

BOYNTON-WILLIAMS & ASSOCIATES

ARCHITECTURE

PLANNING

INTERIORS

NORMAN

DALLAS

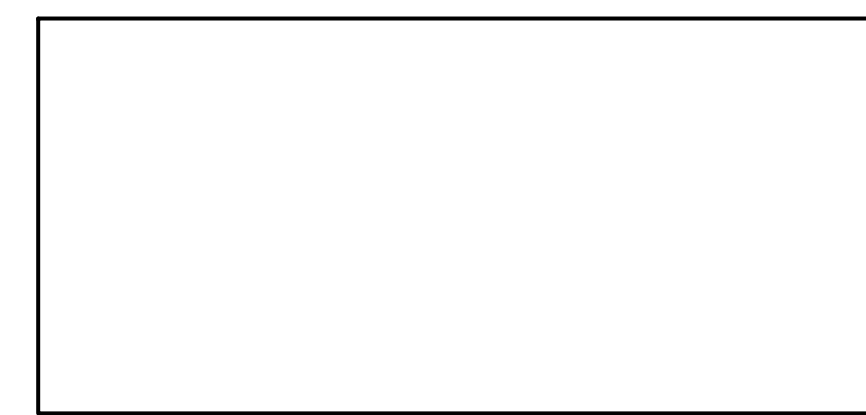
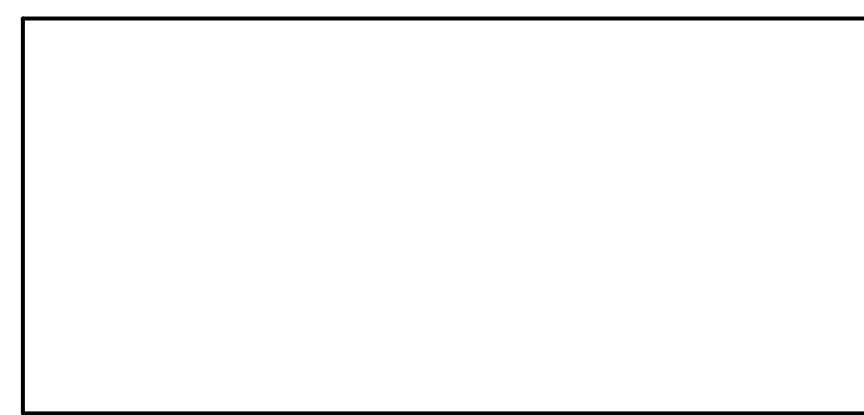
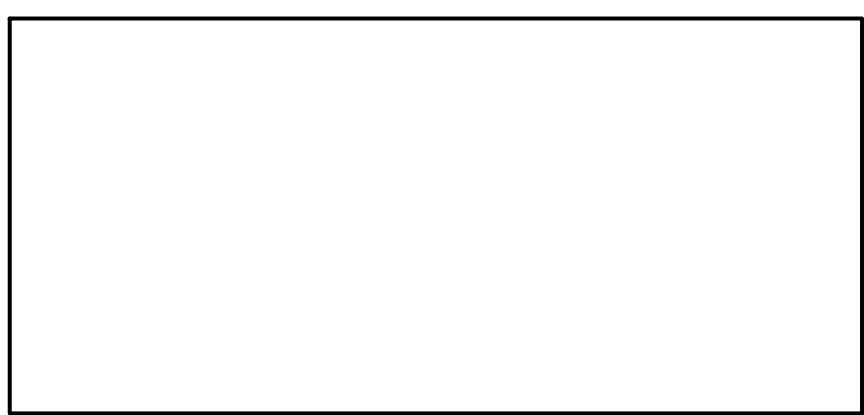
TULSA

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A Professional Corporation Member: American Institute of Architects

ROOF REPLACEMENT & HVAC RENOVATION

Canadian County Office Building 201 N. CHOCTAW AVE. EL RENO, OKLAHOMA 73036



STRUCTURAL ENGINEERING

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Abbreviations List (Architectural Only)

A AB ACOUST A/C AD ADHES ADJUST AFF AGG AL ALT ANC ANOD APPROX ARCH ASPH AUTO	Anchor Bolt Above Acoustic(al) Air Conditioning(er) Area Drain Adhesive Adjustable Above Finished Floor Aggregate(s) Aluminum Alternate(ive) Anchor Anodize(d) Approximate Architect(ural) Asphalt(ic) Automatic	E EA EB EIFS EJ ELEC ELEV EQ EQUIP ETR EXCAV EXG EXP EXT EW EWC EWOC	Each Expansion Bolt Ext. Insul. and Fin. System Expansion Joint Electric(al) Elevation Equal Equipment Existing to Remain Excavate(tion) Existing Expandable/Expansion Exterior Each Way Electric Water Cooler Each Way On Center	J JAN JST JT	Janitor Joist Joint	K KO KD	Knock Out Knock Down	L LAM LAV LB LBL LH LL LT LT FIXT LVR LW	Laminate(d) Lavatory Lag Bolt Label Left Hand Live Load Light Light Fixture Louver Light Weight	M MAS MATL MAX MB MBR MECH MED MEM MANF MH MIN MIR MISC MO MOD MS M SINK MTL MULL	Masonry Material(s) Maximum Machine Bolt Member Mechanical Medium Membrane Manufacturer Man Hole Minimum Mirror Miscellaneous Masonry Opening Modular Machine Screw Map Sink Metal Mullion	N NIC NOM NR NRC NTS	Not in Contract Nominal Noise Reduction Noise Reduction Coefficient Not to Scale	O OA OC OD OF/CI OF/OI	Overall On Center(s) Outside Diameter Owner-Furnished / Contractor-Installed Owner-Furnished / Owner-Installed	P PART PRKG PLAM PNT PREFIN	Partition Parking Plastic Laminated Paint(ed) Prefinished	Q QT	Quarry Tile	R R RA RAD RB RCP RD	Riser Return Air Radius Rubber Base Reinforced Concrete Pipe Roof Drain	S SCHD SC SD SF SH SHT SHTG SIM SJ SND SPEC SPKR SS S SNK S STL STD STL STOR STRUCT SUSP SY SYNTH	Schedule Solid Core Soap Dispenser Square Foot(age) Square Feet Single Hung Sheet Sheathing Similar Scored Joint Sanitary Napkin Dispenser Specification(s) Speaker Sanitary Sewer Service Sink Stainless Steel Standard Steel Storage Structure(al) Suspended Square Yard(s)(age) Synthetic	T T TC TEMP T&G THK TM TPH TOS TOW TYP TV	Tread or Top Top of Curb Temperature Tongue and Groove Thick(ness) Top of Masonry Toilet Paper Holder Top of Steel Top of Wall Typical Television	U UNO UR	Unless Noted Otherwise Urinal	V VAR VB VCT VERT VIF VNR VWC VWF	Variation, Variable, Varies Vapor Barrier Vinyl Composition Tile Vertical Verify in Field Veneer Vinyl Wall Covering Vinyl Wall Fabric	W W/ WAINS WC WD WH WHDWR WINDW W/O WP WS WWF	With Wainscot Water Closet Wood Water Heater Window Without Waterproof(ing) Wood Screw Welded Wire Fabric
B BD BIT BLDG BLK BLKG BM B.M. BOT BRK BSMT BUR	Board Bitumen Building Block Blocking Beam Bench Mark Bottom Brick Basement Built-up Roofing	F FA FACP FAC FIN FAS FBO FC FD FE FEB FEC FF FHS FIN FIX FLASH FLR FOUND FP FTG FR FRM FURR FV FWC	Fire Alarm Fire Alarm Control Panel Factory Finish Faster(er) Furnished By Others Fire Code Floor Drain Fire Extinguisher Fire Exting. / Bracket Fire Exting. / Cabinet Finish Floor Fire Hose Station Finish(ed) Fixture Flashing Floor(ing) Foundation Fireproof(ing) Footing Fire Rated (Rating) Frame(d)(ing) Furring(ed) Field Verify Fabric Wall Covering	M MAS MATL MAX MB MBR MECH MED MEM MANF MH MIN MIR MISC MO MOD MS M SINK MTL MULL	Masonry Material(s) Maximum Machine Bolt Member Mechanical Medium Membrane Manufacturer Man Hole Minimum Mirror Miscellaneous Masonry Opening Modular Machine Screw Map Sink Metal Mullion	G GA GALV GB GC GL GYP BD	Gauge Galvanized Grab Bar General Contractor Glass or Glazing Gypsum Board	H HB HC HDBD HDCP HDWD HDWR HM HORIZ HT HTG HVAC HW H/C	Hose Bib Hollow Core Hardboard Handicap Hardware Hardware Hollow Metal Horizontal Height Heating Heating, Ventilation & Air-Conditioning Hot Water Handicapped Accessible	D DEMO DF DH DIA DIAG DIM DIV DL DMPR DR DS DTL DWG DWR	Demolish / Demolition Drinking Fountain Double Hung Center Cold Water Cubic Yard	C CAB CC CF CG CHBD CI CJ CL CLG CLR CMT CMU CNTRL COL CONC CONST CONT COR CORR CPT CRS CT CTR CW CY	Cabinet Center to Center Cubic Foot Corner Guard Chalkboard Cast Iron Control Joint Closet Ceiling Clear(once) Ceramic Mosaic Tile Concrete Masonry Unit Control Column Concrete Construction Continuous Corridor Corrugated Carpet Course/Coursing Ceramic Tile Center Cold Water Cubic Yard																		

Drawing Index

COV - TITLE / ABBREVIATIONS

ARCHITECTURAL
1A1 - ROOF PLAN, DETAILS AND PLAN NOTES
2A1 - EXISTING FLOOR PLANS AND PLAN DETAILS

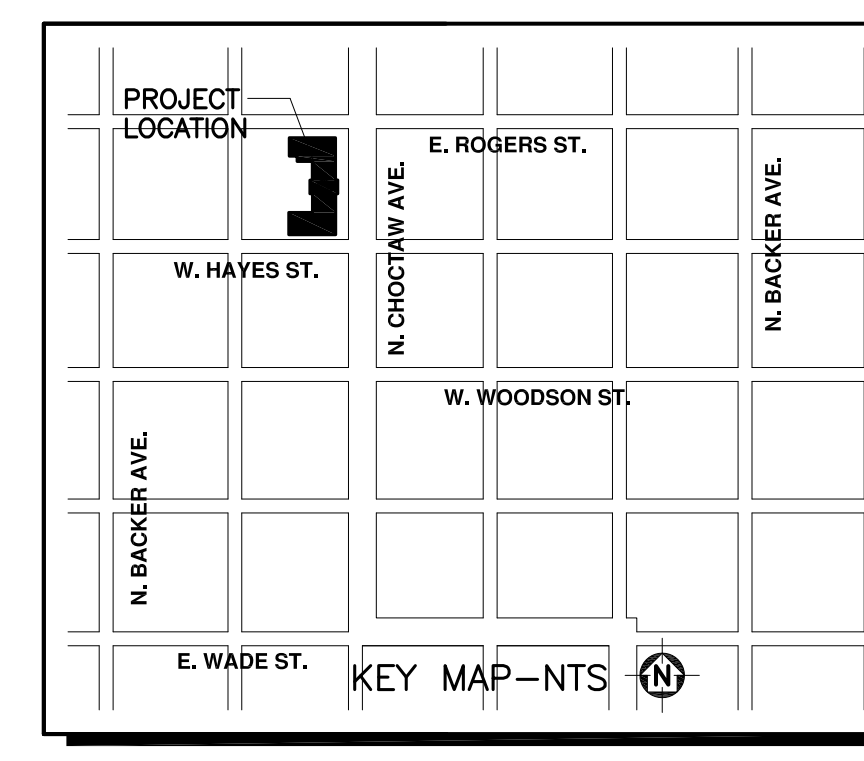
STRUCTURAL
1S1 - PARTIAL EXISTING ROOF PLAN AND GENERAL NOTES
1S2 - JOIST REINFORCING DETAILS

MECHANICAL/PLUMBING
OM1 - MECHANICAL LEGEND & ABBREVIATIONS
2MD1 - BASEMENT MECHANICAL DEMOLITION PLAN
2MD2 - FIRST FLOOR MECHANICAL DEMOLITION PLAN
2M1 - MECHANICAL BASEMENT FLOOR PLAN
2M2 - MECHANICAL FIRST FLOOR PLAN
2M3 - MECHANICAL ROOF PLAN
2M4 - BASEMENT HYDRONIC PIPING PLAN
2M5 - FIRST FLOOR HYDRONIC PIPING PLAN
3M1 - ENLARGED MECHANICAL FLOOR PLAN
4M1 - CHILLED AND HEATING WATER FLOW DIAGRAM
5M1 - MECHANICAL SCHEDULES
6M1 - MECHANICAL DETAILS
6M2 - MECHANICAL DETAILS
7M1 - MECHANICAL CONTROLS
7M2 - MECHANICAL CONTROLS
7M3 - MECHANICAL CONTROLS

