

Architect's Supplemental Instructions

Architect's Project No:
04561.01

Architect's ASI No: 045

Project:
Webster University
Interdisciplinary Science
Building

Date Issued: 01/20/2017

Contract Date:

Reason Code: 05 A/E Scope

Discipline Code: 03 Electrical / 09 HVAC

Owner:
Webster University

Architect:
Cannon Design
1100 Clark Avenue
St. Louis, MO 63102

Contractor:
Paric Construction

Contract For: General Construction

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Indicate your acceptance of these instructions for minor change to the Work as consistent with the Contract Documents and return a copy to the Architect within fourteen (14) business days of the date of issuance of these instructions. If you feel a change in Contract Sum or Contract Time is warranted, please submit an itemized quotation for the changes for approval within fourteen (14) business days of the date of issuance of these instructions prior to proceeding on the Work. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change.

Attachments:

Drawings:

M0103A, M0104A, M0303, E0103.A, E0104.A and E0402

Specifications:

SECTION 268500

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Reason Codes:
#1. Jurisdictional Agency
#2. Constructor Driven
#3. Document Inconsistency
#4. Fast Track Driven
#5. A/E Scope
#6. Owners Scope
#7. Unforeseeable Conditions
#8. Other

Discipline Codes
#1. Demo-demolition
#2. Div1-Division 1 items on the spec book
(this item is not used)
#3. Electrical
#4. Elevator
#5. Equipment (Changes in equipment,
Owner Purchased)
#6. Fire Protection

Discipline Codes
#7. General Construction (Architectural)
#8. General Conditions (Div. 1)
#9. HVAC
#10. Other
#11. Plumbing
#12. Site Work/Landscaping
#13. Structural

Architect's Supplemental Instructions

Page 2

Description:

Please submit an itemized proposal for changes in contract Sum and Contract Time for proposed modifications to the Contract Documents described herein:

SHEET M0103.A LEVEL 03 AREA A FLOOR PLAN - MECHANICAL

- Shifted H/HR, and C/CR risers north per RFI-408 Contractor proposed pipe routings between buildings.
- Added note M69 referring to electrical plans for heat tracing of H/HR, and C/CR piping.

SHEET M0104.A LEVEL 04 AREA A FLOOR PLAN - MECHANICAL

- Shifted H/HR, and C/CR risers north per RFI-408 Contractor proposed pipe routings between buildings.
- Added note M69 referring to electrical plans for heat tracing of H/HR, and C/CR piping.

SHEET M0303 SECTIONS & ELEVATIONS

- Shifted H/HR, and C/CR risers north per RFI-408 Contractor proposed pipe routings between buildings.
- Added note M69 referring to electrical plans for heat tracing of H/HR, and C/CR piping.

SHEET E0103.A LEVEL 03 AREA A FLOOR PLAN – ELECTRICAL & AUXILIARY

- In Corridor C370, provide pipe freeze protection for hot and cold water piping.
- Add Keyed Note E80 for pipe freeze protection.

SHEET E0104.A LEVEL 03 AREA A FLOOR PLAN – ELECTRICAL & AUXILIARY

- At EAB/ISB connection, provide pipe freeze protection for hot and cold water piping.
- Add Keyed Note E80 for pipe freeze protection.

SHEET E0402 DETAILS - ELECTRICAL

- Add pipe freeze protection detail.

SPECIFICATION SECTION 268500 – ELECTRIC HEATING

- Add specification section.

Issued by Architect: Mark de la Fuente & Mike Nolte, William Tao & Associates, Inc.

Architect's Supplemental Instructions

Page 3

Accepted by Contractor:

INDEX

DIVISION 26 – ELECTRICAL WORK

SECTION 268500 – ELECTRIC HEATING

Article	Title	Page
PART 1 - GENERAL		1
1.1	RELATED DOCUMENTS	1
1.2	GENERAL ELECTRIC HEAT REQUIREMENTS	1
1.3	SCOPE OF WORK	1
1.4	DESCRIPTION OF SYSTEMS	1
1.5	SUBSTITUTIONS	1
1.6	SHOP DRAWINGS AND SUBMITTAL REQUIREMENTS	1
PART 2 - PRODUCTS		1
2.1	PIPE FREEZE PROTECTION EQUIPMENT	1
PART 3 - EXECUTION		2
3.1	PIPE FREEZE PROTECTION EQUIPMENT INSTALLATION AND TEST	2

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SECTION 268500 – ELECTRIC HEATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Sections of Division 01, GENERAL REQUIREMENTS, and requirements of Section 260100 - BASIC ELECTRICAL REQUIREMENTS, govern work under this specification section.

1.2 GENERAL ELECTRIC HEAT REQUIREMENTS

- A. This section is intended to cover general materials and installation of electric heating systems and equipment applicable to Contractor's work.
- B. Contractor shall include labor and material for complete electrical work as specified, indicated and required for complete and proper performance of material, equipment and systems.
- C. Contract drawings and specifications are complementary each to the other, and what is called for by one shall be as binding as if called for by both.
- D. Electric heating equipment specified in Divisions 23 and 26 shall be wired complete and ready for service by Contractor, except as otherwise noted.
- E. Equipment Series, Model or Part Numbers: Manufacturer's equipment series, model or part number listed in any of following paragraphs are shown as basis of minimum standards and performance required. Should any equipment series, model or part numbers be obsolete or superseded, it shall be understood that newest equivalent series, model or part shall be furnished.

1.3 SCOPE OF WORK

- A. Contractor shall furnish and install the following electric heating equipment:
 - 1. Pipe Freeze Protection Equipment

1.4 DESCRIPTION OF SYSTEMS

- A. Following is general description of the required electric heating equipment and devices.
 - 1. Pipe freeze protection heating cables shall be provided for hot and chilled water piping.

1.5 SUBSTITUTIONS

- A. See Section 260100.

1.6 SHOP DRAWINGS AND SUBMITTAL REQUIREMENTS

- A. See Section 260100. Shop drawing submittals shall include but not be limited to following:
 - 1. Pipe freeze protection equipment

PART 2 - PRODUCTS

2.1 PIPE FREEZE PROTECTION EQUIPMENT

- A. General:
 - 1. The extent of piping to be traced with pipe freeze protection cable shall be as indicated on the plumbing and/or mechanical drawings.
 - 2. Contractor shall install pipe freeze protection cable in accordance with NEC.
 - a. Equipment leakage current interrupters (30 mA) shall be provided on branch circuits feeding the electric heating cable.
 - b. Heating cable shall have metal covering and shall be grounded.

B. Materials and Applications:

1. Self-Regulating Cable: Pipe freeze protection cable shall be self-regulating type 120 VAC pipe tracer. Pipe freeze protection cable shall be provided by only one manufacturer in accordance with following schedule for 1-1/2 inch fiberglass insulation with desired maintenance temperature of plus 40 deg. F. and minimum expected ambient temperature of -20 deg. F. Reference specifications Section 232500 - MECHANICAL INSULATION for insulation type and thickness for a specific piping system. For metal pipes required to have insulation other than 1-1/2 inch fiberglass insulation with the same desired maintenance temperature and minimum expected ambient temperature, provide freeze protection cable in accordance with manufacturer's design requirements. Unless otherwise indicated cable shall have braided tinned copper shield (CT) for ground path.

Type Tracing	Metal Pipe Size/ 1-1/2" Insulation	Thermal Rating Watts/Foot (*)	Max. Circ. Lgth. in Ft.	
			120 Volt @ 50° F 20 amp	240 Volt @ 50° F 20 amp
BTV Auto-Trace	3/8" through 2"	3 W/ft. (Po)	330	660
BTV Auto-Trace	2-1/2" through 4"	5 W/ft. (Po)	270	540
BTV Auto-Trace	6"	8 W/ft. (Po)	200	400
BTV Auto-Trace	8"	10 W/ft. (Po)	160	320
QTVR Auto-Trace	10" through 12"	10 W/ft. (F)	130	265
QTVR Auto-Trace	14" through 18"	15 W/ft. (F)	100	210
QTVR Auto-Trace	20" through 24"	20 W/ft. (F)	80	160

2. Tracing Insulation (*):

- a. (Po) Polyolefin 150 deg. F. max. maintained
- b. (F) Fluoropolymer 225 deg. F. max. maintained

- C. Accessories: Provide necessary components required to complete installation. Provide for each branch circuit one 20 amp outdoor thermostat with element sensing ambient air temperature. Thermostat shall be NEMA 4X construction and have set point of 40 deg. F. with 6 deg. F. differential. Provide end-of-line signal light in a weather-resistant enclosure at end of each pipe tracing run. Where pipe tracing branches out in several directions on same run, end-of-line signal light shall be provided at end of each branch run.
- D. Manufacturer: Manufacturer shall be Raychem Corp. (Trace) of Menlo Park, California or Nelson. All products shall be by single manufacturer.

PART 3 - EXECUTION

3.1 PIPE FREEZE PROTECTION EQUIPMENT INSTALLATION AND TEST

- A. Pipe tracing heating cable(s) and thermostat sensing element shall be installed prior to application of insulation. Pipe tracing installation shall be coordinated with respective contractor installing pipe or equipment being protected. Contractor shall verify exact circuit lengths in the field and shall make necessary adjustments in conduit, wire and circuit breaker size to meet the actual circuit length.
- B. Pipe tracing shall not be spiral wrapped unless specifically indicated by manufacturer's installation instructions. Tracing normally shall be installed in straight line on bottom quadrant of horizontal pipe runs as indicated by manufacturer.
- C. Removal: Valves, flanges and hangers shall be wrapped with additional pipe tracing and in such manner as to allow removal of these items without cutting heating cable. See manufacturer's installation sheets for specific instructions.
- D. Contractor shall provide items necessary for complete operating system. End-of-line signal lights shall be installed in visible location. Additional wire and conduit from end of heating cable runs shall be provided as necessary.

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Webster University
Cannon Design Project No. 004561.01**

- E. Ground Fault CB: Piping freeze protection cables shall have branch circuits terminate on 30 mA equipment leakage current interrupter (ELCI) circuit breakers.
- F. Labels: "ELECTRIC TRACED" label shall be affixed to exterior of insulation at 10 ft. intervals. On short pipe tracing runs between 2 ft. and 10 ft. with heating cable at least one label shall be affixed.
- G. Pipe Freeze Protection Test:
 - 1. With pipe tracing installed, Contractor shall perform following test on pipe tracing one thermostat controlled circuit at a time. Tests shall be performed prior to Engineer's final observation. Malfunctions encountered during tests shall be corrected immediately by Contractor.
 - 2. Verify pipe freeze protection is correctly wired to branch circuit panelboard.
 - 3. Energize power to pipe tracing and adjust thermostat until tracing becomes energized.
 - 4. Verify pipe tracing radiates heat for one minute.
 - 5. Verify end-of-line pilot lights become energized.
 - 6. Reset thermostat to initial setting of 40 deg. F.

