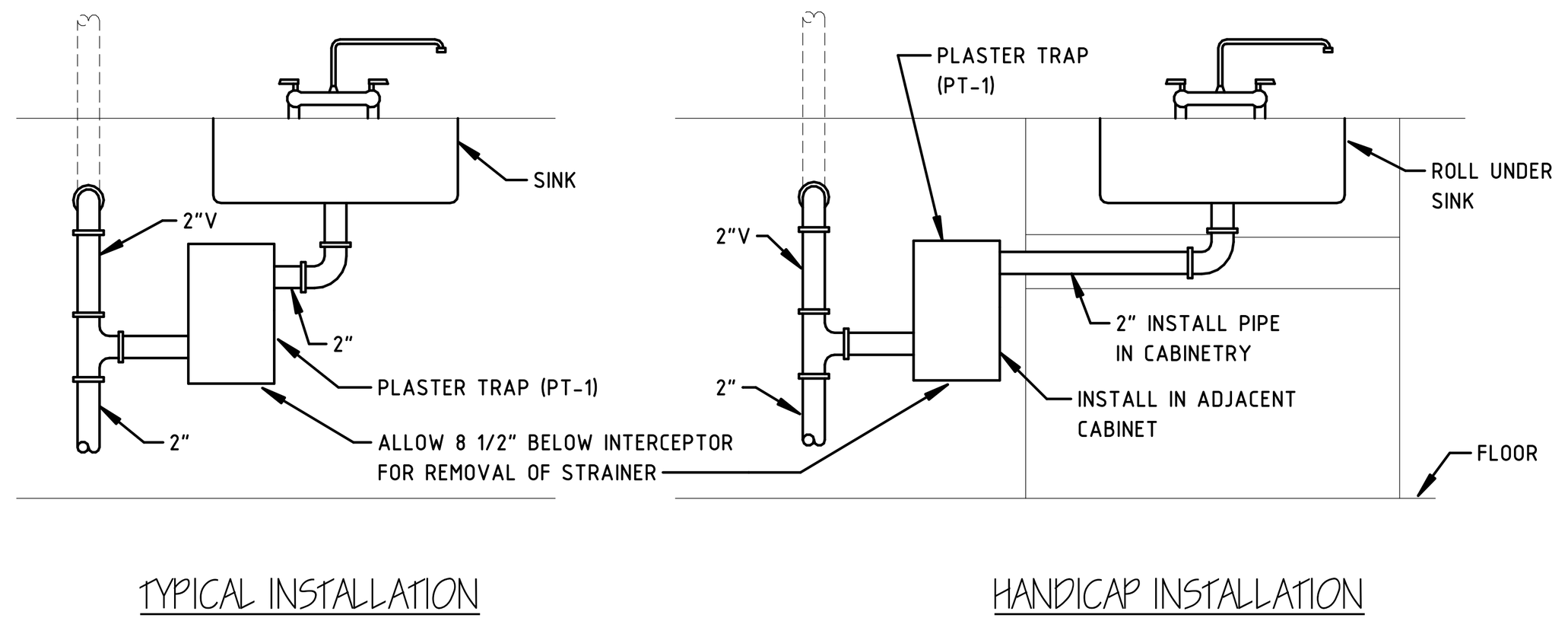
2 P3.1 **RECIRC VALVE DETAIL**
NTS

DETAIL NOTES

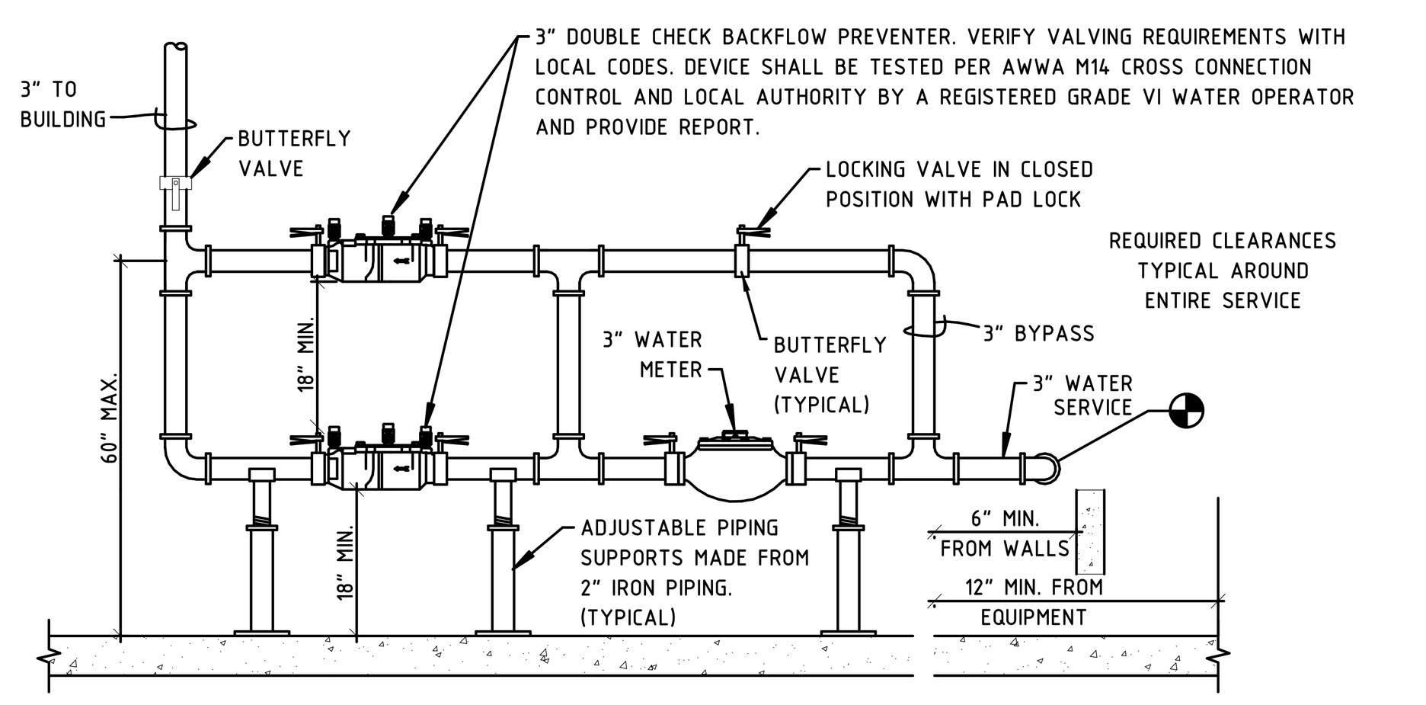
1. ALL PIPING MUST BE INSTALLED IN A NICE CLEAN WORKMANSHIP LIKE MANNER.
2. ALL PIPING FROM MAIN SHALL BE 1/2".
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
4. PROVIDE ESCUTCHEONS AT ALL WALL PENETRATIONS.



3 P3.1 **MIXING VALVE DETAIL**
NTS

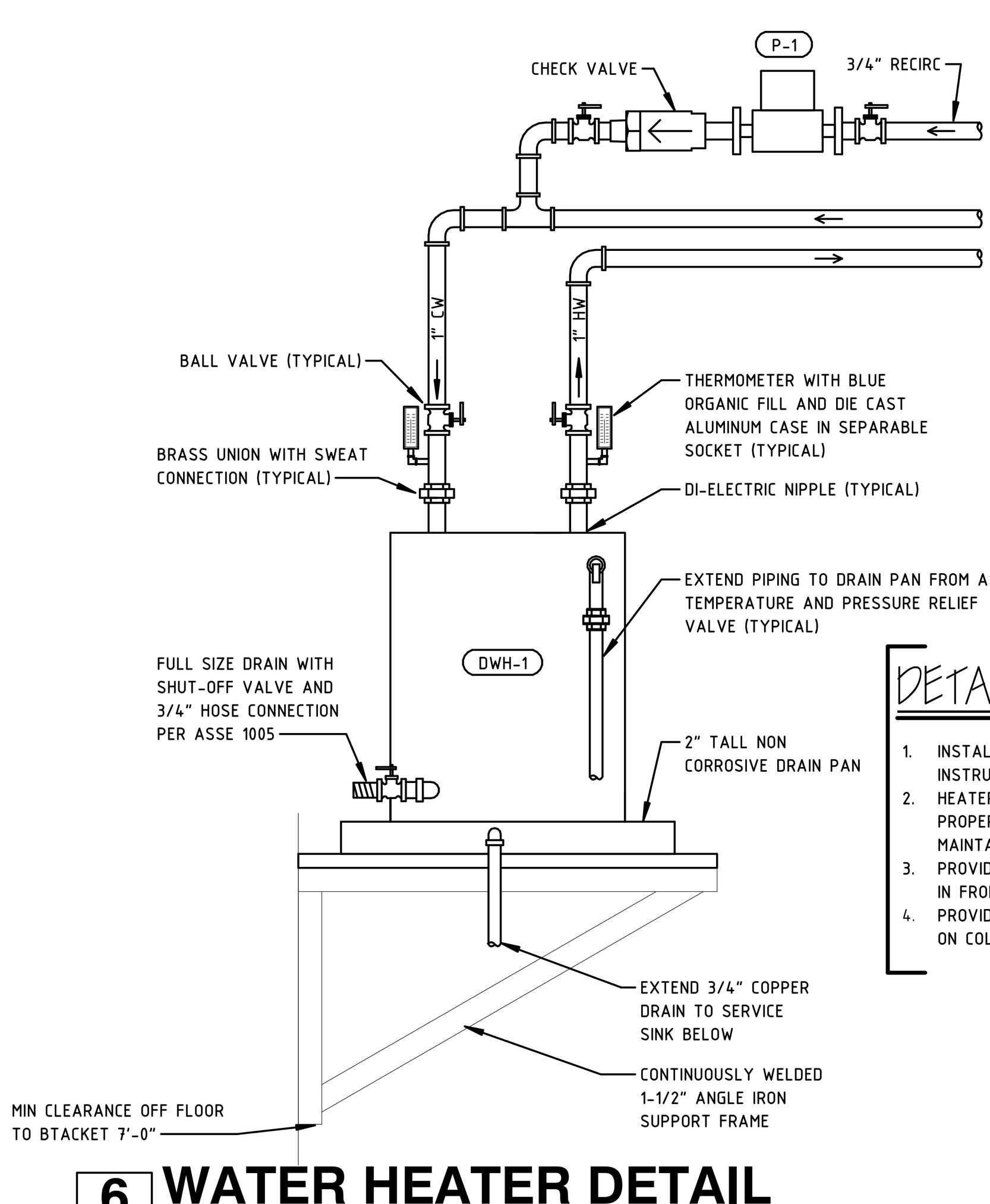


4 P3.1 **PLASTER TRAP DETAIL**
NTS



NOTE: PROVIDE DRAIN AND VALVE IN SYSTEM AT LOW POINT. COORDINATE EXACT REQUIREMENTS AND INSTALL PER LOCAL CODE AND UTILITY COMPANY REQUIREMENTS.

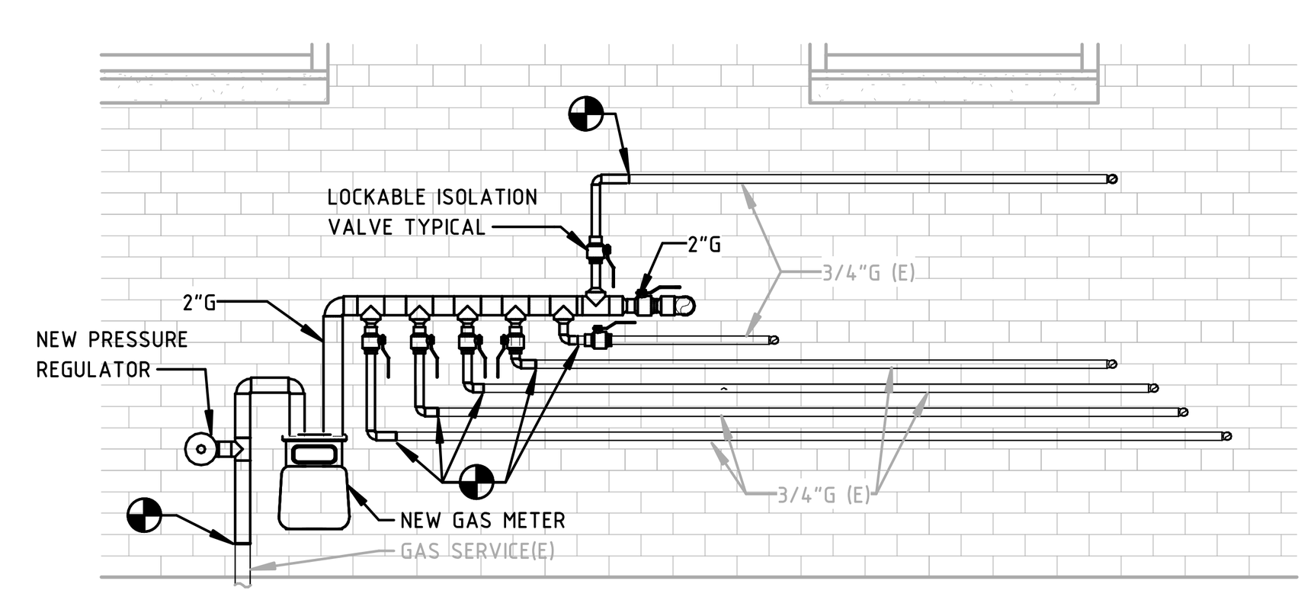
5 P3.1 **WATER SERVICE DETAIL**
NTS



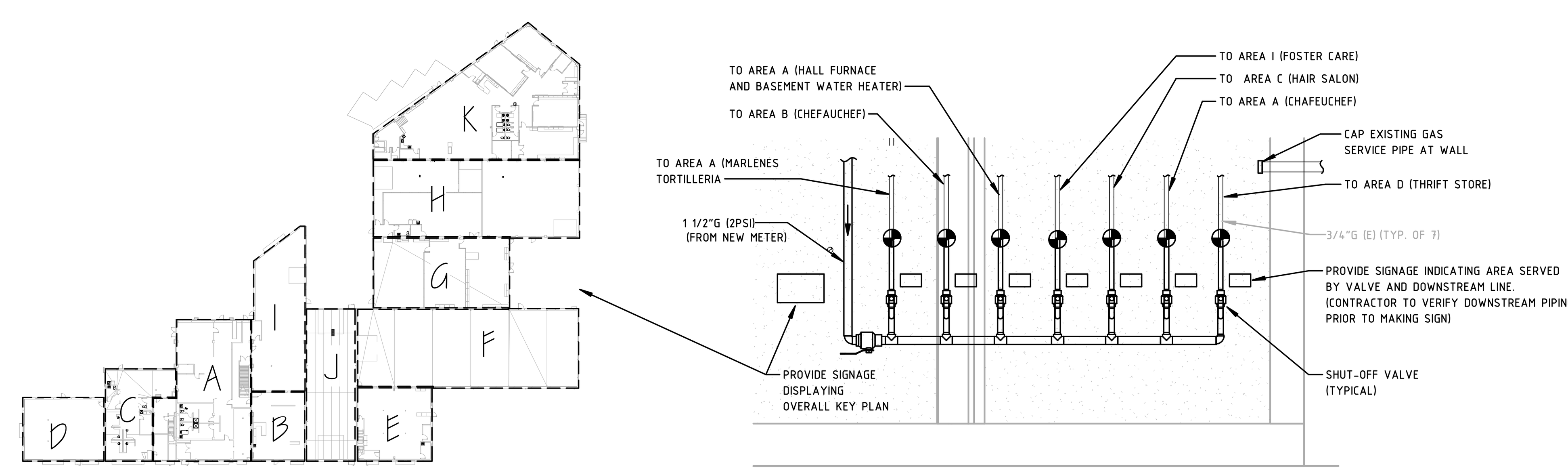
DETAIL NOTES

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. HEATER SHALL BE INSTALLED TO HAVE PROPER ACCESS FOR OBSERVATION, MAINTANENCE AND REPLACEMENT.
3. PROVIDE 30"x30" MINIMUM CLEAR ACCESS IN FRONT OF HEATER.
4. PROVIDE APPROVED ANTI-SIPHON DEVICE ON COLD WATER PIPING.

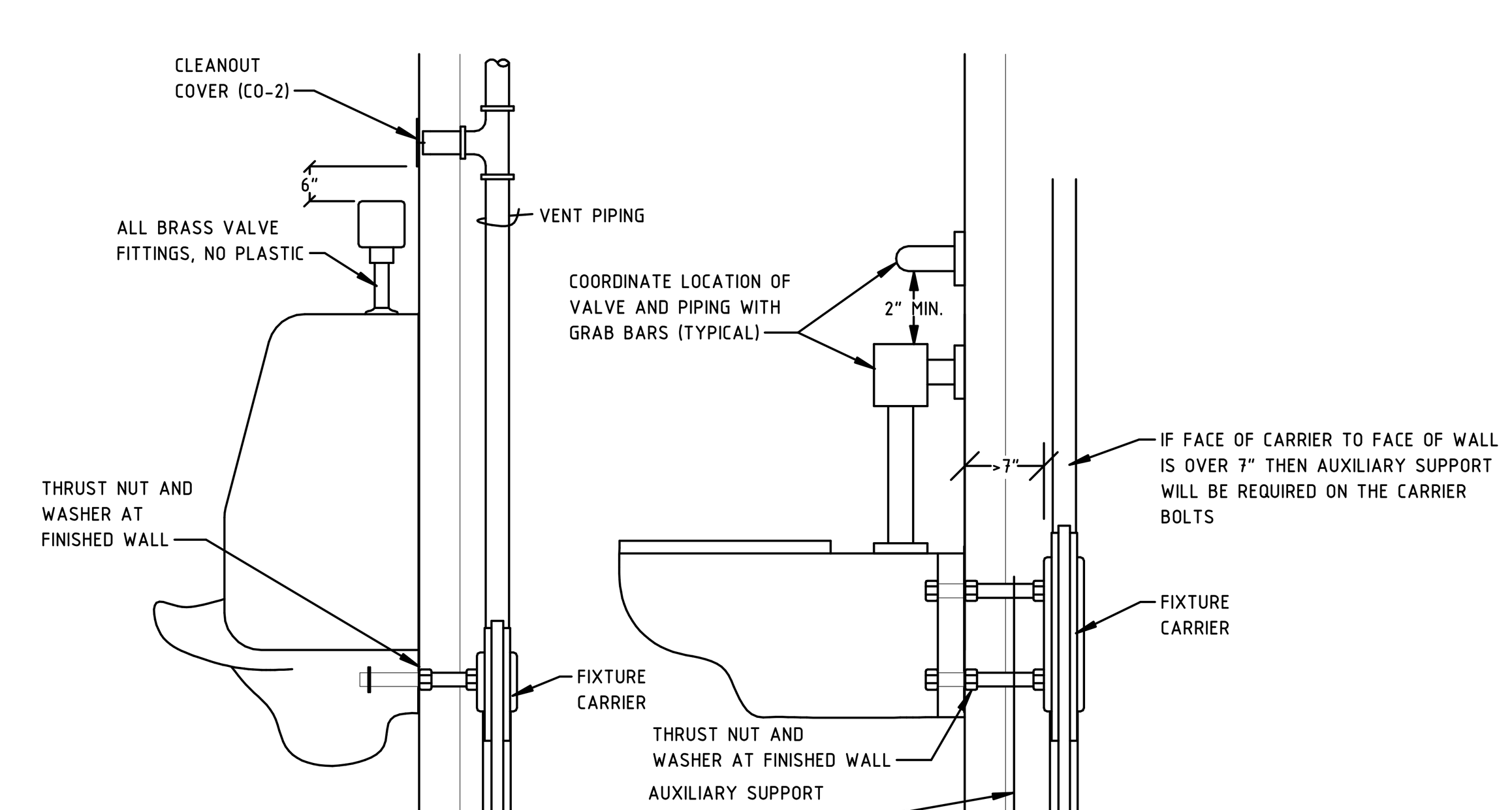
6 P3.1 **WATER HEATER DETAIL**
NTS



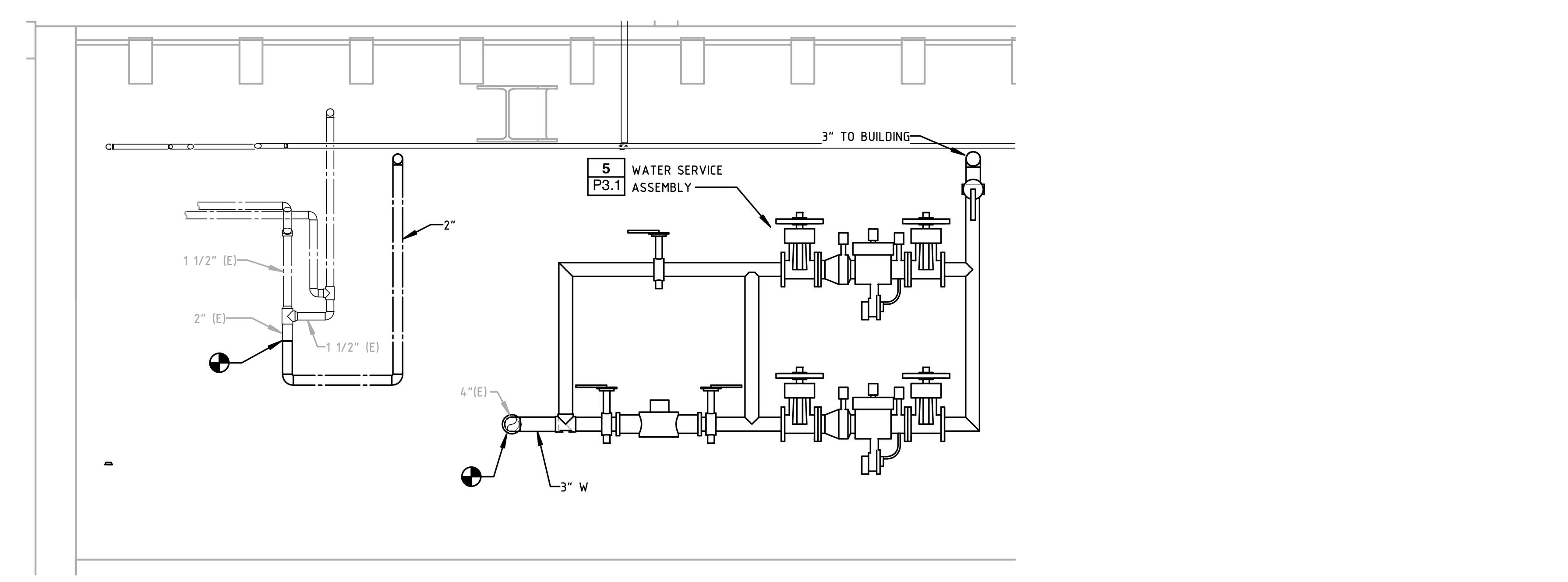
9 P3.1 **NEW GAS METER**
NTS



8 P3.1 **GAS HEADER DETAIL**
NTS



7 P3.1 **URINAL & WATER CLOSET DETAIL**
NTS



10 P3.1 **WATER METER DETAIL**
NTS

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AES
ADVANCED ENGINEERING SYSTEMS

LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGARM
BOTTLERS BUILDING
Lincoln, NE

Project Number
23-007
Date
1/11/2024
Revisions

#	Date
1	1-17-2024
2	1-31-2024

MECHANICAL ABBREVIATIONS

(E)	EXISTING
(R)	RELOCATED
(D)	DEMOLISHED
ACH	AIR CHANGES PER HOUR
ADJ	ADJACENT, ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURE
ASHRAE	AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BFP	BACKFLOW PREVENTER
BJS	BELOW JOIST SPACE
BLDG	BUILDING
BTU	BRITISH THERMAL UNITS
BTUH	BRITISH THERMAL UNITS PER HOUR
CAP	CAPACITY
CFM	CUBIC FEET PER MINUTE
CLG	COOLING
CUFT	CUBIC FEET
DB	DRY BULB
DCW	DOMESTIC COLD WATER
DECO	DOUBLE EXTERIOR CLEANOUT
DEG, °	DEGREE(S)
DEMO	DEMOLITION
DFU	DRAINAGE FIXTURE UNITS
DIA, Ø	DIAMETER
DHW	DOMESTIC HOT WATER
DN	DOWN
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
ECO	EXTERIOR CLEANOUT
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
F	FAHRENHEIT
FDC	FIRE DEPARTMENT CONNECTION
FPM	FEET PER MINUTE
FSC	FOOD SERVICE CONTRACTOR
FT	FOOT, FEET
FUT	FUTURE
GAL	GALLON(S)
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HTG	HEATING
HVAC	HEATING, VENTILATION, & AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IFC	INTERNATIONAL FIRE CODE
IJS	IN JOIST SPACE
IN	INCH(ES)
IMC	INTERNATIONAL MECHANICAL CODE
IPC	INTERNATIONAL PLUMBING CODE
INSUL	INSULATION
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU'S PER HOUR
MECH	MECHANICAL
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOP	MAXIMUM OVER CURRENT PROTECTION
MTL	METAL
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OPNG	OPENING
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH, Ø	PHASE
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
QTY	QUANTITY
RCP	REFLECTED CEILING PLAN
RECIRC	RECIRCULATION
REQD	REQUIRED
REV	REVISION
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
SCHED	SCHEDULE
SENS	SENSIBLE
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SPEC	SPECIFICATION
SQFT, FT^2	SQUARE FEET
STD	STANDARD
SURF	SURFACE
SUSP	SUSPENDED
TD	TEMPERATURE DIFFERENTIAL
TEMP	TEMPERATURE
TJS	THROUGH JOIST SPACE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UF	UNDER FLOOR
UL	UNDERWRITERS LABORATORIES
UMC	UNIFORM MECHANICAL CODE
UPC	UNIFORM PLUMBING CODE
W	WATTS
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WGHT	WEIGHT
WPD	WATER PRESSURE DROP
WSFU	WATER SUPPLY FIXTURE UNITS
V	VOLT
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF

HVAC SYMBOLS

Symbol	Description
#	KEY NOTE
X X / X	CROSS SECTION INDICATOR
X X / X	D = DETAIL DRAWING P = PARTIAL DRAWING R = RISER DIAGRAM S = CROSS SECTION DRAWING
	NEW TO EXISTING CONNECTION
(E) XX	EXISTING DUCT
	DEMOLITION HATCH
	DUCT BREAK MARK
FD	FIRE DAMPER IN DUCT
SD	SMOKE DAMPER IN DUCT
FSD	FIRE/SMOKE DAMPER IN DUCT
MD	MOTORIZED MECHANICAL DAMPER IN DUCT
VD	MANUAL VOLUME DAMPER IN DUCT
BD	BACK DRAFT DAMPER IN DUCT
	TURNING VANES IN ELBOW
	INSIDE AND OUTSIDE RADIUS ELBOW
	SUPPLY AIR DUCT CROSS SECTION
	RETURN AND FRESH AIR DUCT CROSS SECTION
	EXHAUST AIR DUCT CROSS SECTION
SPIRAL	SINGLE WALL SPIRAL DUCT
Ø DWS	DOUBLE WALL INSULATED SPIRAL DUCT
	SUPPLY DIFFUSER
	SUPPLY REGISTER
	RETURN GRILLE
	EXHAUST GRILLE
	SQUARE TO ROUND FITTING
	HIGH EFFICIENCY DUCT TAKE OFF
	ROUND TO ROUND FITTING
SA	SUPPLY AIR DUCT
RA	RETURN AIR DUCT
FA	FRESH AIR DUCT
RFA	RELIEF AIR DUCT
XA	EXHAUST AIR DUCT
Y XXXX	SENSOR S = SENSOR C = CO2 SENSOR P = PRESSURE H = HUMIDITY SENSOR T = THERMOSTAT XXXX = UNIT/SYSTEM SENSOR IS SERVING BAS = BUILDING AUTOMATION SYSTEM MO = MONITORING PURPOSE ONLY
X-X	EQUIPMENT DESIGNATION

GENERAL PROJECT NOTES

GENERAL NOTES

A. THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, CITY, STATE AND NATIONAL CODES, LAWS, ACTS AND ORDINANCES AND ALL AUTHORITIES HAVING JURISDICTION, THE OWNERS INSURANCE COMPANY REQUIREMENTS, UTILITY COMPANY REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS OF GOOD PRACTICE AND SAFETY, THE MANUFACTURER'S STRICTEST REQUIREMENTS AND RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.