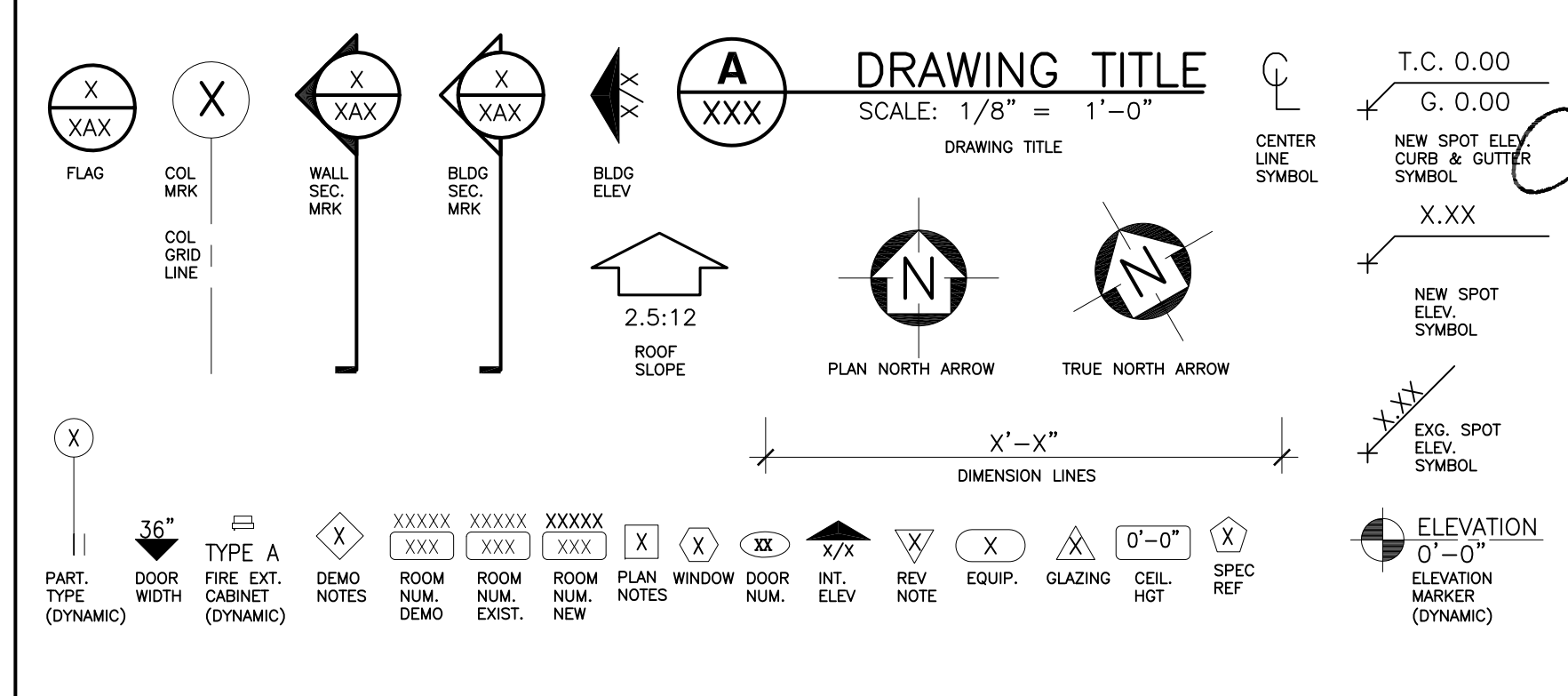
ELECTRICAL
1E1 - ELECTRICAL LEGEND PLAN
2E1 - FIRST FLOOR ELECTRICAL DEMO PLAN - SOUTH
2E2 - FIRST FLOOR ELECTRICAL DEMO PLAN - NORTH
2E3 - BASEMENT ELECTRICAL DEMO PLAN
3E1 - FIRST FLOOR ELECTRICAL POWER PLAN - SOUTH
3E2 - FIRST FLOOR ELECTRICAL POWER PLAN - NORTH
3E3 - BASEMENT ELECTRICAL POWER PLAN

Code Data

APPLICABLE CODES:
NFPA-101 LIFE SAFETY CODE
NATIONAL FIRE CODE 2015
INTERNATIONAL BUILDING CODE 2015
INTERNATIONAL PLUMBING CODE 2015
INTERNATIONAL MECHANICAL CODE 2015
NATIONAL ELECTRICAL CODE 2014



Graphics Symbol Legend

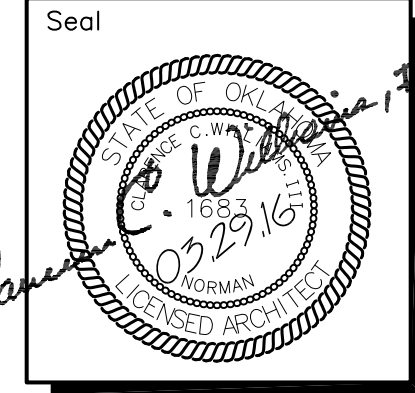


Seal
Professional Engineer Seal for Norman, Oklahoma, License No. 022916, signed by William C. Williams.

Revisions
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Sheet No.
COV



Revisions

Issue Date	03.29.16
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Project No.

N16001

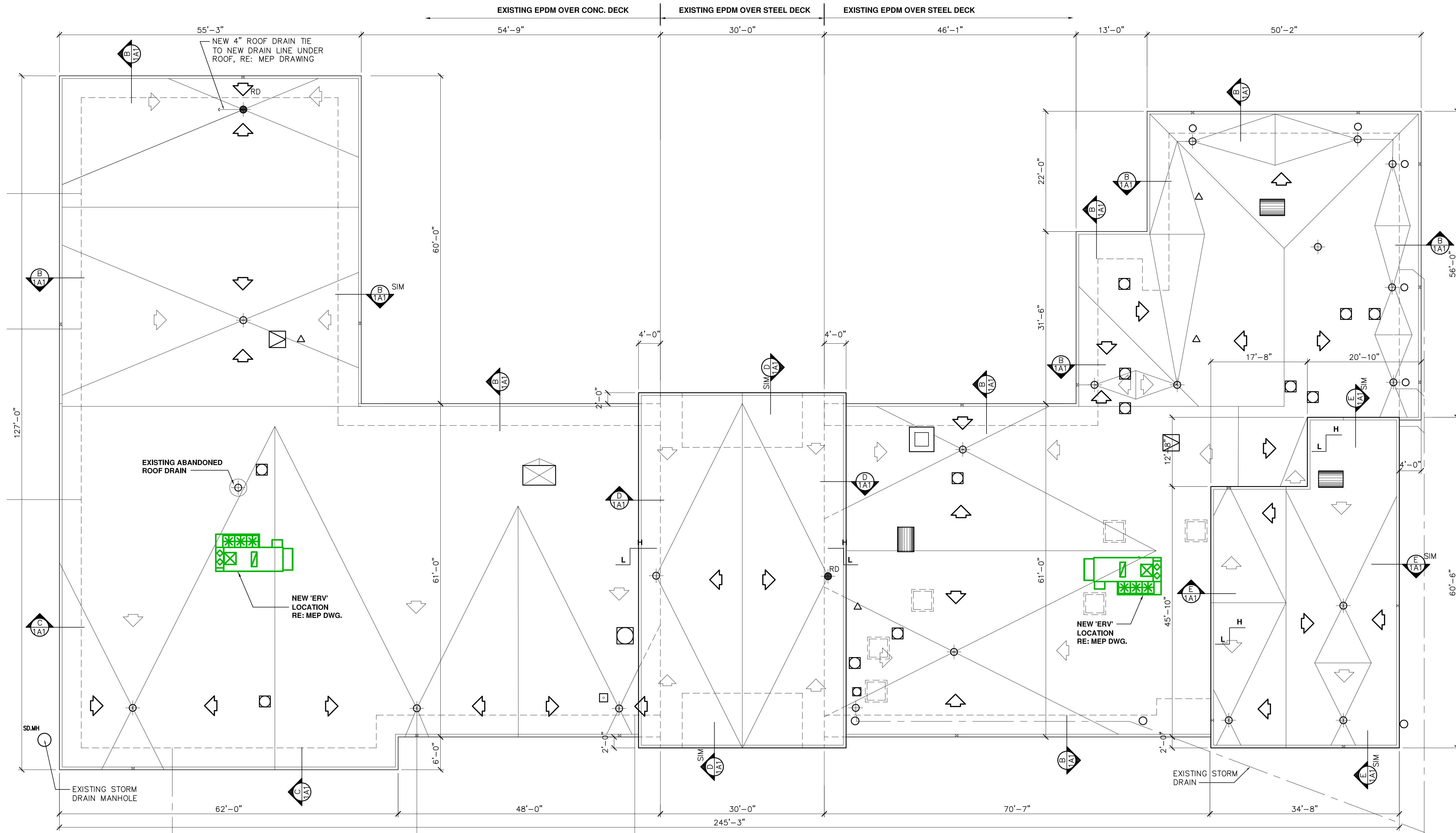
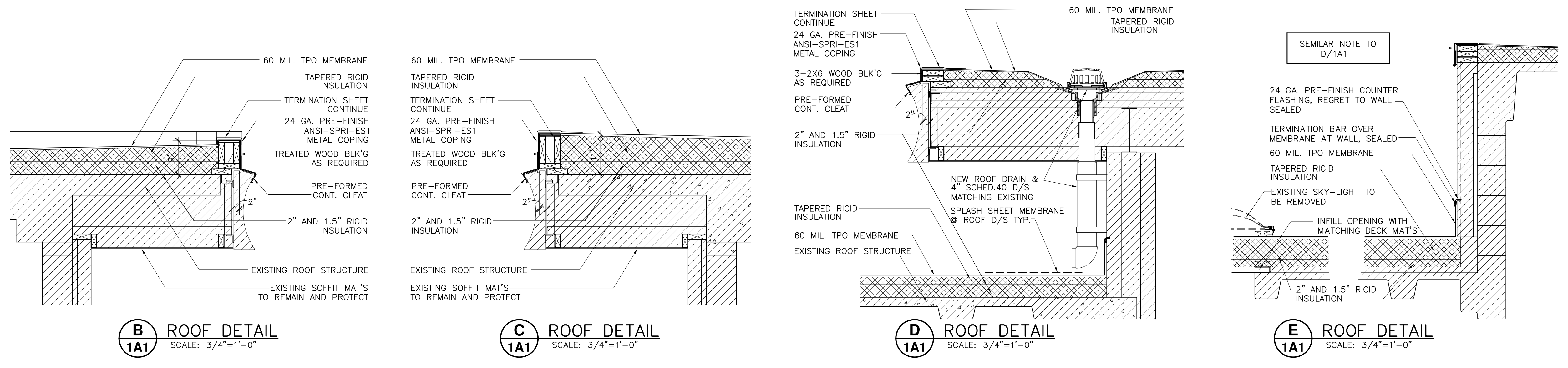
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1A1

- GENERAL NOTES:**
- VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING WORKS. PROVIDED INFORMATION IS FOR REFERENCE ONLY.
 - VERIFY EXISTING ROOF DECK FOR MATERIALS AND SLOPE. PROVIDE TAPERED INSULATION FOR POSITIVE DRAIN OF 1/4" PER FOOT MINIMUM.
 - NOTIFY ARCHITECT FOR ANY DAMAGED DECK UNDER EXISTING ROOF SURFACE FOR APPROVAL PRIOR TO REPLACEMENT OF ANY DAMAGED DECK.
 - NOTIFY, INFORM AND COORDINATE WORK SCHEDULE WITH OTHER TRADES, OWNER AND ARCHITECT.
 - COORDINATE STAGING AREA AND DELIVERY ACCESS LOCATION WITH OWNER AND ARCHITECT.
 - SUBMIT SHOP DRAWINGS, IDENTIFY ROOFING SYSTEM COMPONENTS TAPERED INSULATION SYSTEM LAY-OUT AND MATERIALS BEING USED FOR APPROVAL W/ COLOR TO MATCH EXISTING FLASHING AND TRIMS.
 - DISCONNECT AND RECONNECT ALL UTILITY SERVICE AS REQUIRED BY LICENSED CONTRACTOR.
 - PROTECT EXISTING ROOF TOP ANTENNA, LIGHT SENSORS FROM ANY DAMAGES.
 - PROVIDE MEMBRANE SPLASH SHEET AT ALL DOWNSPOUTS DISCHARGE ON TO ROOF.
 - ALL WORKS MUST BE DONE AS PER ALL APPLICABLE CODES AND MANUFACTURE'S RECOMMENDATION.
- SCOPE OF WORKS:**
- REMOVE EXISTING ROOF FLASHING, TRIMS AND ROOF EDGES.
 - PROTECT AND TEMPORARY RELOCATE EXISTING ANTENNA AND LIGHT SENSORS FROM ANY DAMAGES.
 - REMOVE EXISTING FLASHING AT ALL ROOF CURBS, VENTS AND PENETRATIONS.
 - REMOVE EXISTING ROOFING MEMBRANE AND RIGID INSULATION TO EXISTING ROOF DECK. (CONCRETE DECK AND METAL DECK)
 - INSPECT EXISTING ROOF DECK FOR ANY SIGN OF DAMAGES. REPORT ANY DAMAGE TO ARCHITECT.
 - REPLACE DAMAGED METAL DECK WITH NEW COMPATIBLE IN SIZE AND PROFILE. (ALLOWANCE OF 600 SQ.FT FOR BIDDING)
 - REMOVE EXISTING SKYLIGHTS AND CURBS IN IT'S ENTIRETIES. REPLACE OPENING WITH MATCHING STEEL DECK. PROTECT DAMAGE TO EXISTING CEILING BELOW.
 - REMOVE OLD ABANDONED ROOF CURBS, INFILL SIMILAR TO SKYLIGHT.
 - ADDITIONAL ROOF DRAINS WHERE INDICATED SHALL BE PROVIDED AND INSTALLED BY MECHANICAL/PLUMBING CONTRACTOR.
 - REMOVE DEBRIS AND BROOM CLEAN EXISTING ROOF SURFACE.
 - FULLY ADHERE ALL LAYERS OF RIGID INSULATION TO EXISTING CONCRETE DECK.
 - MECHANICAL ATTACHED FIRST LAYER OF RIGID INSULATION TO EXISTING METAL DECK AND FULLY ADHERE FOLLOWING LAYERS.
 - INSTALL ADDITIONAL RIGID AND TAPERED INSULATION WITH CRICKET TO ROOF DRAIN AS PER MANUFACTURER RECOMMENDATION.
 - FULLY ADHERED 60 MIL. TPO MEMBRANE ROOFING SYSTEM.
 - REPLACE EXISTING PERIMETER WOOD BLOCKING WHERE DAMAGES.
 - CONSTRUCT NEW PERIMETER WOOD BLOCKING AS SHOWN.
 - EXTEND EXISTING ROOF TOP UNITS CURB IF REQUIRED, LAP NEW MEMBRANE OVER ROOF CURBS, REFLASH AND RESET ROOF TOP UNITS.
 - EXTEND EXISTING ROOF VENTS, VENT CURBS AND VENT PIPES TO MINIMUM CLEARANCE AS REQUIRED PER APPLICABLE CODES.
 - COORDINATE WITH HVAC CONTRACTOR FOR NEW MAKE UP AIR UNITS TO BE INSTALL ON ROOF.
 - INSTALL NEW FLASHING AT ALL WALL FLASHING, ROOF DRAIN, ROOF EDGES, ROOF VENT AND ALL ROOF PENETRATIONS.
 - VERIFY ALL EXISTING ROOF DRAIN COLLARS CORRECTLY CONNECT TO DRAIN LINES
 - CONTRACTOR SHALL MAINTAIN WATER TIGHTNESS DURING CONSTRUCTION AT ALL TIME.
 - INSTALL SERVICE WALKWAY TO AND AROUND ALL ROOF TOP UNITS FROM EXISTING ROOF HATCH.
 - REPLACE EXISTING UTILITY LINES SUPPORT WITH NEW TREATED WOOD BLOCKING SECURE IN PLACE.
 - CLEAN AND REMOVE ALL DEBRIS FROM ROOF SURFACE.
 - CONTACT ROOFING MEMBRANE MANUFACTURER FOR WARRANTY INSPECTION AND APPROVAL.
 - PROVIDE 20 YEAR NO DOLLAR AMOUNT LIMIT WARRANTY AS BASE BID
- ALTERNATE: #1** - PROVIDE ADDITIONAL RECOVERY BOARD AS PER MANUFACTURER APPROVAL TO INCLUDE 2" MINIMUM HAIL DAMAGE TO THE 20 YEARS NDL WARRANTY.