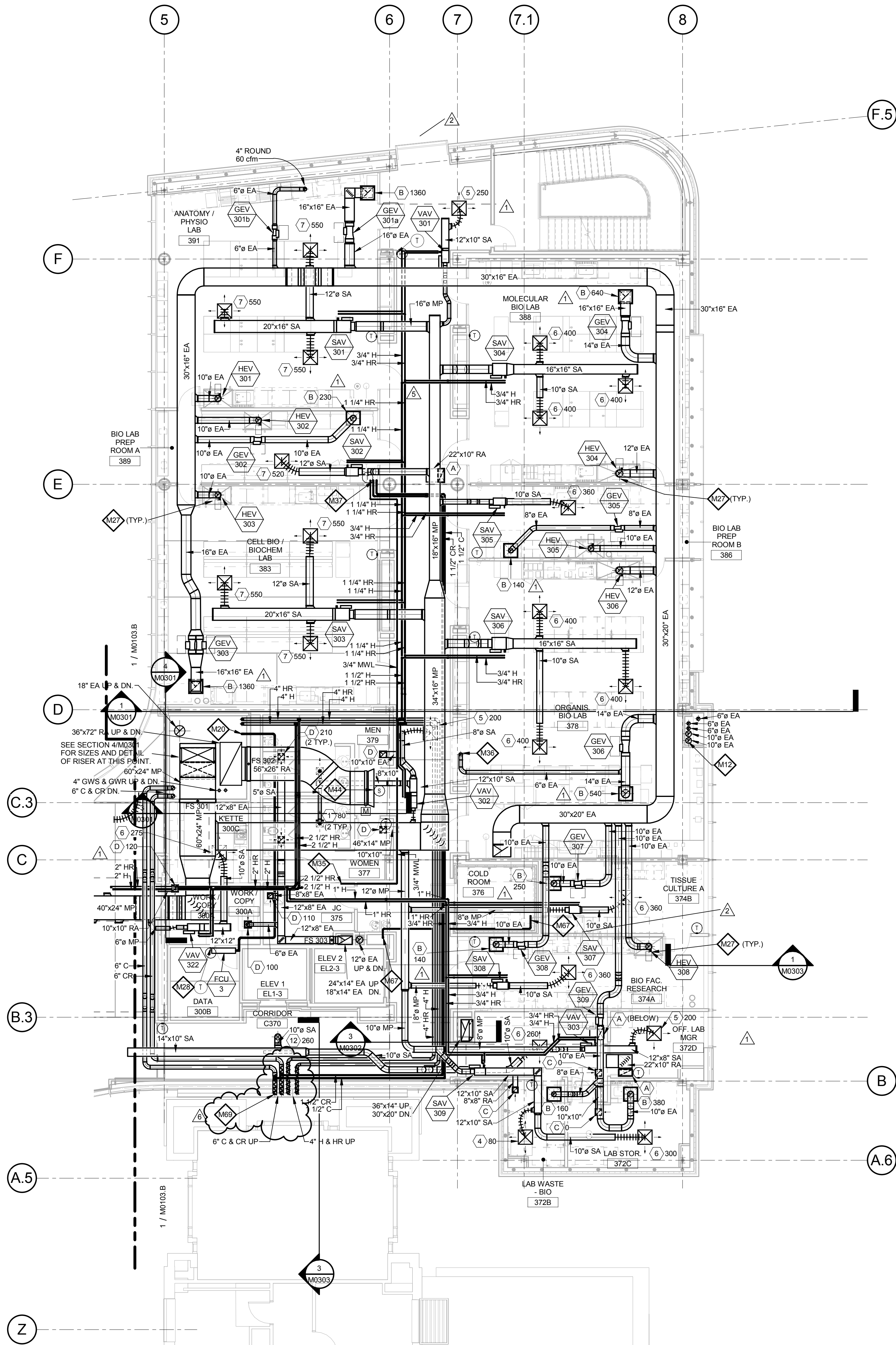
END OF SECTION 268500

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1 LEVEL 03 - AREA A - MECHANICAL PLAN

1/8" = 1'-0"



GENERAL NOTES:

- Because of the limited space available to install all of the mechanical work, coordination between the various trades is of the utmost importance. This contractor shall coordinate with all other trades prior to the fabrication and installation of any work. Refer to the reflected ceiling plans for ceiling construction, ceiling grid layout, ceiling mounted devices, and coordinate exact location and mounting type of all air devices.
- All ductwork upstream of terminal units shall be Medium Pressure (MP). All ductwork downstream of terminal units shall be Low Pressure (LP). Refer to specifications.
- All ductwork dimensions indicated on plans are sheet metal sizes. All medium pressure ductwork shall be unlined, externally insulated. All low pressure ductwork shall be lined. See specifications.
- All mitered 90° rectangular elbows shall be furnished with turning vanes having maximum c = 0.12. All smooth radius rectangular elbows shall have a throat radius greater than one half the duct width, unless furnished with splitter vanes. Under no circumstances shall the throat radius be less than one third the duct width. Unless otherwise noted or specified.
- Contractor shall furnish and install volume dampers for each duct take-off unless otherwise noted. See detail.
- Maximum length of Low Pressure (LP) flexible ductwork shall be 8'-0". Round LP duct of lengths greater than 8'-0" shall be rigid round. Flexible duct sizes on plans shall be neck size of diffusers or as indicated. See specifications.
- Maximum length of Medium Pressure (MP) flexible ductwork shall be 2'-0". Round MP duct of lengths greater than 2'-0" shall be rigid round. Flexible duct sizes on plans shall be air Terminal Unit inlet size or as indicated. See specifications.
- All ductwork runouts to Air Terminal Units and diffusers shall be the connection size unless otherwise noted.
- Piping runouts to terminal units shall be 3/4" unless otherwise noted. Refer to reheat box schedule.
- Verify exact location of thermostats, humidistats, BAS sensors, and other exposed control sensors with architectural elevations and drawings before installation.
- Schedule systems or equipment shut downs required for new construction with owner two weeks in advance. Some premium time work may be required.
- Refer to piping details for final connections to equipment.
- Provide service shut-off valves in major piping branch lines. All connections to risers and each building wing: A & B.

KEYED NOTES

- M12** BOILER AND DOMESTIC WATER HEATER FLUES UP THROUGH ROOF.
- M20** REFRIGERANT LIQUID AND SUCTION PIPING BETWEEN DX COOLING COILS AND CONDENSING UNITS. COORDINATE PIPE SIZES WITH MANUFACTURER. PROVIDE 3/4" DRAIN LINE, ROUTE WITH REFRIGERANT PIPING, AND TERMINATE DRAINS FROM FCU-1, 2, 5A, 5B, AND 5C OVER FLOOR DRAIN IN LOWER LEVEL MECHANICAL ROOM. TERMINATE DRAINS FROM FCU-3 AND 4 OVER SERVICE SINK IN JANITORS CLOSET 375.
- M27** INSTALL HOOD EXHAUST VALVE IN VERTICAL POSITION NEAR HOOD. ELBOWS SHALL HAVE 1.5 DIAMETER RADIUS, USE 1.0 DIAMETER RADIUS ELBOWS ONLY WHERE NECESSARY.
- M28** BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.
- M35** 3/4" MWL CONNECTED TO BACKFLOW DEVICE IN JANITOR'S CLOSET. SEE PLUMBING DRAWINGS. ROUTE TO LEVEL 04 FOR PROCESS COOLING SYSTEM.
- M36** 6" ROUND DUCT FOR AQUARIUM SPACE. BALANCE AIRFLOW TO 100 CFM. TERMINATE OPEN END AS HIGH AS POSSIBLE.
- M37** 1-1/2" C & CR, AND 3/4" MWL UP TO LEVEL 04.
- M44** AIRFLOW MEASURING STATION, KELE MODEL KOAMS FURNISHED WITH INLET BELL FOR PLENUM APPLICATIONS LOCATED IN MINIMUM OA DUCT OR RETURN AIR INLET ON EACH FLOOR.
- M67** LOCATION FOR REFRIGERANT PIPING FOR COOLER, SEE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS. PIPING SHALL BE INSTALLED PER COOLER SUPPLIERS REQUIREMENTS.
- M69** HHR AND C/CR PIPING TO BE HEAT TRACED BY ELECTRICAL CONTRACTOR. REFER TO ELECTRICAL PLANS. COORDINATE INSTALLATION OF PIPE INSULATION OVER HEAT TRACE WITH ELECTRICAL CONTRACTOR. HEAT TRACE TO EXTEND 3 FT. INSIDE EACH BUILDING.

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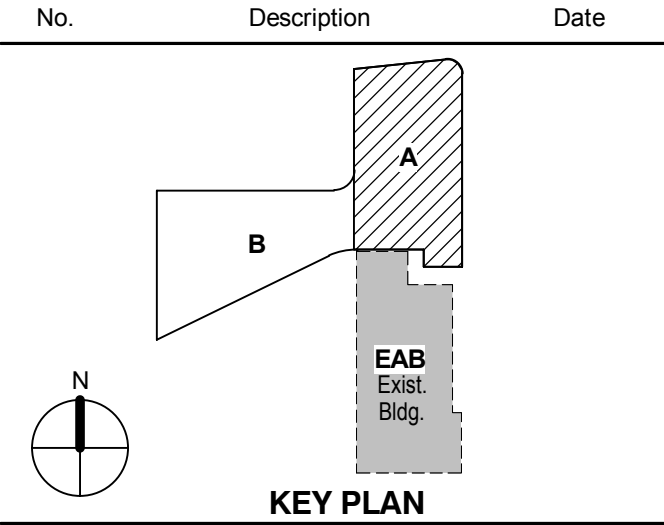
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6	ASI-045	19 JAN 2017
5	ASI-043	20 DEC 2016
4	ASI-034	04 NOV 2016
3	ASI-032	18 OCT 2016
2	ADDENDUM 2-2	19 APRIL 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016