B. DRAWINGS ARE LARGELY SCHEMATIC IN NATURE. THOUGH A LOT OF DETAILS MAY BE SHOWN THEY ARE NOT INTENDED TO SHOW EVERY DETAIL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL OTHER TRADES AND EXISTING/SITE CONDITIONS TO PROVIDE A FULLY FUNCTIONAL SYSTEM PER THE INTENT OF DESIGN. ALL REQUIRED PIPING, SUPPORTS AND DUCTS SHALL BE PROVIDED FOR A FULLY FUNCTIONAL SYSTEM PER THE DESIGN INTENT. IF ROUTING IS NOT SHOWN ON THE PLANS, COORDINATE WITH THE ENGINEER PRIOR TO BIDDING.

C. IF ANY CONFLICTING INFORMATION IS PROVIDED ON THE DRAWINGS, THE MORE STRINGENT/EXPENSIVE SHOULD BE BID UNLESS A ADDENDUM CAN BE ISSUED IN TIME TO CORRECT THE SITUATION.

GENERAL COORDINATION

A. ALL WORK SHALL BE COORDINATED BETWEEN TRADES BEFORE ANY CONSTRUCTION/ FABRICATING BEGINS IN A "KICK-OFF" MEETING. CONTACT ENGINEER/ ARCHITECT FOR QUESTIONS.

B. PHASING OF PROJECT SHALL BE CLOSELY COORDINATED WITH THE GENERAL CONTRACTOR. ANY ADDITIONAL DAMPER, VALVE, OR ACCESSORY SHALL BE PROVIDED AT NO ADDITIONAL COST.

C. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE WITH THE ELECTRICAL CONTRACTOR ON ALL ELECTRICAL REQUIREMENTS FOR THE EQUIPMENT PRIOR TO ORDERING. ALL REQUIREMENT CHANGES SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR / SUPPLIER AT NO ADDITIONAL COST TO THE PROJECT.

D. NO DUCT OR PIPING SHALL BE INSTALLED ABOVE ANY ELECTRICAL PANEL.

E. EXACT LOCATION OF ALL PIPING, DUCTS, DIFFUSERS, GRILLES AND SUPPORTS SHALL BE COORDINATED WITH STRUCTURE, LIGHTS, CEILING GRID, HVAC, PLUMBING FIXTURES. COORDINATE LOCATION WITH FIRE SPRINKLER PIPING IF APPLICABLE. SEE ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS FOR COORDINATION.

F. EXACT ROUTING OF ALL DUCT AND PIPING THROUGH THE ROOF/WALLS SHALL BE COORDINATED WITH STRUCTURE. VERIFY LOCATION WITH GC/ ARCHITECT PRIOR TO CUTTING HOLES.

G. WHEN ALL WORK IS COMPLETED NO MATERIALS SHALL BE LEFT ON SITE UNLESS SPECIFICALLY REQUESTED BY THE OWNER. ALL MATERIALS TO BE DISPOSED OF PROPERLY.

H. CONTRACTOR TO FIRE SEAL WALLS, CEILINGS AS REQUIRED AND MAINTAIN ALL FIRE RATINGS.

2

I. ATTACHEMENT POINTS FOR PIPE, DUCT AND CONDUIT, WITH AN ATTACHEMENT POINT LOAD OF 50 LB OR GREATER, NEED TO BE LOCATED AT JOIST PANEL POINTS OR ELSE JOIST REINFORCING IS REQUIRED PER THE ATTACHED DETAIL 3 ON S1.2.

PRIOR APPROVALS AND FILE SHARING

A. ALL REQUESTED REVIT MODELS (.RVT) SHALL BE PROVIDED AT A CHARGE OF $500. PRIOR TO TRANSMISSION OF FILES, THE REQUESTIING PARTY MUST SIGN AND RETURN "DOCUMENT DISCLAIMER" TO AES.

B. ALL SHEETS REQUESTED IN CAD (.DWG) FORMAT SHALL BE PROVIDED AT A CHARGE OF $25/SHEET (MINIMUM $250). FOR FIRE ALARM AND FIRE SPRINKLER CONTRACTORS. ALL OTHERS REQUESTING CAD FILES SHALL BE CHARGED $50/SHEET (MINIMUM $250). PRIOR TO TRANSMISSION OF FILES, THE REQUESTING PARTY MUST SIGN AND RETURN "DOCUMENT DISCLAIMER" TO AES.

C. MECHANICAL, ELECTRICAL AND PLUMBING SUBSTITUTION PRODUCTS MUST BE ON LPS APPROVED LIST.

D. PROPOSED SUBSTITUTIONS OF MECHANICAL, ELECTRICAL AND PLUMBING PRODUCTS MAY BE SUBMITTED FOR REVIEW DURING THE SHOP DRAWING/ PRODUCT DATA SUBMITTAL STAGE.

E. PROPOSED SUBSTITUTIONS SHALL BE EQUAL TO OR SUPERIOR IN ALL RESPECTS TO THE SPECIFIED PRODUCT.

F. PROPOSED SUBSTITUTIONS SHALL HAVE THE SAME WARRANTY AS THE SPECIFIED PRODUCT.

G. PROPOSED SUBSTITUTIONS WILL HAVE NO ADVERSE EFFECT ON THE OTHER TRADES.

H. PROPOSED SUBSTITUTION WILL NOT AFFECT DIMENSIONS AND FUNCTIONAL CLEARANCES.

I. PRODUCT DATA AND SHOP DRAWING FOR PROPOSED SUBSTITUTIONS MUST BE PROJECT SPECIFIC AND INCLUDING ALL COMPONENTS IDENTIFIED FOR COMPARISON TO THE ORIGINAL PRODUCT.

J. THE BURDEN OF PROOF OF THE EQUIVALENCE ON THE PROPOSED SUBSTITUTION IS ON THE PROPOSER.

DUCT

A. ALL ROUND DUCT SHOWN MUST BE HARD DUCT, FLEX DUCT MAY ONLY BE 3'-0" MIN 5'-0" MAX NEAR THE DIFFUSER AS SHOWN IN THE SUPPLY DIFFUSER DETAIL. DUCT RUNNING IN THE WEBBING OF THE JOISTS MUST ALSO BE HARD DUCT.

B. ALL DUCT DIMENSIONS ARE INSIDE CLEAR DIMENSIONS.

C. DUCT SIZE TO DIFFUSERS, REGISTERS, GRILLES, ETC. SHALL BE SIZE OF NECK UNLESS OTHERWISE STATED.

D. ALL DUCT ELBOWS SHALL BE RADIUS-RADIUS OR SQUARE WITH TURNING VANES.

E. CONTRACTOR IS RESPONSIBLE FOR ALL TRANSITIONS, ELBOWS, OFFSETS IN DUCT TO MAKE SYSTEMS FIT WITHIN SPACE AND STRUCTURE PROVIDED.

F. HIGH EFFICIENCY DUCT TAKE-OFFS (HET) WITH INTEGRAL DAMPERS MUST BE INSTALLED AT EACH TAKE-OFF ON ALL DUCTS (SA,RA,XA,OA...). HET SHALL BE A ONE PIECE OR FACTORY SEALED FITTING WITH PRE-INSTALLED GASKETED FLANGE TO CONNECT TO DUCT. WHERE A HIGH EFFICIENCY TAKE-OFF WILL NOT FIT BECAUSE OF STRUCTURE A SIMPLE DUCT COLLAR MAY BE USED ALONG WITH AN OPPOSED BLADE DAMPER AT THE DIFFUSER. EVERY LOCATION WITH AN OPPOSED BLADE DAMPER IN THE DIFFUSER MUST BE APPROVED BY ENGINEER BEFORE INSTALLATION. ALL DAMPERS SHALL HAVE A LONG STEM (THROUGH DUCT) AND A STAND-OFF SUPPORT FOR INSULATED DUCT.

G. ALL DAMPERS SHALL BE INSTALLED AT AN EASILY ACCESSIBLE LOCATION IN THE DUCT.

H. ALL BLADES ON RETURN GRILLES SHALL BE PARALLEL TO THE FLOOR AND THE GRILLE SHALL BE ORIENTED SO THAT THE BLADES POINT TO THE CEILING IF MOUNTED ABOVE 5'-0" AFF AND POINT TO THE FLOOR IF MOUNTED BELOW 5'-0" AFF.

I. ALL VISIBLE RETURN, EXHAUST AND RELIEF AIR DUCTS SHALL BE PAINTED BLACK ON THE INSIDE INCLUDING INSULATION AND PINS BEHIND ALL GRILLES AND DIFFUSERS.

J. ALL FILTERS AND FILTER RACKS SHALL BE 2" AND ONE OF NOMINAL (WHOLE NUMBER DIVISIBLE BY 1) SIZES AVAILABLE AT BIG BOX RETAIL STORES.

EQUIPMENT

A. ALL DUCT AND DUCT CONNECTION TO EQUIPMENT SHALL BE SEALED WITH EITHER FOIL TAPE OR DUCT SEAL COMPOUND ON ALL JOINTS INCLUDING LONG TRANSVERSE JOINTS IN SQUARE DUCT.

B. ALL DUCT, CONDUIT, AND PIPING CONNECTING TO EQUIPMENT SHALL HAVE FLEXIBLE CONNECTIONS INSTALLED AT CONNECTION TO EQUIPMENT. FLEXIBLE DUCT WITH 1" SLACK SHALL BE INSTALLED IN BOTH THE SUPPLY AND RETURN DUCTS.

C. ALL EQUIPMENT WITH ELECTRICAL HARD WIRED CONNECTIONS MUST BE UL LISTED ASSEMBLIES OR THE PROPER FIELD TESTING FOR FIELD RATINGS TO A UL LISTED ASSEMBLY MUST BE INCLUDED WITH DOCUMENTATION PROVIDED TO THE AUTHORITY HAVING JURISDICTION, OWNER AND DESIGN TEAM UPON COMPLETION.

D. ALL MOTORS BEING CONTROLLED BY VFDS ON PUMPS, FANS, ETC. SHALL BE COMPATIBLE FOR USE WITH A VFD, SHALL BE INVERTER DUTY RATED AND PROVIDED WITH A SHAFT GROUNDING KIT.

E. A 10'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL MECHANICAL FRESH AIR INTAKES AND ALL PLUMBING VENTS, EXHAUST VENTS AND EXHAUST FANS. A 3'-0" MINIMUM CLEARANCE MUST BE KEPT BETWEEN ALL ENVIRONMENTAL AIR EXHAUST (RESTROOMS, ETC.) AND ALL OPERABLE OPENINGS INTO BUILDING.

F. ALL REFRIGERANT PIPING MUST BE SIZED ACCORDING TO MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.

G. PROVIDE APPROVED MANUFACTURER'S ACCESS DOOR IN ALL HARD CEILINGS ADJACENT TO ANY EQUIPMENT/CONTROLS THAT IS NOT ACCESSIBLE FROM BELOW BY ITSELF. COORDINATE FINISH COLOR WITH ARCHITECT PRIOR TO ORDERING.

H. IT IS THE RESPONSIBILITY OF THE MANUFACTURER / SUPPLIER TO MAKE SURE ALL UNITS FIT IN THE REQUIRED SPACE INTENDED WITH RECOMMENDED MAINTENANCE AND ACCESS CLEARANCES. ALL COILS INSTALLED SHALL HAVE PROPER CLEARANCE FOR REMOVAL WITHOUT INTERFERENCE. ANY CHANGES NEEDED WILL BE THE RESPONSIBILITY OF THE MANUFACTURER AT NO ADDITIONAL COST TO THE PROJECT.

I. THE MINIMUM MANUFACTURER RECOMMENDED CLEARANCE OR 48" CLEARANCE, WHICHEVER IS GREATER MUST BE MAINTAINED FOR ALL EQUIPMENT / VALVING NEEDING ACCESS. ALL ACCESS PANELS SHALL HAVE ADEQUATE CLEARANCE. CONSULT THE ENGINEER IF THIS IS NOT POSSIBLE.

J. ALL EQUIPMENT SHALL BE SUPPORTED BY: A HOUSE KEEPING PAD, METAL STAND, OR SUPPORTED FROM THE STRUCTURE. NO EQUIPMENT SHALL SIT DIRECTLY ON THE FLOOR.

K. ALL EQUIPMENT SHALL BE PROPERLY ALIGNED, LUBRICATED AND OILED BEFORE START UP AND FINAL ACCEPTANCE BY OWNER.

L. ALL DUCT AND EQUIPMENT SHALL BE PROTECTED DURING CONSTRUCTING AND CLEANED AS NEEDED BEFORE ANY FAN IS TURNED ON. FILTERS OF THE SPECIFIED EFFICIENCY MUST BE IN PLACE WHEN FANS ARE RUNNING AND CHANGED AS NECESSARY THROUGHOUT CONSTRUCTION. NEW FILTERS SHALL BE INSTALLED JUST PRIOR TO OWNERS ACCEPTANCE. EQUIPMENT MUST BE TESTED AND COMPLETED PRIOR TO SUBSTANTIAL COMPLETION AND TURNING OVER TO OWNER.

M. ALL EQUIPMENT SHALL BE THOROUGHLY CLEANED AND ALL EQUIPMENT SHALL BE THOURALL BARE, SCRATCHED OR MARRED AREAS ON EQUIPMENT SHALL BE PAINTED WITH FACTORY PAINT OR AN OWNER APPROVED EQUAL.

N. ANY SPECIAL TOOL NEEDED FOR ASSEMBLY, MAINTENANCE OR ADJUSTMENT OF ANY EQUIPMENT SHALL BE SUPPLIED TO THE OWNER AT NO ADDITIONAL COST.

O. PROVIDE A PREVENTATIVE/ PREDICTIVE MAINTENANCE SCHEDULE IN MICROSOFT WORD FORMAT FOR ALL EQUIPMENT TO OWNER/ ENGINEER AT THE COMPLETION OF THE PROJECT.

THERMOSTAT

A. HVAC CONTRACTOR TO PROVIDE AND INSTALL ALL REQUIRED THERMOSTAT AND CONTROL WIRING TO THERMOSTATS, MOTORIZED DAMPERS, TIME-CLOCKS, ETC. ALL MOTORIZED DAMPERS TO BE 24 VOLT.

B. ALL THERMOSTATS SHALL BE WALL MOUNTED UNLESS OTHERWISE NOTED. EXACT LOCATION SHALL BE COORDINATED WITH OWNER / ENGINEER / ARCHITECT PRIOR TO INSTALLATION.

EXISTING PROJECT

A. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO SEE SPECIFIC JOB SITE CONDITIONS FOR THIS PROJECT.

B. FIELD VERIFY EXACT LOCATION OF EXISTING DUCT AND PIPING BEFORE BEGINNING CONSTRUCTION.

C. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, STOP WORK IMMEDIATELY AND INFORM THE OWNER'S REPRESENTATIVE IN WRITING. THE OWNER'S REPRESENTATIVE WILL THEN BE RESPONSIBLE TO TAKE THE APPROPRIATE ACTIONS.

D. DURING SMOKE/DUST PRODUCING OPERATIONS, SMOKE DETECTORS SHALL BE COVERED AND TEMPORARY FANS SHALL BE USED TO EXHAUST AREA OF SMOKE/DUST. COORDINATE WITH OWNER.

E. THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW SUPPORTS AND HANGERS FOR ALL EXISTING PIPING, CABLING AND WIRING (HIGH AND LOW VOLTAGE) THAT ARE TO REMAIN. THIS INCLUDES RESUPPORTING ANYTHING THAT IS SUPPORTED BY ANY ITEM SCHEDULED TO BE REMOVED. ANY DAMAGE TO THE EXISTING SYSTEMS TO REMAIN MUST BE REPAIRED AND TESTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

F. MAINTAIN ALL EXISTING ROOF WARRANTIES AS APPLICABLE.

CONTROLS

A. THE CONTROLS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COORDINATION WITH THE MECHANICAL, HVAC, AND ELECTRICAL CONTRACTORS TO PROVIDE AND INSTALL SYSTEMS AS SPECIFIED. THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR ALL CONDUIT AND WIRE NOT SHOWN ON MECHANICAL AND ELECTRICAL DOCUMENTS BUT THAT ARE REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. ALL CONTROL VALVE, DAMPERS, SENSOR, WELLS, ETC SHOWN AND NOT SHOWN SHALL INSTALLED. MECHANICAL CONTRACTOR TO COORDINATE CLOSELY WITH CONTROLS CONTRACTOR. MECHANICAL AND CONTROLS CONTRACTOR SHALL READ CONTROLS SEQUENCES AND SPECIFICATIONS.

B. ALL POINTS FOR THE CONTROL SYSTEM SHALL BE MADE AVAILABLE BY THE EQUIPMENT MANUFACTURER AND SHALL BE PICKED UP BY THE CONTROLS CONTRACTOR.

LPS

A. CURRENT LPS DESIGN GUIDELINES AT THE TIME OF BIDING SHALL BE FOLLOWED. THESE ARE AVAILABLE AT WWW.LPS.ORG

B. ALL FILTERS AND FILTER RACKS SHALL BE 2" AND ONE OF NOMINAL (WHOLE NUMBER DIVISIBLE BY 1) SIZES USED AND APPROVED BY LPS. RACK SHALL BE TESTED TO FIT LPS PROVIDED FILTER CAGE. THIS IS TYPICAL FOR ALL HEAT PUMPS, ERV'S AND AIR HANDLERS.

C. IN ALL MECHANICAL SPACES: MAINTAIN A FOUR FOOT ZERO INCH (4'-0") MINIMUM CLEARANCE BETWEEN MECHANICAL EQUIPMENT AND ACCESSORIES; AND A MINIMUM HEAD HEIGHT OF SEVEN FOOT ZERO INCH (7'-0") AS WELL. WHERE NOT POSSIBLE CONSULT ENGINEER PRIOR TO INSTALLATION.

D. ALL GREASE PORTS TO BE EXTENDED TO OUTSIDE THE CABINET FOR MAINTENANCE PURPOSES. COORDINATE WITH LPS PRIOR TO INSTALLATION.

E. RELIEF AIR DUCT MUST ALWAYS BE CONNECTED UP STREAM OF FRESH AIR DUCT CONNECTION ON RETURN AIR DUCT.

SHEET LIST - HVAC

SHEET NUMBER	SHEET NAME
M0.0	HVAC GENERAL PROJECT INFORMATION
MD1.1	HVAC DEMOLITION PLANS - ARTS & HUMANITIES
M1.1	ARTS & HUMANITIES HVAC PLANS
M1.2	MISC. HVAC PLANS AND SECTIONS
M2.1	HVAC DETAILS
M3.1	HVAC SCHEDULES

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ARTS & HUMANITIES FOCUS PROGARM
BOTTLERS BUILDING
Lincoln, NE

Project Number
23-007
Date
1/11/2024
Revisions

#	Date
2	1-31-2024

M0.0

HVAC GENERAL PROJECT INFORMATION

HVAC SCHEDULES

PROVIDE SPECIFIED OR APPROVED EQUAL

SEQUENCE OF OPERATION

GENERAL:
A. ALL POINTS AND EQUIPMENT SHALL HAVE THEIR STATUS CLEARLY IDENTIFIED ON THE CONTROLS SCREEN.
B. ALL SET POINTS AND PARAMETERS SHALL BE INDEPENDENTLY ADJUSTABLE AND CLEARLY IDENTIFIED AS SET POINTS AND NOT READ ONLY VALUES.
C. THE OCCUPANCY MODE (OCCUPIED OR UNOCCUPIED) SHALL BE DETERMINED THROUGH A USER-ADJUSTABLE, GRAPHICAL, SEVEN-DAY SCHEDULE WITH A HOLIDAY SCHEDULE.
D. NOT ALL POINTS ARE SHOWN/MENTIONED, PROVIDE ALL POINTS REQUIRED FOR PROPER OPERATION/CONTROL.
E. ALL SENSORS, EQUIPMENT, VALVE, ETC. LOCATIONS AND SIZES SHALL BE CLOSELY COORDINATED WITH THE MECHANICAL AND HVAC CONTRACTOR PRIOR TO ORDERING AND INSTALLATION.
F. PROVIDE INTERFACE TO ALL EQUIPMENT AS WELL AS SENSORS / CONTROLS REQUIRED FOR THE COMPLETE OPERATION OF THE SYSTEMS / EQUIPMENT.
G. ALL CONTROL WIRING SHALL BE INSTALLED IN A NEAT AND WORKMANSHIP LIKE MANNER, WITH NO WIRING INSTALLED PARALLEL TO WITHIN 30" OF LINE VOLTAGE ELECTRICAL FOR MORE THAN 24".

CONTROL SYSTEM SHALL BE AN EXTENSION OF THE EXISTING LINCOLN PUBLIC SCHOOLS CONTROL SYSTEM BY CONTROL SERVICES TIED TO THE CENTRAL OFFICE SYSTEM. SYSTEM IN BUILDING SHALL BE A NEW INSTALLATION (NO EXISTING CONTROL SYSTEM IN BUILDING). CONTROL CONTRACTOR SHALL BE CONTROL SERVICES.