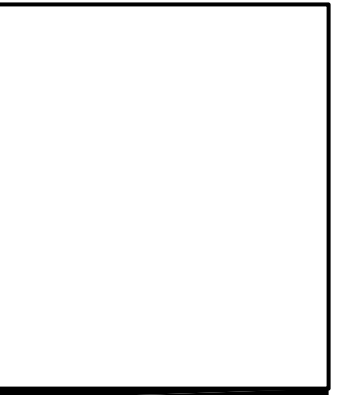
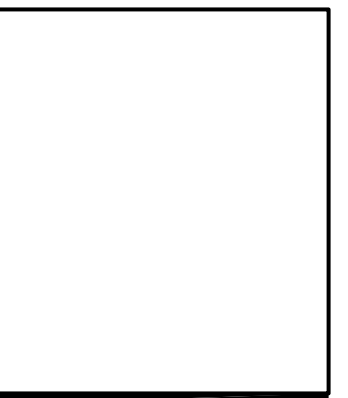
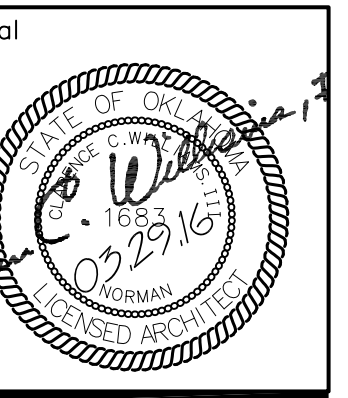
LEGEND:

	EXISTING ROOF TOP UNIT
	LARGE EXISTING BARREL VENT
	NEW ROOF CRICKET 1/8" PER FOOT
	NEW ROOF SLOPE 1/4" PER FOOT
	EXISTING LARGE VENT
	DRAIN PIPE ON FACE OF WALL
	EXISTING ROOF DRAIN
	NEW ADDED ROOF DRAIN (2-REQUIRED)
	EXISTING ROOF HATCH
	EXISTING ANTENNA
	EXISTING SKY LIGHTS TO BE REMOVED
	EXISTING LIGHT SENSOR
	NEW ROOF EDGE SCUPPER



A ROOF PLAN
SCALE: 1"=10'-0"

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Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCTAW AVE.
EL RENO, OKLAHOMA 73036

OVERALL PLANS AND PLAN NOTES

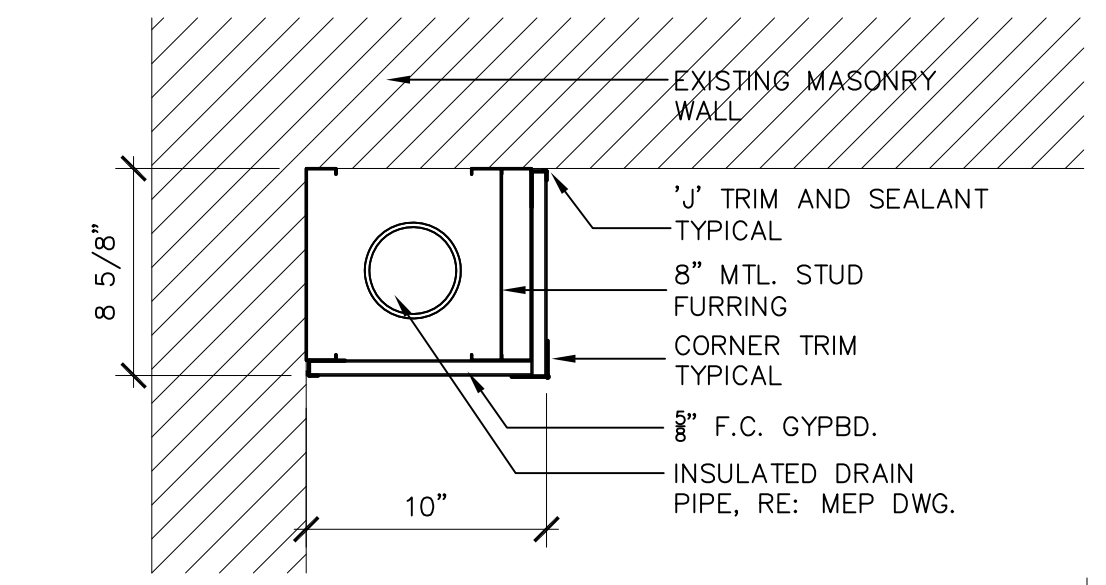
Revisions

Issue Date
03.29.16

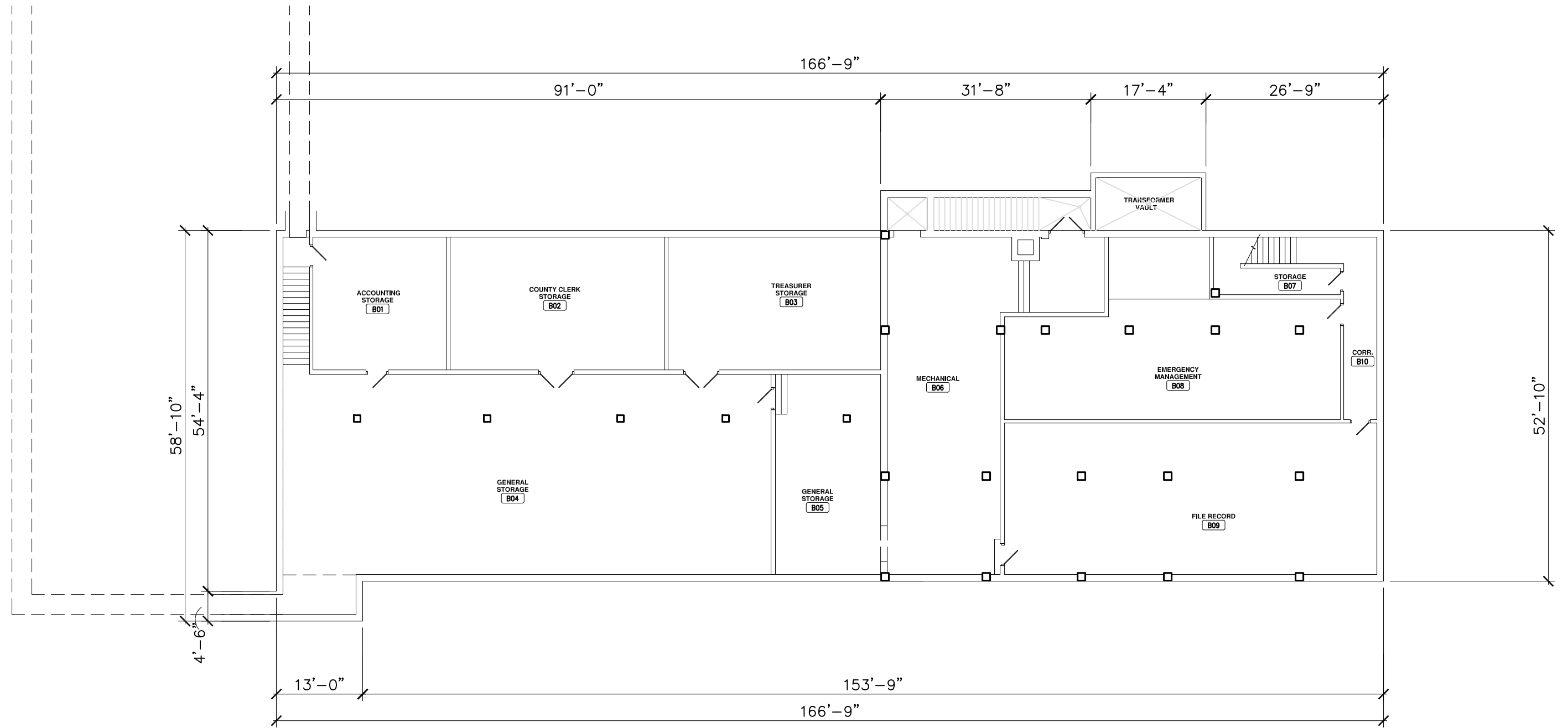
Project No.
N16001

Sheet No.
2A1

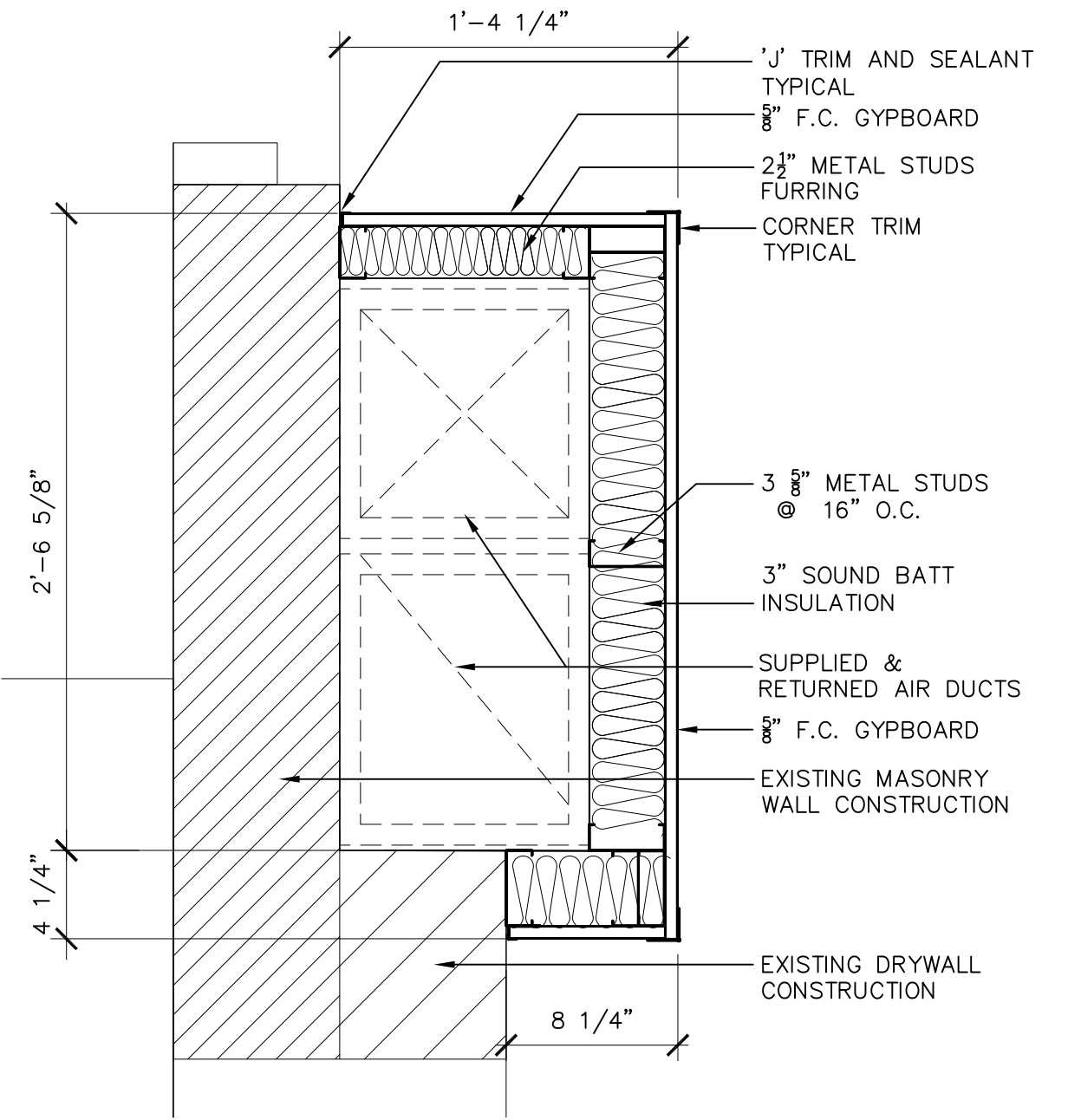
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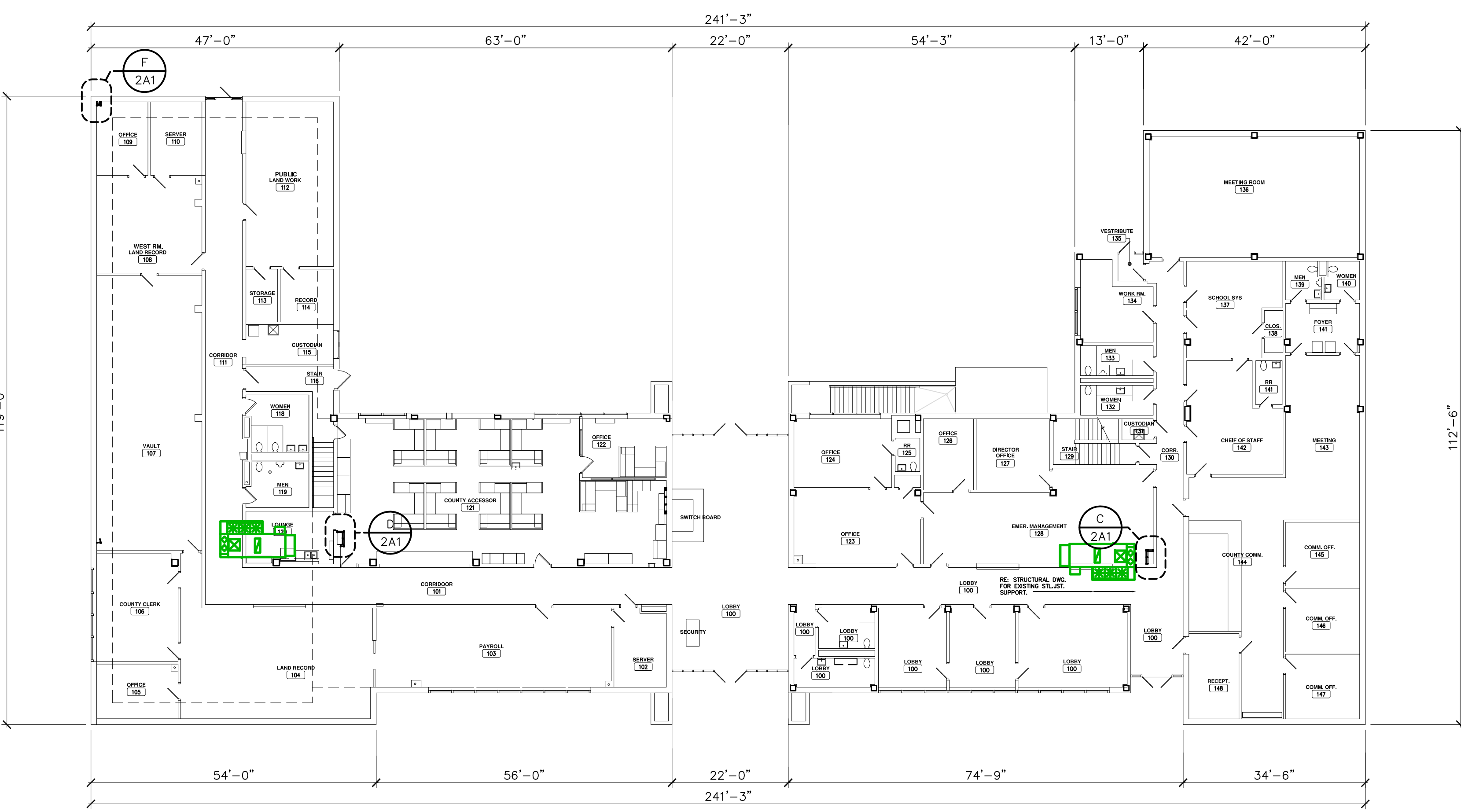
E PLAN DETAIL @ DUCT CHEST
SCALE: 1 1/2"=1'-0"