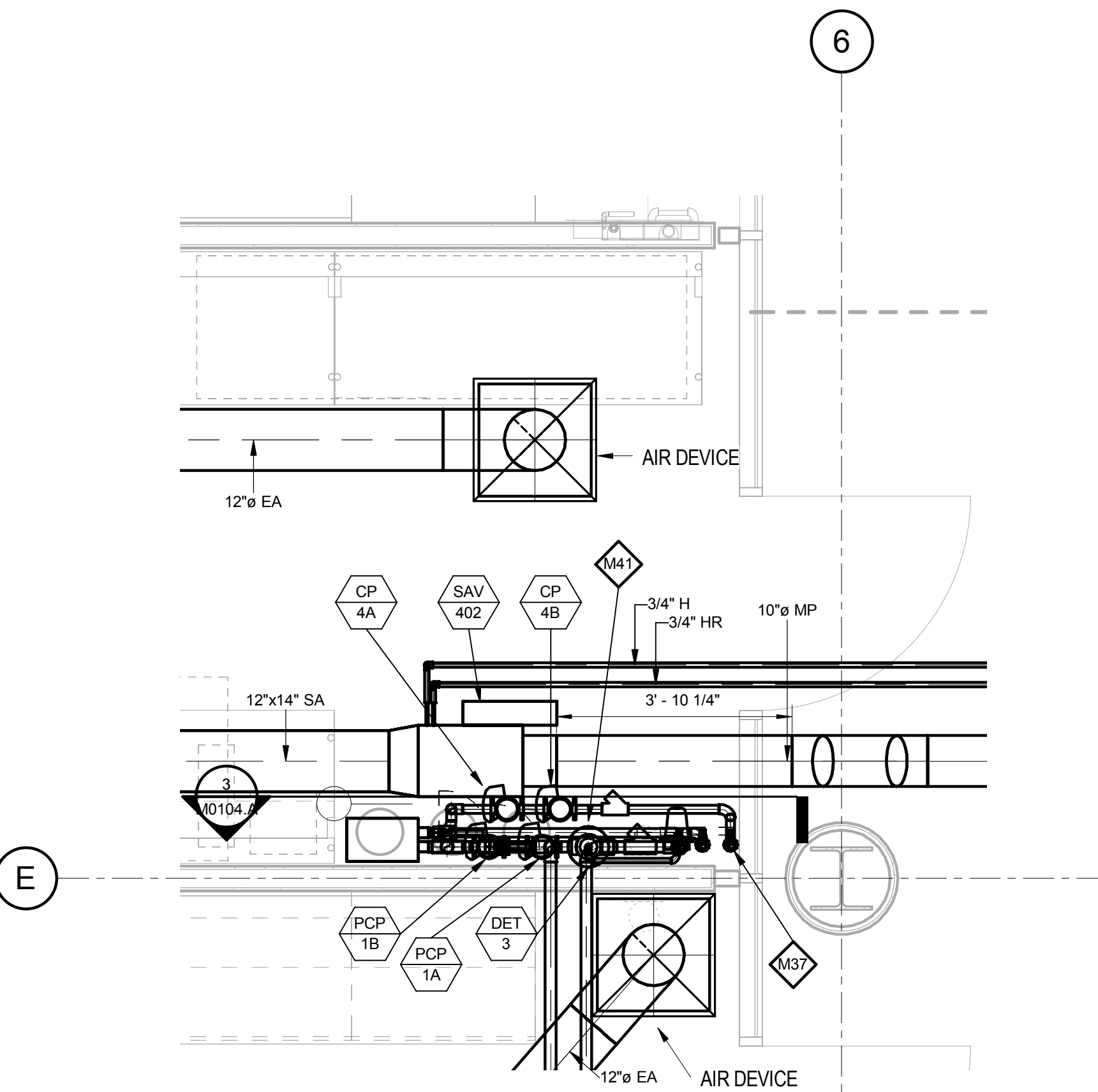


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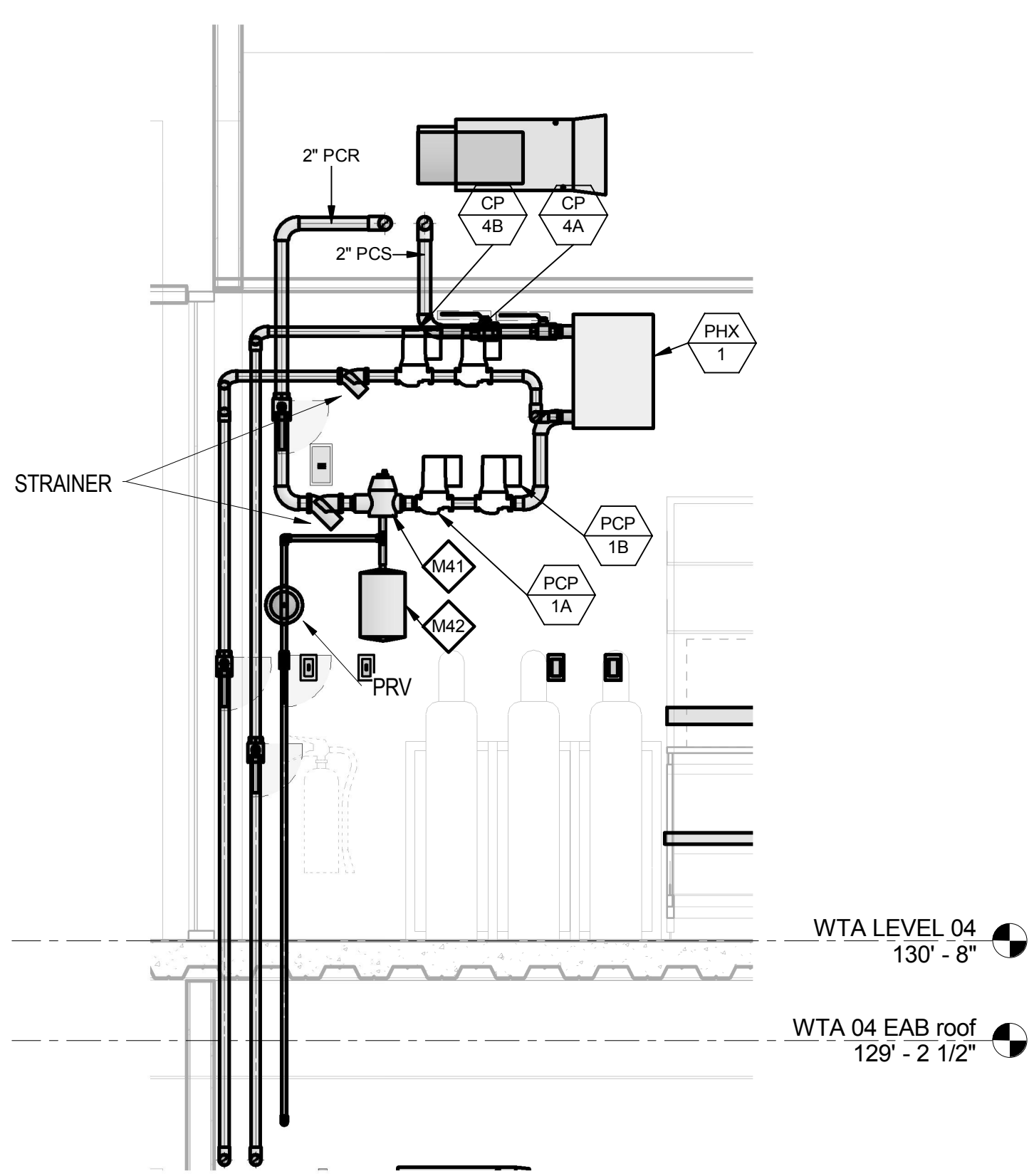
**LEVEL 03 AREA A FLOOR
PLAN - MECHANICAL**

Project No.: 04561.01 Checked by:

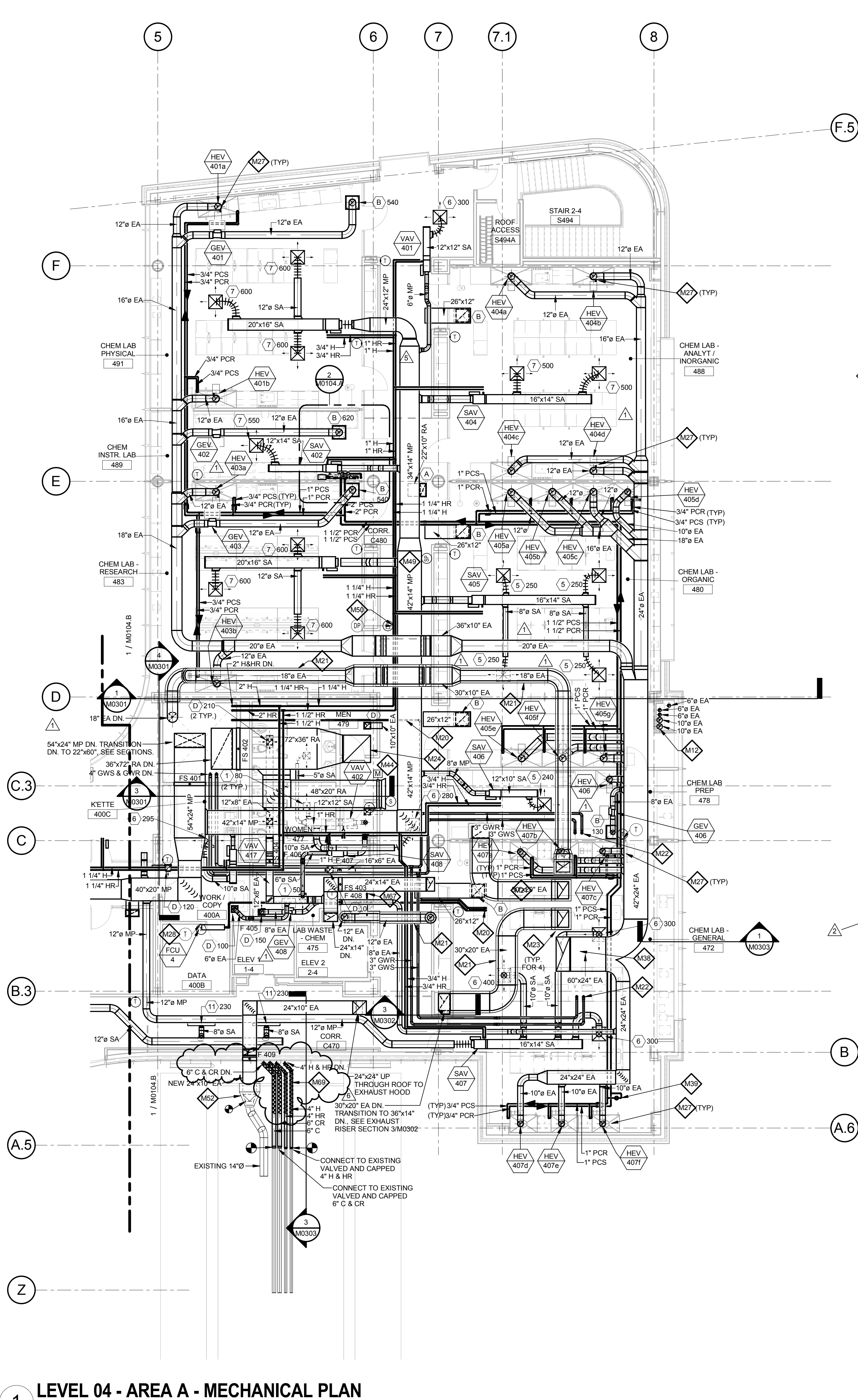
M0103.A



2 PARTIAL LEVEL 04 - PROCESS CHILLED WATER PLAN
1/2" = 1'-0"



3 L04 - SECTION AT PROCESS CHILLED WATER SYSTEM
1/2" = 1'-0"



1 LEVEL 04 - AREA A - MECHANICAL PLAN
1/8" = 1'-0"

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- M21 PROVIDE FIRE WRAP AROUND LAB EXHAUST DUCTWORK FROM RATED CHASE PENETRATION TO ROOF.
- M22 GLYCOL WATER SUPPLY & RETURN PIPING UP THROUGH ROOF TO HEAT RECOVERY COILS. PROVIDE ROOF PENETRATION CURB/SEAL.
- M23 EXHAUST DUCT UP THROUGH ROOF.
- M24 RELIEF AIR DUCT UP THRU ROOF TO RELIEF AIR FAN.
- M27 INSTALL HOOD EXHAUST VALVE IN VERTICAL POSITION NEAR HOOD. ELBOWS SHALL HAVE 1.5 DIAMETER RADIUS. USE 1.0 DIAMETER RADIUS ELBOWS ONLY WHERE NECESSARY.
- M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.
- M37 1-1/2" C & CR, AND 3/4" MWL UP TO LEVEL 04.
- M38 PROVIDE ELBOW SOUND ATTENUATOR, KINETICS MODEL 24KCES-P/5.5 - 60x24x60-6/30, 60" WIDE BY 24" HIGH BY 60" LONG, ELBOW CONFIGURATION, 20,000-CFM AT 0.48" PD, DYNAMIC INSERTION LOSS (H2/DB): 63/4, 125/7, 250/11, 500/19, 1000/18, 2000/18, 4000/20, 8000/16.
- M39 1" BACKPRESSURE REGULATING VALVE (5 GPM) FOR PROCESS CHILLED WATER MINIMUM PUMP FLOW.
- M41 2-INCH AIR SEPARATOR, SEE PIPING DIAGRAM.
- M42 DIAPHRAGM EXPANSION TANK, SEE PIPING DIAGRAM AND SCHEDULE.
- M44 AIRFLOW MEASURING STATION, KELE MODEL KOAMS FURNISHED WITH INLET BELL FOR PLENUM APPLICATIONS LOCATED IN MINIMUM OA DUCT OR RETURN AIR INLET ON EACH FLOOR.
- M49 DUCT STATIC PRESSURE SENSOR.
- M50 PIPING DIFFERENTIAL PRESSURE SENSOR.
- M52 REMOVE EXISTING RELIEF LOUVER AND PORTION OF EXISTING DUCT. ROUTE NEW DUCT THROUGH EXISTING OPENING.
- M67 LOCATION FOR REFRIGERANT PIPING FOR COOLER, SEE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS. PIPING SHALL BE INSTALLED PER COOLER SUPPLIERS REQUIREMENTS.
- M69 HHR AND C/CR PIPING TO BE HEAT TRACED BY ELECTRICAL CONTRACTOR. REFER TO ELECTRICAL PLANS. COORDINATE INSTALLATION OF PIPE INSULATION OVER HEAT TRACE WITH ELECTRICAL CONTRACTOR. HEAT TRACE TO EXTEND 3 FT. INSIDE EACH BUILDING.