COORDINATION RESPONSIBILITY

ITEM	INSTALLED BY	PROVIDED BY
CONTROL VALVES	MC	CC
CONTROL DAMPERS	HC	CC
ENERGY METERS	MC	CC
THERMAL SENSOR WELLS	MC	CC
SENSORS	CC	CC

MC = MECHANICAL CONTRACTOR
CC = CONTROL CONTRACTOR
HC = HVAC CONTRACTOR
EC = ELECTRICAL CONTRACTOR

ALARMS:
A. ALL MANUFACTURERS ALARMS ARE TO BE REPORTED TO THE BAS WITH EMAILS BEING SENT OUT TO THE RESPECTIVE PARTIES, LIST OF EMAIL ADDRESSES IS TO BE PROVIDED BY OWNER.
B. ALARMS SHALL INCLUDE BUT NOT LIMITED TO:
  a. EQUIPMENT COMMON ALARMS
  b. HUMIDITY DRAIN PAN HIGH LEVEL ALARM.
  c. STATUS / EQUIPMENT FAILURE
  d. ROOM TEMPERATURES >5° +- FROM SET POINT.
  e. EQUIPMENT/CONTROL VALVES IN "HAND" MODE.
  f. HIGH/LOW PRESSURE AND TEMPERATURE OF HEAT PUMP LOOP

TRENDING:
A. THE FOLLOWING IS A LIST OF THE MINIMUM AMOUNT OF POINTS THAT SHALL BE TRENDED FOR AT LEAST 13 MONTHS. ALL OTHER POINTS SHALL BE TRENDED FOR 4 WEEKS.
B. ALL TRENDS SHALL BE ABLE TO BE SHOWN GRAPHICALLY FOR A USER ADJUSTABLE TIME PERIOD. DATA SHALL BE EXPORTABLE TO MICROSOFT EXCEL.
  a. ALARMS - EQUIPMENT, CODE, TIME
  b. ALL PRESSURE, HUMIDITY AND TEMPERATURE SENSORS - EVERY 5 MINUTE INTERVALS MAXIMUM

GENERAL

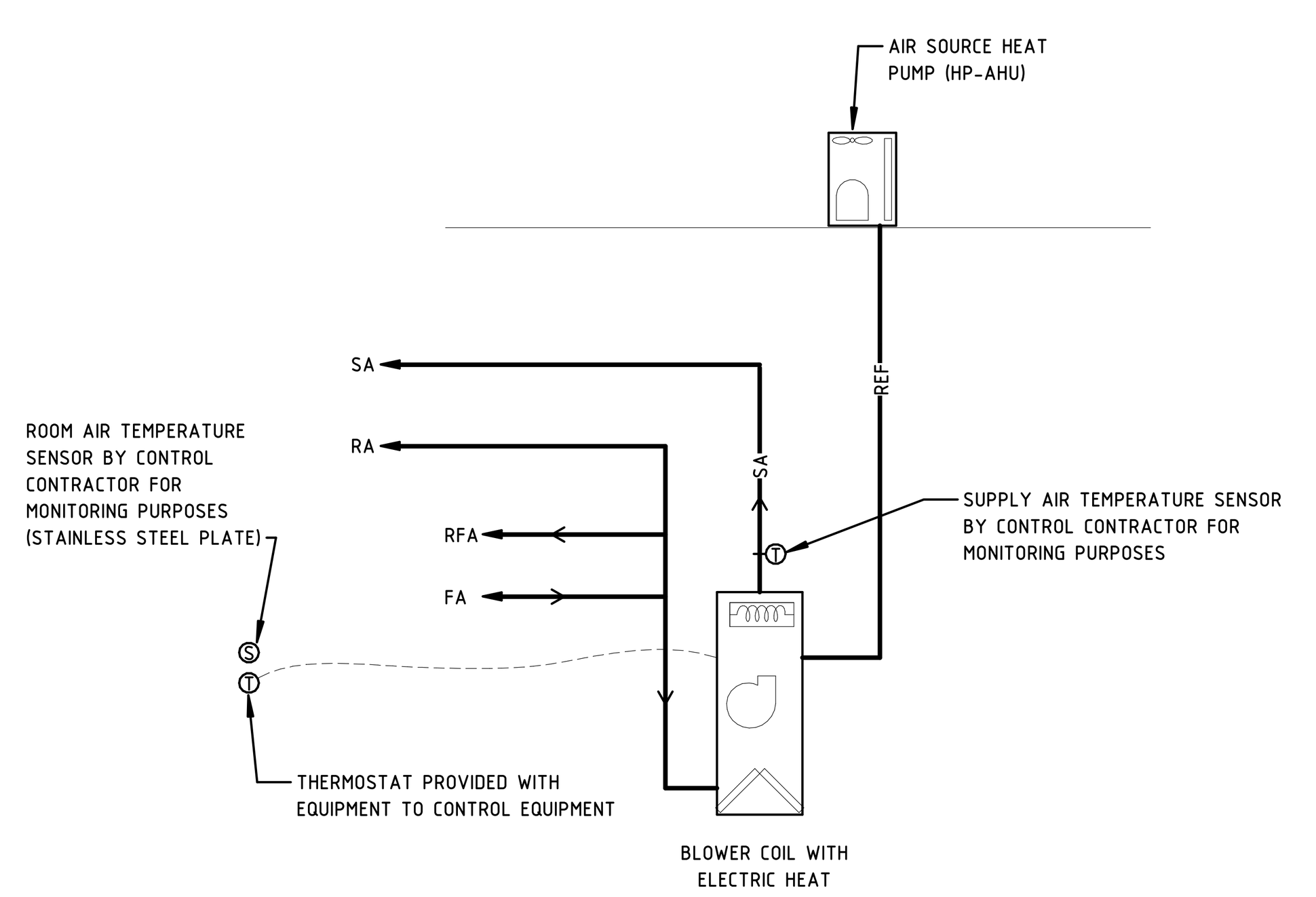
SYMBOLS:

CONTROL DAMPER (ON/OFF)
CONTROL DAMPER (MODULATING)
TEMPERATURE SENSOR
PRESSURE SENSOR
HUMIDITY SENSOR
METER
DIRECTIONAL FLOW ARROW
AIR FLOW STATION
DIFFERENTIAL PRESSURE TRANSMITTER
VARIABLE FREQUENCY DRIVE — VFD

SUPPLY AIR	SA
RETURN AIR	RA
OUTSIDE AIR	OA
EXHAUST AIR	XA
SMOKE DETECTOR	SD
CARBON DIOXIDE	CO2
CARBON MONOXIDE	CO
BUILDING PRESSURE	BP

FULL SIZE CONTROL VALVE (ON/OFF)
FULL SIZE 3WAY CONTROL VALVE (2 POSITION)
CONTROL VALVE (MODULATING)
TEMPERATURE SENSOR
PRESSURE SENSOR
DIFFERENTIAL PRESSURE
DIRECTIONAL FLOW ARROW
PT PORT
MANUAL ISOLATION VALVE
CHECK VALVE
PRESSURE RELIEF VALVE

HEAT PUMP LOOP	HP
HEATING HOT WATER	HW
NORMALLY OPEN	NO
NORMALLY CLOSED	NC

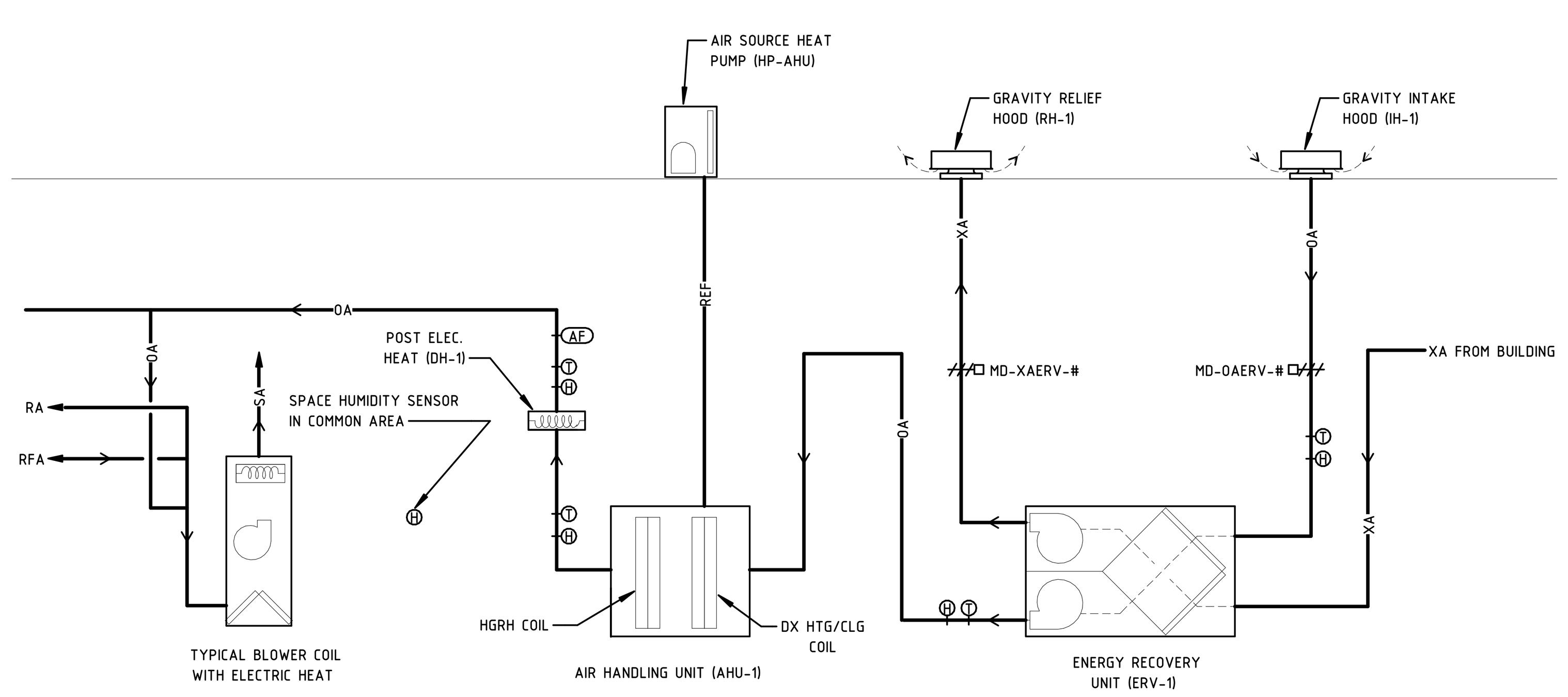


SEQUENCE OF OPERATION

BLOWER COIL AND HEAT PUMP:
- BLOWER COIL AND HEAT PUMP SHALL BE CONTROLLED BY THERMOSTAT PROVIDED WITH THE EQUIPMENT.
- FAN SHALL BE SET TO OPERATE CONTINUOUSLY DURING OCCUPIED HOURS.

MONITORING AND ALARMS:
- A ROOM TEMPERATURE SENSOR SHALL BE PROVIDED AND BE INSTALLED ADJACENT TO THE UNIT THERMOSTAT.
  - •• DATA SHALL BE TRENDED FOR 1 WEEK WITH ALARM SET TO UP ALARM IF THE ROOM TEMPERATURE EXCEEDS 80°F (ADJ) OR IS BELOW 60°F (ADJ).
- A SUPPLY AIR TEMPERATURE SENSOR SHALL BE PROVIDED AND INSTALLED IN THE MECHANICAL ROOM.
  - •• DATA SHALL BE TRENDED FOR 1 WEEK.

1 TYPICAL BLOWER COIL/HEAT PUMP SCHEMATIC
M3.1 NTS



SEQUENCE OF OPERATION

FIXED PLATE ENERGY RECOVERY UNITS (ERV-1):
- OUTSIDE AIR AND EXHAUST DAMPERS (MD-OA#,MD-XA#) SHALL PROVE OPEN BEFORE THEIR RESPECTIVE ERV UNIT FANS TURN ON. (INTEGRAL MOTORIZED DAMPERS SHALL BE NORMALLY CLOSED AND OPEN WITH THE FANS ARE ON).
- FANS (SUPPLY AND EXHAUST) SHALL BE NORMALLY OFF AND OPERATE DURING OCCUPIED HOURS.

AIR HANDLER (AHU-1):
- SUPPLY FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED TIMES. DURING UNOCCUPIED TIMES THE FANS SHALL BE NORMALLY OFF. FAN MUST OPERATE WHEN ITS ASSOCIATED FRESH AIR UNIT (ERV) IS OPERATIONAL, FAN SHALL START 1 MIN PRIOR TO ERV FANS STARTING.
- UNIT SHALL OPERATE TO MAINTAIN 68°F-72°F DISCHARGE AIR TEMPERATURE TO THE DOWNSTREAM BLOWER COILS. UNIT SHALL MODULATE AND PROVIDE HEATING OR COOLING AS REQUIRED.
  - •• DEHUMIDIFICATION MODE: IF THE ZONE RELATIVE HUMIDITY IS ABOVE THE ZONE RELATIVE HUMIDITY SET POINT.
    - ••• THE COOLING SHALL OPERATE 100% OPEN TOO MAINTAIN THE SUPPLY TEMPERATURE AT 55° OR BELOW.
    - ••• DX REHEAT VALVE SHALL MODULATE OPEN AS REQUIRED TO KEEP THE DISCHARGE AIR TEMPERATURE AT 70°F SET POINT.
    - ••• PREHEAT SHALL BE OFF

ELEC. POST HEATER (DH-1):
- SCR CONTROL, SHALL MODUALTE AS REQUIRED TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT (70°F). AIRFLOW SWITCH SHALL PROVIE AIR FLOW TO ALLOW THE HEATER TO OPERATE

7 FRESH AIR CONDITIONING SYSTEM SCHEMATIC
M3.1 NTS

BLOWER COILS

MARK	MANUFACTURER	MODEL	ELECTRIC HEAT MODEL #	CFM	E.S.P. IN W.C.	BLOWER HP	ELECTRIC HEAT: KW @ 208V	ELECTRIC HEAT: MIN. OUTPUT (BTU/HR)	ELECTRIC HEAT: VOLT	ELECTRIC HEAT: PHASE	POWER: VOLT	POWER: PHASE	POWER: MCA	POWER: MOP	FA CFM/ SIZE	RFA CFM/SIZE	NOTES
BC-108	DAIKIN	FXTQ36TAVJUA	HKSX10XC	1050	0.90	0.5	10	34140.0	208	1	208	1	48	50	310 / 10"ø	-	1,2,3,4,6,7,9,10
BC-110	DAIKIN	FXTQ36TAVJUA	HKSX10XC	1050	0.90	0.5	10	34140.0	208	1	208	1	48	50	285 / 10"ø	250 / 8"ø	1,2,3,4,6,7,9,10
BC-112	DAIKIN	FXTQ36TAVJUA	HKSX10XC	1050	0.90	0.5	10	34140.0	208	1	208	1	48	50	285 / 10"ø	250 / 8"ø	1,2,3,4,6,7,9,10
BC-113	DAIKIN	FXTQ60TAVJUA	HKSC20DA	1800	0.90	1	20	68280.0	208	1	208	1	95	100	495 / 12"ø	400 / 10"ø	1,2,3,4,6,7,9,10
BC-114	DAIKIN	FXTQ60TAVJUA	HKSC20DA	1800	0.90	1	20	68280.0	208	1	208	1	95	100	380 / 10"ø	350 / 10"ø	1,2,3,4,6,7,9,10
BC-181A	DAIKIN	FXTQ60TAVJUA	HKSC20DA	1800	0.90	1	20	68280.0	208	1	208	1	95	100	285 / 10"ø	250 / 8"ø	1,2,3,4,6,7,9,10
BC-181B	DAIKIN	FXTQ60TAVJUA	HKSC20DA	1800	0.90	1	20	68280.0	208	1	208	1	95	100	285 / 10"ø	250 / 8"ø	1,2,3,4,6,7,9,10

AIR SOURCE HEAT PUMPS

MARK	MANUFACTURER	MODEL	DX COOLING (R410X): TOTAL MBH	DX COOLING: SENS. MBH	DX COOLING: STAGES	DX COOLING: SEER @ AHRI	HEATING: TOTAL (MBH)	HEATING: HSPF/ COP @ AHRI	ELECTRICAL: VOLT	ELECTRICAL: PHASE	ELECTRICAL: MCA	ELECTRICAL: MOP	NOTES
HP-108	DAIKIN	RXTQ36TAVJ9A	34	23	VAR	18	34.8	10.3	208	1	17	20	1,5,8,10,11
HP-110	DAIKIN	RXTQ36TAVJ9A	34	23	VAR	18	34.8	10.3	208	1	17	20	1,5,8,10,11
HP-112	DAIKIN	RXTQ36TAVJ9A	34	23	VAR	18	34.8	10.3	208	1	17	20	1,5,8,10,11
HP-113	DAIKIN	RXTQ60TAVJUA	56.7	39.4	VAR	18	50	10.2	208	1	29	35	1,5,8,10,11
HP-114	DAIKIN	RXTQ60TAVJUA	56.7	39.4	VAR	18	50	10.2	208	1	29	35	1,5,8,10,11
HP-181A	DAIKIN	RXTQ60TAVJUA	56.7	39.4	VAR	18	50	10.2	208	1	29	35	1,5,8,10,11
HP-181B	DAIKIN	RXTQ60TAVJUA	56.7	39.4	VAR	18	50	10.2	208	1	29	35	1,5,8,10,11
HP-DOAS	DAIKIN	RXYQ144XAYDA	141	0	VAR	12.1	121	3.7	208	3	48	50	1,5,8,10,11

BLOWER COIL & HEAT PUMP UNIT SCHEDULE NOTES

1. COOLING CAPACITIES BASED ON ARI STANDARDS, 95°F DB/74° WB AMBIENT AIR & 80° F D.B./67° F W.B. RETURN AIR.
2. HEATING CAPACITIES BASED ON ARI STANDARDS, 32.0°F DB/30.7° WB AMBIENT AIR.
3. 2" DEEP FILTER RACK SHALL BE PROVIDED WITH UNIT.
4. THERMOSTAT TO BE DAIKIN BRC1E73 7 DAY PROGRAMMABLE, WITH HEAT-OFF-COOL-AUTO SYSTEM SELECTION AND AUTO-ON FAN SWITCH. THERMOSTAT SHALL HAVE BATTERY BACK-UP POWER.
5. OUTDOOR UNIT SHALL HAVE LOW AMBIENT CONTROLS, A HIGH PRESSURE SWITCH AND LOW PRESSURE SWITCH, AND HAIL GUARD.
6. BLOWER COIL SHALL BE PROVIDED WITH SINGLE POINT POWER SUPPLY KIT.
7. ELECTRIC HEAT KW SHALL BE PROVIDED AT SPECIFIED VOLTAGE AND PHASE AND MEET MIN. REQUIRED OUTPUT (INCREASE NOMINAL KW AS REQUIRED). PROVIDE WITH CIRCUIT BREAKER.
8. PROVIDE WITH FULLY MODULATING VARIABLE SPEED COMPRESSOR.
9. UNIT SHALL BE PROVIDED WITH AND INSTALLED ON STEEL SUPPORT STAND. SEE DETAIL 11 ON SHEET M2.1.
10. UNIT SHALL BE PROVIDED WITH 5 YEAR WARRANTY.
11. UNIT SHALL BE PROVIDED WITH AND INSTALLED ON STEEL SUPPORT STAND. SEE DETAIL 10 ON SHEET M2.1.

ENERGY RECOVERY VENTILATORS

MARK	MANUFACTURER	MODEL #	SUPPLY FAN (OUTSIDE AIR): CFM	SUPPLY FAN: E.S.P. WG	SUPPLY FAN: KW	SUPPLY FAN: AMPS	EXHAUST FAN (EXHAUST AIR): CFM	EXHAUST FAN: E.S.P. WG	EXHAUST FAN: KW	EXHAUST FAN: AMPS	POWER: VOLT	POWER: PHASE	POWER: MCA	POWER: MOP	EFFECTIVENESS: SENSIBLE (%)	EFFECTIVENESS: LATENT (%)	ERV LOCATION	NOTE
ERV-1	OXYGEN8	C24IN-BP	2330	1.00	2.7	8.6	2330	1.00	2.7	8.6	208	3	14	20	65.8	45.6	MECH-190	1-9

ENERGY RECOVERY UNIT SCHEDULE NOTES

1. ALL TEMPERATURES ARE IN DEGREES FAHRENHEIT.
2. SUMMER: EAT 95°DB/78°WB, LAT 81.8°DB/70.6°WB
3. WINTER: EAT -10°DB/-11.8°WB, LAT 42.6°WB/34°DB
4. UNIT MUST FIT THROUGH A 71" WIDE BY 79" TALL OPENING.
5. VERIFY EXACT CONFIGURATION AND ORIENTATION WITH DRAWINGS.
6. IT IS THE RESPONSIBILITY OF THE MANUFACTURER / SUPPLIER TO MAKE SURE ALL UNITS FIT IN THE REQUIRED SPACE INTENDED WITH RECOMMENDED MAINTENANCE AND ACCESS CLEARANCES. ANY CHANGES NEEDED WILL BE THE RESPONSIBILITY OF THE MANUFACTURER AT NO ADDITIONAL COST TO THE PROJECT.
7. PROVIDE WITH SINGLE POINT POWER CONNECTION.
8. ERV SHALL SIT ON STEEL STAND. SEE DETAIL 11 ON SHEET M2.1.
9. 2" DEEP FILTER RACK SHALL BE PROVIDED WITH UNIT.

ELECTRIC HEATER SCHEDULE

MARK	MANUFACTURER	MODEL #	HEATER TYPE	UNIT/DUCT SIZE	POWER: VOLT	POWER: PHASE	POWER: KW	POWER: MCA	POWER: MOP	POWER: AMPS	AREA SERVED	NOTES
DH-1	INDEECO	QUA	INLINE DUCT HEATER	22"X16"	208	3	22	62		61.07	AHU-1 POST HEAT	1,2,4,5,6
EH-1	INDEECO	932U04800CW-D1	WALL CABINET (FAN FORCED)	14.5"W X 19.875"T	208	1	4.8	23	30		VEST. 181A	1,2,3,6

ELECTRIC HEATER SCHEDULE NOTES

1. MAINTAIN ALL RECOMMENDED CLEARANCES FOR ACCESS.
2. PROVIDE DISCONNECT SWITCH.
3. PROVIDE WITH HEAVY GAUGE STEEL, RECESSED ROUGH-IN BOX, LOUVERED FRONT COVER (FINISH BY ARCH), SURFACE MOUNTING FRAME.
4. PROVIDE WITH SCR CONTROLS, INLET AND DISCHARGE DUCT COLLARS.
5. SEE DRAWINGS FOR EXACT CONFIGURATION AND COORDINATE AS REQUIRED PRIOR TO ORDERING. MAINTAIN ALL RECOMMENDED CLEARANCES FOR ACCESS.
6. ELECTRIC HEAT KW SHALL BE PROVIDED AT SPECIFIED VOLTAGE AND PHASE AND MEET MIN. REQUIRED OUTPUT (INCREASE NOMINAL KW AS REQUIRED). PROVIDE WITH CIRCUIT BREAKER.

AIR HANDLING UNITS

MARK	MANUFACTURER	MODEL #	CFM	E.S.P. WG	ELECTRICAL: VOLT	ELECTRICAL: PHASE	ELECTRICAL: MCA	ELECTRICAL: MOP	LOCATION	NOTES
AHU-1	OXYGEN 8	-	2330	1.0	208	3	3	15	MECH-190	1,2,3,4,5,6,7

COMPONENT POSITION	COMPONENT DESCRIPTION	ACCESS DOOR SIDE / SWING	FILTER	DRAIN PAN MATERIAL / CONNECTION SIDE	DX COIL INFORMATION: EAT	LAT	MAX. FACE VELOCITY	TOTAL MBH	SENS. MBH	NOTES
1	DX COOLING	-	-	GALVANIZED RIGHT	81.8° DB / 70.6 WB	55°DB / 54°WB	500 FPM	128.7	69.0	-
	DX HEATING	-	-	GALVANIZED RIGHT	42.6° DB	72°DB	500 FPM	73.9	-	-
2	HOT GAS REHEAT	-	-	GALVANIZED RIGHT	55° DB	71°DB	500 FPM	40.2	-	-

AIR HANDLING UNIT SCHEDULE NOTES

1. PROVIDE WITH (2) AHU INTEGRATION VALVE KITS (DAIKIN #EKEXV50).
2. PROVIDE WITH BACNET INTERFACE CARD AND INTEGRATE TO THE BMS.
3. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION.
4. AHU SHALL SIT ON STEEL STAND. SEE DETAIL 11 ON SHEET M2.1.
5. UNIT MUST FIT THROUGH A 71" WIDE BY 79" TALL OPENING.
6. VERIFY EXACT CONFIGURATION AND ORIENTATION WITH DRAWINGS.
7. IT IS THE RESPONSIBILITY OF THE MANUFACTURER / SUPPLIER TO MAKE SURE ALL UNITS FIT IN THE REQUIRED SPACE INTENDED WITH RECOMMENDED MAINTENANCE AND ACCESS CLEARANCES. ANY CHANGES NEEDED WILL BE THE RESPONSIBILITY OF THE MANUFACTURER AT NO ADDITIONAL COST TO THE PROJECT.

FRESH/ REFLIEF AIR HOODS AND LOUVERS

MARK	MANUFACTURER	MODEL #	TYPE	CFM	S.P. IN. W.C.	FREE AREA (SQ. FT.)	VELOCITY (FPM)	MATERIAL	CURB/OPENING SIZE (IN.)	AREA / SYSTEM SERVED	NOTES
IH-1	GREENHECK	FGI-24X24	GRAVITY INTAKE	2330	0.08	4	583	ALUMINUM	26.5X26.5	ERV-1 (INTAKE)	1,2
RH-1	GREENHECK	FGR-22X22	GRAVITY RELIEF	2330	0.12	4	693	ALUMINUM	24.5X24.5	ERV-1 (RELIEF)	1,2

FRESH/ RELIEF AIR HOOD AND LOUVERS SCHEDULE NOTES

1. PROVIDE INTEGRAL BIRD SCREEN.
2. PROVIDE PREFABRICATED ROOF CURB AS REQUIRED FOR ROOF TYPE. CONTRACTOR TO VERIFY ROOF TYPE, INSULATION THICKNESS, AND PITCH BEFORE ORDERING.

DUCT MATERIAL AND INSULATION

DUCT	DUCT LOCATION	SPACE	DUCT CONSTRUCTION: MATERIAL	DUCT CONSTRUCTION: TYPE	DUCT CONSTRUCTION: CONNECTION	DUCT INSULATION: TYPE	DUCT INSULATION: MATERIAL	DUCT INSULATION: SKIN TYPE	DUCT INSULATION: THICKNESS	DUCT INSULATION: DENSITY LB/FT^3	DUCT INSULATION: MIN. R VALUE	NOTES
EXHAUST / RELIEF AIR	CONCEALED	PARTIALLY CONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	WRAP	FIBERGLASS	ALUMINUM FSK JACKET	2"	3/4	5	1,2,3,5,6
EXHAUST / RELIEF AIR	CONCEALED	CONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	WRAP	FIBERGLASS	ALUMINUM FSK JACKET	1"	3/4	3	1,2,3,5,6
FRESH AIR	CONCEALED	CONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	WRAP	FIBERGLASS	ALUMINUM FSK JACKET	1"	3/4	3	1,2,3,13
RETURN / TRANSFER AIR	CONCEALED	PARTIALLY CONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	LINER	FIBERGLASS	ACRYLIC POLYMER ANIT-MICROBIAL COATING	1-1/2"	1-1/2	4	1,2,4
RETURN / TRANSFER AIR	CONCEALED	CONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	LINER	FIBERGLASS	ACRYLIC POLYMER ANIT-MICROBIAL COATING	1/2"	2	2	1,2,4
RETURN / TRANSFER AIR	EXPOSED	CONDITIONED	PAINT GRIP STEEL	SINGLE WALL	SLIP & DRIVE	LINER	FIBERGLASS	ACRYLIC POLYMER ANIT-MICROBIAL COATING	1"	1-1/2	3	1,2,4,7
RETURN / TRANSFER AIR	CONCEALED	UNCONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	LINER	FIBERGLASS	ACRYLIC POLYMER ANIT-MICROBIAL COATING	1-1/2"	1-1/2	5	1,2,4
SUPPLY AIR	CONCEALED	CONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	WRAP	FIBERGLASS	ALUMINUM FSK JACKET	1"	3/4	3	1,2,3
SUPPLY AIR	EXPOSED	CONDITIONED	PAINT GRIP STEEL	SINGLE WALL	SLIP & DRIVE	LINER	FIBERGLASS	ACRYLIC POLYMER ANIT-MICROBIAL COATING	1"	1-1/2	3	1,2,4,7
SUPPLY AIR	CONCEALED	UNCONDITIONED	GALVANIZED STEEL	SINGLE WALL	SLIP & DRIVE	WRAP	FIBERGLASS	ALUMINUM FSK JACKET	3"	3/4	8	1,2,3

SPACE DEFINITION

PARTIALLY CONDITIONED SPACE: A SPACE THAT HAS A TEMPERATURE DIFFERENTIAL BETWEEN THE AIR IN DUCT AND HTE SURROUNDING GREATER THAN 15°. EXAMPLES INCLUDE ATTIC SPACE (WITH INSULATION ON ROOF), CRAWL SPACE, GARAGE, MECHANICAL/ELECTRICAL ROOM, NON PLENUM RETURN CEILING SPACE.

CONDITIONED SPACE: A SPACE THAT HAS A TEMPERATURE DIFFERENTIAL BETWEEN THE AIR IN THE DUCT AND THE SURROUNDING LESS THAN 15°. EXAMPLES INCLUDE: ABOVE CEILING RETURN PLENUM SPACE, HEATED AND COOLED SPACE.

UNCONDITIONED SPACE: A SPACE WHOSE TEMPERATURE IS THE SAME AS OUTDOORS OR WORSE (FURTHER FROM ROOM SET POINT) OR IS THE OUTDOORS. EXAMPLES INCLUDE ATTIC WITH INSULATION AT CEILING, DUCT CHASES.