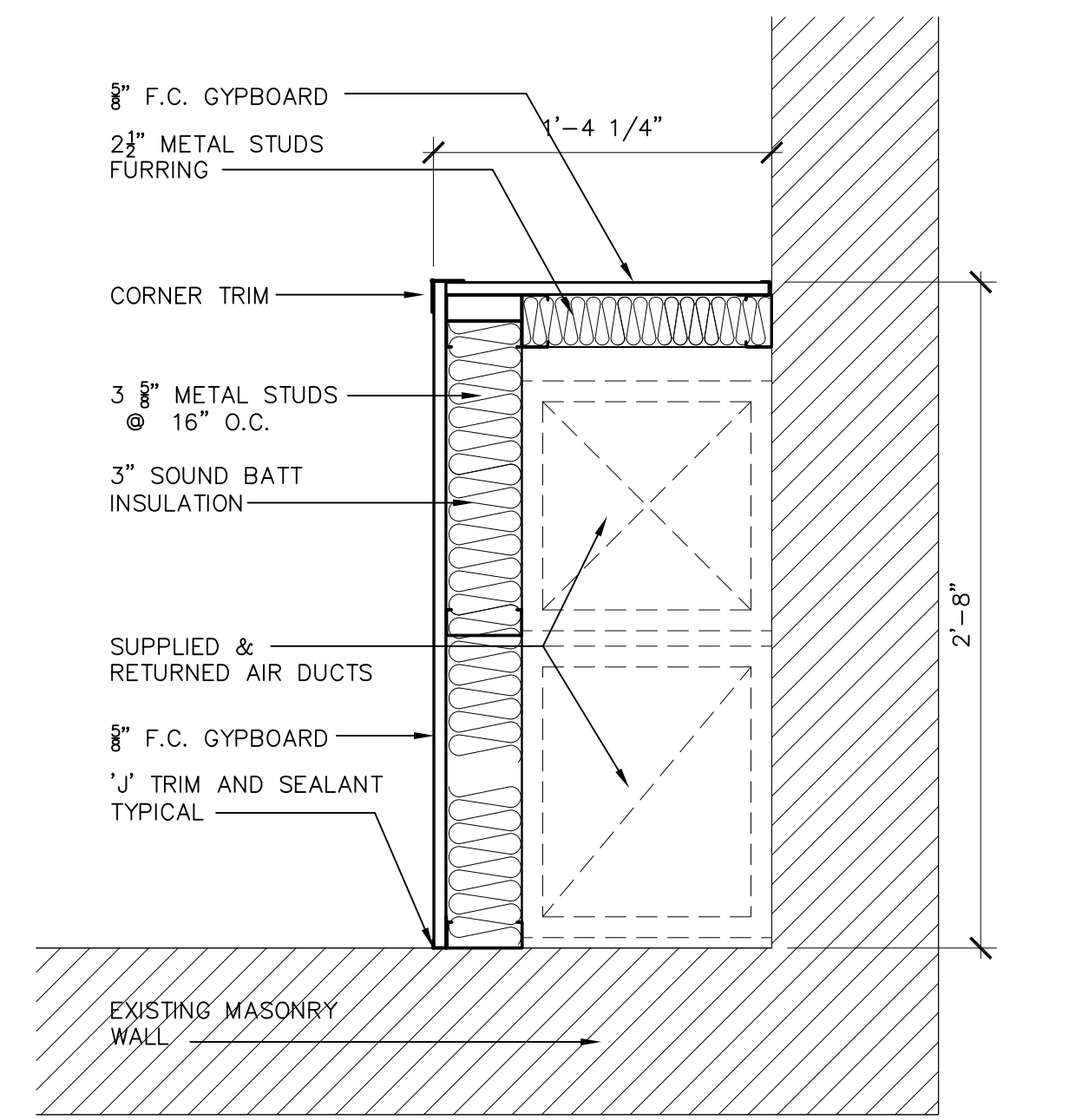
B OVER ALL BASEMENT PLAN
SCALE: 1/16"=1'-0"



D PLAN DETAIL @ DUCT CHEST
SCALE: 1 1/2"=1'-0"



A OVER ALL FLOOR PLAN
SCALE: 1/16"=1'-0"



C PLAN DETAIL @ DUCT CHEST
SCALE: 1 1/2"=1'-0"

- NOTES:
1. DRYWALL FURRING CHASES SHALL BE 10'-0" HIGH OR 6" ABOVE EXISTING CEILING.
 2. TEXTURE AND PAINT TO MATCH EXISTING WALL NEAR BY
 3. REMOVE AND REPLACE EXISTING CEILING GRIDS AND TILES WHERE DAMAGE TO MATCH EXISTING.

GENERAL NOTES

- 1.0 GENERAL**
- STEEL FRAMING IS NON-Self SUPPORTING AND REQUIRES INTERACTION WITH OTHER ELEMENTS NOT CLASSIFIED AS STRUCTURAL STEEL TO PROVIDE THE REQUIRED STABILITY AND RESISTANCE TO LATERAL AND GRAVITY FORCES. THE STEEL FRAMING SHALL BE TEMPORARILY BRACED UNTIL ALL STEEL BRACING AND ROOF DECKS HAVE BEEN INSTALLED AND ALL CONNECTIONS BETWEEN THESE ELEMENTS HAVE BEEN MADE. FOUNDATION WALLS SHALL HAVE TEMPORARY SHORING BEFORE BACKFILL IS PLACED AGAINST THEM. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL STRUCTURE IS PERMANENTLY BRACED.
 - THE SIZE AND LOCATION OF PENETRATIONS THROUGH THE STRUCTURE FOR MECHANICAL, ELECTRICAL AND PLUMBING WORK SHALL BE COORDINATED BY THE CONTRACTOR(S). PENETRATIONS SHALL BE SUBJECT TO APPROVAL BY THE ARCHITECT/ENGINEER.
 - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TEMPORARY SUPPORT AND STABILITY OF EXISTING STRUCTURE DURING ALL PHASES OF CONSTRUCTION.
 - EXISTING PORTION OF PLANS ARE FROM LIMITED ORIGINAL DESIGN DRAWINGS. ALL EXISTING MATERIAL, DIMENSIONS, ELEVATIONS, AND GENERAL CONDITIONS OF THE BUILDING SHALL BE VERIFIED BY THE CONTRACTOR BEFORE PURCHASE OF MATERIAL AND CONSTRUCTION. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF RECORD OF DISCREPANCIES BETWEEN PLANS AND FIELD CONDITIONS IMMEDIATELY.
 - CONTRACTOR IS RESPONSIBLE FOR STRUCTURAL INTEGRITY AND STABILITY OF EXISTING STRUCTURE DURING DEMOLITION AND NEW CONSTRUCTION. CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT STATE TO DESIGN TEMPORARY SHORING.
 - DURING WELDING OR ANY OTHER CONSTRUCTION ACTIVITY THAT GENERATES SPARKS OR INTENSE HEAT, THE CONTRACTOR SHALL PROVIDE ADEQUATE FIRE PROTECTION TO THE EXISTING STRUCTURE AND CONTENTS. AS A MINIMUM:
 - REMOVE COMBUSTIBLE MATERIALS FROM AREAS OF WELDING AND SPARKS.
 - PROVIDE FIRE PROOF BLANKETS AND SHIELDS TO CONTAIN SPARKS WHERE COMBUSTIBLE MATERIALS CANNOT BE REMOVED.
 - PROVIDE A FIRE SAFETY OBSERVER WITH A FIRE EXTINGUISHER ON BOTH THE ROOF AND BELOW THE ROOF DURING WELDING NEAR THE ROOF STRUCTURE.

- 2.0 STRUCTURAL STEEL**
- STRUCTURAL STEEL SHALL MEET THE FOLLOWING MINIMUM YIELD STRENGTHS AND SPECIFICATIONS:

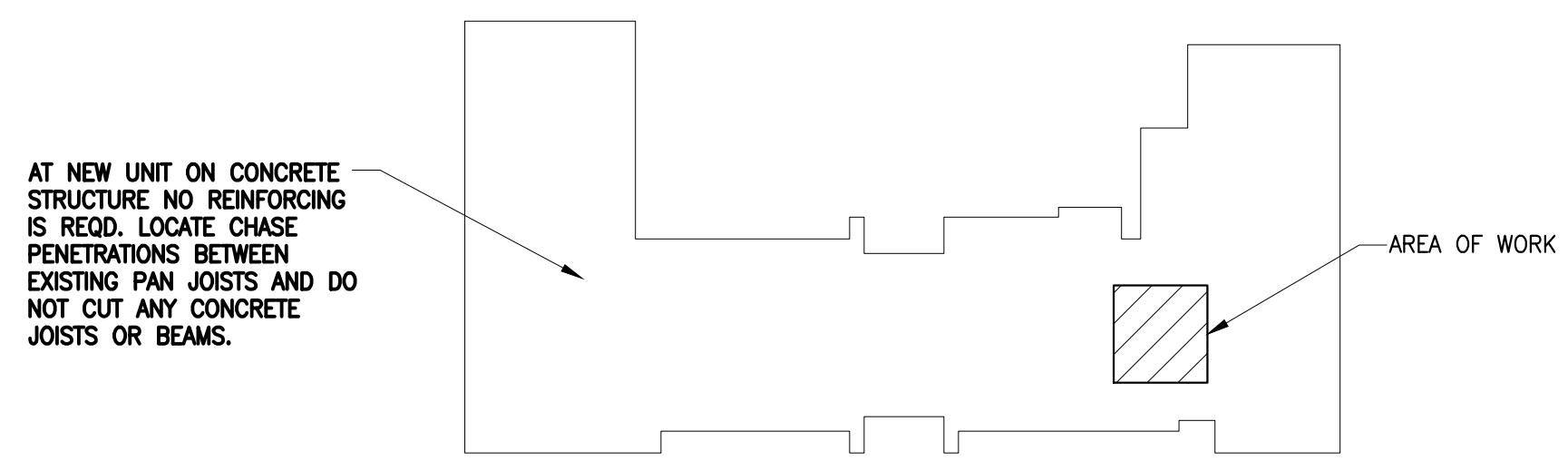
	YIELD	ASTM SPEC.
A. W, M, S, HP OR STRUCTURAL TEE SHAPES:	50 KSI	A572 OR A992
B. OTHER SHAPES, BARS AND PLATES:	36 KSI	A36
C. STRUCTURAL STEEL TUBING:	46 KSI	A500, GRADE B
D. STRUCTURAL STEEL PIPE:	35 KSI	A53, GRADE B OR A500, GRADE B
E. ANCHOR BOLTS:	36 KSI	A36
F. HEADED STUD ANCHORS:	50 KSI	A108, GRADES 1010-1020 INCLUSIVE
 - WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE, LATEST REVISION. ELECTRODES SHALL BE 70KSI LOW HYDROGEN SERIES (I.E. E7018).
 - PROVIDE L3X3X1/4 (LLV.) FIELD FABRICATED FRAME BETWEEN SUPPORTS AT OPENINGS IN ROOF GREATER THAN 10'X10'. U.N.O. THAT ARE NOT SHOWN ON PLAN.
 - THE FABRICATOR SHALL BE RESPONSIBLE FOR THE DESIGN AND ADEQUACY OF CONNECTIONS THAT ARE NOT DESIGNED OR FULLY DETAILED ON THE CONTRACT DOCUMENTS.