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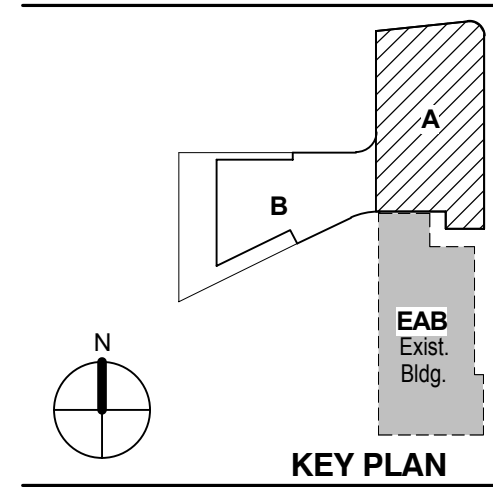
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6	ASI-045	19 JAN 2017
5	ASI-043	20 DEC 2016
4	ASI-034	04 NOV 2016
3	ASI-032	18 OCT 2016
2	ADDENDUM 2-2	19 APRIL 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016
No.	Description	Date



Drawing Title:

**LEVEL 04 AREA A FLOOR
PLAN - MECHANICAL**

Project No.: 04561.01 Checked by:

M0104.A

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2	ASI-045	19 JAN 2017
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016
No.	Description	Date

Drawing Title:

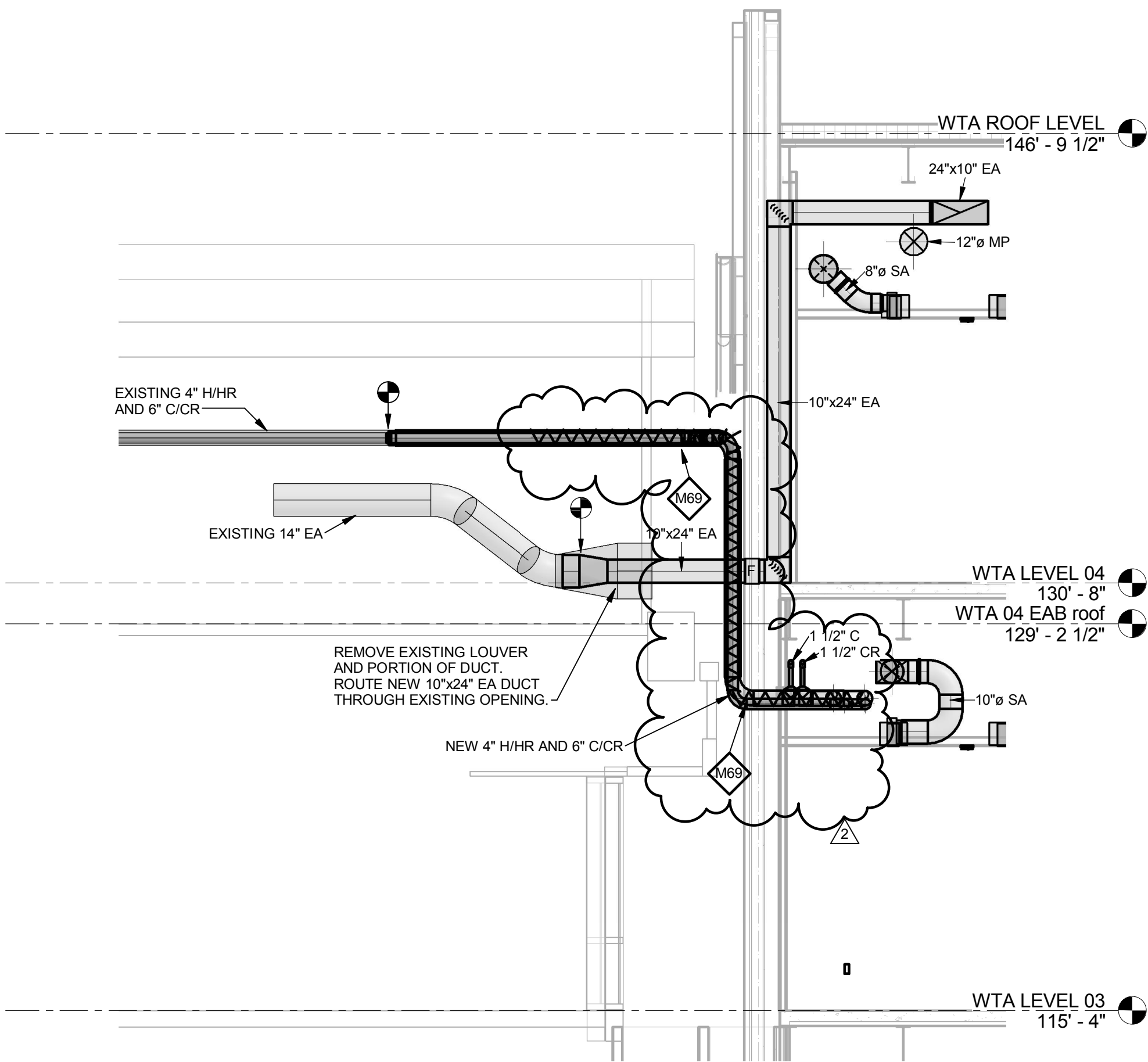
SECTIONS & ELEVATIONS

Project No.: 04561.01

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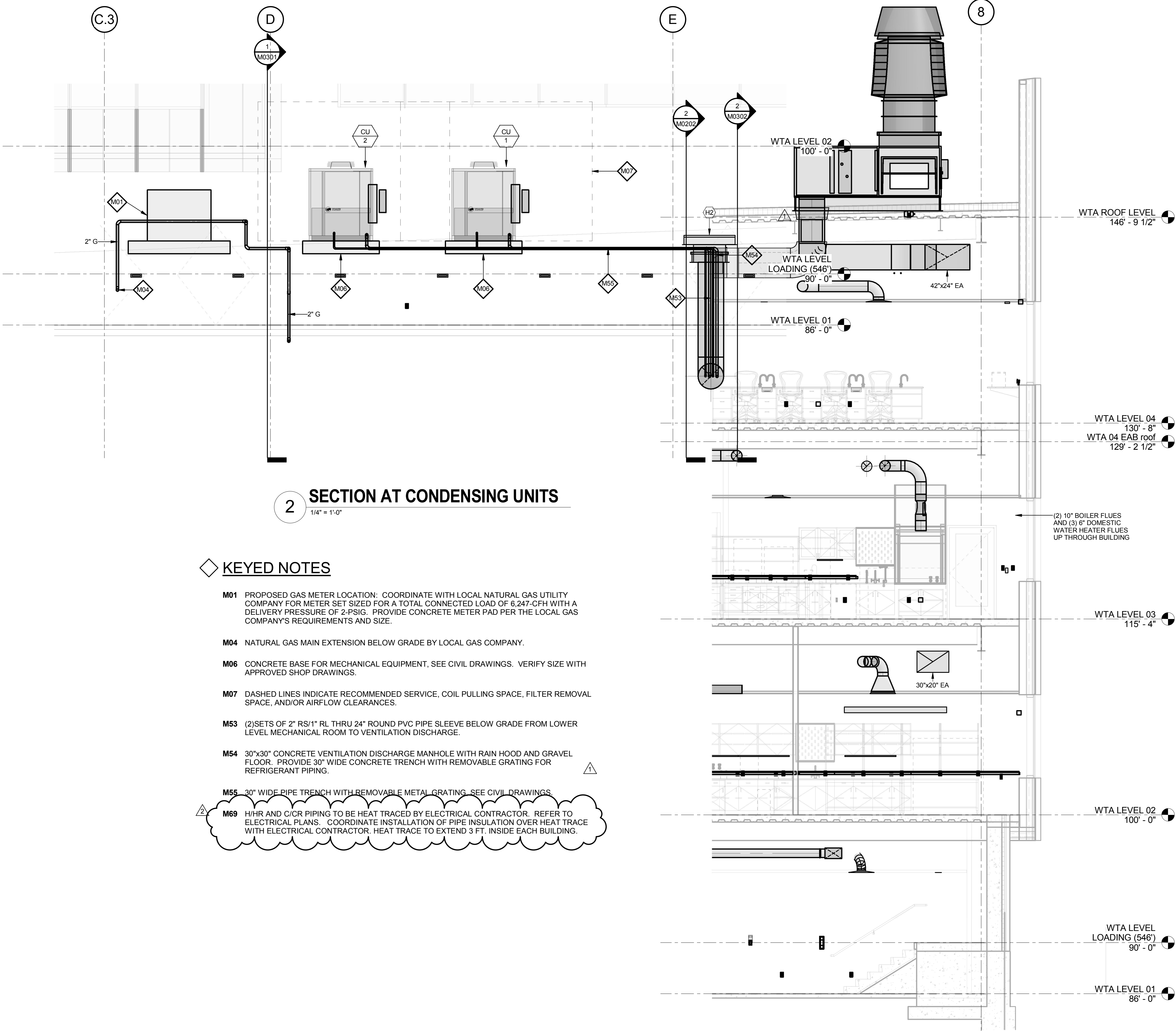
M0303

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3 SECTION THROUGH EAB ATTIC

1/4" = 1'-0"



2 SECTION AT CONDENSING UNITS

1/4" = 1'-0"

KEYED NOTES

- M01** PROPOSED GAS METER LOCATION. COORDINATE WITH LOCAL NATURAL GAS UTILITY COMPANY FOR METER SET SIZED FOR A TOTAL CONNECTED LOAD OF 6,247-GPH WITH A DELIVERY PRESSURE OF 2-PSIG. PROVIDE CONCRETE METER PAD PER THE LOCAL GAS COMPANY'S REQUIREMENTS AND SIZE.
- M04** NATURAL GAS MAIN EXTENSION BELOW GRADE BY LOCAL GAS COMPANY.
- M06** CONCRETE BASE FOR MECHANICAL EQUIPMENT, SEE CIVIL DRAWINGS. VERIFY SIZE WITH APPROVED SHOP DRAWINGS.
- M07** DASHED LINES INDICATE RECOMMENDED SERVICE, COIL PULLING SPACE, FILTER REMOVAL SPACE, AND/OR AIRFLOW CLEARANCES.
- M53** (2)SETS OF 2" RS-1" RL THRU 24" ROUND PVC PIPE SLEEVE BELOW GRADE FROM LOWER LEVEL MECHANICAL ROOM TO VENTILATION DISCHARGE.
- M54** 30"x30" CONCRETE VENTILATION DISCHARGE MANHOLE WITH RAIN HOOD AND GRAVEL FLOOR. PROVIDE 30" WIDE CONCRETE TRENCH WITH REMOVABLE GRATING FOR REFRIGERANT PIPING.
- M55** 30" WIDE PIPE TRENCH WITH REMOVABLE METAL GRATING. SEE CIVIL DRAWINGS.
- M69** HHR AND C/C/R PIPING TO BE HEAT TRACED BY ELECTRICAL CONTRACTOR. REFER TO ELECTRICAL PLANS. COORDINATE INSTALLATION OF PIPE INSULATION OVER HEAT TRACE WITH ELECTRICAL CONTRACTOR. HEAT TRACE TO EXTEND 3 FT. INSIDE EACH BUILDING.