DUCT LOCATION DEFINITION

CONCEALED: ANY NON VISIBLE DUCT. EXAMPLES INCLUDE: MECHANICAL ROOMS, JANITORS ROOMS, ATTICS AND CRAWL SPACES.

EXPOSED: ANY VISIBLE DUCT IN ANY PUBLIC OR OCCUPIABLE SPACE. EXAMPLES INCLUDE: STORAGE ROOMS, CLOSETS

WHERE DUCT INSULATION IS SPECIFIED:

A. ALL DUCTS SHALL BE COMPLETELY INSULATED ON ALL SIDES ENCOMPASSING DUCT SUPPORTS/ HANGERS WITH INSULATION SEALED TO SUPPORTS AS THEY PENETRATE INSULATION.

B. ALL SUPPLY AND FRESH AIR DIFFUSERS AND REGISTERS INCLUDING DUCT BOOTS SHALL BE COMPLETELY WRAPPED IN INSULATION DOWN TO THE CEILING TO PREVENT CONDENSATION.

C. ALL INSULATION HOLES FROM TESTING AND BALANCING SHALL BE RE-SEALED.

D. ALL BALANCING DAMPERS SHALL HAVE THE HANDLES OUTSIDE THE INSULATION, WITH A PROPER STANDOFF/ SHAFT LENGTH TO ALLOW PROPER DAMPER ADJUSTMENT.

DUCT MATERIAL AND INSULATION SCHEDULE NOTES

1. ALL DUCTWORK SHALL BE CONSTRUCTED, REINFORCED AND SUPPORTED ACCORDING TO CURRENT MECHANICAL CODE, SMACNA STANDARDS, AND PER REQUIREMENTS OF CURRENT EDITION OF INTERNATIONAL ENERGY CODES. DUCTS SHALL BE CONSTRUCTED BASED ON THE TOTAL FAN PRESSURE THE DUCTS ARE CONNECTED TO (A MINIMUM OF 2") AND BE TAKEN AS POSITIVE ON THE FAN DISCHARGE SIDE AND NEGATIVE ON THE FAN SUCTION SIDE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE FAN PRESSURES BEFORE BIDDING AND CONSTRUCTION. SINGLE WALL DUCT SHALL BE SEALED WITH EITHER FOIL TAPE OR DUCT SEAL COMPOUND ON ALL JOINTS INCLUDING LONG TRANSVERSE JOINTS. FOR LOW PRESSURE (< 2" W.C.) NON SPIRAL DUCT, ADJUSTABLE 1xRADIUS ELBOWS AND SNAPLOCK PIPE ARE ACCEPTABLE. FOR DUCT MATE/TDC CONNECTIONS FOAM TAPE, PLASTIC CLEATS ARE NOT ACCEPTABLE, BUTYL TAPE, METAL CLEATS AND NUT & BOLTS MUST BE USED.
2. INSULATION SHALL HAVE A FHC OF 25/50 AND BE CLASSIFIED AS MEETING THE REQUIREMENTS OF LIMITED COMBUSTIBILITY.
3. DUCT WRAP INSULATION: INSULATION SHALL COMPLY WITH ASTM C 553. TAPE AND SEAL INSULATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. EVERY JOINT SHALL BE COMPLETELY TAPPED WITH FACED TAPE (MEETING UL181 STANDARD) TO MATCH INSULATION AND COMPLETELY SEAL INSULATION PER MANUFACTURER'S RECOMMENDATIONS.
4. DUCT LINER INSULATION: INSULATION SHALL COMPLY WITH ASTM C 1071. PROVIDE MANUFACTURER'S SEALANT FOR COATING OF ALL EXPOSED EDGES, CONNECTIONS, OR MINOR SURFACE DAMAGE. WELD PINS OF SUFFICIENT LENGTH AND GLUE OR STAPLES WITH SHEET METAL DISCS SHALL BE USED TO FASTEN LINER TO DUCT. ALL BUTT EDGES SHALL BE COATED WITH ADHESIVE AND PRESSED TOGETHER. DUCT LINER SHALL HAVE PERMACOTE ANTI FUNGI AND BACTERIA GROWTH AGENT APPLIED TO THE LINER. ALL ROUND RETURN DUCT MUST BE WRAPPED WITH DUCT WRAP INSULATION OF AN EQUAL INSTALLED "R" VALUE SCHEDULED LINER.
5. PROVIDE INSULATION ON FIRST 15' OF DUCT FROM EXTERIOR TERMINATION.
6. IF DUCT IS GOING TO A ENERGY RECOVERY UNIT, INSULATION MUST BE PROVIDED TO THE UNIT AND MAY BE OMITTED AFTER THE UNIT.
7. IF DUCT IS GOING TO BE PAINTED, THOROUGHLY CLEAN AND DRY OUTSIDE OF DUCT WITH A WARM SOAPY SOLUTION CONSISTING OF "SIMPLE GREEN" CLEANER AND WATER PRIOR TO BEING PAINTED. THIS SHALL BE WITNESSED BY THE GENERAL CONTRACTOR AND PAINTER.

2

DIFFUSERS, GRILLES, REGISTERS AND LOUVERS

MARK	FIXTURE	MANUFACTURER	MODEL #	DAMPER	FINISH	MOUNTING TYPE	DESCRIPTION AND OPTIONS
RG-1	RETURN GRILLE	NAILOR	4360	-	WHITE	LAY-IN	24 GAUGE STEEL 24" X 24" OR 12" X 24" PANEL PROVIDE NECK SIZE S SHOWN ON DRAWINGS
RG-2	RETURN GRILLE	NAILOR	6145H	-	WHITE	SURFACE MOUNT	24 GAUGE STEEL, 35° BLADE DEFLECTION, 3/4" BLADE SPACING, BLADES PARALLEL TO FLLOR/CEILING, PROVIDE SIZE AS SHOWN ON DRAWINGS.
SD-1	SUPPLY DIFFUSER	NAILOR	RNS	-	WHITE	LAY-IN	24 GAUGE STEEL, 24" X 24" PANEL, PROVIDE NECK SIZE AS SHOWN ON DRAWINGS
SR-1	SUPPLY REGISTER	NAILOR	61DV	-	WHITE	SURFACE MOUNT	24 GAUGE STEEL, 3/4" BLADE SPACING, INDIVIDUALLY ADJUSTABLE BLADES, DOUBLE DEFLECTION, PROVIDE SIZE AS SHOWN ON DRAWINGS
WC-1	WALL CAP	GREENHECK	WC-4	BACKDRAFT	ALUMINUM	SURFACE MOUNT	HOODED WALL CAP, BIRDSCREEN, 4"ø INLET.
XG-1	EXHAUST GRILLE	NAILOR	6145H	OPPOSED BLADE	WHITE	SURFACE MOUNT	24 GAUGE STEEL, 35° BLADE DEFLECTION, 3/4" BLADE SPACING, BLADES PARALLEL TO LONG DIMENSION, PROVIDE SIZE AS SHOWN ON DRAWINGS.

DIFFUSERS, GRILLES, REGISTERS AND LOUVERS SCHEDULE NOTES

A. COORDINATE FINISH COLOR WITH ARCHITECT, LOCATION AND MOUNTING TYPE FOR ALL REGISTER, GRILLES AND DIFFUSERS WITH GENERAL CONTRACTOR PRIOR TO ORDERING.
B. COORDINATE SHAPE OF LOUVER WITH ARCHITECTURAL DRAWINGS.
C. PROVIDE SIZE AND SHAPE AS SHOWN ON THE DRAWING.
D. LINEAR DIFFUSERS SHALL BE PROVIDED WITH AN INSULATED PLENUM BOOT.
E. PROVIDE INSULATION BLANKET ON THE BACK OF DIFFUSERS.

EXHAUST FANS

MARK	MANUFACTURER	MODEL #	CFM	E.S.P. WG	FAN TYPE	FAN MOTOR DATA: HP	VOLT	PHASE	RPM	SONES	DRIVE	FAN LOCATION	CONTROLS	AREA(S) SERVED	NOTES
EF-1	SKUTT	ENVIROVENT 2	140	0.00	CENTRIFUGAL		120	1			DIRECT	KILN-113A	SWITCH	KILN	1
EF-2	GREENHECK	SP-A900	750	0.41	CENTRIFUGAL	1/8	120	1	1055	5	DIRECT	STORAGE-108A	THERMOSTAT	108A	2

EXHAUST FAN SCHEDULE NOTES

1. FAN SHALL BE PROVIDED WITH DUAL VENT KIT INCLUDING FLEXIBLE 3"ø ALUMINUM DUCT (AT LENGTH REQUIRED - SEE PLANS), (2) SPRING LOADED PLENUM CUPS, HOSE CLAMPS, Y DUCT CONNECTOR, 6' POWER CORD WITH IN-LINE SWITCH. ALL COMPONENETS TO BE RATED UP TO 160°F AIR. ALL REQUIRED MATERIALS FOR A FULLY FUNCTIONAL SYSTEM. ALL MATERIALS MUST BE INSTALLED BY THIS CONTRACTOR.
2. PROVIDE WITH BACKDRAFT DAMPER, THERMAL ELEMENT SWITCH, COOLING ONLY THERMOSTAT.

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#	Date
1	1-17-2024
2	1-31-2024

M3.1
HVAC SCHEDULES

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ELECTRICAL SYMBOLS & ABBREVIATIONS

GENERAL NOTES
- THIS LEGEND IS GENERAL IN NATURE, NOT ALL SYMBOLS SHOWN ARE USED
- LIGHT SHADING INDICATES ITEM IS EXISTING
- MOUNTING HEIGHTS ARE FROM ABOVE FINISHED FLOOR TO CENTER OF BOX, UNLESS NOTED OTHERWISE

Symbol	Description
1	KEY NOTE DESIGNATION
XXX-#	EQUIPMENT DESIGNATION, REFER TO EQUIPMENT CONNECTION SCHEDULE
S	SINGLE POLE SWITCH @ 48" AFF
S^2	DOUBLE POLE SWITCH @ 48" AFF (IF SERVING MECHANICAL EQUIPMENT, LOCATE ADJACENT TO UNIT)
S^3	THREE WAY SWITCH @ 48" AFF
S^4	FOUR WAY SWITCH @ 48" AFF
$^aSS^b$	INBOARD/OUTBOARD SWITCH @ 48" AFF
S^K	KEY SWITCH @ 48" AFF
S^M	MOMENTARY CONTACT SWITCH @ 48" AFF
S^P	PILOT LIGHT SWITCH @ 48" AFF
S^T	TIMER SWITCH @ 48" AFF
STE	MANUAL STARTER WITH TOGGLE - PROVIDE THERMAL ELEMENT IF MOTOR IS NOT INTERNALLY PROTECTED
	START/STOP SWITCH @ 48" AFF
D	DIMMER @ 48" AFF
	CEILING MOUNT LIGHT FIXTURE - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	CEILING MOUNT LIGHT FIXTURE WITH EMERGENCY BALLAST - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	WALL MOUNT LIGHT FIXTURE - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	WALL MOUNT LIGHT FIXTURE WITH EMERGENCY BALLAST - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	FLUORESCENT/LED LIGHT FIXTURE - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	FLUORESCENT/LED LIGHT FIXTURE WITH EMERGENCY POWER SOURCE - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	CEILING MOUNT, SINGLE FACE EXIT SIGN - ARROW INDICATES DIRECTION - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	CEILING MOUNT, DOUBLE FACE EXIT SIGN - ARROW INDICATES DIRECTION - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	WALL MOUNT EXIT SIGN - ARROW INDICATES DIRECTION - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	COMBINATION EXIT SIGN AND EMERGENCY LIGHTING UNIT - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	EMERGENCY LIGHTING UNIT - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	TRACK LIGHTING - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	CEILING FAN - NUMBER INDICATES DESIGNATION, REFER TO LIGHT FIXTURE SCHEDULE
	POLE MOUNT LIGHT FIXTURE - NUMBER INDICATES TYPE, REFER TO LIGHT FIXTURE SCHEDULE
O	CEILING MOUNT OCCUPANCY SENSOR - NUMBER INDICATES DESIGNATION, REFER TO OCCUPANCY SENSOR SCHEDULE
O	WALL MOUNT OCCUPANCY SENSOR - ARROW INDICATES DIRECTION - NUMBER INDICATES DESIGNATION, REFER TO OCCUPANCY SENSOR SCHEDULE
	SIMPLEX RECEPTACLE @ 18" AFF
	DUPLEX RECEPTACLE @ 18" AFF
	SPECIAL RECEPTACLE @ 18" AFF
	QUADPLEX RECEPTACLE @ 18" AFF
	HORIZONTAL DUPLEX RECEPTACLE @ 44" AFF
	ISOLATED GROUND DUPLEX RECEPTACLE @ 18" AFF
	SPLIT DUPLEX RECEPTACLE @ 18" AFF
	CEILING MOUNT OR SUSPENDED DUPLEX RECEPTACLE
	FLOOR RECEPTACLE
	COMBINATION FLOOR BOX
	TELEPHONE OUTLET @ 18" AFF - ROUTE 1 1/4" CONDUIT TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
	DATA OUTLET @ 18" AFF - ROUTE 1 1/4" CONDUIT TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
1 2	COMBINATION TELEPHONE/DATA OUTLET @ 18" AFF - NUMBERS INDICATE JACKS REQUIRED (NO NUMBER INDICATES ONE (1) JACK) - ROUTE 1" CONDUIT TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
	FUSIBLE DISCONNECT SWITCH @ 54" AFF
	NON-FUSIBLE DISCONNECT SWITCH @ 54" AFF
	MOTOR STARTER @ 54" AFF
	COMBINATION STARTER @ 54" AFF
	ENCLOSED CIRCUIT BREAKER
	PLUGMOLD RACEWAY MULTIOUTLET SYSTEM
	PAD MOUNT TRANSFORMER
	DRY TRANSFORMER
T	TELEPHONE PEDESTAL
TV	TELEVISION PEDESTAL
	WIRELESS ACCESS POINT

Symbol	Description
B	BELL - STAND ALONE DEVICE OR CONNECTED TO MASTER CLOCK
C	CLOCK - STAND ALONE DEVICE OR CONNECTED TO MASTER CLOCK
D	DUCT SMOKE DETECTOR
DC	DOOR CONTACT
M	MOTOR CONNECTION
P	PUSH BUTTON @ 48" AFF
R	CEILING MOUNT RECEIVER
S	CEILING MOUNT SPEAKER
TV	TELEVISION OUTLET @ 18" AFF - ROUTE 1" CONDUIT TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
C	WALL MOUNT CLOCK OUTLET @ 90" AFF - ROUTE 3/4" CONDUIT TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
P	PHOTO CONTROLLER
a	DIGITAL PUSHBUTTON LIGHTING CONTROL STATION, LETTER INDICATES TYPE @ 48" AFF.
S	WALL MOUNT SPEAKER, @ 84" AFF TO BOTTOM OF SPEAKER OR WIREGUARD WHEN CEILINGS ARE <12', @ 120" AFF WHEN CEILING ARE >12' - ROUTE 3/4"C TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
B	BOILER SHUTDOWN SWITCH @ 48" AFF
C	CARD READER @ 40" AFF
ES	ELECTRIC STRIKE
H	MAGNETIC DOOR HOLDER
I	INTERCOM CALL-IN SWITCH @ 48" AFF
J	JUNCTION BOX @ 18" AFF - ROUTE 3/4" CONDUIT TO ABOVE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE
K	KEYPAD @ 48" AFF
M	MICROPHONE OUTLET @ 18" AFF
ML	MAGNETIC LOCK
N	NURSE CALL @ 48" AFF
P	PANIC BUTTON
TP	TELE-POWER POLE
R	RELAY
RE	REQUEST TO RELEASE ACTUATOR
V	VOLUME CONTROL @ 48" AFF
	FIRE ALARM PULL STATION @ 48" AFF TO TOP
	FIRE ALARM FLASHING STROBE LIGHT @80"AFF TO BOTTOM OR 6" BELOW CEILING
	CEILING MOUNT FIRE ALARM FLASHING STROBE LIGHT
	FIRE ALARM HORN AND FLASHING STROBE LIGHT @80"AFF TO BOTTOM OR 6" BELOW CEILING
	CEILING MOUNT FIRE ALARM HORN AND FLASHING STROBE LIGHT
	FIRE ALARM SPEAKER AND FLASHING STROBE LIGHT @80"AFF TO BOTTOM OR 6" BELOW CEILING
	CEILING MOUNT FIRE ALARM SPEAKER AND FLASHING STROBE LIGHT
	FIRE ALARM HORN @80"AFF TO BOTTOM OR 6" BELOW CEILING
	FIRE ALARM BELL @ 80" AFF TO BOTTOM OR 6" BELOW CEILING
S D	SMOKE DETECTOR
	THERMAL HEAT DETECTOR
	WATER FLOW SWITCH
	TAMPER SWITCH
PIV	POST INDICATOR VALVE
	SINGLE BED CALL LIGHT
D	DOUBLE BED CALL LIGHT
	CLOSED CIRCUIT TELEVISION CAMERA
	DOOR CHIME @ 80" AFF
'A'	SURFACE MOUNT, LIGHTING AND APPLIANCE PANELBOARD @ 72" AFF TO TOP - LETTER INDICATES DESIGNATION - HATCHING INDICATES REQUIRED CLEARANCE
'B'	FLUSH MOUNT, LIGHTING AND APPLIANCE PANELBOARD @ 72" AFF TO TOP - LETTER INDICATES DESIGNATION - HATCHING INDICATES REQUIRED CLEARANCE
'MDP'	POWER DISTRIBUTION PANELBOARD - LETTER INDICATES DESIGNATION - HATCHING INDICATES REQUIRED CLEARANCE
A-1	HOMERUN - LETTER INDICATES PANELBOARD - NUMBER INDICATES CIRCUIT
	CONDUIT IN WALL OR CEILING - SYMBOL REPRESENTS UNSWITCHED CIRCUIT
D	DATA RACEWAY
DT	DATA & TELEPHONE RACEWAY
EM	EMERGENCY CIRCUIT
FO	FIBER OPTICS RACEWAY
GPO	GENERATOR POWER OUTPUT
OSE	OVERHEAD SECONDARY ELECTRICAL SERVICE
T	TELEPHONE RACEWAY
TV	TELEVISION RACEWAY
UF	CONDUIT TO BE CONCEALED UNDER FLOOR
UG	UNDERGROUND ELECTRICAL
UPE	UNDERGROUND PRIMARY ELECTRICAL SERVICE

Abbreviation	Description
USE	UNDERGROUND SECONDARY ELECTRICAL SERVICE
— — — —	CONDUIT OR RACEWAY TO BE REMOVED
A	AMPERES
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFI	ARC FAULT CIRCUIT INTERRUPTER
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERCAN WIRE GAUGE
BFG	BELOW FINISH GRADE
C	CONDUIT
CATV	CABLE TELEVISION
CCTV	CLOSED-CIRCUIT TELEVISION
CLG	CEILING
CO	CARBON MONOXIDE
CU	COPPER
D	INDICATES ITEM TO BE DEMOLISHED
E	INDICATES EXISTING ITEM
EM	EMERGENCY
EMD	ESTIMATED MAXIMUM DEMAND
EMT	ELECTRICAL METALLIC TUBING
ERCES	EMERGENCY RESPONDER COMMUNICATIONS ENHANCEMENT SYSTEM
ERRCS	EMERGENCY RESPONDER RADIO COMMUNICATIONS SYSTEM
EXP	EXPLOSION PROOF
F	FRACTIONAL
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
GND	GROUND
GFI	GROUND FAULT CIRCUIT INTERRUPTER
HA	HIGH ABUSE/SECURITY CAST WALL PLATE
HG	HOSPITAL GRADE
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING, VENTILATION & AIR CONDITIONING
KAIC	THOUSAND AMPS INTERRUPTING CAPACITY
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LED	LIGHT EMITTING DIODE
MCA	MINIMUM CIRCUIT AMPACITY
MCM	THOUSAND CIRCULAR MILS
MH	METAL HALIDE
MOCP	MAXIMUM OVER CURRENT PROTECTION
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NL	NIGHT LIGHT
P	POLE
PVC	POLYVINYL CHLORIDE NON METALLIC RACEWAY
R	INDICATES ITEM TO BE RELOCATED
RGS	RIGID GALVANIZED STEEL CONDUIT
RSC	RIGID STEEL CONDUIT
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
TEL	TELEPHONE
TR	TAMPER RESISTANT
TV	TELEVISION
V	VOLTS
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

ELECTRICAL GENERAL NOTES

DEMOLITION GENERAL NOTES

A. THESE PLANS REPRESENT THE BEST INFORMATION AVAILABLE DURING ON-SITE INVESTIGATION AND/OR EXISTING DRAWINGS. THERE MAY BE MORE DEVICES TO BE REMOVED THAN SHOWN. THE ELECTRICAL CONTRACTOR SHALL VISIT THE JOBSITE PRIOR TO SUBMITTING A BID. THE BUILDING NEEDS TO REMAIN FUNCTIONAL DURING ALL PHASES OF CONSTRUCTION. COORDINATE ALL REQUIREMENTS WITH THE OWNER AND ARCHITECT. MAINTAIN THE INTEGRITY OF ALL DEVICES NOT REQUIRED TO BE REMOVED.

B. ALL DASHED ITEMS AND ITEMS NOTED WITH 'D' SHALL BE REMOVED IN THEIR ENTIRETY. THIS INCLUDES WIRING DEVICES, CONDUIT/RACEWAY, J-BOXES, AND ALL ASSOCIATED WIRING/CABLING TO EXTENT POSSIBLE.

C. EXISTING ITEMS SHOWN IN LIGHT SHADE ARE TO REMAIN AND SHALL BE PROTECTED. ALL DEVICES SHOWN WITH 'R' ARE TO BE REMOVED AND RELOCATED. RETEST ALL AFFECTED DEVICES TO MAINTAIN CIRCUIT INTEGRITY OF ALL EXISTING CIRCUITS AND CONNECTIONS..

D. EXISTING ELECTRICAL CONDUIT WHICH IS NOT CONCEALED IN WALLS OR FLOOR SLAB AND WHICH IS NOT BEING REUSED SHALL BE REMOVED. WIRING SHALL BE REMOVED AND ABANDONED CONDUIT SHALL BE CUT OFF FLUSH WHERE IT ENTERS THE FLOOR OR WALL AND SEALED. EXISTING CONDUIT TO REMAIN SHALL BE SUPPORTED.

E. WHERE DEVICES ARE TO BE REMOVED FROM EXISTING SURFACES OR ABANDONED, THE CONTRACTOR SHALL INSTALL BLANK STAINLESS STEEL WALL PLATES. EXTRA CARE SHOULD BE TAKEN NOT TO DAMAGE EXISTING SURFACES OR FINISHES. ALL REPAIR COSTS SHALL BE AT THE EXPENSES OF THE CONTRACTOR. REPAIR ALL HOLES FROM THE REMOVAL OF ELECTRICAL ITEMS AND PATCH/PAINT TO MATCH EXISTING.

F. ALL NEW WIRING/CONDUITS SHALL BE CONCEALED IN NEW WALLS AND ALSO IN EXISTING WALLS WHERE POSSIBLE. EVERY EFFORT SHALL BE MADE TO CONCEAL WIRING IN EXISTING WALLS. 3/4" FLEXIBLE METALLIC CONDUIT MAY BE USED AND ROUTED THROUGH EXISTING WALLS. BOXES SHALL BE CUT IN AND RECESSED WHERE POSSIBLE. SURFACE MOUNT CONDUIT INSTALLATIONS ARE ACCEPTABLE ONLY IN UNFINISHED AREAS (I.E. MECHANICAL AND ELECTRICAL ROOMS). CONCEALED RACEWAYS ARE REQUIRED EXCEPT WHERE SURFACE MOUNTED RACEWAYS ARE SHOWN.

G. SURFACE INSTALLATIONS IN FINISHED AREAS SHALL BE PERMITTED ONLY IF ABSOLUTELY NECESSARY. IF IT IS NOT PHYSICALLY POSSIBLE OR PRACTICAL TO CONCEAL RACEWAYS, THE CONTRACTORS SHALL BE PREPARED TO FURNISH AND INSTALL ONE-PIECE STEEL SURFACE RACEWAY, WIREMOLD 700 SERIES OR EQUAL, WITH COLOR SELECTED BY ARCHITECT. FOR NEW DEVICES SHOWN ON EXISTING GYP-BOARD WALLS, CONTRACTOR SHALL BE CUT NEW RECESSED REMODEL J-BOX INTO WALL AND ROUTE 3/4" FLEXIBLE METALLIC CONDUIT INSIDE WALL FROM J-BOX TO ABOVE CEILING TO ACCESSIBLE AREA. CONDUIT ENDS SHALL BE REAMED AND FREE OF BURRS. SURFACE MOUNT EMT IS ACCEPTABLE IN UNFINISHED AREAS.

H. NEW BOXES SHALL BE CUT IN & RECESSED WHERE POSSIBLE. ELECTRICAL CONTRACTOR SHALL MAKE EVERY EFFORT TO CONCEAL NEW RACEWAYS IN EXISTING WALLS [3/4" FMC WILL BE PERMITTED]. EXPOSED RACEWAYS WILL BE PERMITTED IN UNFINISHED AREAS ONLY. CONCEALED RACEWAYS ARE REQUIRED EXCEPT WHERE SURFACE MOUNTED RACEWAYS ARE SHOWN.

I. IF IT IS NOT PHYSICALLY POSSIBLE OR PRACTICAL TO CONCEAL RACEWAYS, ELECTRICAL CONTRACTOR SHALL BE PREPARED TO FURNISH/INSTALL ONE-PIECE STEEL SURFACE RACEWAY, WIREMOLD 700 SERIES OR EQUAL. COLOR TO BE APPROVED BY OWNER.

J. PATCH, REPAIR, PAINT WALLS WHERE DEVICES HAVE BEEN REMOVED. PROVIDE IVORY COVERPLATES OVER UNUSED OR ABANDONED J-BOXES.

K. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED CUTTING, PATCHING AND REPAIRING OF EXISTING WALLS WHERE NEW DEVICES/CONDUIT ARE TO BE INSTALLED RECESSED.

L. ALL ABANDONED AND UNUSED CABLING SHALL BE REMOVED UNLESS LABELED FOR FUTURE USE AND SUPPORTED BACK TO SOURCES. CONTRACTOR TO VISIT SITE PRIOR TO BIDDING FOR FIELD CONDITIONS.