DESIGN PARAMETERS

1. CODE	2009 IBC
2. DEAD LOADS	
A. ROOF	MAIN BUILDING
-ROOFING, INSULATION, AND METAL DECK	3.1 PSF
-STEEL JOISTS	1.6 PSF
-MECH., ELEC., PLUMBING AND SPRINKLERS	6.5 PSF
-MISC.	2.2 PSF
-TOTAL DEAD LOAD	15.0 PSF
3. LIVE LOADS	
A. ROOF	20.0 PSF
4. SNOW LOAD	
A. GROUND SNOW LOAD (Pg)	10.0 PSF
B. IMPORTANCE FACTOR (Is)	1.1
C. ROOF SNOW LOAD (P)	11.0 PSF
D. RAIN ON SNOW LOAD	12.0 PSF

ABBREVIATIONS

A.B.	ANCHOR BOLTS	LT. WT.	LIGHT WEIGHT
A.F.F.	ABOVE FINISHED FLOOR	LL.	LIVE LOAD
AHU	AIR HANDLING UNIT	LLH	LONG LEG HORIZONTAL
ARCH.	ARCHITECT	LLV	LONG LEG VERTICAL
BAL.	BALANCE	LONG.	LONGITUDINAL
B.F.F.	BELOW FINISHED FLOOR	MFR.	MANUFACTURER
B.L.	BLOCK LINTEL	MAX.	MAXIMUM
B.O.S.	BOTTOM OF STEEL	M.C.J.	MASONRY CONTROL JOINT
BLDG.	BUILDING	MEZZ.	MEZZANINE
BRG.	BEARING	MIN.	MINIMUM
C.L.	CENTER LINE	MISC.	MISCELLANEOUS
CLR.	CLEAR	M.O.	MASONRY OPENING
COL.	COLUMN	MTL.	METAL
CONC.	CONCRETE	N.S.	NEAR SIDE
CMU	CONCRETE MASONRY UNIT	O.C.	ON CENTER
CONST. JT.	CONSTRUCTION JOINT	O.H.	OPPOSITE HAND
CONT.	CONTINUOUS	O.F.	OUTSIDE FACE
C.J.	CONTROL JOINT	P.A.F.S	POWDER ACTUATED FASTENERS
CONST.	DIAMETER	PL.	PLATE
DWGS.	DRAWINGS	PCF	POUNDS PER CUBIC FOOT
E.F.	EACH FACE	PLF	POUNDS PER LINEAR FOOT
E.W.	EACH WAY	PREP.	PREPARATION
ELECT.	ELECTRICAL	PSF	POUNDS PER SQUARE FOOT
ELEV.	ELEVATION	PSI	POUNDS PER SQUARE INCH
EQ.	EQUAL	REF.	REFER
EX.	EXISTING	REINF.	REINFORCING
EXP. JT.	EXPANSION JOINT	REQD.	REQUIRED
EXT.	EXTERIOR	RTU	ROOF TOP UNIT
F.S.	FAR SIDE	R.O.	ROUGH OPENING
F.E.	FINISH FLOOR ELEVATION	QTY.	QUANTITY
FIN. FLR.	FINISH FLOOR	SCHED.	SCHEDULE
FTG.	FOOTING	SIM.	SIMILAR
FDN.	FOUNDATION	SPECS.	SPECIFICATIONS
GA.	GUAGE (GAGE)	STD.	STANDARD
GALV.	GALVANIZED	T&B	TOP AND BOTTOM
H.S.A.	HEADED STUD ANCHOR	T.O.F.	TOP OF FOOTING
HORIZ.	HORIZONTAL	T.O.M.	TOP OF MASONRY
INFO.	INFORMATION	T.O.P.	TOP OF PEDESTAL
INSUL.	INSULATION	T.O.S.	TOP OF STEEL
INT.	INTERIOR	T.O.W.	TOP OF WALL
J.B.E.	JOIST BEARING ELEVATION	TRANS.	TRANSVERSE
K	KIPS	TYP.	TYPICAL
KSF	KIPS PER SQUARE FOOT	U.N.O.	UNLESS NOTED OTHERWISE
KSI	KIPS PER SQUARE INCH	UNREINF.	UNREINFORCED
KLF	KIPS PER LINEAR FOOT	VERT.	VERTICAL



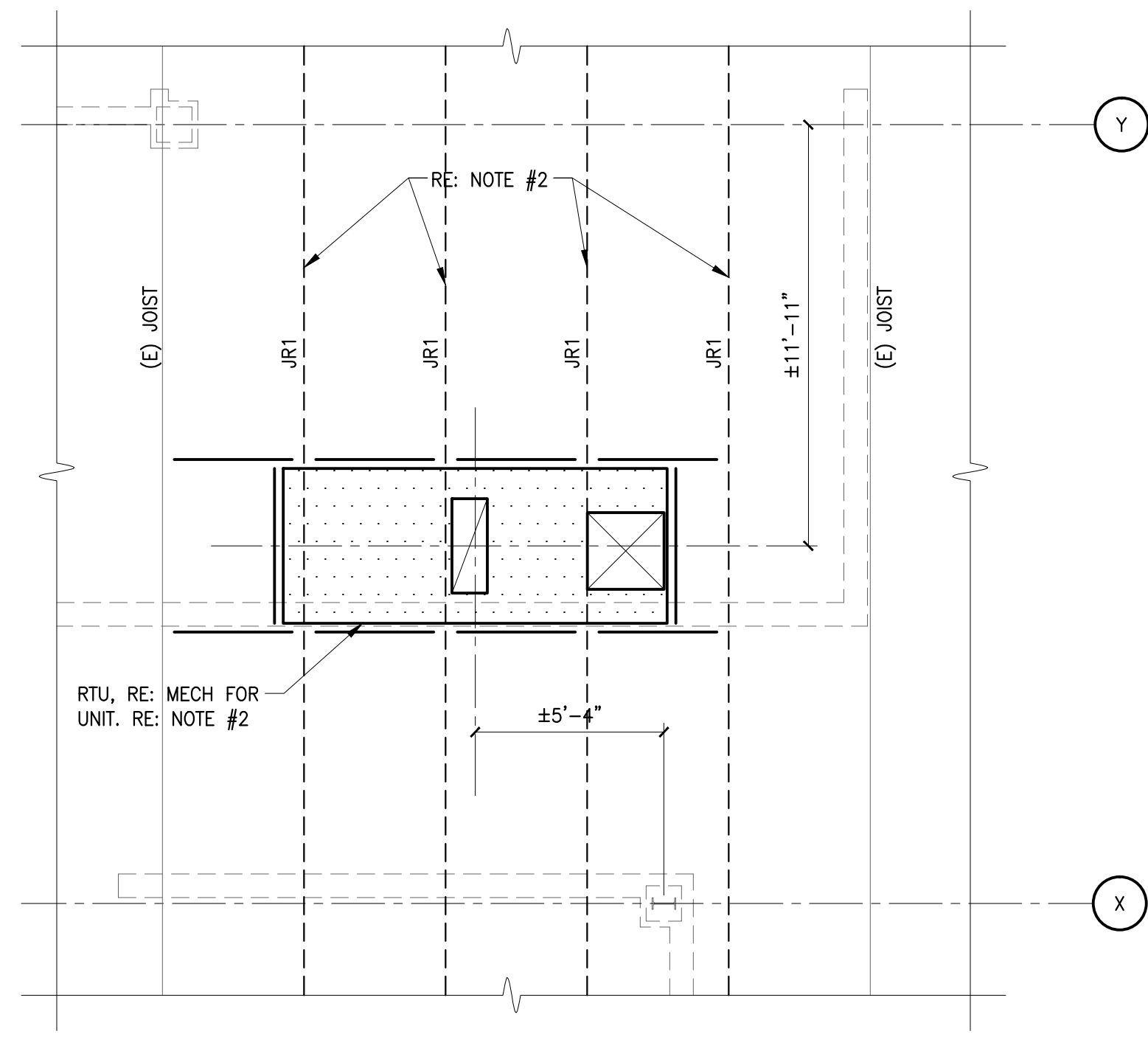
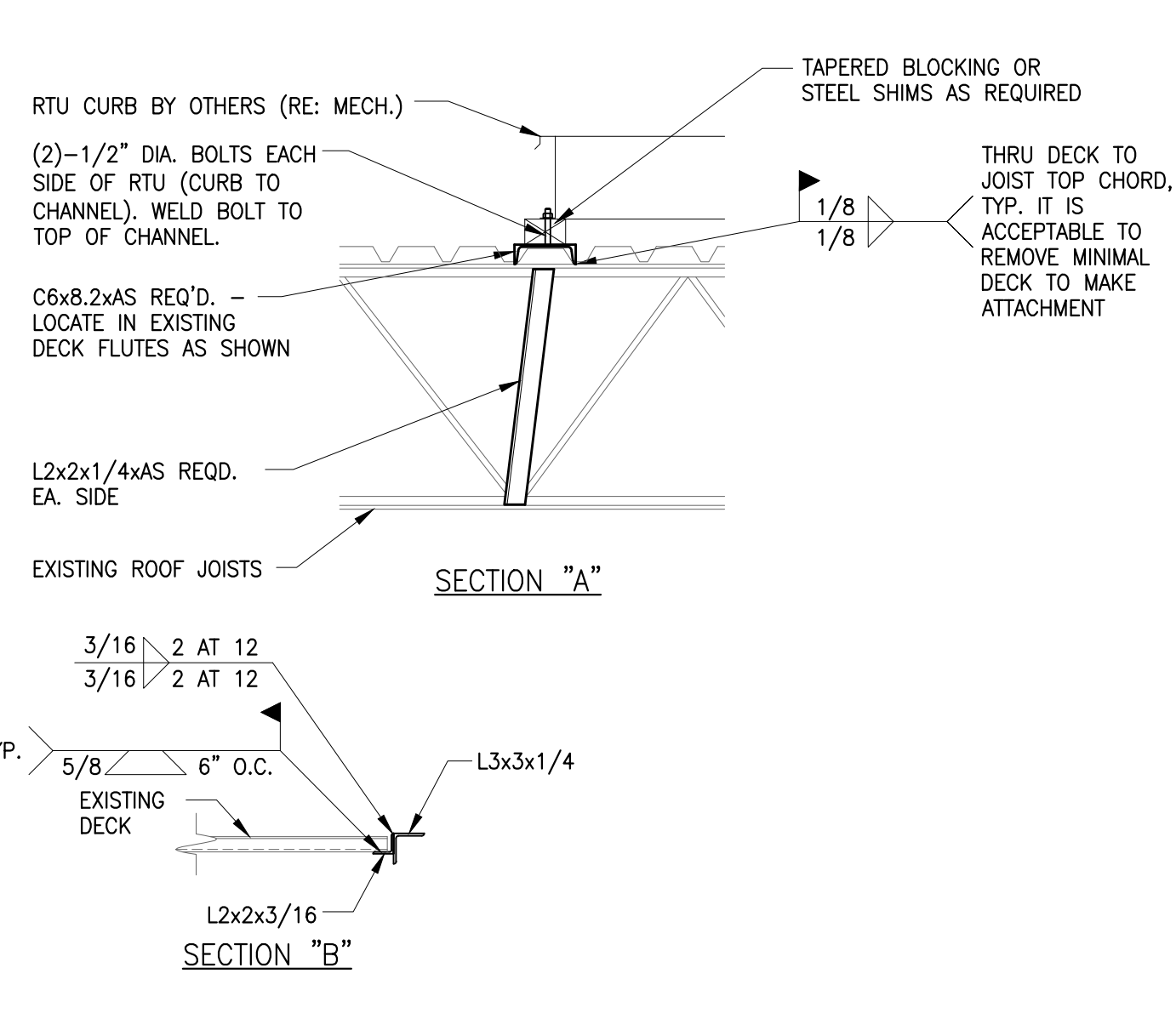
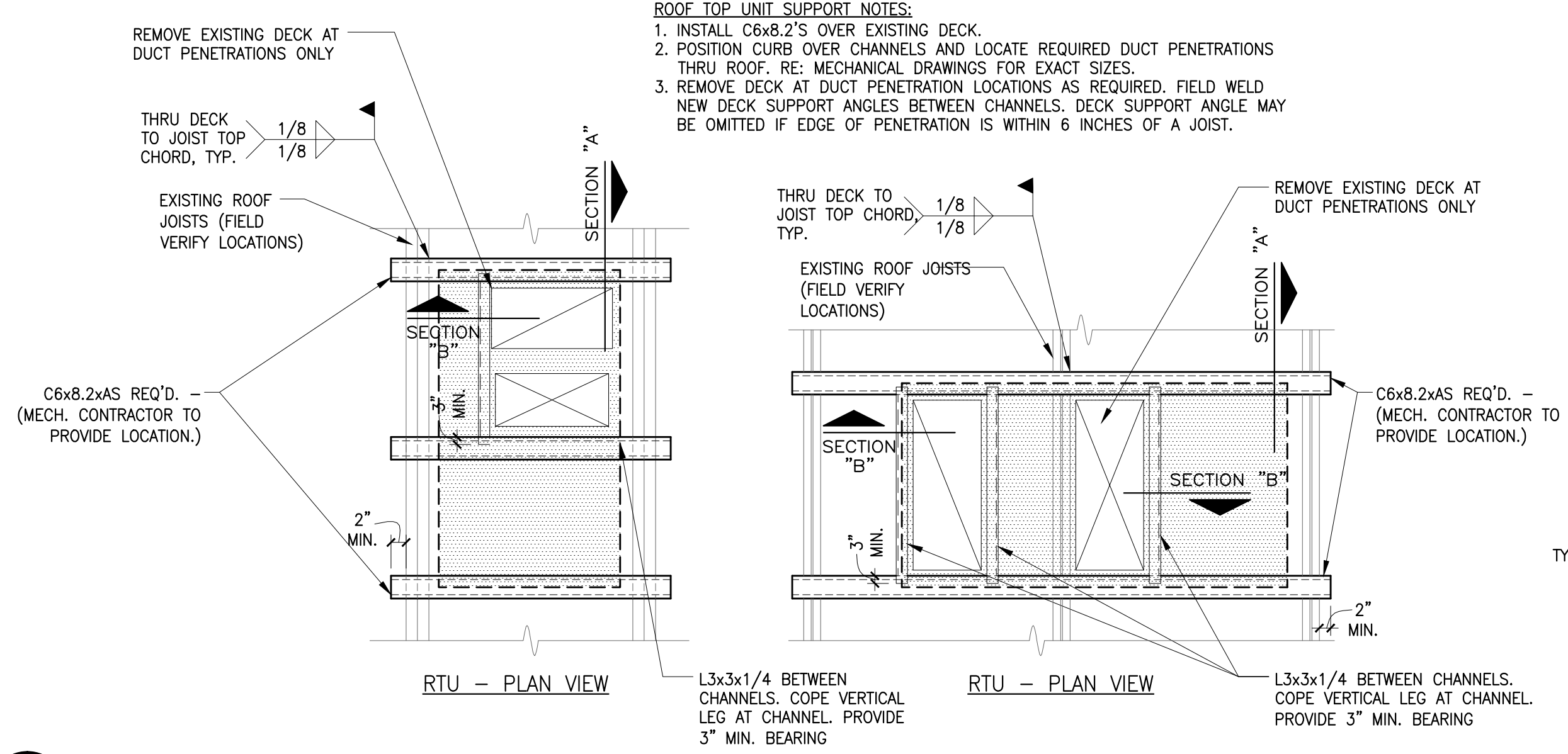
KEY PLAN

GENERAL SHEET NOTES

- ALL DIMENSIONS TO RTU'S ARE APPROXIMATE.
- REINFORCE EXISTING JOISTS AT ALL NEW RTU LOCATIONS PER 2/151 AND 1/152.