1 SECTION AT BOILER FLUES

1/4" = 1'-0"

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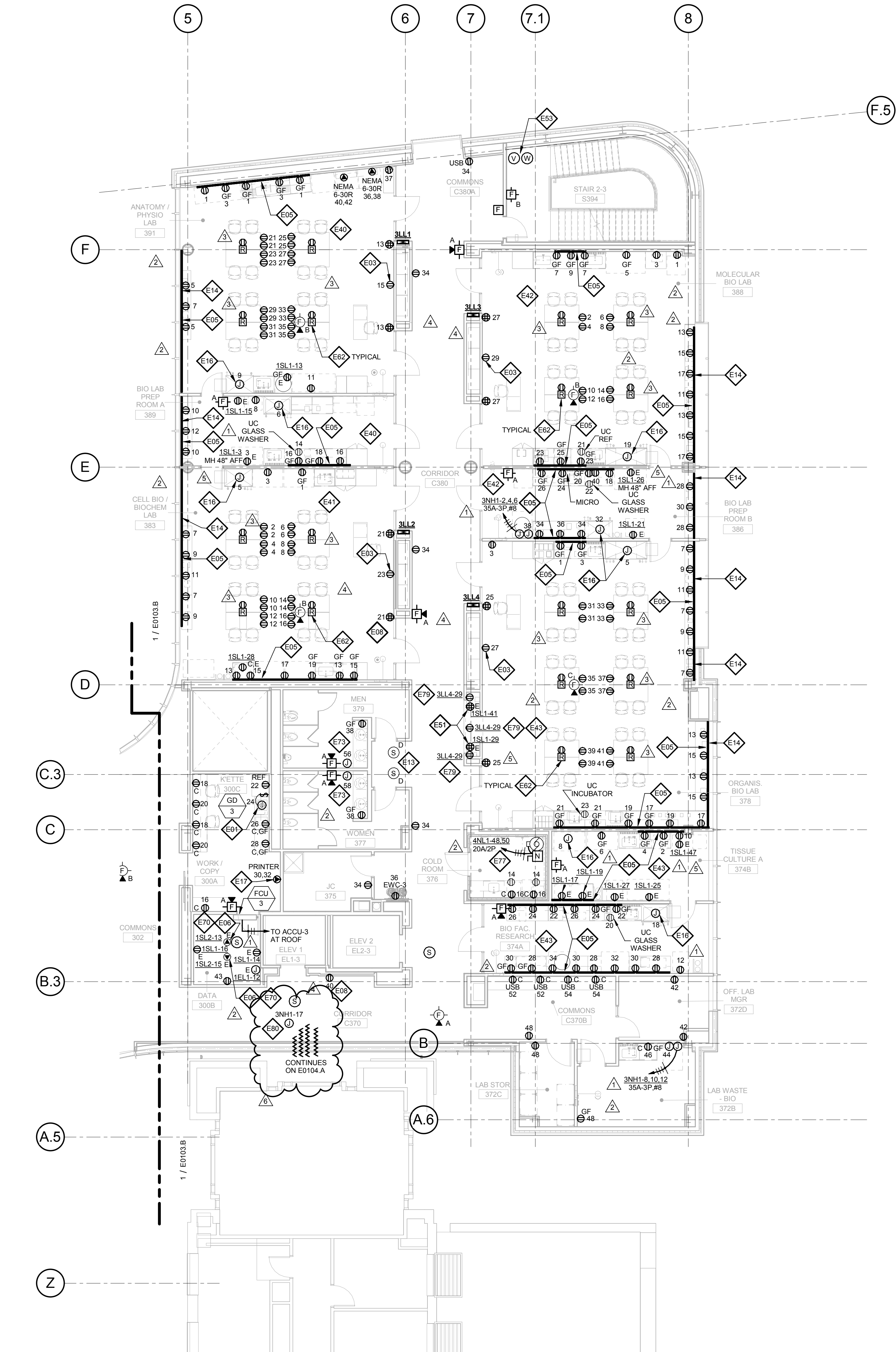
GENERAL NOTES:

- DO NOT SCALE DRAWINGS. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR LOCATION AND ORIENTATION OF DEVICES. WHERE LOCATIONS ARE NOT INDICATED ON ARCHITECTURAL DRAWINGS, COORDINATE LOCATION AND ORIENTATION OF DEVICES IN FIELD WITH ARCHITECT PRIOR TO ROUGH-IN.
- ALL DEVICES SHOWN ARE NEW UNLESS NOTED OTHERWISE.
- ALL DEVICES TO REMAIN ARE INDICATED WITH A THIN SOLID LINE WEIGHT AND SUBSCRIPT "EX".
- CONTRACTOR SHALL VISIT PRIOR TO BID SUBMITTALS TO DETERMINE SITE CONDITIONS EFFECTING THE EXECUTION OF WORK. FAILURE TO BE ACQUAINTED WITH EXISTING CONDITIONS WILL NOT BE JUSTIFICATION FOR ADDITIONAL SERVICES.
- PROVIDE FACE PLATES ON ALL J-BOXES ABANDONED IN FINISHED FLOOR, WALL OR CEILINGS. COORDINATE COLOR AND FINISH WITH ARCHITECT. CONTRACTOR TO VERIFY QUANTITY IN THE FIELD.
- WHERE EXPOSED CONDUIT IS NOTED, CONTRACTOR SHALL IDENTIFY ROUTING IN FIELD AND OBTAIN ARCHITECT'S APPROVAL OF ROUTING PRIOR TO ROUGH-IN. EXPOSED CONDUIT SHALL BE ROUTED TIGHT TO STRUCTURE.
- ALL SINGLE PHASE BRANCH CIRCUITS SHOWN SHALL HAVE DEDICATED NEUTRALS TO MEET NEC SECTION 210.4 MULTI-WIRE BRANCH CIRCUIT REQUIREMENTS.
- REFER TO TECHNOLOGY DRAWINGS FOR CONDUIT ROUGH-IN OF DATA, VOICE AND A/V.
- ALL 120V BRANCH CIRCUITS ON THIS SHEET SHALL BE FED FROM PANEL 3NL1 UNLESS NOTED OTHERWISE.

KEYED NOTES

- E01** REFER TO EQUIPMENT DATA SCHEDULE FOR BRANCH CIRCUIT INFORMATION.
- E03** PROVIDE NEW RECEPTACLE FOR WALL MOUNTED PROJECTOR. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS AND A/V DRAWINGS.
- E05** PROVIDE NEW TWO SECTION ALUMINUM RACEWAY, WIREMOLD AL4320 WITH RECEPTACLES MOUNTED 24" ON CENTER UNLESS NOTED OR SHOWN OTHERWISE. PROVIDE ALL ACCESSORIES FOR A COMPLETE INSTALLATION. REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHT AND LENGTH. SEE DETAILS ON SHEET E402.
- E06** OUTLET SHALL BE MOUNTED TO THE BACK SIDE OF THE TELECOMMUNICATION RACK AND FED FROM ABOVE. COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH TELECOMMUNICATIONS CONTRACTOR PRIOR TO INSTALLATION.
- E08** OUTLET FOR DIGITAL SIGNAGE, COORDINATE MOUNTING HEIGHT AND EXACT LOCATION WITH ARCHITECTURAL ELEVATIONS AND A/V DRAWINGS.
- E13** PROVIDE A DUCT MOUNTED SMOKE DETECTOR(S) AT RETURN AIR GRILLE OF AHU-1 & AHU-2. BOTH AIR HANDLING UNITS SHALL SHUT DOWN UPON ACTIVATION OF THE DUCT MOUNTED SMOKE DETECTOR(S). PROVIDE REMOTE INDICATOR LIGHT(S) IN CEILING BELOW.
- E14** SURFACE RACEWAY AT EXTERIOR WINDOWS SHALL BE FED FROM BELOW OR FROM ADJACENT WALL OR COLUMN.
- E16** PROVIDE POWER AND FINAL CONNECTIONS TO FUME HOOD.
- E17** PROVIDE NEMA 6-30R, 30A-208V RECEPTACLE FOR PRINTER. CONTRACTOR SHALL VERIFY PRINTER PLUG TYPE WITH OWNERS REPRESENTATIVE PRIOR TO ROUGH-IN.
- E40** ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 3LL1.
- E41** ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 3LL2.
- E42** ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 3LL3.
- E43** ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 3LL4.
- E51** PROVIDE 20A GFCI QUAD RECEPTACLE WITH AUDIBLE ALARM ON EMERGENCY CIRCUIT FOR FISH TANK. COORDINATE EXACT LOCATION WITH ARCHITECTURAL PLANS AND ELEVATIONS.
- E53** COORDINATE QUANTITY AND LOCATION OF TAMPER AND FLOW SWITCHES WITH FIRE PROTECTION CONTRACTOR.
- E62** PROVIDE A 2HR FIRE CLASSIFIED 2-GANG MULTI-SERVICE STEEL RECESSED FLOOR BOX EQUAL TO WIREMOLD CAT. NO. RFB2S-FC WITH A BRASS FLANGED COVER CAT. NO. FPB2CBS-NA. THE FLOOR BOX SHALL HAVE ALL NECESSARY MOUNTING BRACKETS FOR (2) 20A STANDARD DUPLEX RECEPTACLES. NEMA 6-20R. THE BOX SHALL BE INSTALLED PER MANUFACTURERS WRITTEN INSTRUCTIONS SO THAT THE COVER IS FLUSH WITH THE FLOOR.
- E70** PROVIDE NEMA L5-20R, 20A-120V TWIST LOCK RECEPTACLE FOR RACK MOUNTED PDU. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH TECHNOLOGY CONTRACTOR.
- E73** PROVIDE POWER AND FINAL CONNECTIONS FOR ELECTRIC HAND DRYER.
- E77** PROVIDE POWER TO EVAPORATOR COIL, LIGHTS, CONTROLS ETC. FOR A COMPLETE INSTALLATION OF WALK-IN COOLER.

- E79** PROVIDE 20A GFCI DUPLEX RECEPTACLE CEILING MOUNTED FOR POWER TO AQUARIUM LIGHTS. COORDINATE EXACT LOCATION WITH ARCHITECTURAL PLANS AND ELEVATIONS.
- E80** PROVIDE PIPE FREEZE PROTECTION OF COLD AND HOT WATER SUPPLY AND RETURN PIPING. REFER TO SHEET M0103.A, M0104.A, AND SECTION THROUGH EAB ATTIC ON SHEET M0303 FOR LENGTH OF PIPES, AND SPECIFICATION SECTION 268500 FOR ADDITIONAL INFORMATION.