SITE PLAN GENERAL NOTES

A. IN COMPLIANCE WITH STATE AND LOCAL JURISDICTIONS, CONTACT THE UTILITY LOCATING SERVICE/DIGGERS HOTLINE. THIS SHOULD BE DONE A MINIMUM OF 48 HOURS, (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS), PRIOR TO ACTUAL NEED, TO ARRANGE FOR LOCATION OF UNDERGROUND UTILITY CABLES AND EQUIPMENT. ACTUAL LOCATING OF THE CABLES AND EQUIPMENT WILL THEN BE DONE BY EACH UTILITY. GENERAL SERVICE OR RESIDENTIAL CUSTOMERS MUST MAKE SEPARATE ARRANGEMENTS FOR LOCATION OF THEIR NON-UTILITY-OWNED UNDERGROUND FACILITIES SITUATED UPON THEIR OWN PROPERTY.

B. UTILITY LOCATIONS ARE SUBJECT TO INTERPRETATION. LOCATIONS ARE APPROXIMATE AND NO GUARANTEE IS MADE OR IMPLIED AS TO THEIR ACCURACY. FURTHER VERIFICATION MAY BE REQUIRED TO IDENTIFY UTILITIES. CONTACT LOCAL UTILITY COMPANIES FOR REQUIREMENTS. COORDINATION ON CONDUIT AND/OR CABLE SHALL BE DONE PRIOR TO INSTALLATION. ALL INSTALLATIONS MUST BE INSTALLED PER LOCAL UTILITY STANDARDS AND INSPECTED PRIOR TO BEING COVERED.

C. CONTRACTOR SHALL INCUR ALL COSTS FOR CLEARING EITHER OVERHEAD OR UNDERGROUND ROUTES, INCLUDING TREE REMOVAL, BUILDING AND/OR FOUNDATION OR RUBBLE REMOVAL, ANY OTHER OBSTACLES ENCOUNTERED, AND ALL SITE WORK REQUIRED BY LOCAL UTILITIES.

D. CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH LOCAL UTILITY COMPANY REGARDING AID-TO-CONSTRUCTION COSTS. AID TO CONSTRUCTION COSTS SHALL BE INCLUDED AS AN ALLOWANCE AND NOT PART OF THE CONTRACTOR BID.

E. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, STOP WORK IMMEDIATELY AND INFORM THE OWNER'S REPRESENTATIVE IN WRITING AND VERBALLY. THE OWNER'S REPRESENTATIVE WILL THEN BE RESPONSIBLE TO TAKE APPROPRIATE ACTIONS.

F. REFER TO ELECTRICAL/TELECOM RISER DIAGRAMS FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE WORK REQUIRED BY LOCAL UTILITIES.

LIGHTING GENERAL NOTES

A. CONNECT EACH EXIT/EMERGENCY FIXTURE TO THE LOCAL UNSWITCHED LIGHTING CIRCUIT.

B. PROVIDE A SEPARATE NEUTRAL WIRE FOR ALL DIMMED LIGHTING CIRCUITS AND DIMMED ZONES SHARING THE SAME CIRCUIT.

POWER/SPECIAL SYSTEMS GENERAL NOTES

A. PROVIDE A 4"x4"x2 1/8" DEEP J-BOX WITH 1 1/4"C. STUBBED TO ABOVE CEILING TO ACCESSIBLE AREA FOR ALL TELECOMMUNICATION OUTLET LOCATIONS SHOWN. PROVIDE A PULLSTRING IN EACH CONDUIT. CABLING AND TERMINATIONS ARE BY CONTRACTOR UNLESS NOTED OTHERWISE.

B. SECURITY SYSTEM, ALL RESPECTIVE DEVICES, CABLING, & EQUIPMENT, AND RACEWAYS ARE BY CONTRACTOR.

C. COORDINATE DEVICES TO BE INSTALLED IN MILLWORK WITH MILLWORK CONTRACTOR.

D. VERIFY LOCATION AND COORDINATE REQUIREMENTS OF ALL EQUIPMENT SUPPLIES, ETC. PRIOR TO INSTALLATION.

E. EACH BRANCH CIRCUIT SHALL HAVE A SEPARATE NEUTRAL WIRE. ONE GREEN EQUIPMENT GROUND WIRE SHALL BE INSTALLED IN EACH CONDUIT WITH (3) OR LESS BRANCH CIRCUITS.

F. THIS CONTRACTOR SHALL FURNISH AND INSTALL DUCT SMOKE DETECTORS AND SHUTDOWN RELAYS FOR EACH SUPPLY DUCT IF 2000CFM OR GREATER AND ALSO EACH RETURN DUCT IF 15000 CFM OR GREATER. COORDINATE ALL EQUIPMENT REQUIREMENTS AND LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO BIDDING.

G. PROVIDE SMOKE DETECTOR AT EVERY FIRE ALARM CONTROL PANEL PAD EXTENDER (WITHIN 5-FT.). CONTRACTOR TO DETERMINE LOCATIONS BASED ON POWER REQUIREMENTS AND VOLTAGE DROP.

H. FIRE ALARM CONTRACTOR TO INCLUDE COST AND TIME OF PERFORMING A RADIO FREQUENCY (RF) TEST FOR THE BUILDING AFTER THE CORE, SHELL, WINDOWS, AND DOORS ARE COMPLETED, TO DETERMINE IF AN ERCES IS NEEDED, AS REQUIRED BY THE LOCAL AHJ. ERCES SHALL BE DESIGNED BY AN RF SYSTEM DESIGNER AND INSTALLED ACCORDING TO THE LATEST NFPA AND IFC REQUIREMENTS AND APPROVED BY THE AJH AND FREQUENCY LICENSE HOLDER.

I. THE CONTROLS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COORDINATION WITH THE MECHANICAL AND ELECTRICAL CONTRACTORS TO PROVIDE AND INSTALL SYSTEMS AS SPECIFIED. THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR ALL CONDUIT AND WIRE NOT SHOWN ON MECHANICAL AND ELECTRICAL DOCUMENTS BUT THAT ARE REQUIRED FOR A FULLY FUNCTIONAL SYSTEM.

J. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR ON ALL ELECTRICAL REQUIREMENTS PERTAINING TO MECHANICAL EQUIPMENT AND CONNECTIONS PRIOR TO ORDERING OF EQUIPMENT AND INSTALLATION. CHANGES AND MODIFICATIONS TO THIS EQUIPMENT THAT MAY REQUIRE CIRCUIT BREAKER AND WIRE/CONDUIT CHANGES SHALL BE COMMUNICATED TO ALL PARTIES WITH THE CONTRACTOR(S) INCLUDING THIS IN THEIR RESPECTIVE SCOPE OF WORK. THERE SHALL BE NO ADDITIONAL COST TO THE OWNER FOR THESE MODIFICATIONS.

K. ALL 120V KITCHEN RECEPTACLES SHALL BE GFI PROTECTED.

L. PROVIDE GFI RECEPTACLES AT OTHER LOCATIONS AS REQUIRED BY THE NEC.

M. PROVIDE TAMPER PROOF RECEPTACLES IN LOCATIONS REQUIRED BY THE NEC.

PROJECT GENERAL NOTES

A. ALL SHEETS REQUESTED IN CAD (.DWG) FORMAT SHALL BE PROVIDED IN ACAD 2018 AT A CHARGE OF $25/SHEET (MINIMUM $250) FOR FIRE ALARM, TELECOMMUNICATIONS, AND SECURITY EQUIPMENT CONTRACTORS AND FOR LIGHTING FIXTURE MANUFACTURER REPRESENTATIVES. ALL OTHERS REQUESTING CAD FILES SHALL BE CHARGED $50/SHEET (MINIMUM $250). PRIOR TO TRANSMISSION OF FILES, THE REQUESTING PARTY MUST SIGN AND RETURN "DOCUMENT DISCLAIMER" TO AES.

B. THE ENTIRE INSTALLATION SHOWN IN THE CONSTRUCTION DOCUMENTS (CDS) SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, CITY, STATE AND NATIONAL CODES, LAWS, ACTS AND ORDINANCES AND ALL AUTHORITIES HAVING JURISDICTION, THE OWNERS INSURANCE COMPANY REQUIREMENTS, UTILITY COMPANY REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS OF GOOD PRACTICE AND SAFETY, THE MANUFACTURER'S STRICTEST REQUIREMENTS AND RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION. IN THE EVENT OF CONFLICT BETWEEN THESE CONTRACT DOCUMENTS AND GOVERNING LAWS, THE MORE STRICT SHALL APPLY. ALL COSTS REQUIRED SHOULD BE INCLUDED IN THE BIDS.

C. DRAWINGS ARE LARGELY SCHEMATIC IN NATURE AND SHALL BE ADAPTED TO ACTUAL SITE CONDITIONS AND OWNER'S REQUIREMENTS AT NO ADDITIONAL COST. THOUGH A LOT OF DETAILS MAY BE SHOWN THEY ARE NOT INTENDED TO SHOW EVERY DETAIL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONTRACT DOCUMENTS AND TO COORDINATE WITH ALL OTHER TRADES AND EXISTING/SITE CONDITIONS TO PROVIDE A FULLY FUNCTIONAL SYSTEM PER THE INTENT OF DESIGN. ALL REQUIRED SUPPORTS AND SYSTEMS SHALL BE PROVIDED FOR A FULLY FUNCTIONAL SYSTEM PER THE DESIGN INTENT, AS DETERMINED BY THE ARCHITECT AND ENGINEER.

D. ALL EQUIPMENT SHALL BE PROPERLY ALIGNED, LUBRICATED AND OILED BEFORE START UP AND FINAL ACCEPTANCE BY OWNER. OIL/GREASE FILL PORTS SHALL BE VERTICAL AND EXTENSION FITTINGS SHALL BE PROVIDED AS REQUIRED FOR ACCESS FROM EXTERIOR OF UNIT.

E. ALL EQUIPMENT SHALL BE THOROUGHLY CLEANED AND ALL BARE, SCRATCHED OR MARRED AREAS SHALL BE PAINTED WITH FACTORY PAINT OR AN OWNER APPROVED EQUAL.

F. IN A MANNER SATISFACTORY TO THE OWNER'S REPRESENTATIVE, TOUCH-UP OR REFINISH FACTORY-APPLIED PAINTS OR FINISHES WHICH ARE CHIPPED, DEFACED, SCRATCH, OR IN ANY OTHER WAY DISTURBED DUE TO HANDLING, INSTALLATION, OR GENERAL CONSTRUCTION WORK.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP DURING AND AT CONCLUSION OF CONSTRUCTION PERIOD. NO MATERIALS SHALL BE LEFT ON SITE WHEN WORK IS COMPLETED, UNLESS REQUESTED BY OWNER'S REPRESENTATIVE. ALL MATERIALS SHALL BE DISPOSED OF PROPERLY.

H. CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING ANY HOLES IN EXISTING/NEW BEAMS THAT ARE REQUIRED FOR ROUTING PIPING/DUCT/CONDUIT. ALL HOLES TO BE MADE IN THE MIDDLE THIRD (HEIGHT AND WIDTH WISE) OF THE BEAMS. COORDINATE WITH STRUCTURAL ENGINEER/GENERAL CONTRACTOR BEFORE CUTTING.

I. COORDINATE ALL ROOF AND WALL PENETRATIONS WITH EXISTING/NEW STRUCTURAL CONDITIONS. MAINTAIN ALL ROOF WARRANTIES. ALL PENETRATIONS THROUGH FIRE-RATED WALLS AND FLOORS SHALL BE CAULKED AND SEALED WITH APPROVED FIRE RATED CAULKING MATERIAL.

J. INSTALL RACEWAYS AND ELECTRICAL EQUIPMENT, WHICH PENETRATE FIRE-RATED OR SMOKE BARRIER SURFACES, IN A MANNER, WHICH MAINTAINS THE SURFACE RATING OR BARRIER INTENT. DRILL WALL AND FLOOR OPENINGS FOR PENETRATIONS AS NEEDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING SLEEVES, CUTTING AND PATCHING, AND PLACING ROOF PENETRATIONS.

K. PROVIDE PERMANENT TYPED LABELS PER NEC 2017-ARTICLE 110 AND AHJ.

L. THE CONTRACTOR SHALL COORDINATE SERVICE INTERRUPTIONS WITH OWNER, MINIMUM OF 10 DAYS NOTICE IN ADVANCE.

M. ALL DUCT, CONDUIT, AND PIPING CONNECTING TO VIBRATING EQUIPMENT SHALL HAVE FLEXIBLE CONNECTIONS INSTALLED AT CONNECTION TO EQUIPMENT.

N. ALL ELECTRICAL EQUIPMENT ON THE FLOOR SHALL SIT ON A 3-1/2" HIGH CONCRETE HOUSE KEEPING PAD. PAD SHALL BE SEALED AND OR PAINTED TO MATCH SURROUNDING FLOOR.

O. SHUT DOWN OF ELECTRICAL SYSTEM FOR SWITCH-OVER TO NEW MAIN ELECTRICAL GEAR, CAN OCCUR DURING REGULAR WORKING HOURS, DURING ONE OF LPS'S SCHOOL BREAKS. LPS WILL COORDINATE ELECTRICAL SHUT DOWN TIMING WITH TENANTS.

P. ATTACHMENT POINTS FOR PIPES AND CONDUIT, WITH AN ATTACHMENT POINT LOAD OF 50 LB OR GREATER, NEED TO BE LOCATED AT JOIST PANEL POINTS OR ELSE JOIST REINFORCING IS REQUIRED PER THE ATTACHED DETAIL 3 ON S1.2.

2

SHEET LIST - ELECTRICAL

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01/31/24
JOSH L. RICH
E-12414
STATE OF NEBRASKA

AES ADVANCED ENGINEERING SYSTEMS

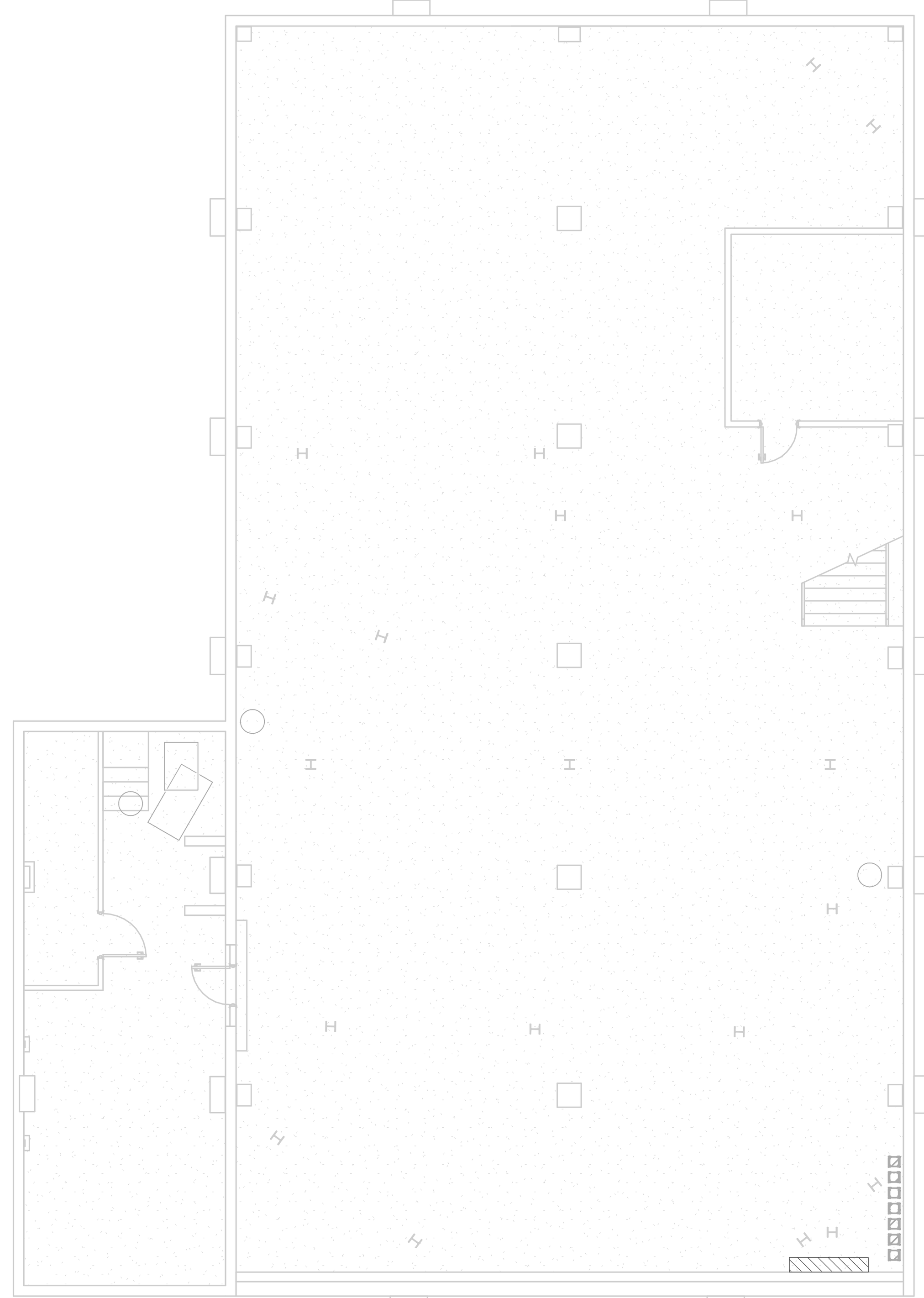
LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGARM
BOTTLERS BUILDING
Lincoln, NE

Project Number
23-007
Date
1/11/2024
Revisions

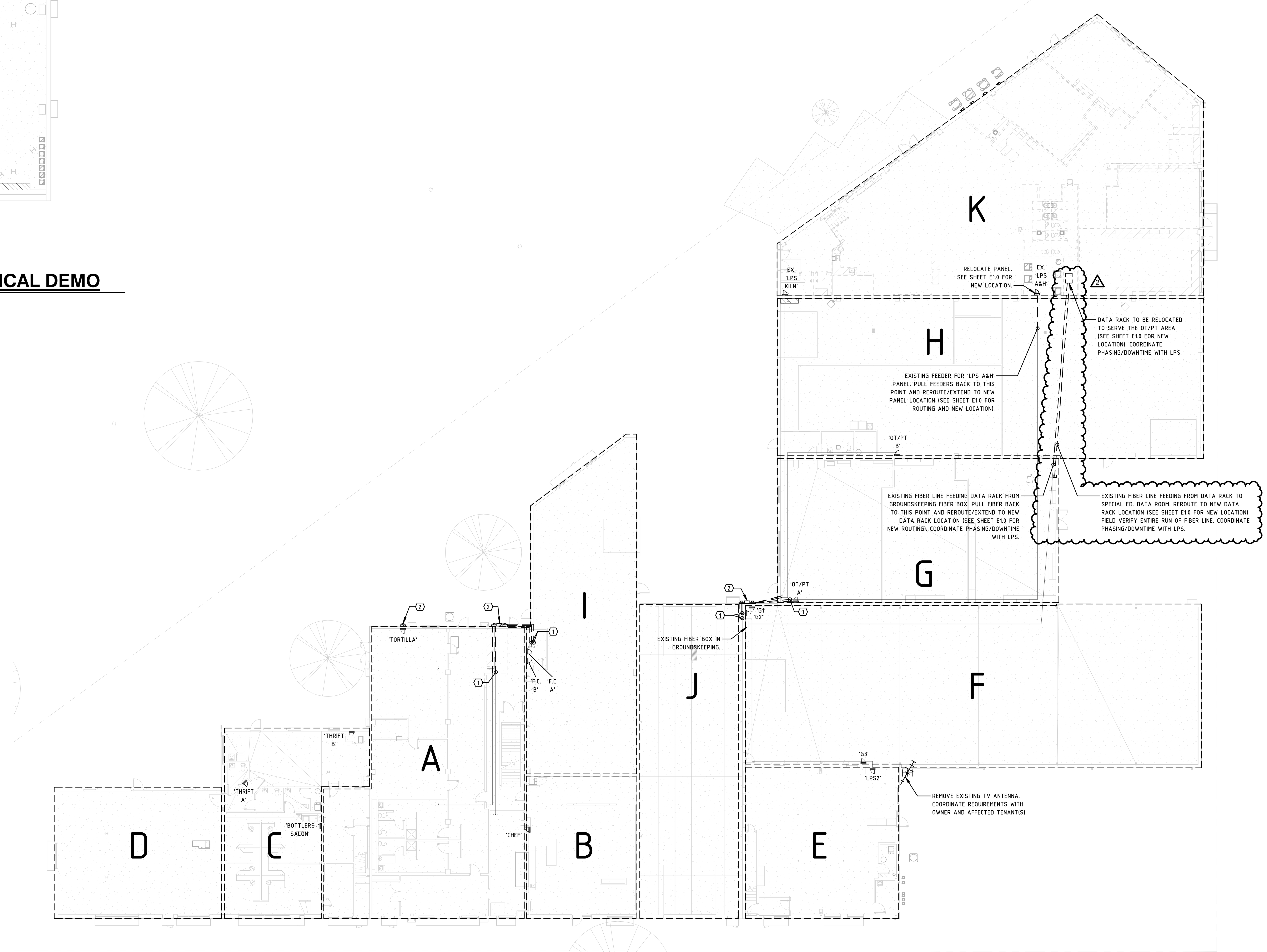
#	Date
1	1-17-2024
2	1-31-2024

E0.0

ELECTRICAL GENERAL PROJECT NOTES & SYMBOLS



1 OVERALL BASEMENT PLAN - ELECTRICAL DEMO
ED1.0 1/8" = 1'-0"



2 OVERALL MAIN FLOOR PLAN - ELECTRICAL DEMO
ED1.0 1/16" = 1'-0"

KEY NOTES

SYMBOL = (X)

1 INTERCEPT CONDUIT AND PREPARE TO REFEED FROM NEW SOURCE, SEE SHEET E1.0. CUT CONDUIT AT LOCATION MARKED BY KEYNOTE AND DEMOLISH BACK TO METER CENTER. REMOVE CONDUCTORS.

2 DEMOLISH EXISTING METER CENTER. REMOVE ALL ABANDONED CONDUIT, INSULATORS/CONDUCTORS, ELECTRICAL ACCESSORIES, ETC. GC TO PATCH MASONRY AND TOUCH UP PAINT, COORDINATE IN FIELD. COORDINATE SHUTDOWN TIMES WITH OWNER - DOWNTIME CANNOT OCCUR DURING SCHOOL HOURS.

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ED1.0

OVERALL BUILDING DEMO - ELEC. EQUIPMENT PLANS - LOWER & MAIN LEVELS

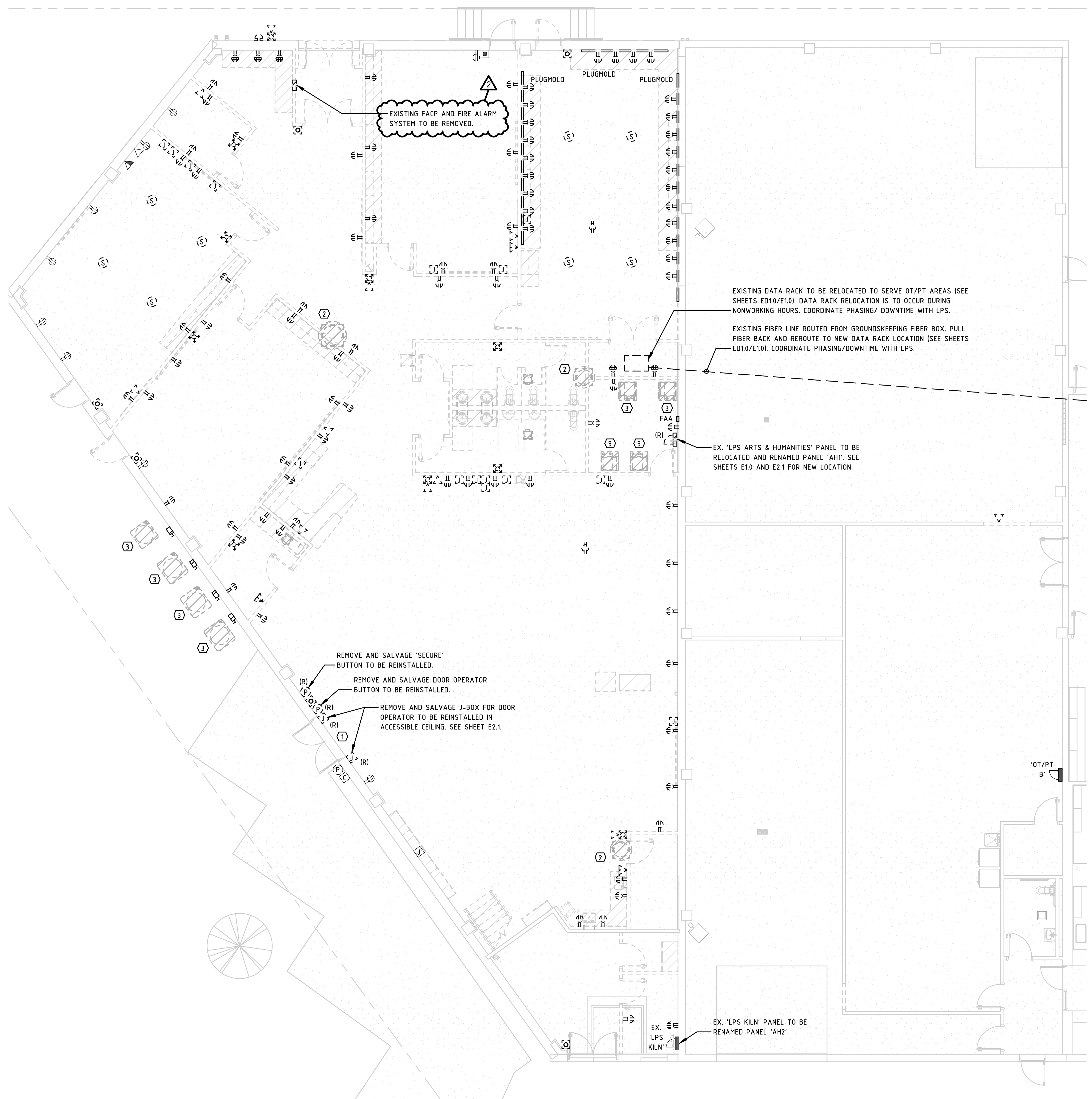
KEY NOTES

SYMBOL = ⟨X⟩

1 REMOVE ALL SURFACE-MOUNTED CONDUIT SERVING EXISTING DOORS, AND CONCEAL CONDUIT AND J-BOXES IN NEW WALLS OR WALL FURRING. DEVICES TO REMAIN UNLESS OTHERWISE NOTED. SEE E2.1 FOR MORE INFO.