FIELD VERIFICATION NOTE

VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF STRUCTURAL ITEMS. EXISTING PORTION OF PLANS ARE FROM ORIGINAL DESIGN DRAWINGS, WHICH MAY OR MAY NOT REFLECT ACTUAL AS-BUILT DIMENSIONS. IF ANY DISCREPANCIES ARE FOUND BETWEEN WHAT IS SHOWN ON THE PLANS AND WHAT EXISTS IN THE FIELD, CONTACT THE ENGINEER OF RECORD TO DETERMINE WHAT SHOULD BE DONE TO MATCH EXISTING CONDITIONS AS REQUIRED. BEGINNING OF STEEL FABRICATION MEANS ACCEPTANCE OF EXISTING CONDITIONS. REF GENERAL NOTE 1.4 ON SHEET S1.



1 PARTIAL EXISTING ROOF FRAMING PLAN
1/4"=1'-0"

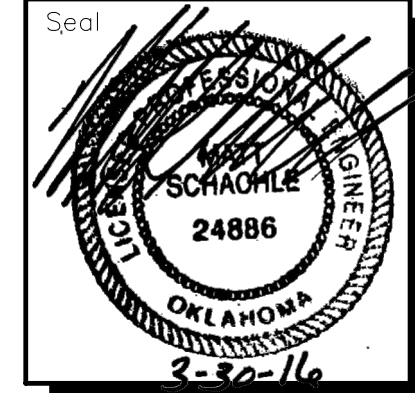
2 RTU FRAMING AT EXISTING ROOF
3/4"=1'-0"

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wallace

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PARTIAL EXISTING ROOF PLAN AND GENERAL NOTES

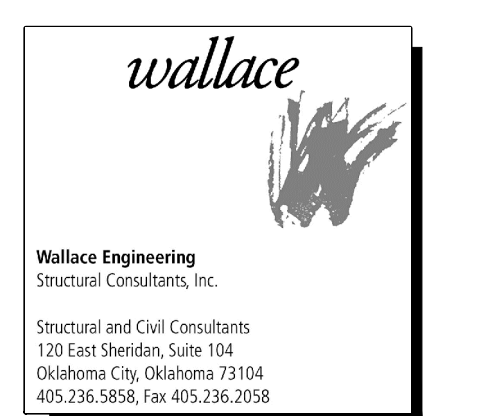
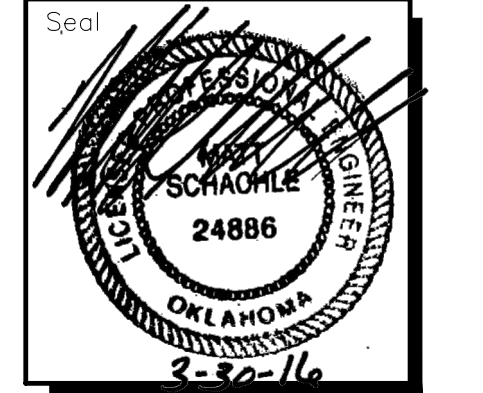
Revisions

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Project No.
N16001

Sheet No.
1S1

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JOIST INSPECTION NOTES
(REQUIRED AT ALL EXISTING JOISTS INDICATED TO BE REINFORCED)

A. INSPECTION OF EXISTING WEB MEMBER SHOP WELDS: (REFERENCE CONTRACTOR NOTES ON JOIST REINFORCEMENT DETAIL FOR WELD REPAIRS TO BE INCLUDED IN THE BID)

VISUAL INSPECTION ACCEPTANCE CRITERIA.....
(INSPECTION MAY BE PERFORMED WITH PAINT IN PLACE):

1. CRACK PROHIBITION: ANY CRACK SHALL BE UNACCEPTABLE, REGARDLESS OF SIZE OR LOCATION.
2. WELD/BASE-METAL FUSION: NO LACK OF FUSION BETWEEN ADJACENT LAYERS OF WELD METAL AND BETWEEN WELD METAL AND BASE METAL SHALL EXIST.
3. WELD CRATER: WELD CRATERS SHALL BE UNACCEPTABLE ALONG THE LENGTH OF THE WELD. EXISTING TACK WELDS THAT CONTAIN CRATERS DO NOT NEED TO BE ALTERED.
4. WELD POROSITY: THE SUM OF SURFACE (PIPING) POROSITY DIAMETERS SHALL NOT EXCEED 1/16 INCH IN ANY 1 INCH OF EFFECTIVE WELD LENGTH.
5. UNDERCUT: FOR MATERIAL LESS THAN 1 INCH THICK, UNDERCUT SHALL NOT EXCEED 1/32 INCH, WITH THE FOLLOWING EXCEPTION: UNDERCUT SHALL NOT EXCEED 1/16 INCH FOR ANY ACCUMULATED LENGTH UP TO 2 INCH IN ANY 12 INCH. FOR MATERIAL EQUAL TO OR GREATER THAN 1 INCH THICK, UNDERCUT SHALL NOT EXCEED 1/16 INCH FOR ANY LENGTH OF WELD.

B. WELD REPAIR: (REFERENCE CONTRACTOR NOTES ON JOIST REINFORCEMENT DETAIL FOR WELD REPAIRS TO BE INCLUDED IN THE BID)

1. REPAIRS TO WELDS THAT DO NOT MEET THE VISUAL INSPECTION ACCEPTANCE CRITERIA SHALL BE MADE PER ANSI/AWS D1.1 SECTION 5.26.

C. INSPECTION OF REPAIR WELDS:
(REPAIR FIELD WELDS SHALL BE VISUALLY INSPECTED AND SHALL BE ACCEPTABLE IF THE CRITERIA OUTLINED BELOW ARE SATISFIED):

VISUAL INSPECTION ACCEPTANCE CRITERIA.....
(REPAIR FIELD WELDS SHALL BE VISUALLY INSPECTED AND SHALL BE ACCEPTABLE IF THE CRITERIA OUTLINED BELOW ARE SATISFIED):

1. CRACK PROHIBITION: ANY CRACK SHALL BE UNACCEPTABLE, REGARDLESS OF SIZE OR LOCATION.
2. WELD/BASE-METAL FUSION: THOROUGH FUSION SHALL EXIST BETWEEN ADJACENT LAYERS OF WELD METAL AND BETWEEN WELD METAL AND BASE METAL.
3. WELD CRATER: ALL CRATERS SHALL BE FILLED TO PROVIDE THE SPECIFIED WELD SIZE, EXCEPT FOR THE ENDS OF INTERMITTENT FILLET WELDS OUTSIDE OF THEIR EFFECTIVE LENGTH.
4. WELD PROFILES: WELD PROFILES SHALL BE IN CONFORMANCE WITH ANSI/AWS D1.1 SECTION 5.24.
5. UNDERSIZED WELDS: THE SIZE OF A FILLET WELD IN ANY CONTINUOUS WELD MAY BE LESS THAN THE SPECIFIED NOMINAL SIZE (L) WITHOUT CORRECTION BY THE FOLLOWING AMOUNTS (U):

L. SPECIFIED NOMINAL WELD SIZE, IN.	U. ALLOWABLE DECREASE FROM L, IN.
≤ 3/16	≤ 1/16
1/4	≤ 3/32
≥ 5/16	≤ 1/8

IN ALL CASES, THE UNDERSIZE PORTION OF THE WELD SHALL NOT EXCEED 10% OF THE WELD LENGTH.
6. POROSITY: THE SUM OF SURFACE (PIPING) POROSITY DIAMETERS SHALL NOT EXCEED 1/16 INCH IN ANY 1 INCH OF DESIGN WELD LENGTH.
7. UNDERCUT: FOR MATERIAL LESS THAN 1 INCH THICK, UNDERCUT SHALL NOT EXCEED 1/32 INCH, WITH THE FOLLOWING EXCEPTION: UNDERCUT SHALL NOT EXCEED 1/16 INCH FOR ANY ACCUMULATED LENGTH UP TO 2 INCH IN ANY 12 INCH. FOR MATERIAL EQUAL TO OR GREATER THAN 1 INCH THICK, UNDERCUT SHALL NOT EXCEED 1/16 INCH FOR ANY LENGTH OF WELD.

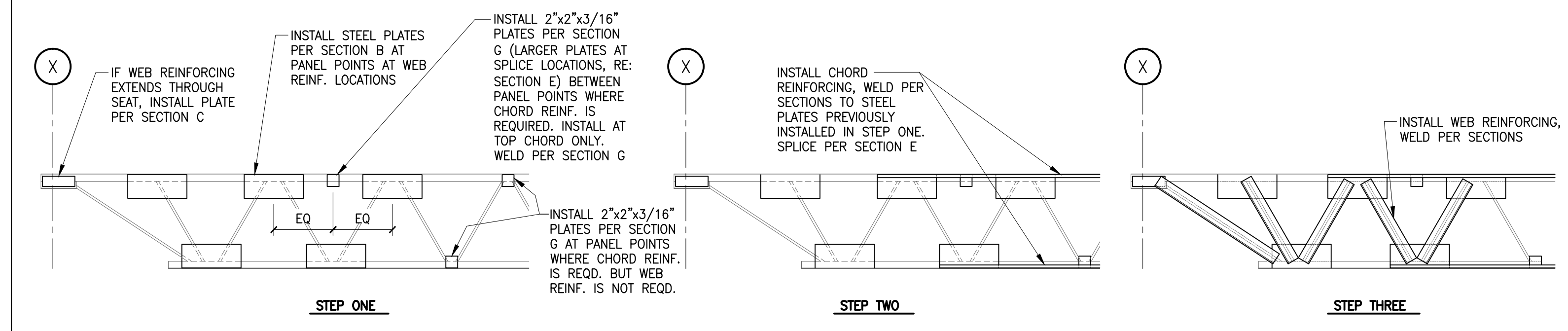
CONTRACTOR NOTES:

- A. RE: JOIST INSPECTION NOTES ON THIS SHEET FOR REQUIRED INSPECTIONS TO BE PERFORMED PRIOR TO PROCEEDING WITH JOIST MODIFICATIONS. RE: JOIST REINFORCING PROCEDURE ON THIS SHEET.
- B. ALL WELDING ON EXISTING JOISTS SHALL BE PERFORMED USING EITHER THE GMAW OR FCAW PROCESS ONLY, SMAW OR "STICK" WELDING IS NOT ALLOWED. WIRE FOR FCAW PROCESS SHALL BE E71T-B AND WIRE FOR GMAW PROCESS SHALL BE E70S-6 (-GS WIRE IS NOT ALLOWED). WELDS SHALL BE PERFORMED BY OPERATORS CERTIFIED FOR THE PROCESS AND POSITIONS USED. THE TESTING AGENCY'S CERTIFIED WELDING INSPECTOR SHALL BE QUALIFIED AND EXPERIENCED WITH INSPECTION OF WELDS PERFORMED BY THESE PROCESSES. PRIOR TO COMMENCEMENT OF JOIST REINFORCING, CONTRACTOR SHALL PREPARE A MOCK UP FOR INSPECTION AND APPROVAL BY THE CERTIFIED WELDING INSPECTOR BY JOINING TWO 5"x5"x1/8" PLATES WITH A 1/8" FILLET WELD AND ATTACHING A 5/8" DIA x 5" LONG ROD TO ONE PLATE WITH 2" LONG FLARE BEVEL.
- C. IF EXISTING JOIST BRIDGING INTERFERES WITH INSTALLATION OF REINFORCEMENT, REMOVE BRIDGING AND REPLACE IMMEDIATELY UPON COMPLETION OF REINFORCEMENT INSTALLATION. IF BRIDGING TABS FOR BOLTED BRIDGING INTERFERE WITH INSTALLATION OF REINFORCEMENT, REMOVE TABS AND REPLACE IMMEDIATELY UPON COMPLETION OF REINFORCEMENT INSTALLATION. NEW CONNECTIONS SHALL MATCH EXISTING.
- D. STEEL ERECTOR SHALL FIELD CUT REINFORCEMENT TO FIT FROM STOCK LENGTHS. WEB REIN. SHALL BE INSTALLED AS ONE PIECE AND NOT SPLICED AT ANY POINT ALONG THE LENGTH. REINFORCEMENT SHALL MEET THE STRUCTURAL STEEL REQUIREMENTS IN THE GENERAL NOTES ON SHEET 1S1.
- E. CONTRACTOR TO INCLUDE IN BID, AN ADDITIONAL 18" TOTAL LENGTH OF 3/16" FILLET WELDS AT EACH JOIST TO BE REINFORCED FOR REQUIRED REPAIRS THAT RESULT FROM THE JOIST INSPECTIONS. THESE REPAIRS MAY INCLUDE, BUT ARE NOT LIMITED TO WEB TO CHORD WELDS, BRIDGING WELDS, JOIST TO SUPPORT WELDS, OR ANY OTHER REPAIR WELDS REQUIRED BASED ON THE EXISTING JOIST INSPECTIONS.
- F. WHERE REQUIRED AREA OF WEB REINFORCEMENT EXTENDS THROUGH THE JOIST SEAT, AND THE JOIST SEAT BEARS WITHIN AN EXISTING WALL, REMOVE CMU AND GROUT AS REQUIRED FOR INSTALLATION OF REINFORCEMENT. ONCE THE REINFORCEMENT HAS BEEN INSTALLED AND INSPECTED, REPLACE/REPAIR THE CMU AND GROUT TO MATCH EXISTING CONDITION PRIOR TO REMOVAL.
- G. REMOVE ALL PAINT AND DEBRIS FROM EXISTING JOIST AT LOCATIONS OF NEW WELDS FOR JOIST REINFORCING PRIOR TO INSTALLATION OF JOIST REINFORCEMENT.
- H. ALL JOIST REINFORCEMENT SHALL BE INSTALLED AND INSPECTED BEFORE APPLYING NEW LOADS (I.E. RTU'S, BULKHEADS, FANS AND OTHER ROOF SUPPORTED ITEMS).
- I. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF EXISTING BUILDING ELEMENTS THAT PREVENT ACCESS TO INSTALL JOIST REINFORCEMENT, INCLUDING SUSPENDED CEILINGS, DUCTWORK, RTU PLENUMS, LARGE PIPING, ETC.
- J. PRIOR TO INSTALLATION OF JOIST REINFORCEMENT, CONTRACTOR SHALL REMOVE ALL LIVE LOADS FROM JOISTS TO BE REINFORCED. THIS INCLUDES BUT IS NOT LIMITED TO PONDED WATER, ICE, SNOW (REMOVE SNOW TO EXPOSE ROOFING MATERIAL), STAGED CONSTRUCTION MATERIALS/EQUIPMENT, ETC.
- K. PRIOR TO INSTALLATION OF JOIST REINFORCEMENT, CONTRACTOR SHALL SURVEY EXISTING JOISTS TO BE REINFORCED FOR EXISTING DAMAGE OR REPAIRS. ANY JOIST DAMAGE FOUND SHALL BE CORRECTED BEFORE INSTALLATION OF REINFORCEMENT. CONTACT ENGINEER OF RECORD FOR REQUIRED JOIST REPAIRS AT EXISTING DAMAGE AND/OR FOR DIRECTION REGARDING NEW REINFORCEMENT AT EXISTING REPAIRS.