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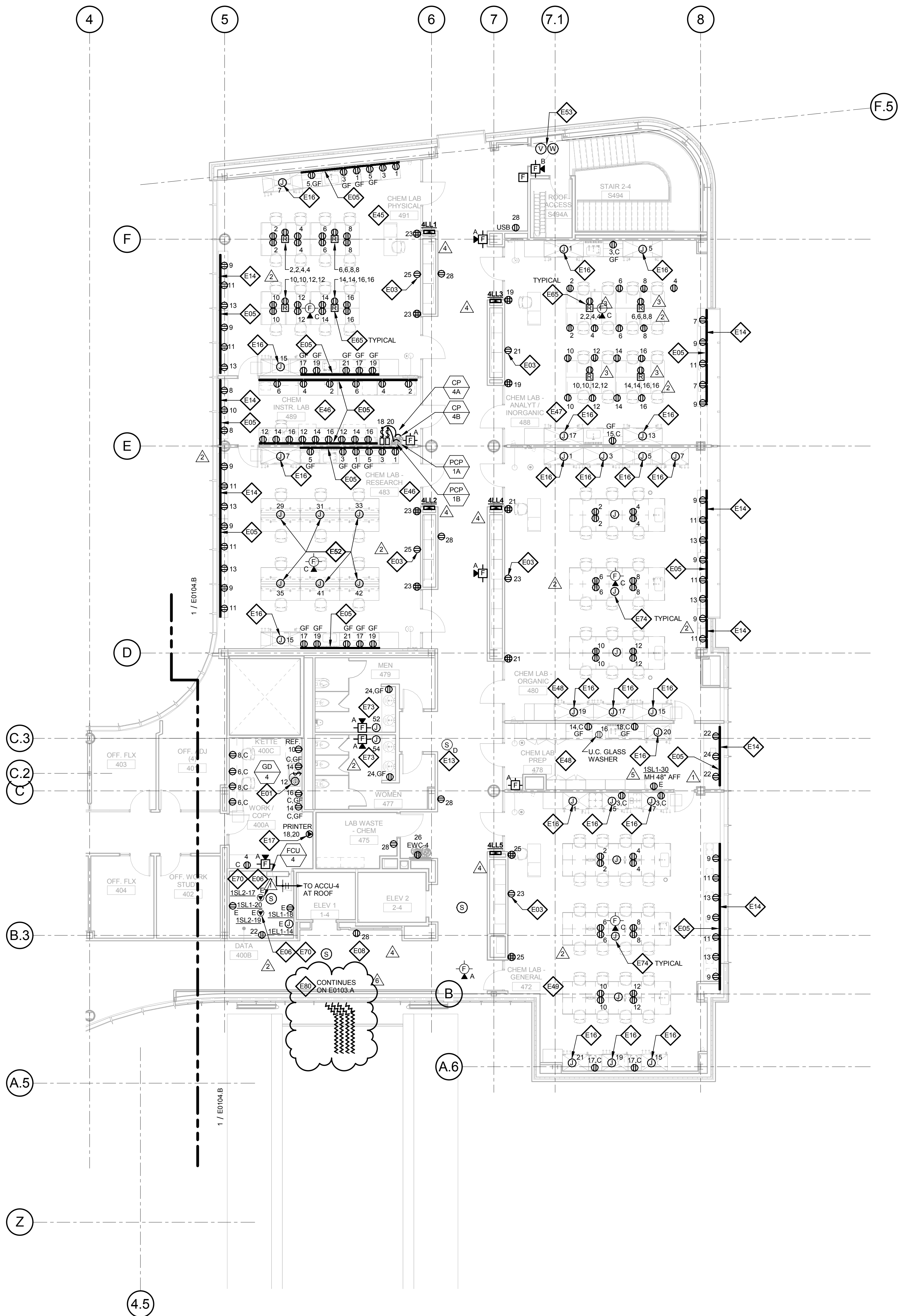
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- REFER TO TECHNOLOGY DRAWINGS FOR CONDUIT ROUGH-IN OF DATA, VOICE AND AV.
- ALL 120V BRANCH CIRCUITS ON THIS SHEET SHALL BE FED FROM PANEL 4NLL1 UNLESS NOTED OTHERWISE.

KEYED NOTES

- E01 REFER TO EQUIPMENT DATA SCHEDULE FOR BRANCH CIRCUIT INFORMATION.
- E03 PROVIDE NEW RECEPTACLE FOR WALL MOUNTED PROJECTOR. VERIFY EXACT LOCATION AND MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS AND AV DRAWINGS.
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- E13 PROVIDE A DUCT MOUNTED SMOKE DETECTOR(S) AT RETURN AIR GRILLE OF AHU-1 & AHU-2. BOTH AIR HANDLING UNITS SHALL SHUT DOWN UPON ACTIVATION OF THE DUCT MOUNTED SMOKE DETECTOR(S). PROVIDE REMOTE INDIATOR LIGHT(S) IN CEILING BELOW.
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- E46 ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 4LL2.
- E47 ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 4LL3.
- E48 ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 4LL4.
- E49 ALL 120V BRANCH CIRCUITS IN THIS ROOM SHALL BE FED FROM PANEL 4LL5.
- E52 PROVIDE POWER AND FINAL CONNECTIONS TO OVERHEAD SERVICE CARRIER. REFER TO LIGHTING PLANS FOR LIGHTING CIRCUITS. COORDINATE WITH ARCHITECTURAL PLANS AND ELEVATIONS.
- E53 COORDINATE QUANTITY AND LOCATION OF TAMPER AND FLOW SWITCHES WITH FIRE PROTECTION CONTRACTOR.
- E65 PROVIDE A 2HR FIRE CLASSIFIED 4-GANG MULTI-SERVICE STEEL RECESSED FLOOR BOX EQUAL TO WIREMOLD CAT. NO. RFBS-FC WITH A BRASS FLANGED COVER CAT. NO. FPBTCS-NA. THE FLOOR BOX SHALL HAVE ALL NECESSARY MOUNTING BRACKETS FOR (4) 20A STANDARD DUPLEX RECEPTACLES, NEMA 5-20R. THE BOX SHALL BE INSTALLED PER MANUFACTURERS WRITTEN INSTRUCTIONS SO THAT THE COVER IS FLUSH WITH THE FLOOR.
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- E73 PROVIDE POWER AND FINAL CONNECTIONS FOR ELECTRIC HAND DRYER.

E74 FEED FIXED FURNITURE FROM BELOW AND MAKE ALL FINAL CONNECTIONS TO RECEPTACLES.

E80 PROVIDE PIPE FREEZE PROTECTION OF COLD AND HOT WATER SUPPLY AND RETURN PIPING. REFER TO SHEET M0103.A, M0104.A, AND SECTION THROUGH EAB ATTIC ON SHEET M0303 FOR LENGTH OF PIPES, AND SPECIFICATION SECTION 268500 FOR ADDITIONAL INFORMATION.



1 LEVEL 04 - AREA A - FLOOR PLAN - POWER AND AUXILLARY

1/8" = 1'-0"



KEY PLAN

LEVEL 04 AREA A FLOOR PLAN - ELECTRICAL & AUXILIARY

Project No.: 04561.01 Checked by:

E0104.A

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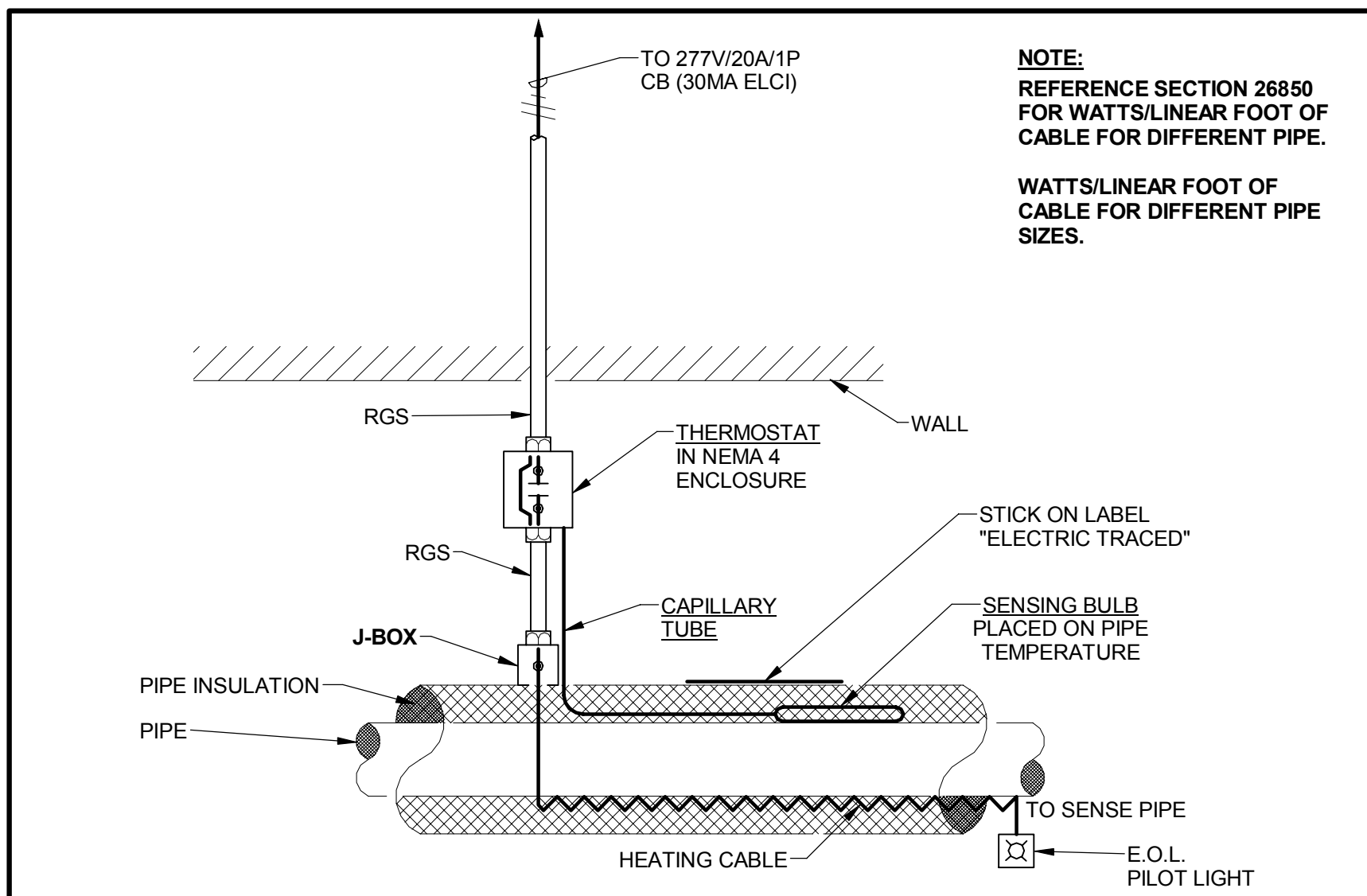
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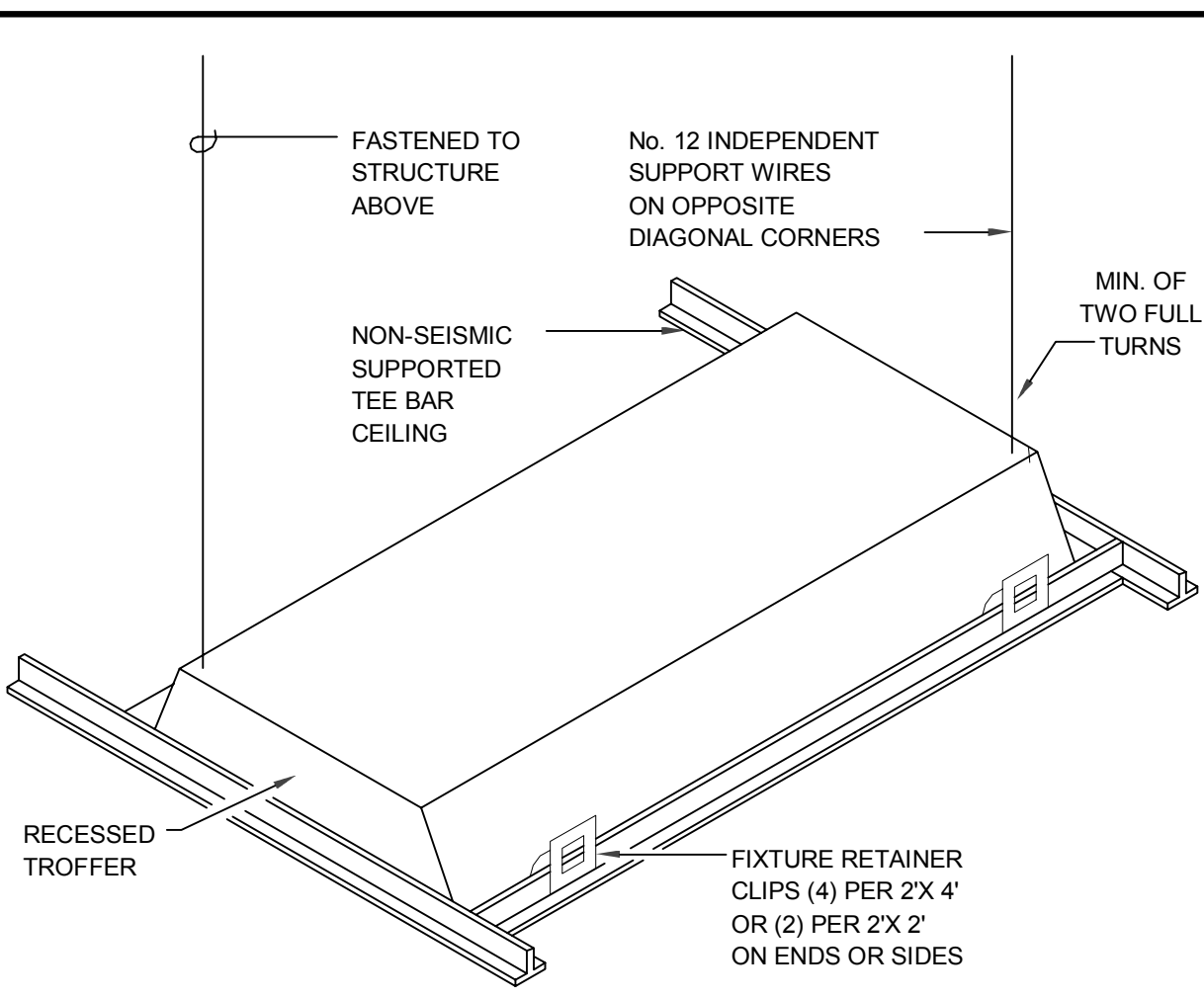
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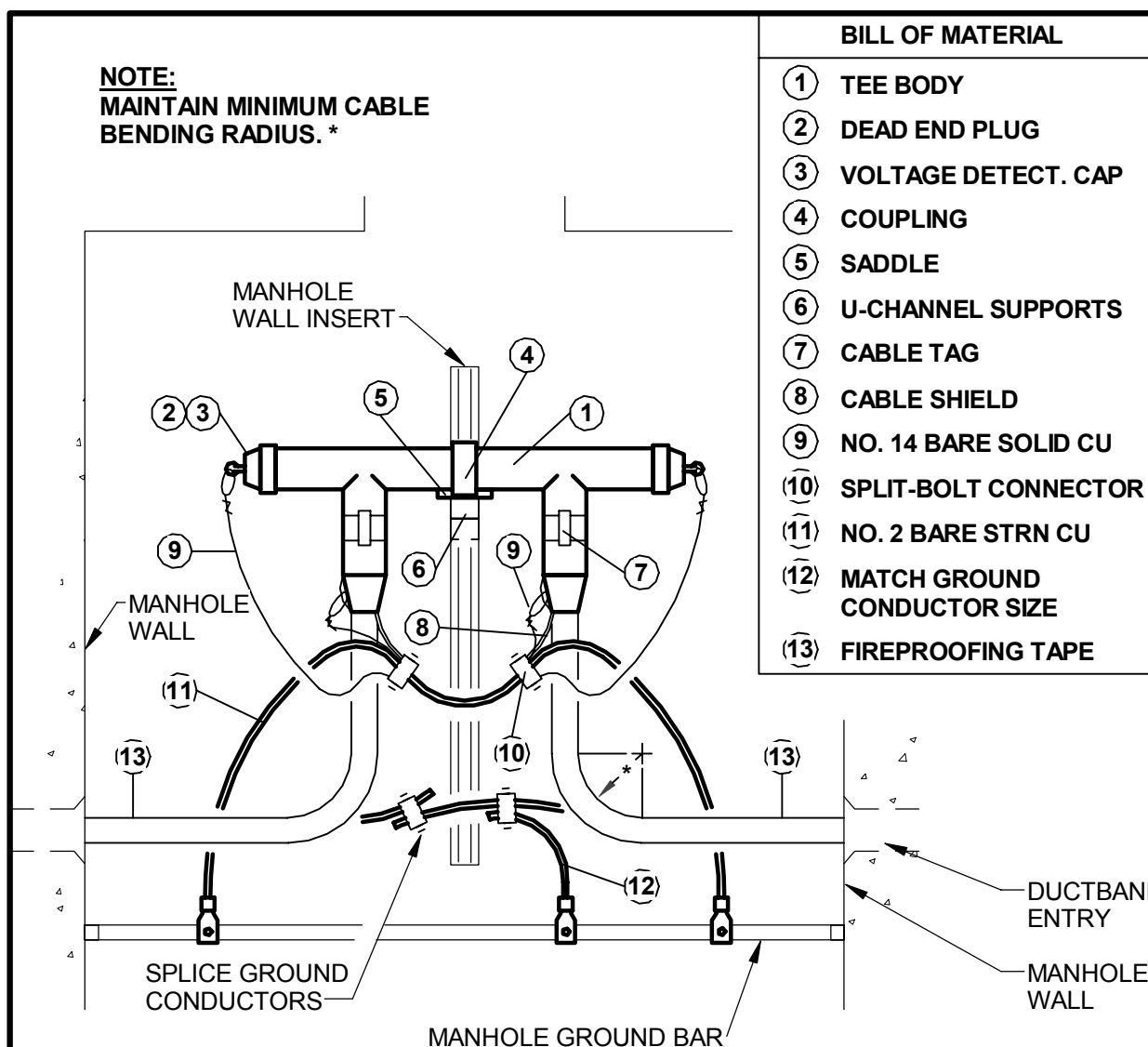
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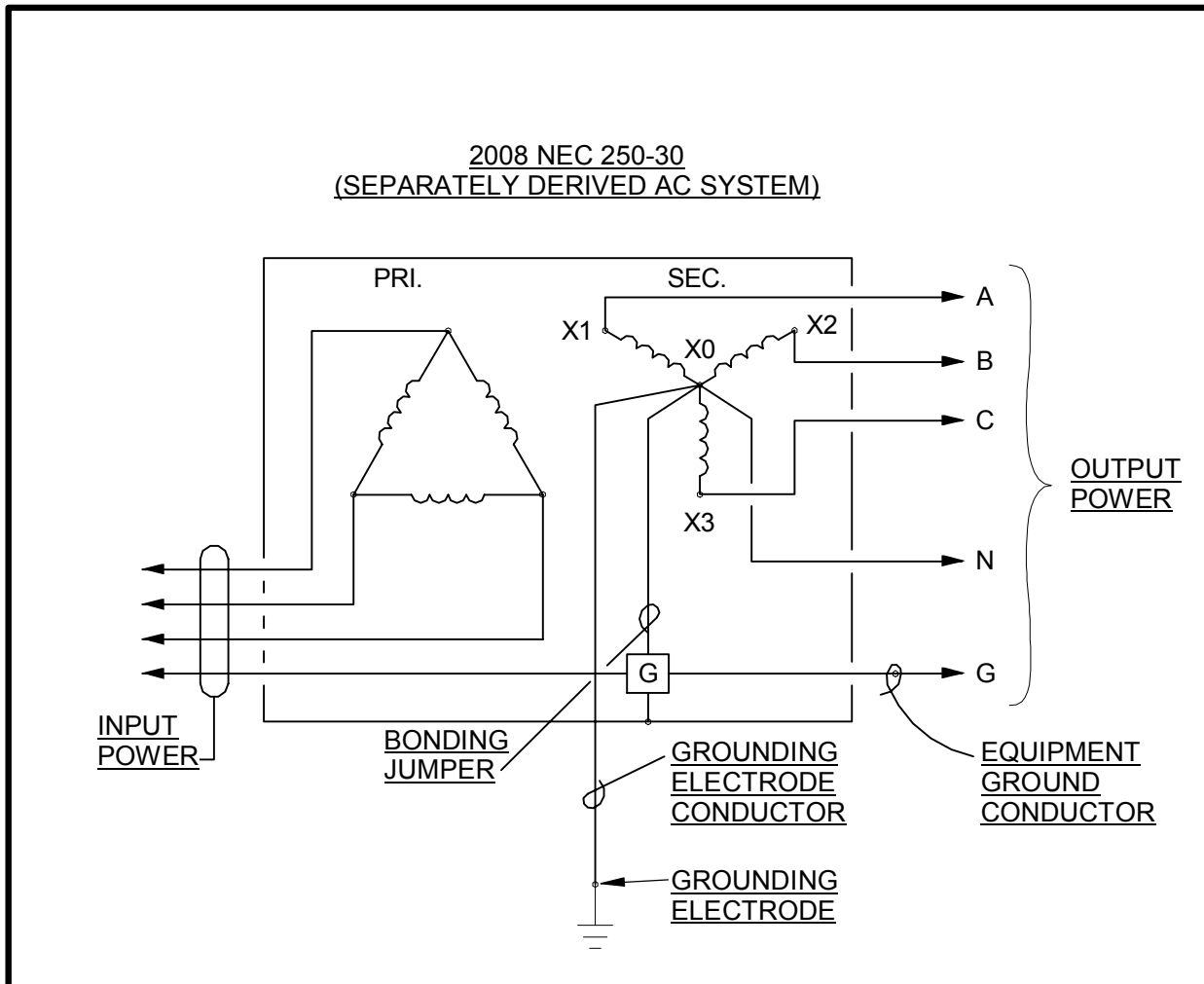
PIPE FREEZE PROTECTION DETAIL