2 MECHANICAL EQUIPMENT TO BE REMOVED BY MECHANICAL CONTRACTOR. REMOVE ELECTRICAL DISCONNECT AND DEMO CONDUIT/FEEDERS BACK TO SOURCE. GC TO INSULATE AND PATCH ROOF, COORDINATE IN FIELD.

3 TYPICAL. MECHANICAL EQUIPMENT TO BE REMOVED BY MECH. CONTRACTOR. REMOVE ELECTRICAL CONNECTION AND DEMOLISH WIRE AND CONDUIT BACK TO SOURCE.



1 ARTS & HUMANITIES SCHOOL DEMOLITION - POWER

ED2.1 1/8" = 1'-0"

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ED2.1

ARTS & HUMANITIES SCHOOL, OT/PT, CONFERENCE & STORAGE DEMO POWER

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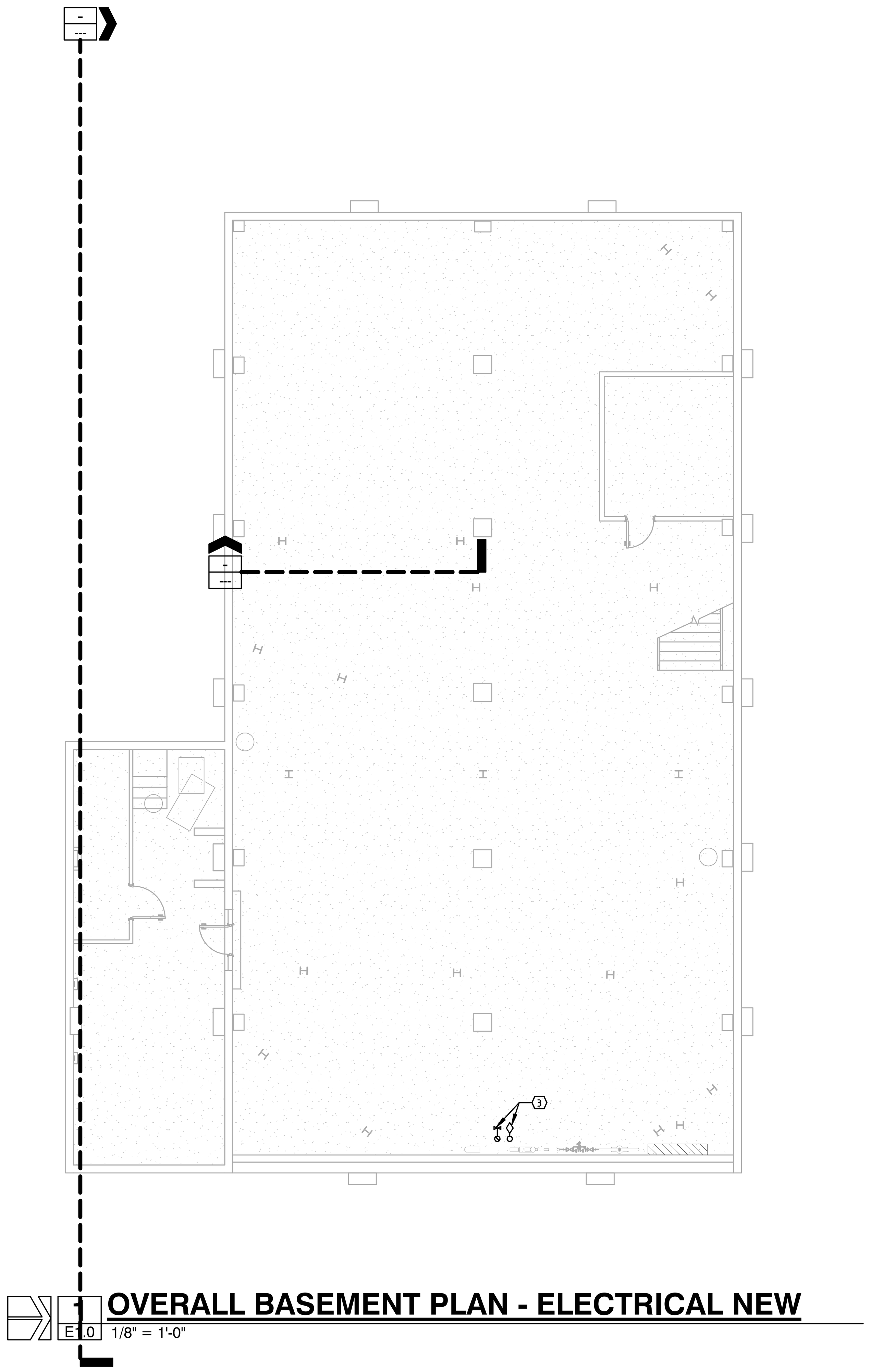
KEY NOTES

SYMBOL = ⟨X⟩

1 PROVIDE PULLBOX TO INTERCEPT EXISTING CONDUIT. EXTEND NEW CONDUIT AND FEEDERS TO MDP IN NEW ELECTRICAL ROOM. SEE ELECTRICAL RISER DIAGRAMS, SHEET E5.1. FIELD VERIFY ALL REQUIREMENTS FOR CONDUIT/FEEDER SIZE AND ROUTING.

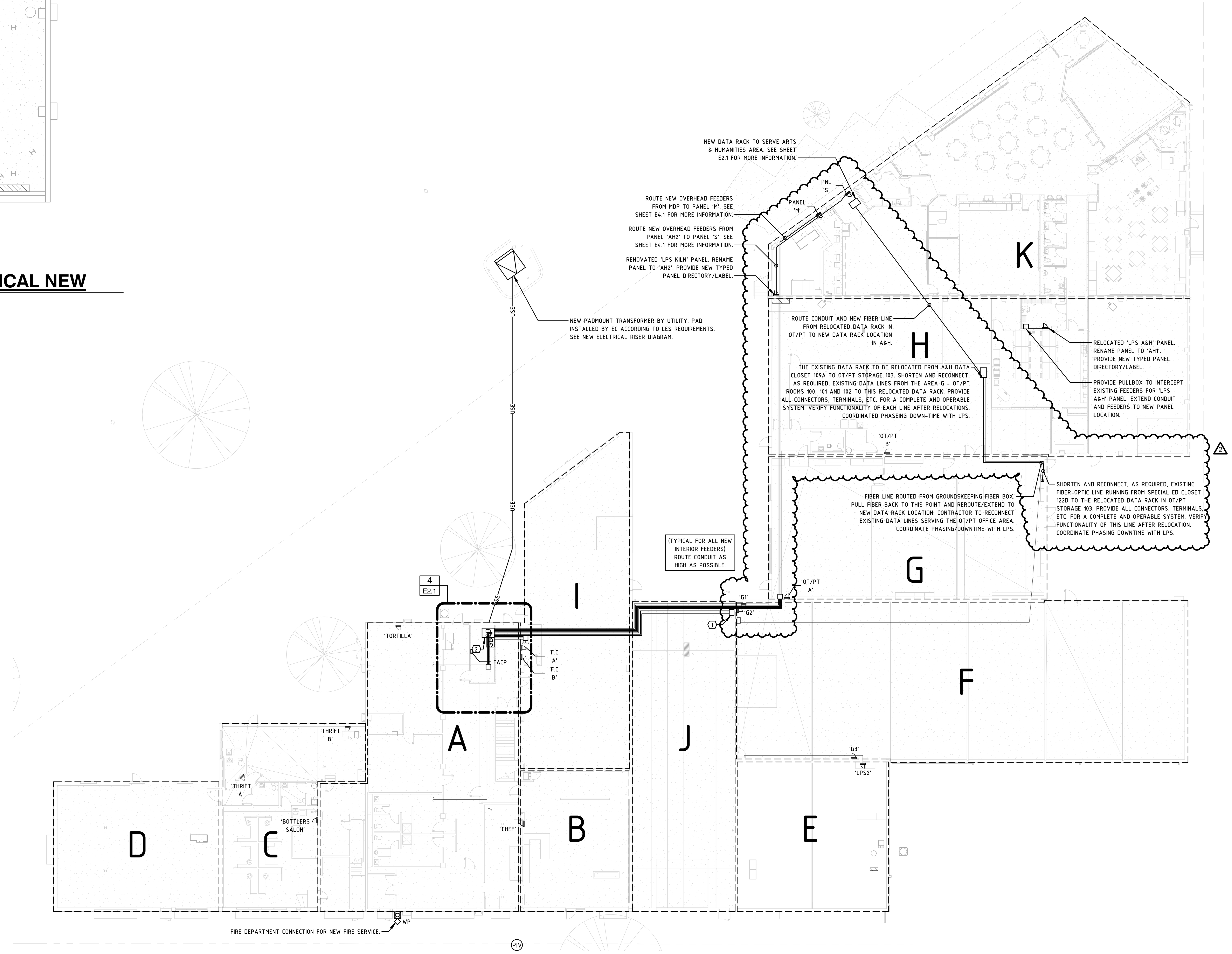
2 NEW SWITCHGEAR. SEE SHEET E4.1. COORDINATE SHUTDOWN/STARTUP TIMES WITH OWNER - DOWNTIME CANNOT OCCUR DURING SCHOOL HOURS.

3 CONNECT TAMPER/FLOW SWITCHES TO FIRE ALARM SYSTEM.



1 OVERALL BASEMENT PLAN - ELECTRICAL NEW

E1.0 1/8" = 1'-0"



2 OVERALL MAIN FLOOR PLAN - ELECTRICAL NEW

E1.0 1/16" = 1'-0"

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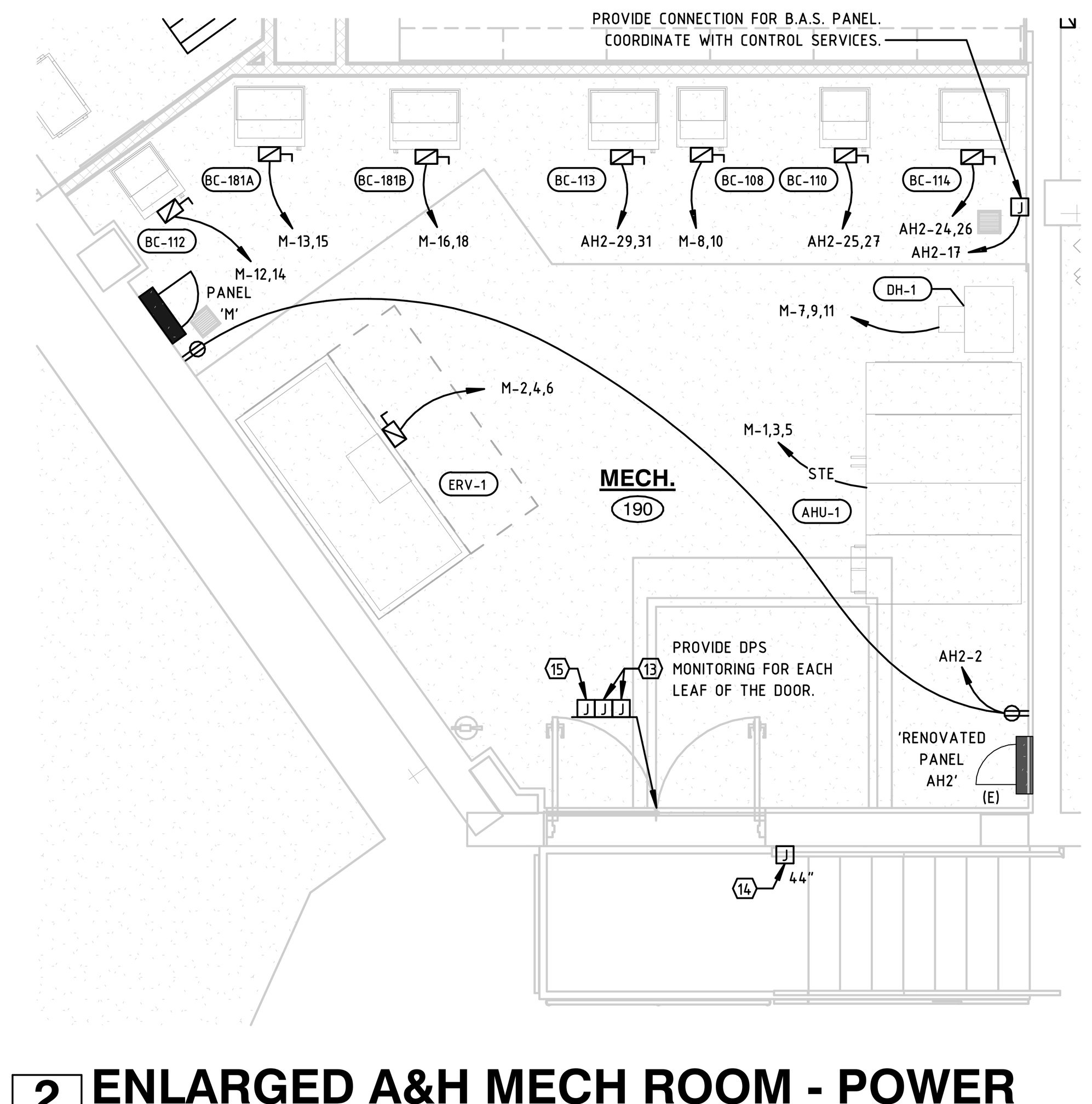
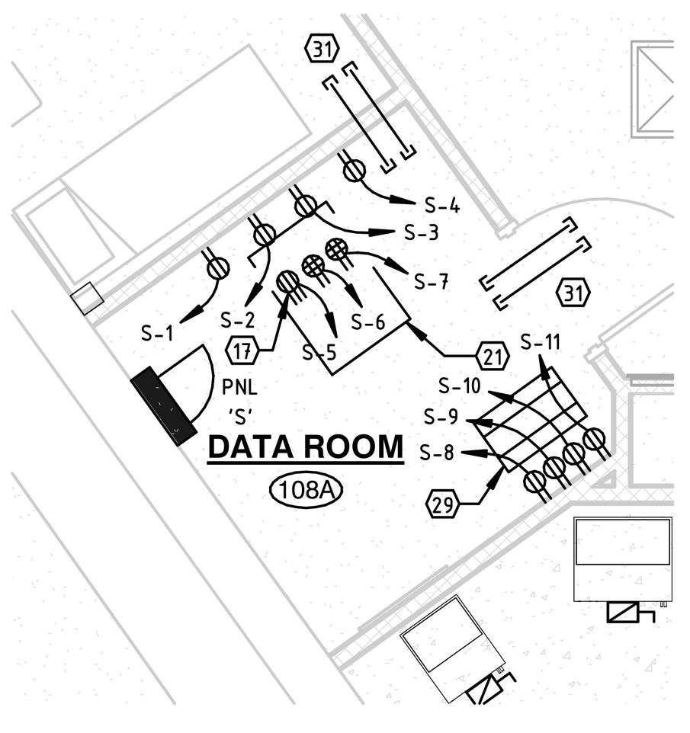
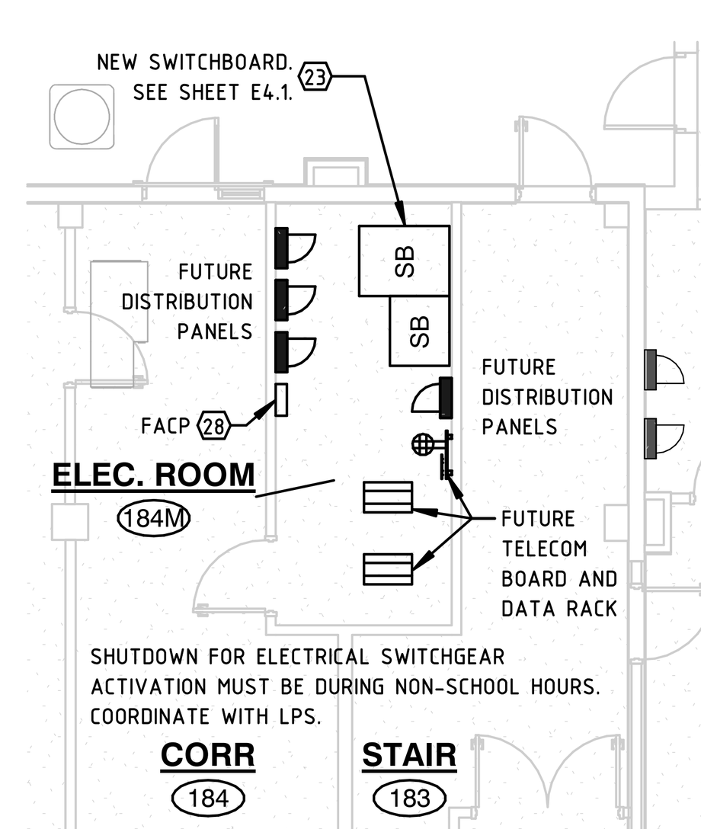
OVERALL BUILDING NEW - ELEC. EQUIPMENT PLANS - LOWER & MAIN LEVELS



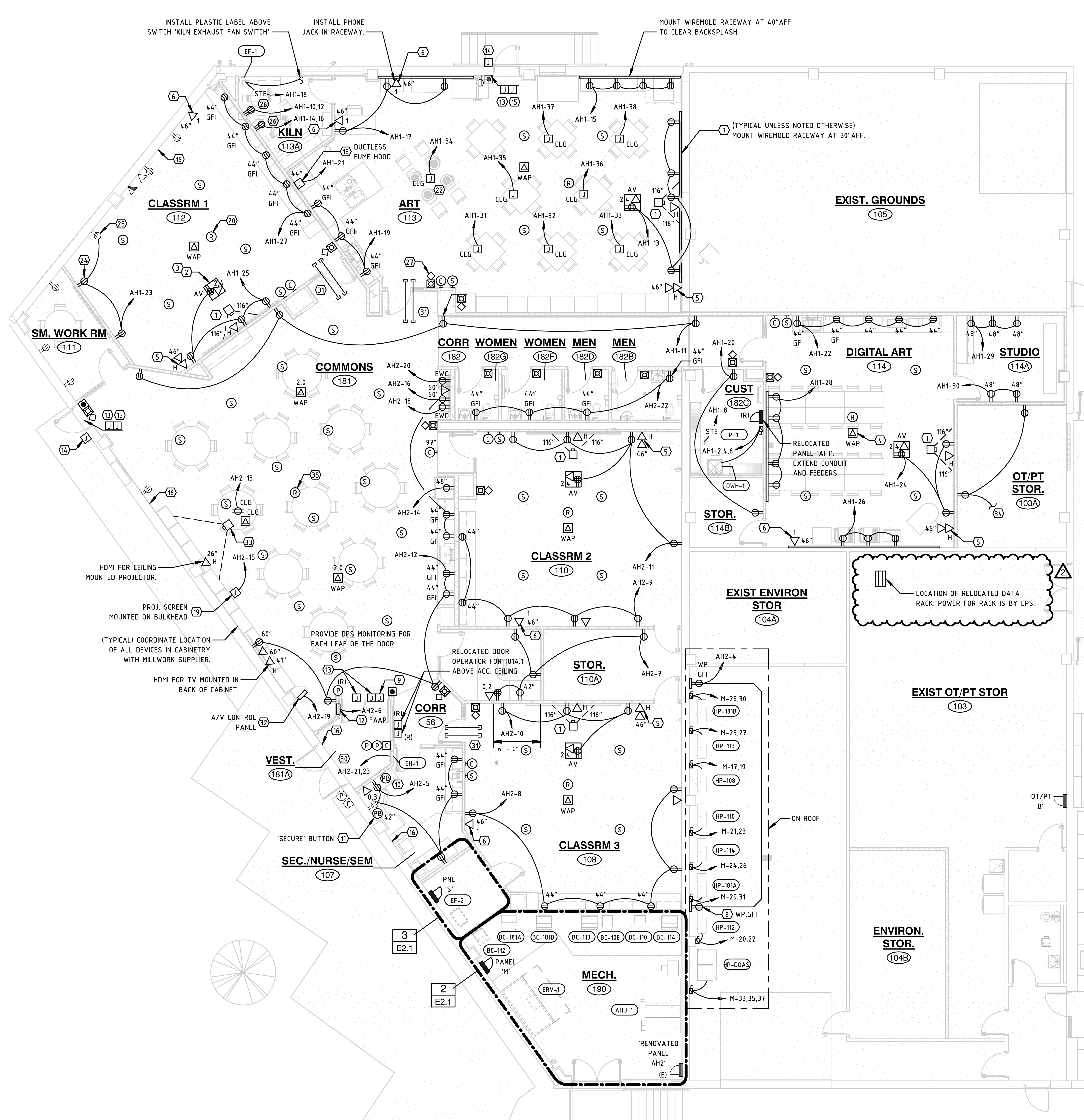
2 ENLARGED A&H MECH ROOM - POWER
E2.1 1/4" = 1'-0"



3 DATA ROOM POWER - ENLARGED
E2.1 1/4" = 1'-0"



4 NEW ELECTRICAL ROOM - POWER
E2.1 1/8" = 1'-0"



1 ARTS & HUMANITIES SCHOOL - POWER
E2.1 1/8" = 1'-0"

KEY NOTES

SYMBOL = ⟨X⟩

1 LPS TO PROVIDE AND INSTALL SHORT-THROW WALL-MOUNTED PROJECTOR. REFER TO DETAILS '4', '5', & '6', SHEET E5.1, FOR INSTALLING PROJECTOR POWER AND COMMUNICATIONS BOXES. COORDINATE EXACT REQUIREMENTS WITH LPS.

2 TYPICAL. AV GEARBOX - INSTALL IN 2'X2' CEILING GRID SPACE.

3 TYPICAL FOR CLASSROOMS & SIMILAR AREAS THAT ARE TO RECEIVE TECHNOLOGY READY CABLING & INFRASTRUCTURE, REFER TO TECHNOLOGY READY CLASSROOM CABLING DETAIL AND AV GEAR BOX DETAIL, SHEET E5.1 FOR EXACT REQUIREMENTS, DEVICE LOCATIONS AND INSTALLATION NOTES.

4 TYPICAL. WIRELESS ACCESS POINT. PROVIDE TWO (2) CAT 6A CABLES FROM GEARBOX TO THIS LOCATION AND LABEL 'A' AND 'B'.

5 PROVIDE ONE (1) HDMI CABLE WITH TERMINATIONS ON BOTH ENDS IN 1 1/4"C.

6 PROVIDE A WALL MOUNTED CAT 6 PHONE JACK FACEPLATE AND CABLE (LABELED 'E') ROUTED FROM GEARBOX.

7 TYPICAL. SURFACE MOUNTED WIREMOLD RECEPTACLE. ELEC/DATA 4000 SERIES. ROUTE DATA/PHONE CABLE ONLY TO MARKED LOCATIONS.

8 PROVIDE WEATHER RESISTANT TAMPER PROOF GFI RECEPTACLE WITH LOCKABLE METAL IN USE COVER AT 24" ABOVE ROOF. SURFACE MOUNT CONDUIT ON EXTERIOR WALLS. SEAL ALL ROOF PENETRATIONS. TYPICAL.

9 SEE HARDWARE SCHEDULE FOR LATCH RETRACTION AT DOUBLE DOORS. DOOR IS TO BE LOCKED AT ALL TIMES AND RELEASE VIA BUTTON IN SEM OFFICE. THE EAST LEAF SHALL BE THE ACTIVE LEAF FOR THE CARD READER, AUTO DOOR OPENER, AND DOOR RELEASE. ALL PATHWAYS FOR DOOR 181A.2 TO TERMINATE IN LPS PROVIDED LIFESAFETY E1M CABINETS ABOVE CLOSEST LAY-IN CEILING. FIELD VERIFY BEST LOCATION WITH ARCHITECT. VESTIBULE DOORS TO BE OUTFITTED WITH 99 SERIES PANIC HARDWARE. COORINATE WITH ARCHITECT/GC.

10 DOOR RELEASE BUTTON IN SEM OFFICE FOR LATCH RETRACTION AT VEST. DOOR 181A.2. MOUNT TO BOTTOM OF COUNTER - FIELD VERIFY LOCATION WITH OWNER.

11 LOCKDOWN BUTTON - BUTTON SHALL BE INCORPORATED INTO THE ACCESS CONTROL SYSTEM AND OPERATED IN SERIES WITH THE FIRE ALARM SYSTEM. THE VESTIBULE DOORS WILL CLOSE AND LOCK UPON POWER FAILURE, FIRE DETECTION IN ALARM CONDITIONS OR LOCKDOWN BUTTON ACTIVATION. COORDINATE EXACT BUTTON LOCATION AND ALL CABLING/CONNECTION REQUIREMENTS WITH LPS PRIOR TO ROUGH-IN AND ORDERING.

12 FIRE ALARM ANNUNCIATOR PANEL. CONNECT TO FIRE ALARM SYSTEM.

13 PATHWAYS FOR FUTURE DOOR POSITION SWITCH (DPS). ROUTE 1 1/4"C. TO DATA ROOM 108A.

14 PATHWAY FOR FUTURE CARD READER. ROUTE 1 1/4"C. TO DATA ROOM 108A.

15 PATHWAY FOR FUTURE ELECTRIC POWER TRANSFER (EPT). ROUTE 1 1/4"C. TO DATA ROOM 108A.

16 RECESS NEW CONDUIT AND J-BOXES AT EXISTING WALLS IN ROOMS 107, 108, 110, 112, 181, AND 181A.

17 PROVIDE NEMA 1-30R RECEPTACLE AND UTILIZE #10CU THROUGHOUT CIRCUIT.

18 CONNECTION FOR DUCTLESS FUME HOOD. COORDINATE EXACT CIRCUITING REQUIREMENTS WITH EQUIPMENT SUPPLIER.

19 CONNECTION FOR PROJECTION SCREEN. COORDINATE EXACT CIRCUITING AND CONTROL REQUIREMENTS WITH EQUIPMENT SUPPLIER. UTILIZE 3-#12CU, #12CU GND. CONNECT SCREEN TO A/V CONTROL PANEL ON COLUMN AT FRONT WALL FOR CONTROL. SEE SHEET E5.2. COORDINATE WITH OWNER.

20 AUDIO ENHANCEMENT SYSTEM FOR CLASSROOMS TO BE PROVIDED BY OWNER. PROVIDE JUNCTION BOXES AND CONDUIT WITH PULLSTRINGS FOR FUTURE INSTALLATION. SEE SHEET E5.2. COORDINATE WITH OWNER.