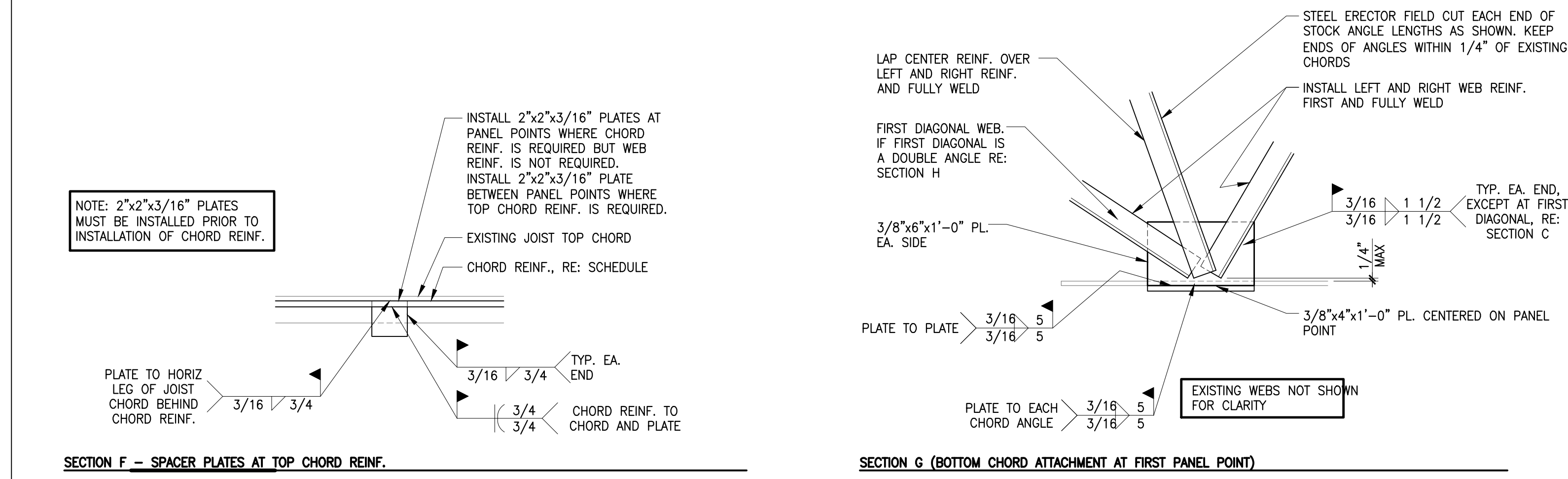
JOIST REINFORCEMENT SCHEDULE

JOIST REINFORCEMENT DESIGNATION, K-SERIES (RE: PLAN SHEETS)	TOP CHORD REIN.	BOT CHORD REIN.	CHORD REIN.			WEB REIN.	WEB REIN.			SPAN	GRID "X"	GRID "Y"	NOTES
			"a"	"b"	"c"		"d"	"e"	"f"				
JR1	1/2" DIA. ROD	3/8"x4" PL.	8'-0"	7'-0"	7'-6"	L1x1x1/8	8'-0"	4'-0"	12'-6"	22'-6"	--	--	1, 2, 3

NOTES:
1. DIMENSION "B" IS THE MINIMUM REQUIRED LENGTH OF TOP AND BOTTOM CHORD REINFORCEMENT. FIELD VERIFY PANEL POINT LOCATIONS AND EXTEND TOP AND BOTTOM CHORD REIN. TO OUTER EDGE OF STEEL PLATE AT PANEL POINT.
2. RE: PLAN FOR NEW EQUIPMENT, RE: 2-1S1 FOR ADDITIONAL REINFORCEMENT. DO NOT SET EQUIPMENT UNTIL ALL REIN. IS IN PLACE AND INSPECTED.

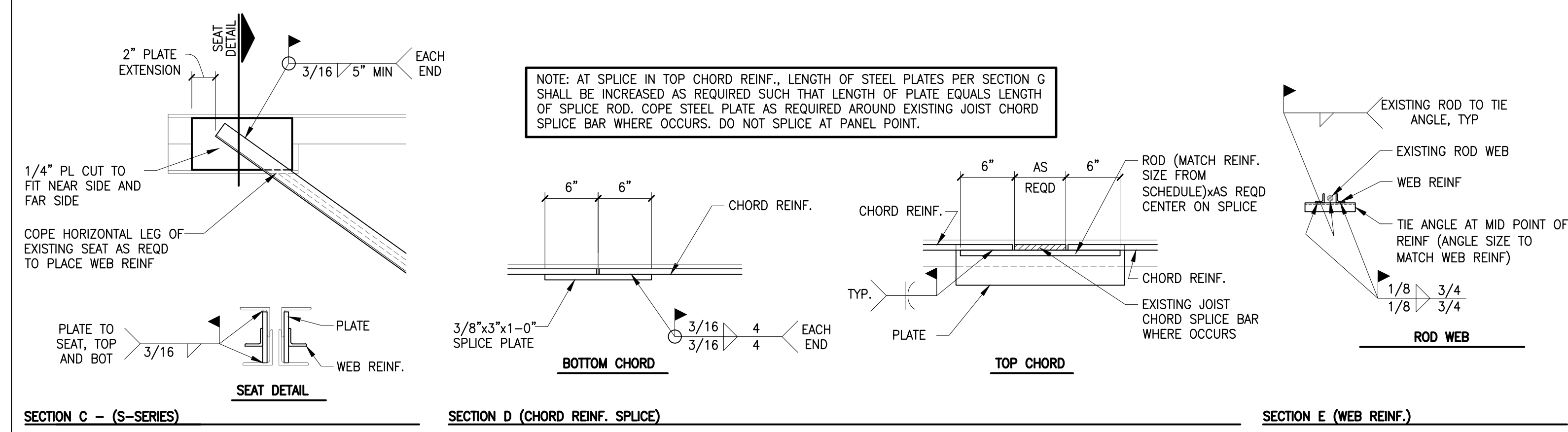


JOIST REINFORCEMENT PROCEDURE



SECTION F - SPACER PLATES AT TOP CHORD REIN.

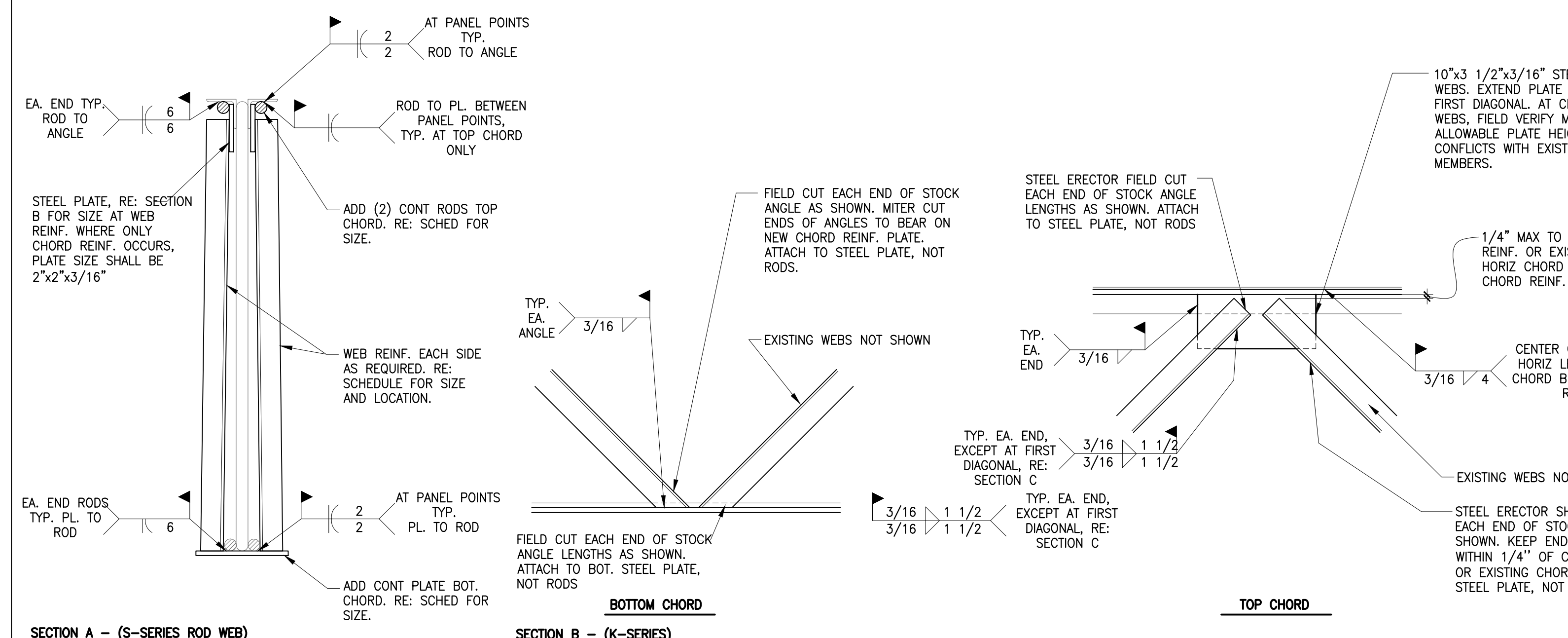
SECTION G (BOTTOM CHORD ATTACHMENT AT FIRST PANEL POINT)



SECTION C - (S-SERIES)

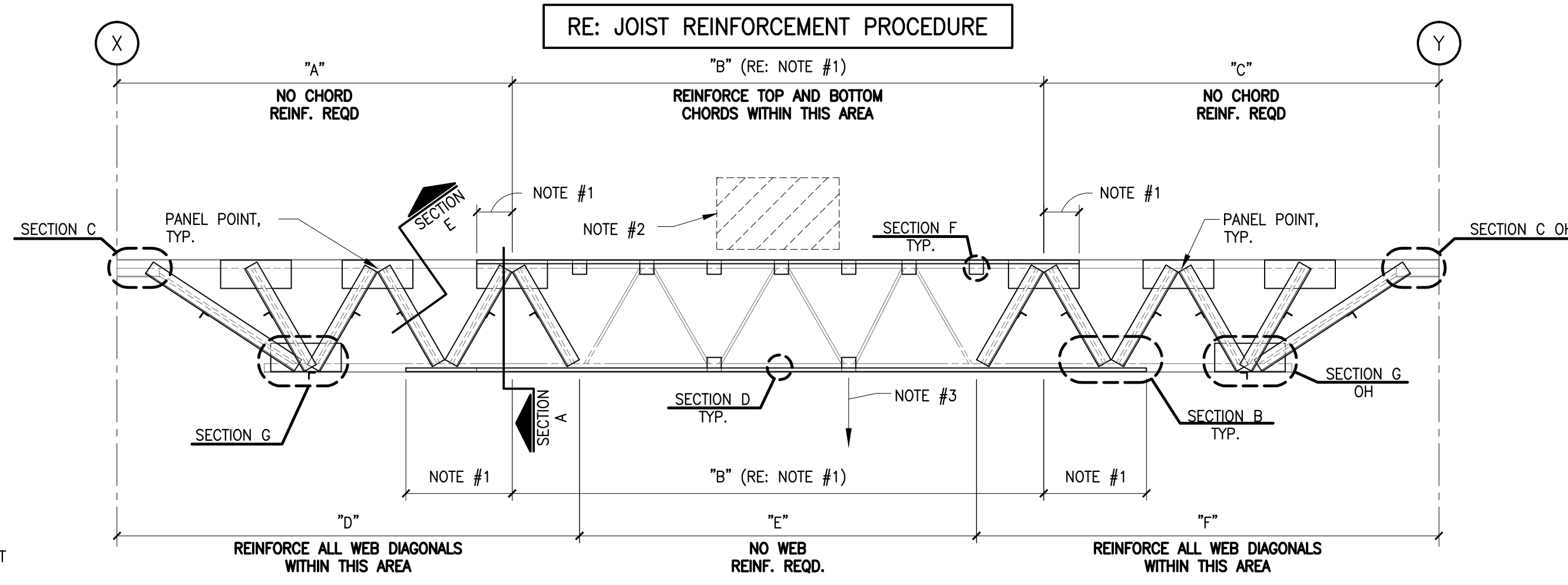
SECTION D (CHORD REIN. SPLICE)

SECTION E (WEB REIN.)