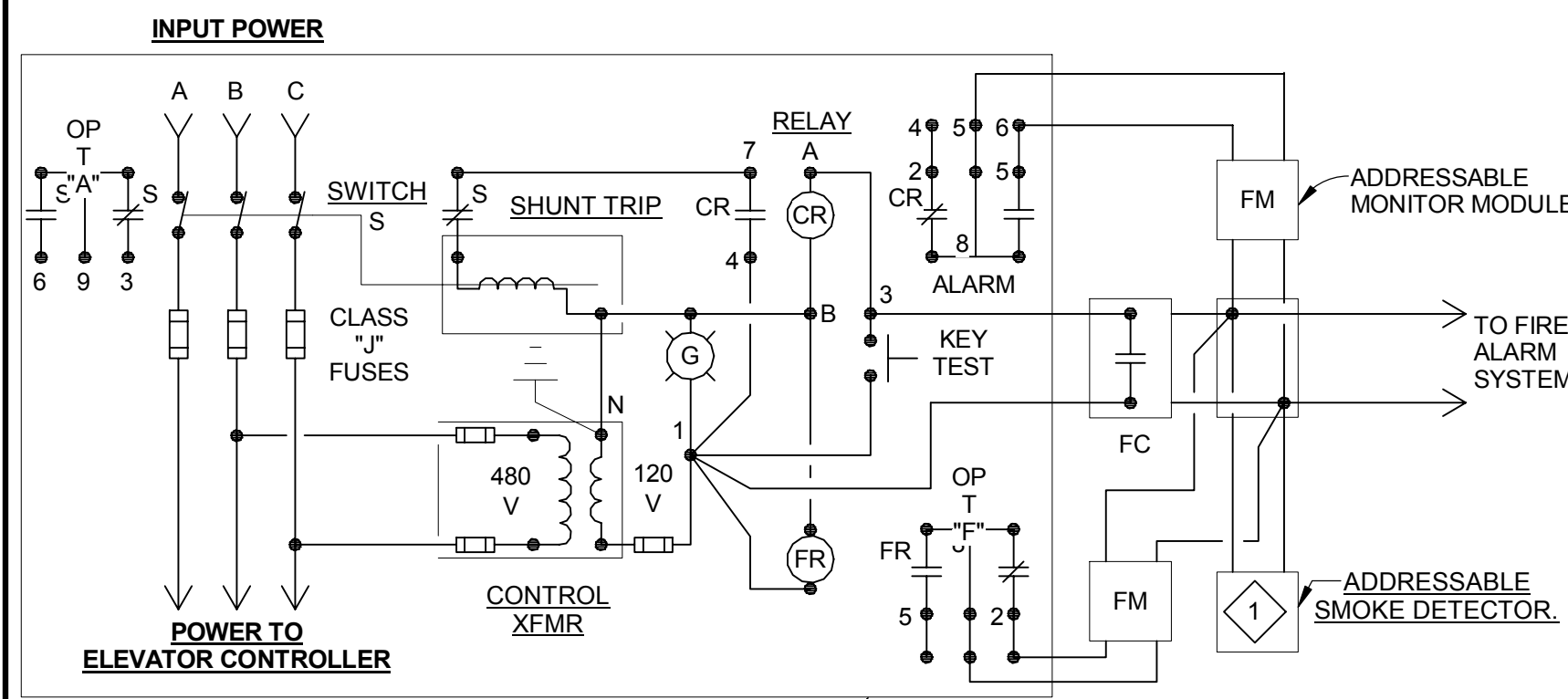
RECESSED MOUNTED FIXTURE



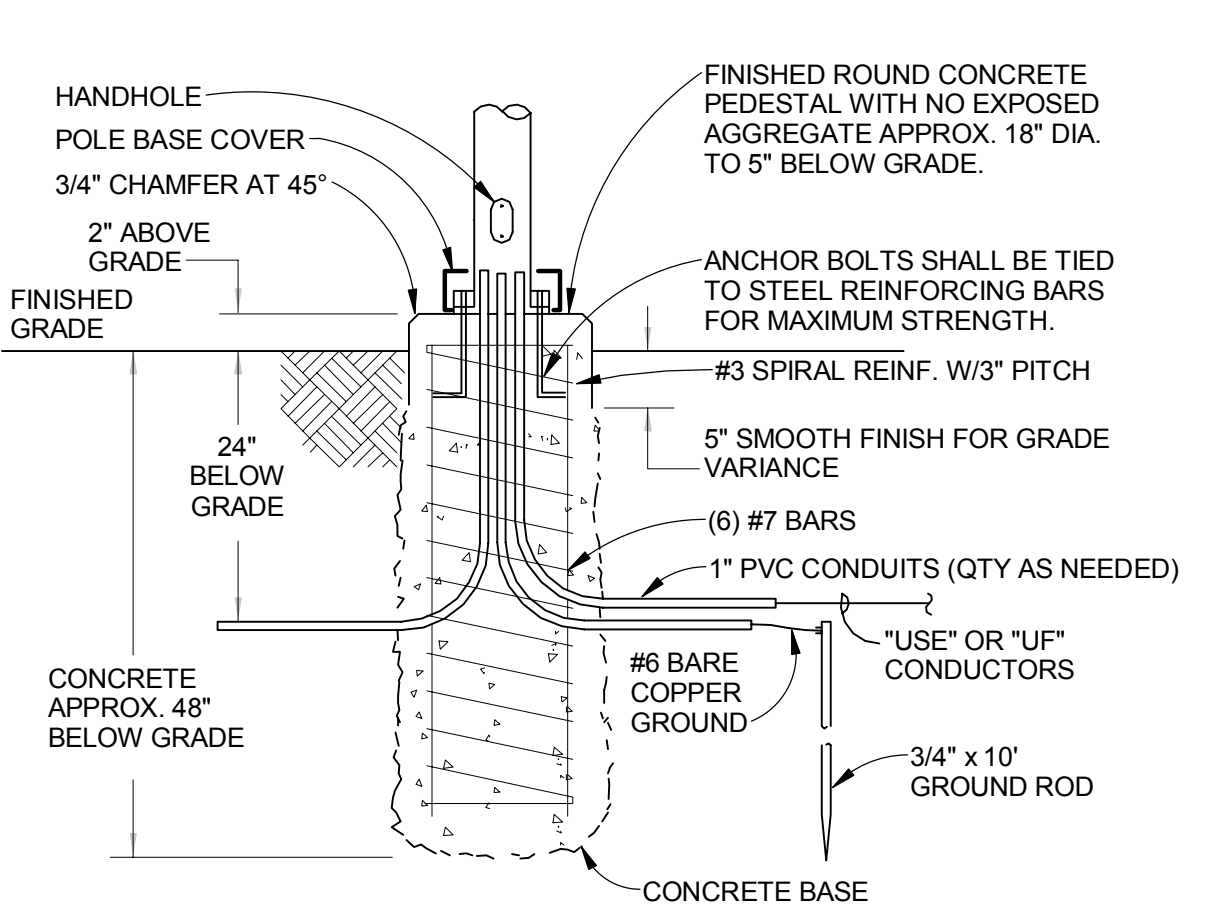
5KV MANHOLE CABLE SPLICE



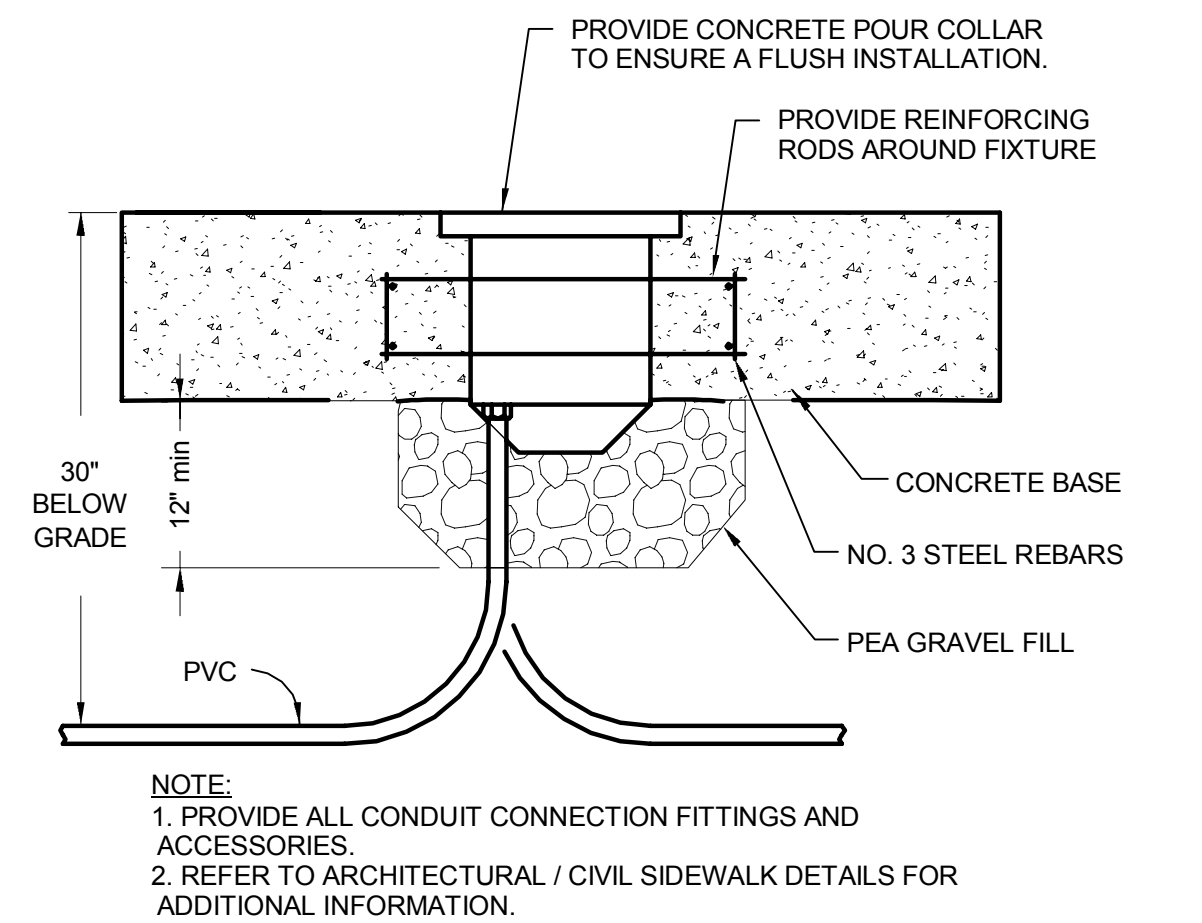
TRANSFORMER GROUNDING DETAIL



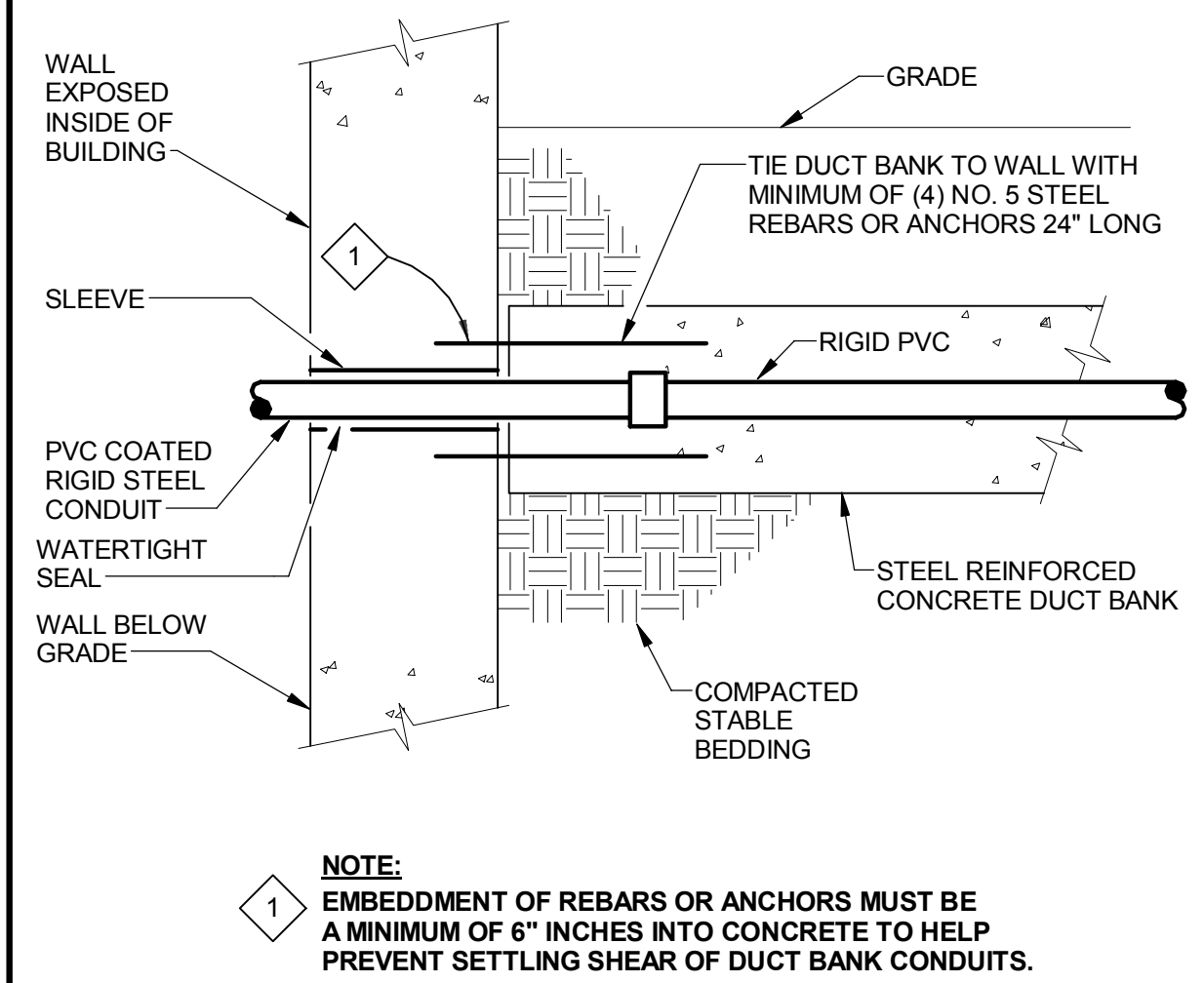
ELEVATOR AUTO. POWER DISCONNECTION DETAIL



LIGHTING POLE "EG" CONCRETE BASE DETAIL



TYPE EC DIRECT BURIED LIGHTING FIXTURE DETAIL



CONDUIT THRU-WALL DETAIL