21 PROVIDE 48 UNIT HEAVY DUTY 4-POST OPEN FRAME RACK FOR NETWORK EQUIPMENT, EATON TRIPP LITE SR4POST48HD OR APPROVED EQUAL. SEE DETAILS 2 AND 3 ON SHEET E5.1.

22 PROVIDE SELF-RETRACTING 40FT CORD REEL, 120V WITH THREE (3) NEMA 5-20 RECEPTACLES. REELCRAFT LG3040 123 9 OR APPROVED EQUAL. ROUTE 2-#12CU, #12CU GND IN 3/4"C. TO INDICATED BREAKER. REEL SHALL BE ANCHORED SECURELY TO ROOF STRUCTURE, NOT TO LAY-IN GRID. COORDINATE LOCATION FOR MOUNTING IN FIELD WITH CLASSROOM TABLE LAYOUT AND OWNER.

23 NEW SWITCHGEAR. SEE SHEET E4.1. COORDINATE SHUTDOWN/STARTUP TIMES WITH OWNER - DOWNTIME CANNOT OCCUR DURING SCHOOL HOURS.

24 TYPICAL FOR ALL NEW RECEPTACLES/SWITCHES. PROVIDE GRAY DEVICE WITH STAINLESS STEEL COVER PLATES.

25 TYPICAL AT ALL EXISTING RECEPTACLES SHOWN TO REMAIN - REPLACE DEVICE AND COVER WITH GRAY DEVICE AND STAINLESS STEEL COVER IN EXISTING J-BOX. RECONNECT EXISTING WIRING TO NEW DEVICE.

26 PROVIDE NEMA 15-50R RECEPTACLE FOR KILN. COORDINATE EXACT LOCATION FOR ROUGH-IN IN FIELD WITH EQUIPMENT SUPPLIER. ROUTE 3-#6CU, #10CU GND IN 1"C. TO INDICATED BREAKER.

27 TYPICAL FOR ALL NEW FIRE ALARM DEVICES. PROVIDE TYPED, PRINTED LABEL FOR DEVICE. ASSIGN DEVICE NAMES IN A NEAT, ORDERLY MANNER. COORDINATE NAMING WITH LPS.

28 FIRE ALARM CONTROL PANEL. ROUTE TWO CAT 6 TO TERMINATION BOARD FOR EMERGENCY CALLOUT.

29 A/V RACK. SEE SHEET E5.2. COORDINATE WITH OWNER.

30 RECONNECT EXISTING DEVICES. CONCEAL CONDUIT BEHIND GYP IN EXISTING WALL FURRING AND ROUTE TO ABOVE ACCESSIBLE CEILING. ALL PATHWAYS FOR DOOR 181A.1 TO TERMINATE IN LPS PROVIDED LIFESAFETY E1M CABINETS ABOVE CLOSEST LAY-IN CEILING. FIELD VERIFY BEST LOCATION WITH ARCHITECT.

31 TYPICAL. 2-2 1/2"C SLEEVES THRU WALL ABOVE CEILING. INSTALL CONDUITS THAT ROUTE INTO COMMONS AREA AT 18'-6"AFF OR HIGHER TO CLEAR CEILING CLOUDS.

32 A/V CONTROL PANEL. PROVIDE LARGE PLASTIC LOCKING COVER OVER TOUCHSCREEN. ROUTE 2-#12CU IN 3/4"C. BACK TO INDICATED PANEL, AND ROUTE PULLSTRING IN 1 1/4"C. TO DATA ROOM 108A. SEE SHEET E5.2. COORDINATE WITH OWNER.

33 PROVIDE AND INSTALL EPSON EB-PU1007W 7000 LUMEN PROJECTOR OR APPROVED EQUAL FOR COMMONS AREA. SEE SHEET E5.2. COORDINATE WITH OWNER.

34 CONNECT TO NEAREST EXISTING RECEPTACLE CIRCUIT.

35 AUDIO ENHANCEMENT SYSTEM FOR COMMONS AREA TO BE PROVIDED AND INSTALLED BY CONTRACTOR. PROVIDE ALL DEVICES, PATHWAYS, AND CONNECTIONS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM. SEE SHEET E5.2. COORDINATE WITH OWNER.

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LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGARM
BOTTLERS BUILDING
Lincoln, NE

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E2.1

ARTS & HUMANITIES SCHOOL, OT/PT, CONFERENCE & STORAGE POWER

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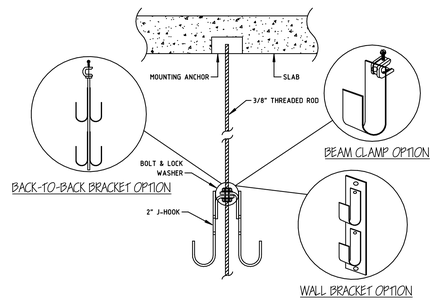
GENERAL DETAIL NOTES

A. J-HOOKS ARE ALLOWED ON STRUCTURAL BEAMS, STRUCTURAL BRACES, MASONRY WALL, & FULL HEIGHT STUD WALLS. USE APPROPRIATE FASTENERS AS REQUIRED.
B. J-HOOKS SHALL NOT BE ON CEILING SUPPORTED HARDWARE, DUCT HANGERS, ETC.
C. NO MORE THAN 24 CABLES SHALL BE PLACED IN A 2" HOOK.
D. UTILIZE 650 LBS (MIN) ANCHORS ON THREADED ROD. MAXIMUM LOAD ON ASSEMBLY NOT TO EXCEED 150 LBS.
E. THREADED ROD MOUNTING IS SHOWN FOR FREE-STANDING CONDITIONS.

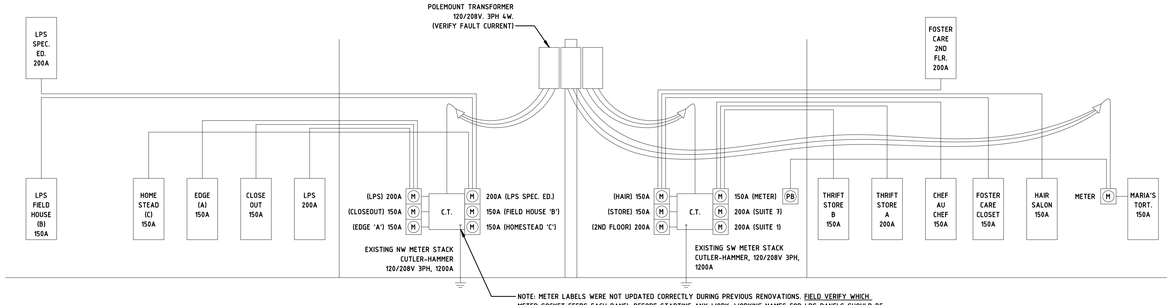


4 T7 - J-HOOK SUPPORTS
E4.1 NTS

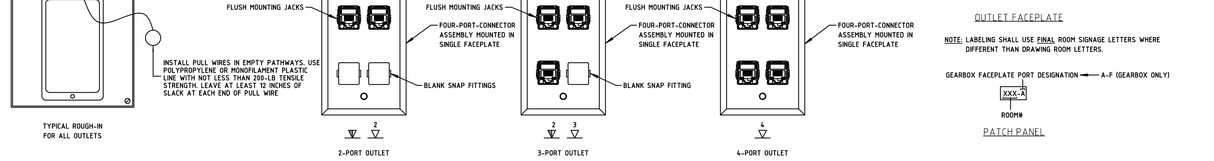
BRANCH CIRCUIT AND FEEDER SCHEDULE

GENERAL NOTES:
A. ALL CONDUCTORS ARE COPPER UNLESS OTHERWISE NOTED.
B. BASED ON 75 DEGREE TERMINATIONS.

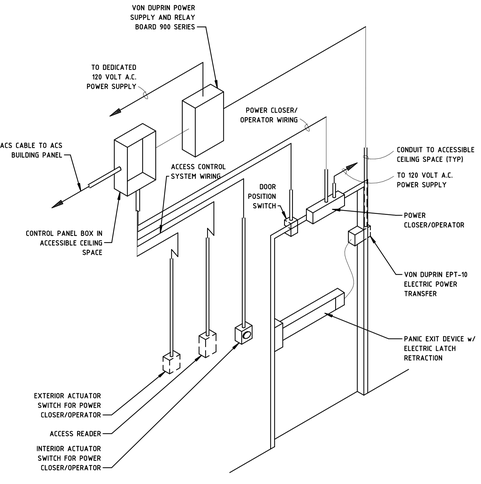
TAG	CONDUCTORS / CONDUITS	TAG	CONDUCTORS / CONDUITS
	3 WIRE PLUS GND		3 WIRE
20-3G	3-#12, 1-#12G, 3/4"C.	20-3	3-#12, 3/4"C.
30-3G	3-#10, 1-#10G, 3/4"C.	30-3	3-#10, 3/4"C.
50-3G	3-#8, 1-#10G, 3/4"C.	50-3	3-#8, 3/4"C.
65-3G	3-#6, 1-#8G, 1"C.	65-3	3-#6, 1"C.
85-3G	3-#4, 1-#8G, 1 1/4"C.	85-3	3-#4, 1 1/4"C.
100-3G	3-#3, 1-#8G, 1 1/4"C.	100-3	3-#3, 1 1/4"C.
115-3G	3-#2, 1-#6G, 1 1/4"C.	115-3	3-#2, 1 1/4"C.
130-3G	3-#1, 1-#6G, 1 1/2"C.	130-3	3-#1, 1 1/2"C.
150-3G	3-#1/0, 1-#6G, 2"C.	150-3	3-#1/0, 2"C.
175-3G	3-#2/0, 1-#6G, 2"C.	175-3	3-#2/0, 1-#6, 2"C.
200-3G	3-#3/0, 1-#6G, 2"C.	200-3	3-#3/0, 2"C.
230-3G	3-#4/0, 1-#4G, 2 1/2"C.	230-3	3-#4/0, 2 1/2"C.
255-3G	3-#250MCM, 1-#4G, 2 1/2"C.	255-3	3-#250MCM, 2 1/2"C.
310-3G	3-#350MCM, 1-#3G, 3"C.	310-3	3-#350MCM, 3"C.
380-3G	3-#500MCM, 1-#3G, 3"C.	380-3	3-#500MCM, 3"C.
400-3G	2 SETS (3-#3/0, 1-#3, 2"C.)	400-3	2 SETS (3-#3/0 2"C.)
460-3G	2 SETS (3-#4/0, 1-#2G, 2 1/2"C.)	460-3	2 SETS (3-#4/0, 2 1/2"C.)
500-3G	2 SETS (3-#250MCM, 1-#2G, 2 1/2"C.)	500-3	2 SETS (3-#250MCM, 2 1/2"C.)
600-3G	2 SETS (3-#350MCM, 1-#1G, 3"C.)	600-3	2 SETS (3-#350MCM, 3"C.)
1200-3G	4 SETS (3-#350MCM, 1-#3/0G, 3"C.)	1200-3	4 SETS (3-#350MCM, 3"C.)
	4 WIRE PLUS GND		4 WIRE
20-4G	4-#12, 1-#12G, 3/4"C.	20-4	4-#12, 3/4"C.
30-4G	4-#10, 1-#10G, 3/4"C.	30-4	4-#10, 3/4"C.
50-4G	4-#8, 1-#10G, 3/4"C.	50-4	4-#8, 3/4"C.
65-4G	4-#6, 1-#8G, 1"C.	65-4	4-#6, 1"C.
85-4G	4-#4, 1-#8G, 1 1/4"C.	85-4	4-#4, 1 1/4"C.
100-4G	4-#3, 1-#8G, 1 1/4"C.	100-4	4-#3, 1 1/4"C.
115-4G	4-#2, 1-#6G, 1 1/2"C.	115-4	4-#2, 1 1/2"C.
130-4G	4-#1, 1-#6G, 2"C.	130-4	4-#1, 2"C.
150-4G	4-#1/0, 1-#6G, 2"C.	150-4	4-#1/0, 2"C.
175-4G	4-#2/0, 1-#6G, 2"C.	175-4	4-#2/0, 2"C.
200-4G	4-#3/0, 1-#6G, 2 1/2"C.	200-4	4-#3/0, 2 1/2"C.
230-4G	4-#4/0, 1-#4G, 2 1/2"C.	230-4	4-#4/0, 2 1/2"C.
255-4G	4-#250MCM, 1-#4G, 2 1/2"C.	255-4	4-#250MCM, 2 1/2"C.
285-4G	4-#300MCM, 1-#4G, 3"C.	285-4	4-#300MCM, 3"C.
310-4G	4-#350MCM, 1-#3G, 3"C.	310-4	4-#350MCM, 3"C.
380-4G	4-#500MCM, 1-#3G, 3 1/2"C.	380-4	4-#500MCM, 3 1/2"C.
400-4G	2 SETS (4-#3/0, 1-#3G, 2 1/2"C.)	400-4	2 SETS (4-#3/0, 2 1/2"C.)
460-4G	2 SETS (4-#4/0, 1-#2G, 2 1/2"C.)	460-4	2 SETS (4-#4/0, 2 1/2"C.)
500-4G	2 SETS (4-#250MCM, 1-#2G, 2 1/2"C.)	500-4	2 SETS (4-#250MCM, 2 1/2"C.)
600-4G	2 SETS (4-#350MCM, 1-#1G, 3"C.)	620-4	2 SETS (4-#350MCM, 3"C.)
800-4G	4 SETS (4-#3/0, 1-#1/0G, 2 1/2"C.)	800-4	4 SETS (4-#3/0, 2 1/2"C.)
1000-4G	3 SETS (4-#400MCM, 1-#2/0G, 3"C.)	1000-4	3 SETS (4-#400MCM, 3"C.)
1200-4G	4 SETS (4-#350MCM, 1-#3/0G, 3"C.)	1200-4	4 SETS (4-#350MCM, 3"C.)
1600-4G	5 SETS (4-#500MCM, 1-#4/0G, 3 1/2"C.)	1600-4	5 SETS (4-#500MCM, 3 1/2"C.)
2000-4G	6 SETS (4-#500MCM, 1-#250MCM G, 3 1/2"C.)	2000-4	6 SETS (4-#500MCM, 3 1/2"C.)
2500-4G	7 SETS (4-#500MCM, 1-#400MCM G, 3 1/2"C.)	2500-4	7 SETS (4-#500MCM, 3 1/2"C.)
3000-4G	8 SETS (4-#500MCM, 1-#400MCM G, 3 1/2"C.)	3000-4	8 SETS (4-#500MCM, 3 1/2"C.)



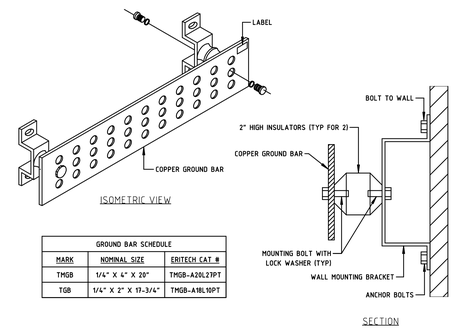
1 DEMOLITION ELECTRICAL RISER DIAGRAM
E4.1 NTS



2 NEW ELECTRICAL RISER DIAGRAM
E4.1 NTS

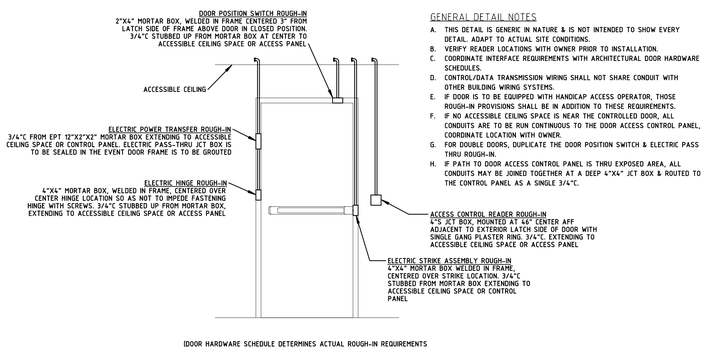


5 S5 - 28 10 00-B-LPS
E4.1 NTS



GROUND BAR SCHEDULE		
MARK	NOMINAL SIZE	ERITECH CAT #
TMGB	1/4" X 4" X 20"	TMGB-A20L2TPT
TGB	1/4" X 2" X 17-3/4"	TMGB-A18L10PT

6 T8 - GROUND BAR
E4.1 NTS



(DOOR HARDWARE SCHEDULE DETERMINES ACTUAL ROUGH-IN REQUIREMENTS

GENERAL DETAIL NOTES

A. THIS DETAIL IS GENERIC IN NATURE & IS NOT INTENDED TO SHOW EVERY DETAIL. ADAPT TO ACTUAL SITE CONDITIONS.
B. VERIFY READER LOCATIONS WITH OWNER PRIOR TO INSTALLATION.
C. COORDINATE INTERFACE REQUIREMENTS WITH ARCHITECTURAL DOOR HARDWARE SCHEDULES.
D. CONTROL/DATA TRANSMISSION WIRING SHALL NOT SHARE CONDUIT WITH OTHER BUILDING WIRING SYSTEMS.
E. IF DOOR IS TO BE EQUIPPED WITH HANDICAP ACCESS OPERATOR, THOSE ROUGH-IN PROVISIONS SHALL BE IN ADDITION TO THESE REQUIREMENTS.
F. IF NO ACCESSIBLE CEILING SPACE IS NEAR THE CONTROLLED DOOR, ALL CONDUITS ARE TO BE RUN CONTINUOUS TO THE DOOR ACCESS CONTROL PANEL, COORDINATE LOCATION WITH OWNER.
G. FOR DOUBLE DOORS, DUPLICATE THE DOOR POSITION SWITCH & ELECTRIC PASS THRU ROUGH-IN.
H. IF PATH TO DOOR ACCESS CONTROL PANEL IS THRU EXPOSED AREA, ALL CONDUITS MAY BE JOINED TOGETHER AT A DEEP 4"X4" JCT BOX & ROUTED TO THE CONTROL PANEL AS A SINGLE 3/4"C.

7 ACCESS CONTROL GENERIC ROUGH-IN
E4.1 NTS

GENERAL DETAIL NOTES

A. PROVIDE COLOR CODED IDENTIFICATION ICONS, VERIFY WITH OWNER.
B. DATA/VOICE JACKS SHALL BE LABELED TO INDICATE EQUIPMENT ROOM, RACK, PATCH PANEL, & PORT OF ORIGINATION.
C. TV CONNECTORS SHALL BE LABELED TO INDICATE EQUIPMENT ROOM & LINE TAP.
D. COMPLY WITH TIA/EIA & UL FOR A SYSTEM OF LABELING MATERIALS, INCLUDING LABEL STOCKS, LAMINATING ADHESIVES, & INKS USED BY LABEL PRINTERS.
E. PROVIDE MACHINE-GENERATED LABELS. LABELING SHALL BE LEGIBLE & PERMANENT ENOUGH TO LAST THE LIFECYCLE OF THE COMPONENT. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.

8 TELECOMMUNICATIONS OUTLET/CONNECTORS
E4.1 NTS

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LINCOLN PUBLIC SCHOOLS
ARTS & HUMANITIES FOCUS PROGARM
BOTTLERS BUILDING
Lincoln, NE

Project Number
23-007
Date
1/11/2024
Revisions
#	Date
2	1-31-2024

E4.1
ELECTRICAL RISER DIAGRAMS & DETAILS

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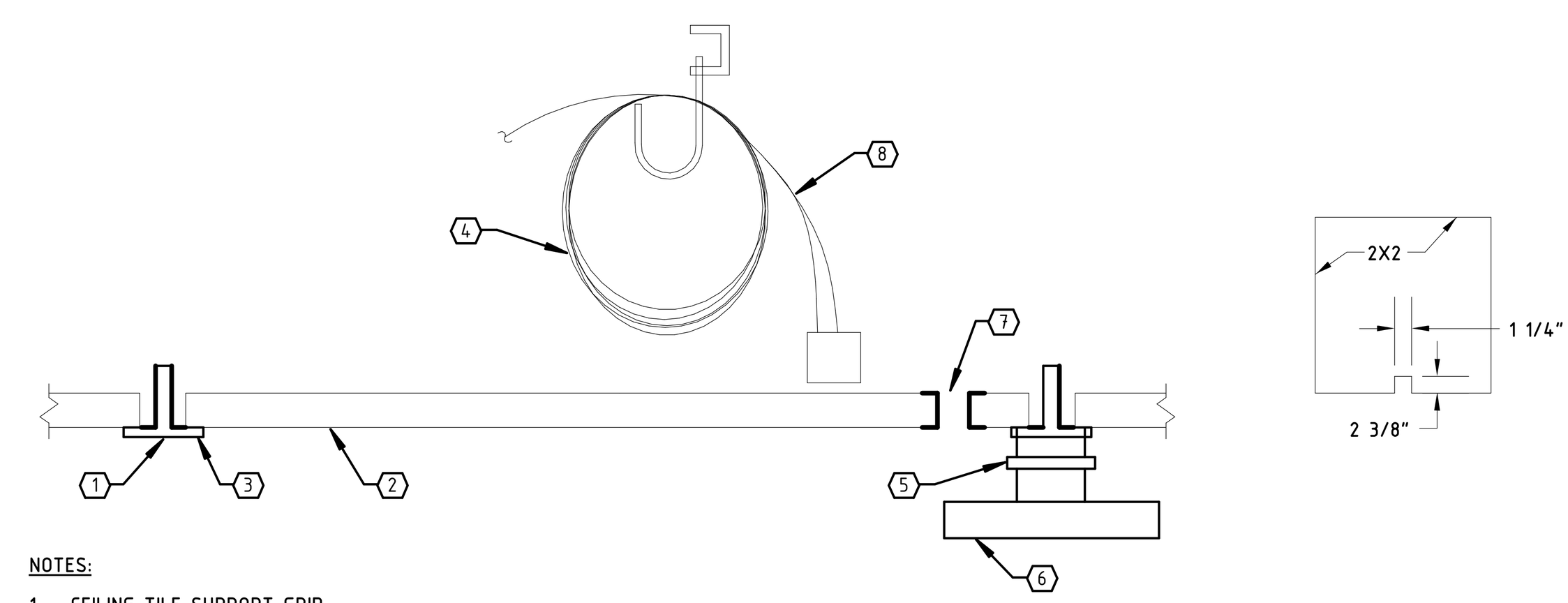


NOTES:

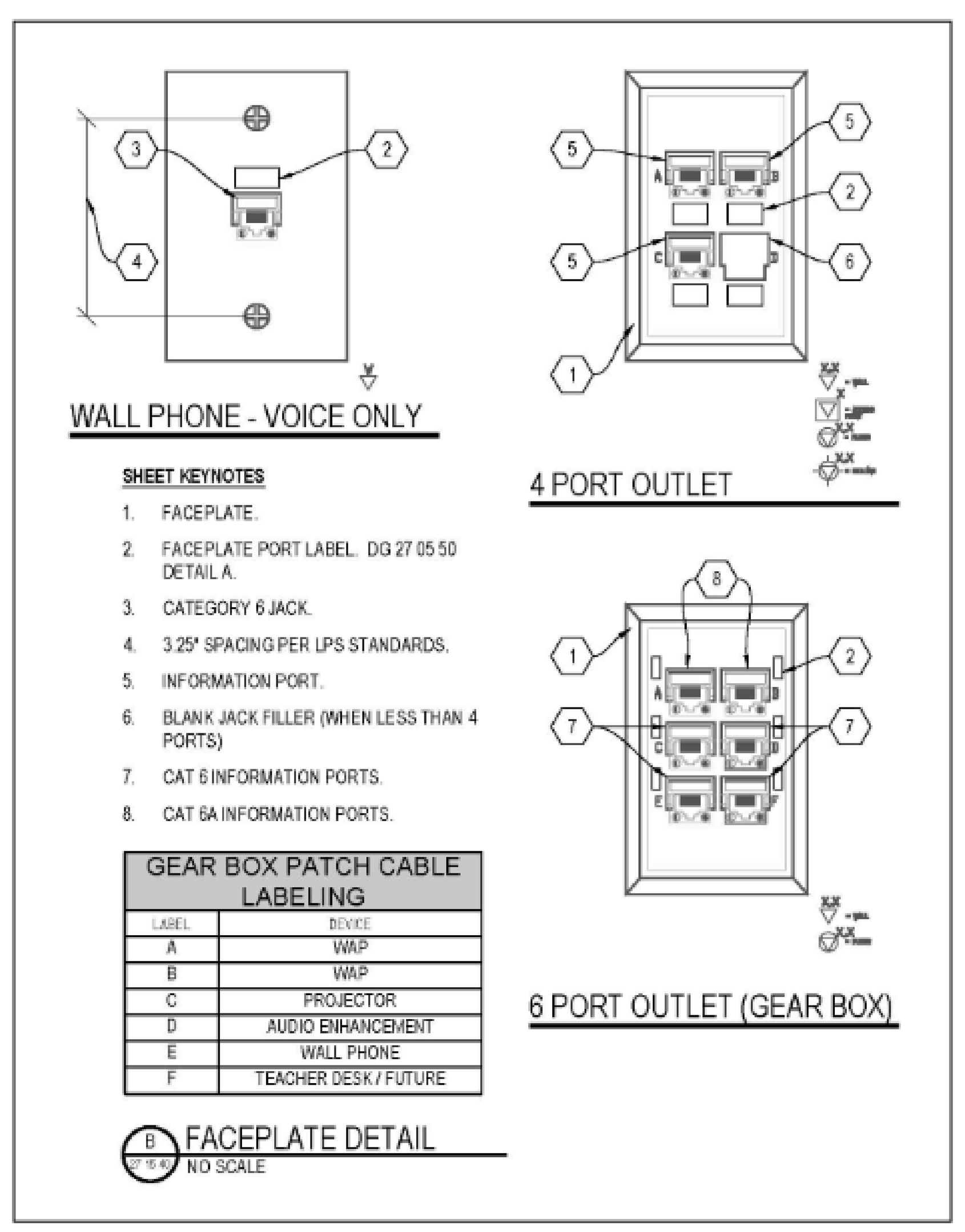
1. CEILING TILE SUPPORT GRID.
2. CEILING TILE.
3. PLACE LABEL ON GRID UNDER SLACK LOOP. SEE DG 27 05 50 DETAIL A IN LPS GUIDELINES.
4. 20' CABLE SLACK SUPPORTED VIA J-HOOKS. PROVIDE SLACK LOOP ONLY WHERE WIRELESS ACCESS POINTS ARE NOT LOCATED WITHIN CLASSROOM.
5. CEILING TILE SUPPORT GRID MOUNTING KIT INSTALLED BY OWNER.
6. WIRELESS ACCESS POINT OR WIRELESS AIR MONITOR (AM) INSTALLED BY OWNER.
7. PROVIDE 1-1/4" SLOT FOR CABLE, CENTER ON TILE.
8. WHEN WIRELESS ACCESS POINT IS NOT LOCATED WITH CLASSROOM, OR IN A CLASSROOM WITHOUT A GEAR BOX, PROVIDE (2) CAT-6A COMMUNICATIONS CABLES TERMINATED TO JACKS IN A TWO PORT MODULAR SURFACE OUTLET BOX AND LABEL AS PER DG 27 05 50 DETAIL A, AND PROVIDE 5' CAT-6A RJ-45 TO RJ-45 PATCH CORD FOR EACH ACCESS POINT.
9. WHEN WIRELESS ACCESS POINT IS LOCATED WITHIN CLASSROOM WITH A GEAR BOX, PROVIDE (2) CAT-6A PATCH CABLES FROM GEAR BOX AS PER DETAIL 6 ON THIS SHEET.
10. WIRELESS AIR MONITOR (AM) LOCATIONS - PROVIDE (1) CAT-6 COMMUNICATIONS CABLE TERMINATED WITH A JACK IN A ONE PORT MODULAR SURFACE MOUNT OUTLET BOX AND LABEL AS PER DG 27 05 50 DETAIL A IN LPS GUIDELINES, AND PROVIDE ONE 5' CAT-6 PATCH CABLE FOR EACH AIR MONITOR.

1 INTERIOR CEILING MOUNT ACCESS POINT ROUGH-IN

E5.1 NTS

LINCOLN PUBLIC SCHOOLS — FACILITIES DEPARTMENT

27 15 40 – Attachment B

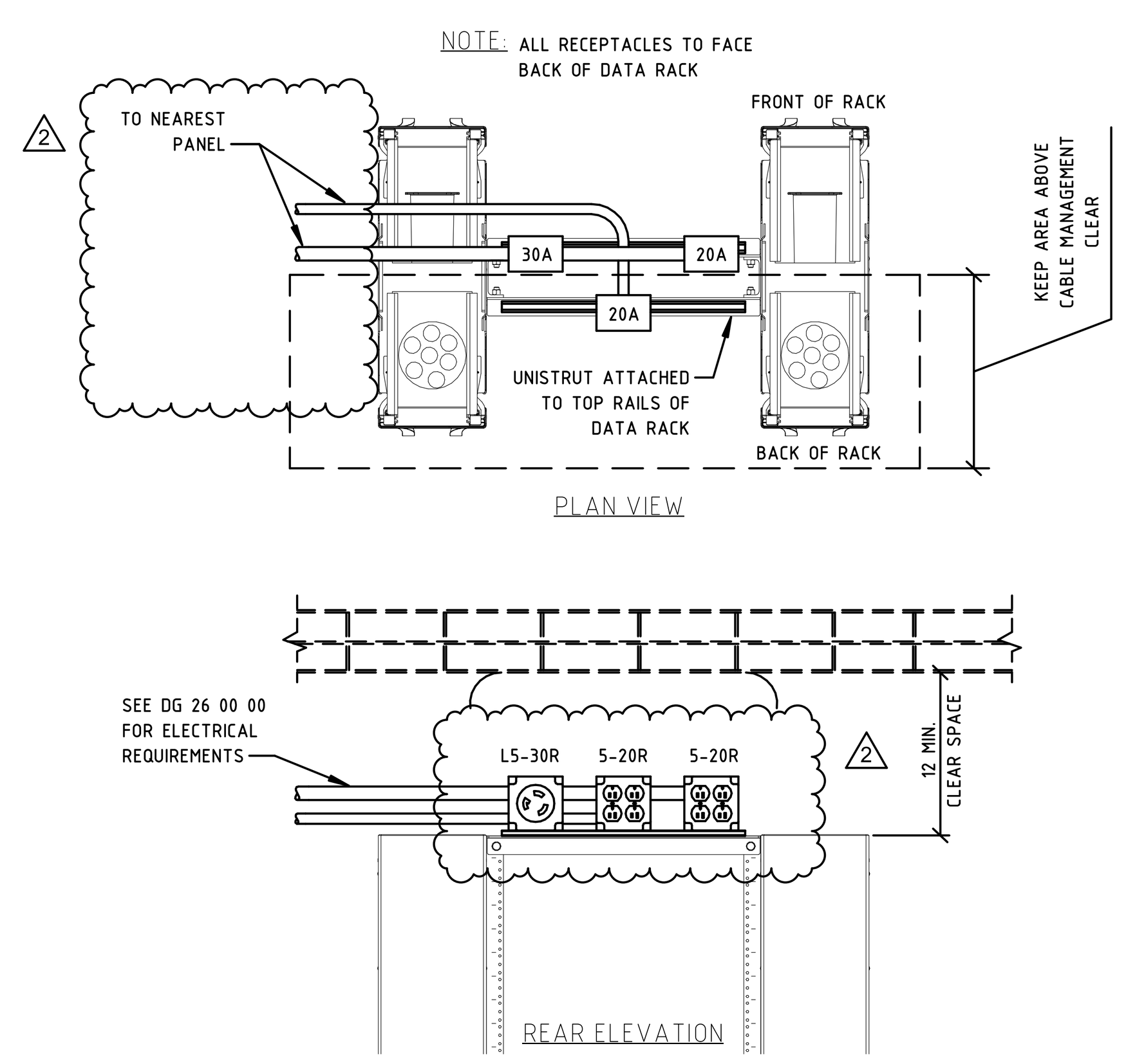


SHEET KEYNOTES

1. FACEPLATE.
2. FACEPLATE PORT LABEL. DG 27 05 50 DETAIL A.
3. CATEGORY 6 JACK.
4. 3.25" SPACING PER LPS STANDARDS.
5. INFORMATION PORT.
6. BLANK JACK FILLER (WHEN LESS THAN 4 PORTS)
7. CAT 6 INFORMATION PORTS.
8. CAT 6A INFORMATION PORTS.

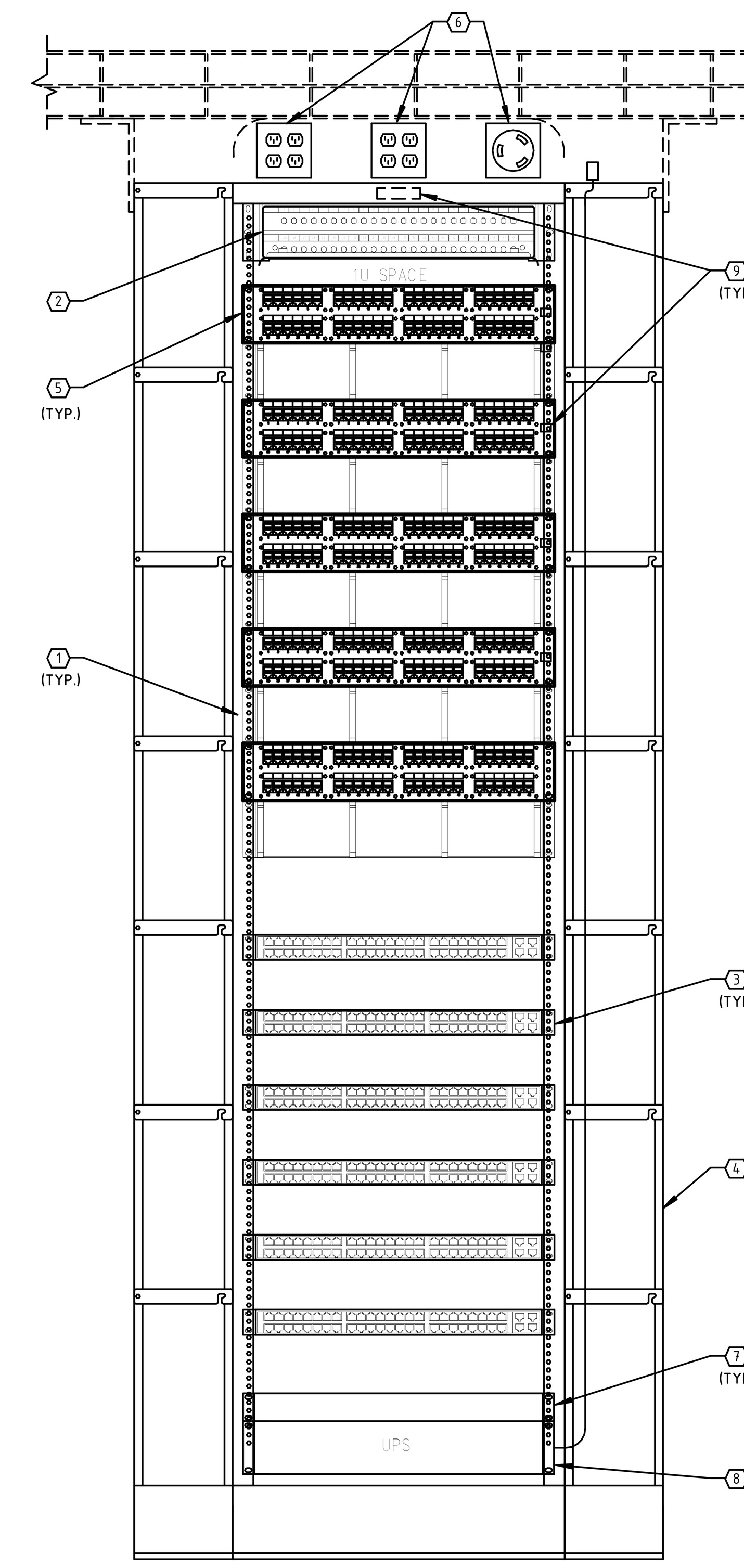
GEAR BOX PATCH CABLE LABELING	
LABEL	BOXES
A	WAP
B	WAP
C	PROJECTOR
D	AUDIO ENHANCEMENT
E	WALL PHONE
F	TEACHER DESK / FUTURE

LPS DESIGN GUIDELINES 05/01/2022 — DG 27 15 40 - 5 — COMMUNICATIONS FACEPLATES AND CONNECTORS



2 DATA RACK POWER RECEPTACLES

E5.1 NTS

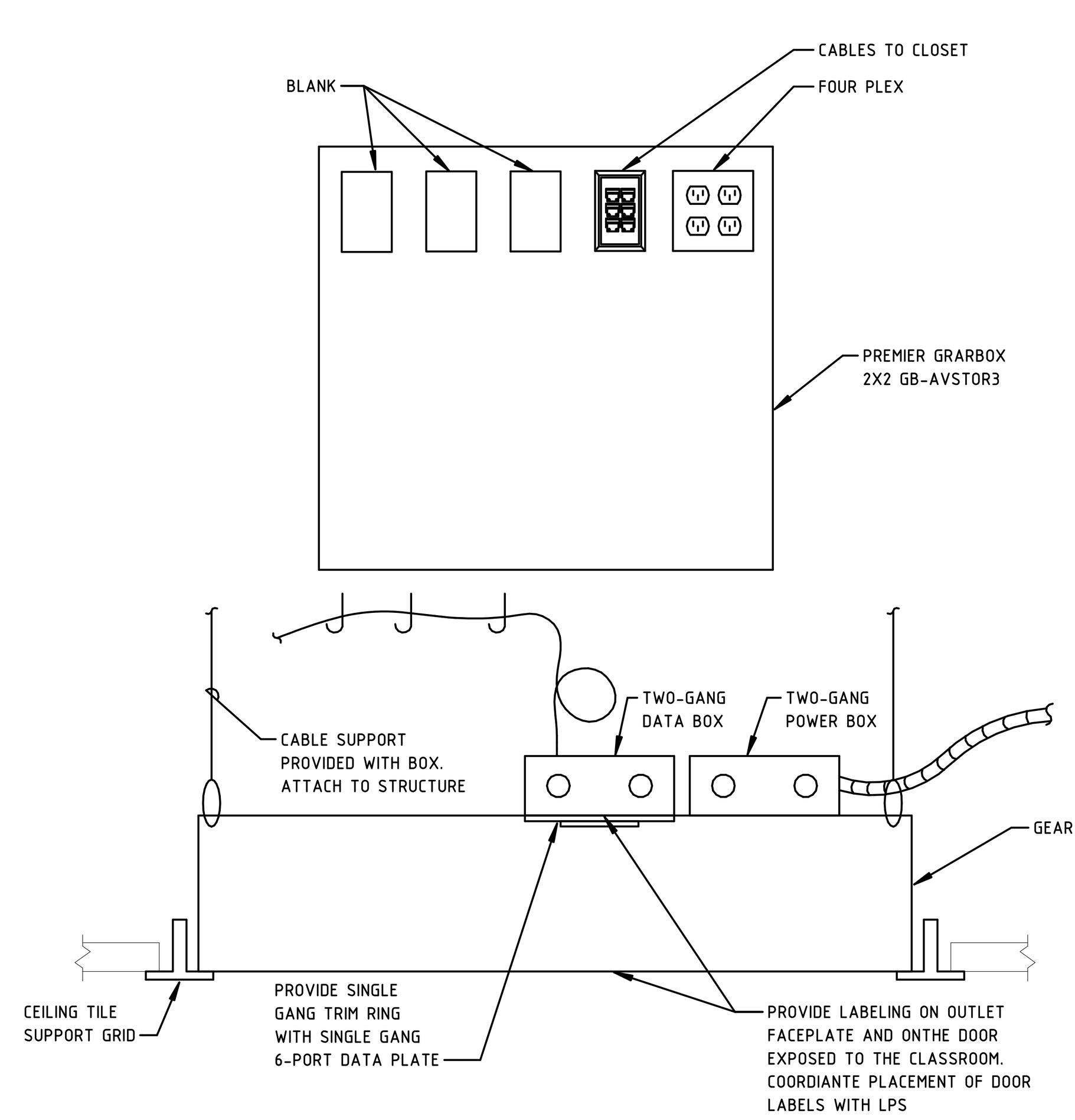


NOTES

1. 2U WIRE MANAGER.
2. 1U FIBER TERMINATION SHELF.
3. 48 PORT ETHERNET SWITCH OWNER FURNISHED.
4. VERTICAL WIRE MANGERS, FRONT AND REAR WITH COVERS 6" WIDE.
5. 48 PORT CATEGORY 6A OR 6. LOCATE PATCH PANELS AT TOP OF RACK. LPS COMPUTING SERVICES WILL WORK WITH THE CONTRACTOR TO MAKE SWITCH AND EXISTING PATCH PANEL ADJUSTMENTS WHERE APPLICABLE.
6. DATA RACK POWER OUTLETS, REAR FACING. SEE DETAIL D2, THIS SHEET, FOR LPS GUIDELINES FOR REQUIREMENTS.
7. PROVIDE 1U HORIZONTAL 20A. 120V. PLUG STRIP. RECEPTACLES TO BE REAR FACING. GEIST P/N BR100-1025. CONNECT TO OUTPUT OF UPS.
8. UPS PROVIDED BY LPS WHEN NECESSARY. CONNECT TO EMERGENCY POWER.
9. LABEL RACKS AND PATCH PANELS PER LPS STANDARDS. SEE DETAIL DG 27 05 50-B IN THE LPS GUIDELINES FOR REQUIREMENTS.

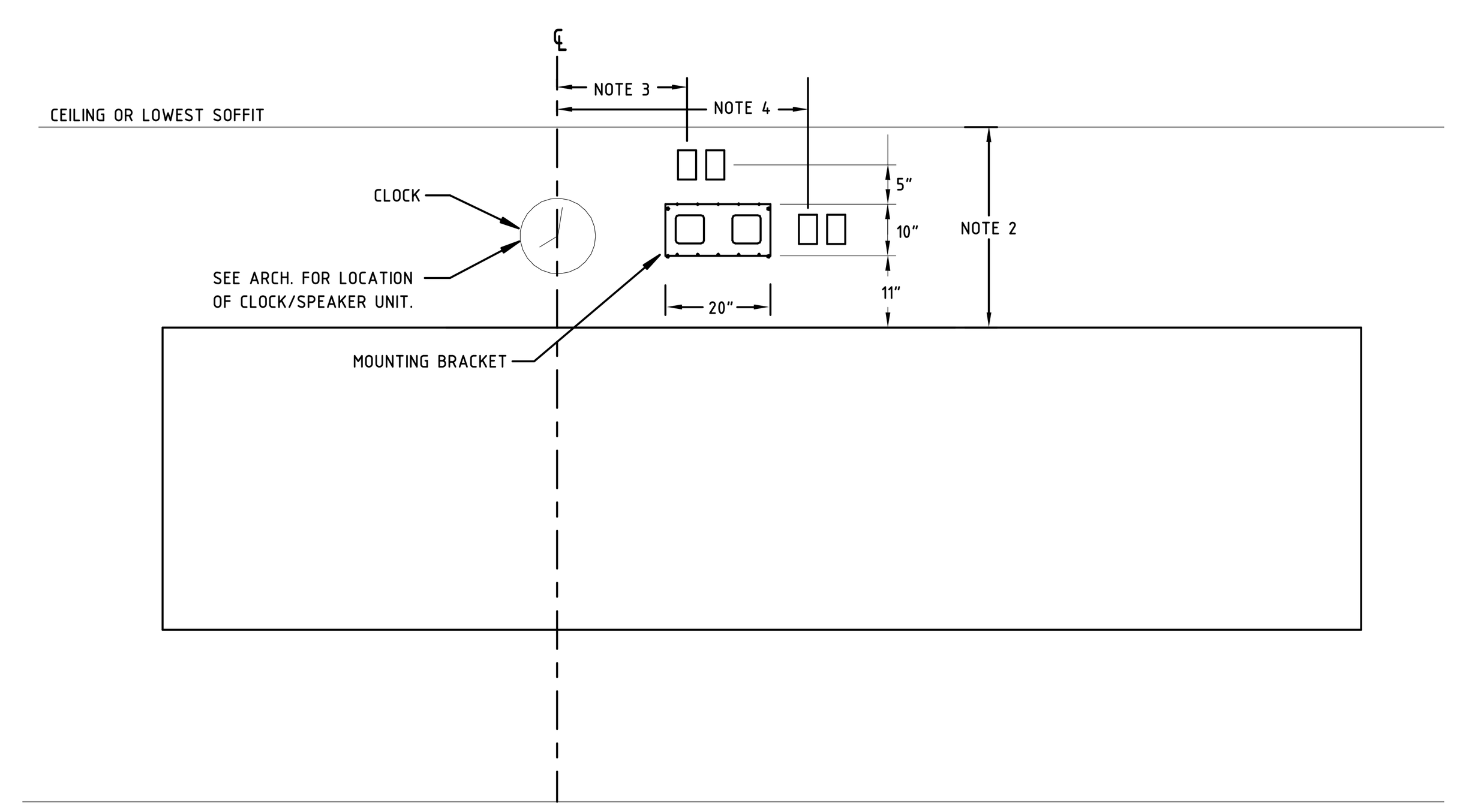
3 1 RACK ELEVATION

E5.1 NTS



4 AV GEAR BOX

E5.1 NTS

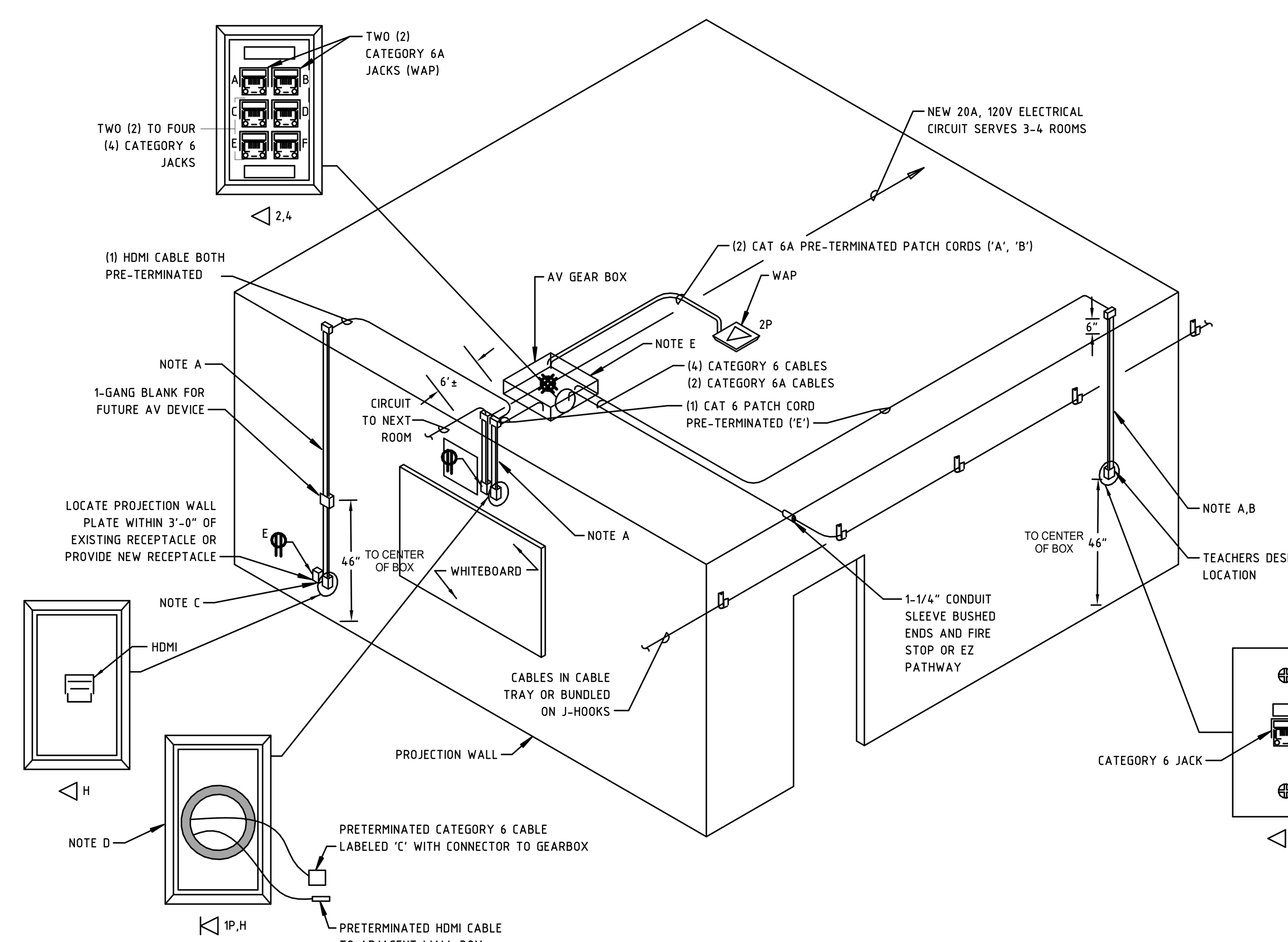


PROJECTOR NOTES

1. DIMENSIONS BASED ON THE FOLLOWING:
   A. LPS PROVIDED PROJECTOR - EPSON POWERLITE 685W
   B. ALL DIMENSIONS FROM TOP OF PRESENTATION WALL'S "PROJECTION SURFACE" (ASSUMED TO ALIGN WITH TOP OF MARKER BOARD)
   C. LPS INSTALLED PROJECTOR TO BE MOUNTED ON THE CENTERLINE OF THE PRESENTATION WALL. IF CLOCK IS ON THE CENTERLINE, SEE NOTES 3 & 4.
2. IF THERE IS 28" OR MORE OF CLEAR SPACE (WITHOUT SOFFITS) THEN LOCATE THE PROJECTOR OUTLETS ABOVE PROJECTOR MOUNT. IF THERE IS LESS THEN 28" OF CLEAR SPACE THEN LOCATE BOTH ELECTRICAL AND COMMUNICATION PROJECTOR OUTLETS 6" TO THE RIGHT OF THE PROJECTOR MOUNT.
3. IF CLOCK IS LOCATED ON THE CENTERLINE OF THE PRESENTATION WALL THEN LOCATE THE PROJECTOR OUTLETS 21" OFF OF THE CENTER OF THE PRESENTATION WALL IF INSTALLING ABOVE PROJECTOR MOUNT. IF CLOCK IS NOT LOCATED ON THE CENTERLINE OF THE PRESENTATION WALL THAN LOCATE THE PROJECTOR OUTLETS ON THE CENTERLINE.
4. IF CLOCK IS LOCATED ON THE CENTERLINE OF THE PRESENTATION WALL THEN LOCATE THE PROJECTOR OUTLETS 41" OFF OF THE CENTER OF THE PRESENTATION WALL IF INSTALLING TO THE RIGHT SIDE OF THE PROJECTOR MOUNT.

5 PROJECTOR OUTLET PLACEMENT

E5.1 NTS



NOTES:

A. EXISTING BOXES AND CONDUITS MAY BE REUSED (CONDUIT MUST BE 1" MINIMUM TO BE REUSED). WHERE BOXES ARE NOT ADEQUATE TO ACCOMMODATE TWO (2) CABLES PROVIDE PLASTER RINGS AND FISH CABLE WERE WALLS CAN'T BE FISHED PROVIDE WIREMOLD 2000 OR 2400 SERIES RACEWAY AND SURFACE BOXES AS NOTED ON THE FLOOR PLANS.

B. PREFERRED LOCATION IS ON DOOR SIDE, REAR OF CLASSROOM. AS DICTATED BY EXISTING CONDITIONS.

C. LOCATE ON EITHER SIDE OF PROJECTION SURFACE AS DICTATED BY EXISTING CONDITIONS.

D. PREFERRED LOCATION IS DIRECTLY ABOVE PROJECTOR. WHERE HEADROOM IS NOT AVAILABLE LOCATE TO SIDE OF PROJECTOR. SEE DETAIL 5.

E. LOCATE GEAR BOX 2' OR MORE OFF CENTER LINE OF THE ROOM AS NECESSARY TO ACCOMMODATE RELOCATE OF EXISTING CAT 6 CABLES.

F. PROVIDE 6 FEET OF SLACK ABOVE CEILING, DIRECTLY ABOVE PROJECTOR, FOR HDMI AND CAT 6 CABLES.

6 TECHNOLOGY READY CLASSROOM CABLING

E5.1 NTS

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PROFESSIONAL ELECTRICAL ENGINEER — JOSH L. RICH — E-12414 — STATE OF NEBRASKA — 01/31/24

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BOTTLERS BUILDING
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Project Number 23-007
Date 1/11/2024
Revisions

#	Date
2	1-31-2024

E5.1

ELECTRICAL DETAILS