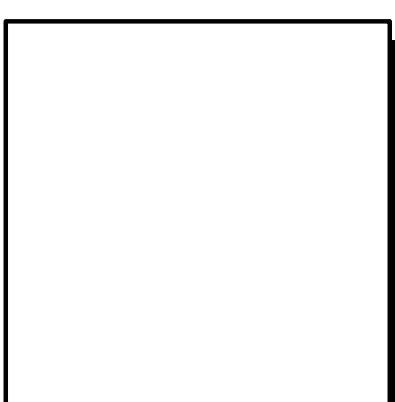
SECTION A - (S-SERIES ROD WEB)

SECTION B - (K-SERIES)



JOIST ELEVATION WITH ROD WEBS

(NOTE: DIAGRAM IS GENERIC AND ACTUAL NUMBER OF WEBS TO BE REINFORCED IS NOT ACCURATELY SHOWN. ACTUAL NUMBER OF WEB MEMBERS TO BE REINFORCED SHALL BE DETERMINED BASED ON THE LENGTHS SHOWN IN THE JOIST REINFORCEMENT SCHEDULE)



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LEGEND &
 ABBREVIATIONS

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Issue Date
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Project No.
N16001
Sheet No.

OMO

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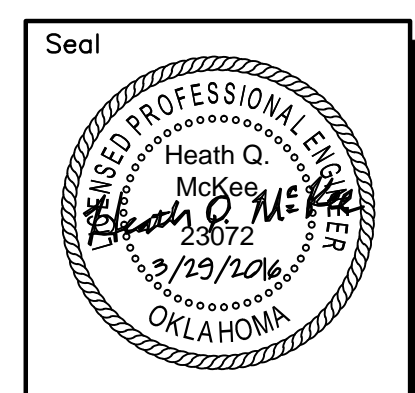
MECHANICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PIPE NOTATION STORM DRAIN LINE (UNDER SLAB)		VALVES CONTROL VALVE		RECTANGULAR DUCT ELBOWS UP & DOWN SUPPLY, OUTDOOR & MAKEUP AIR UP
	ROOF DRAIN LINE (ABOVE CEILING)		STRAINER W/ DRAIN		SUPPLY, OUTDOOR & MAKEUP AIR DOWN
	OVERFLOW ROOF DRAIN LINE (ABOVE CEILING)		STEAM TRAP		RETURN UP
	SUBSURFACE DRAIN LINE		AIR VENT		RETURN DOWN
	FIRE LINE		AUTOMATIC AIR VENT		EXHAUST UP, RELIEF
	NATURAL GAS LINE		PIPING EQUIPMENT (SCHEMATIC) PRESSURE GAUGE		EXHAUST DOWN, RELIEF
	WATER LINE		PRESSURE GAUGE W/ GAGE COCK		ROUND DUCT ELBOWS UP & DOWN SUPPLY, OUTDOOR & MAKEUP AIR UP
	SANITARY WASTE LINE		TEMPERATURE GAUGE		SUPPLY, OUTDOOR & MAKEUP AIR DOWN
	SANITARY SEWER LINE		REDUCER		RETURN UP
	VENT LINE		AUTOFLOW		RETURN DOWN
	ACID WASTE		FLEX CONNECTOR		EXHAUST UP, RELIEF
	ACID VENT		PUMP		EXHAUST DOWN, RELIEF
	DOMESTIC COLD WATER LINE		DRAINS FLOOR SINK		OVAL DUCT ELBOWS UP & DOWN SUPPLY, OUTDOOR & MAKEUP AIR UP
	DOMESTIC HOT WATER LINE		FLOOR DRAIN		SUPPLY, OUTDOOR & MAKEUP AIR DOWN
	DOMESTIC HOT WATER RETURN LINE		RECTANGULAR DUCT ELBOWS MITERED 45° - 90°		RETURN UP
	CHILLED DRINKING WATER SUPPLY		REDUCING 90°		RETURN DOWN
	CHILLED DRINKING WATER RETURN		SMOOTH RADIUS 45° - 90°		EXHAUST UP, RELIEF
	HEATING WATER SUPPLY LINE		ROUND DUCT ELBOWS 5 GORE 45° - 90°		EXHAUST DOWN, RELIEF
	HEATING WATER RETURN LINE		7 GORE 45° - 90°		DUCT FITTINGS CONICAL LATERAL TRANSITION WYE (ROUND)
	CHILLED WATER SUPPLY		MITERED 45° - 90°		TRANSITION (ROUND TO ROUND OR RECTANGULAR TO RECTANGULAR)
	CHILLED WATER RETURN		SMOOTH 45° - 90°		TRANSITION (ROUND TO RECTANGULAR)
	CONDENSER WATER SUPPLY		5 GORE 45° - 90°		RISE
	CONDENSER WATER RETURN		7 GORE 45° - 90°		DROP
	STEAM LINE (WITH PRESSURE INDICATED)		MITERED 45° - 90°		CAP
	STEAM CONDENSATE RETURN		SMOOTH 45° - 90°		90° VANED ELBOW (RECTANGULAR DUCT)
	STEAM VENT		5 GORE 45° - 90°		ROUND TAP ON ROUND DUCT
	REFRIGERANT SUCTION		7 GORE 45° - 90°		BRANCH ON ROUND DUCT
	REFRIGERANT RETURN		MITERED 45° - 90°		TAP ON RECTANGULAR DUCT
	NITROGEN		SMOOTH 45° - 90°		BRANCH ON RECTANGULAR DUCT
	OXYGEN		5 GORE 45° - 90°		ROUND DUCT TAP ON RECTANGULAR DUCT
	VACUUM		7 GORE 45° - 90°		OFFSET (RECTANGULAR)
	MEDICAL AIR		MITERED 45° - 90°		
	NITROUS OXIDE		SMOOTH 45° - 90°		
	COMPRESSED AIR		5 GORE 45° - 90°		
	CONDENSATE DRAIN LINE		7 GORE 45° - 90°		
	PIPE FITTINGS 90° ELBOW- PLAN 45° ELBOW- PLAN ELBOW UP ELBOW DOWN TEE- PLAN TEE- UP TEE- DOWN CROSS BRANCH- UP BRANCH- DOWN CAP UNION		VALVES BUTTERFLY VALVE BALL VALVE GATE VALVE STRAINER THREE WAY VALVE CHECK VALVE GAS COCK PLUG TEE PRESSURE RELIEF VALVE PRESSURE REDUCING VALVE		GRILLES & DIFFUSERS & ACCESSORIES SUPPLY DIFFUSER CEILING RETURN GRILLE CEILING ROUND DIFFUSER OR GRILLE LINEAR DIFFUSER WALL DIFFUSER OR GRILLE SUPPLY ARROW RETURN ARROW FIRE DAMPER (RECTANGULAR DUCT) FIRE DAMPER (ROUND DUCT) DAMPER THERMOSTAT HUMIDISTAT SENSOR FIRE DAMPER (RECTANGULAR DUCT)
				AIR DEVICE IDENTIFICATION 	

NOTE: ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A.F.F.	ABOVE FINISHED FLOOR	HX	HEAT EXCHANGER
AHU	AIR HANDLING UNIT	L.A.T.	LEAVING AIR TEMPERATURE
BHP	BRAKE HORSEPOWER	LBS/HR	POUNDS PER HOUR
C	CONDENSATE	L.L.	LOW LEVEL
CFM	CUBIC FEET PER MINUTE	L.W.T.	LEAVING WATER TEMPERATURE
CHWP	CHILLED WATER PUMP	MIN.	MINIMUM
CHR	CHILLED WATER RETURN	MW	MAKEUP WATER
CHS	CHILLED WATER SUPPLY	N.C.	NOISE CRITERIA
C.O.	CLEANOUT	NC	NORMALLY CLOSED
CP	CONDENSATE PUMP	NO	NORMALLY OPEN
CR	CONDENSER WATER RETURN	NO.	NUMBER
CS	CONDENSER WATER SUPPLY	NTS	NOT TO SCALE
CU	CONDENSING UNIT	O.A.	OUTSIDE AIR
CV	CONTROL VALVE	P.D.	PRESSURE DROP
CW	COLD WATER	PH	PHASE
CWP	CONDENSER WATER PUMP	PLS	PLACES
CWR	CONDENSER WATER RETURN	PRV	PRESSURE REDUCING VALVE
CWS	CONDENSER WATER SUPPLY	RA	RETURN AIR
D	DRAIN	REF	REFERENCE
DW	DOMESTIC WATER	RF	RELIEF FAN
E.A.T.	ENTERING AIR TEMPERATURE	RD	ROOF DRAIN
EF	EXHAUST FAN	RPM	REVOLUTIONS PER MINUTE
ELEV.	ELEVATION	S	STEAM
E.S.	EVEN SPLIT	SA	SUPPLY AIR
E.S.P.	EXTERNAL STATIC PRESSURE	SCH.	SCHEDULE
EVAP	EVAPORATOR	SCW	SOFT COLD WATER
E.W.T.	ENTERING WATER TEMPERATURE	S.F.	SQUARE FEET
EXP.	EXPANSION	SG	STEAM GENERATOR
EXTG	EXISTING	STD	STANDARD
FCU	FAN COIL UNIT	SP	STATIC PRESSURE
FD	FLOOR DRAIN	SV	STEAM VENT
F.F.	FINISHED FLOOR	TB	TERMINAL BOX
E	FLOW LINE	T.S.P.	TOTAL STATIC PRESSURE
FLA	FULL LOAD AMPS	TYP	TYPICAL
F.S.	FLOOR SINK	UH	UNIT HEATER
GAL.	GALLON	UV	UNIT VENTILATOR
GPM	GALLONS PER MINUTE	VAV	VARIABLE AIR VOLUME
HC	HEATING COIL	VIR	VENT THRU ROOF
HD	HEAD	WH	WATER HEATER
HP	HORSEPOWER	WS	WATER SOFTENER
HW	HOT WATER		ROUND DUCT
HHWP	HEATING HOT WATER PUMP		OVAL DUCT
HWS	HOT WATER SUPPLY		TEMPERATURE DIFFERENCE
HWR	HOT WATER RETURN		CONNECT TO EXISTING

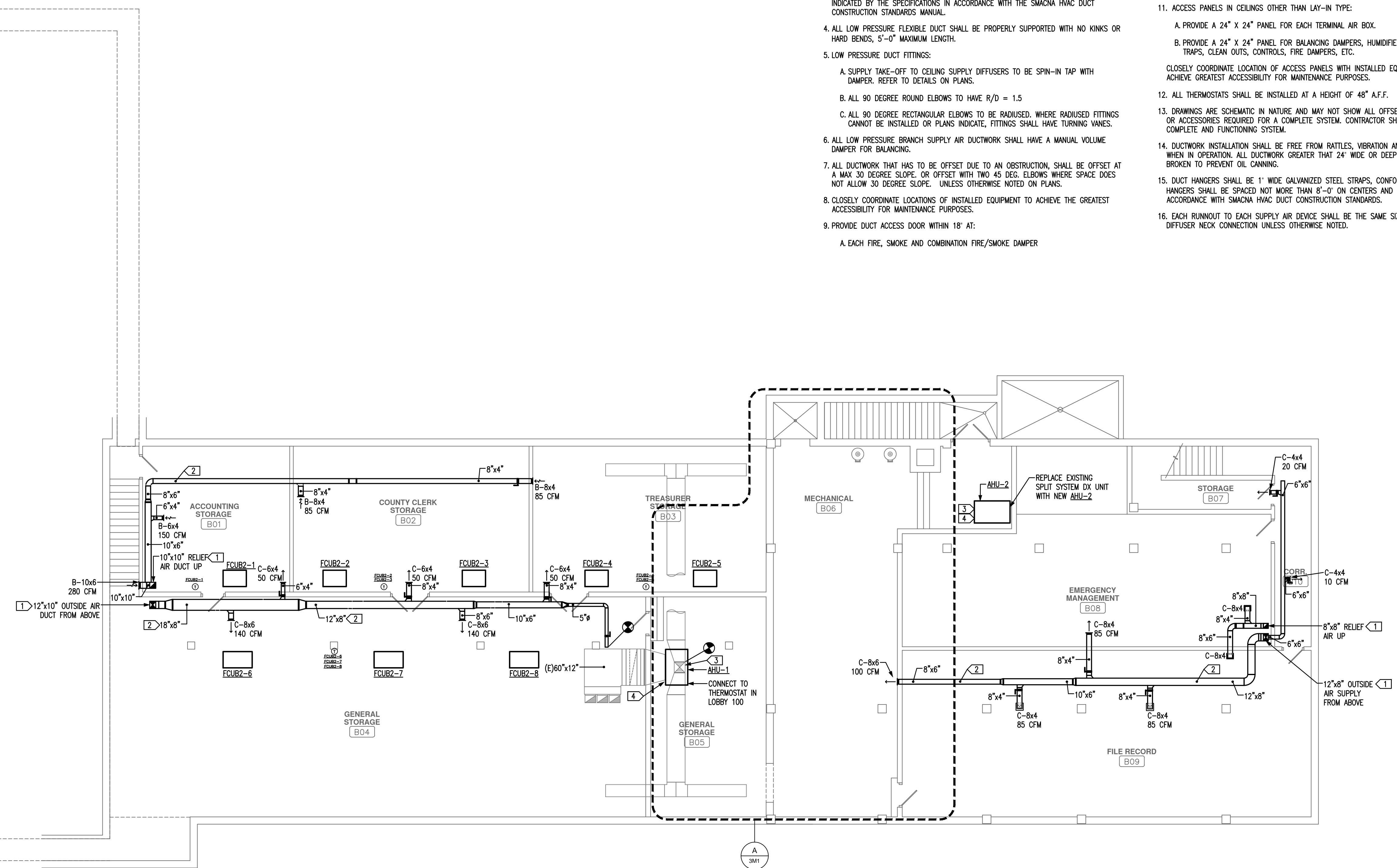


Revisions
Issue Date 03.29.16

Project No. N16001
Sheet No. 2M1

GENERAL DUCTWORK NOTES:

- COORDINATE EXACT LOCATION OF CEILING MOUNTED AIR DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELECTRICAL LIGHTING PLANS. CONTRACTOR SHALL ADJUST LOCATION OF AIR DISTRIBUTION DEVICES AS REQUIRED TO AVOID CONFLICTS.
- ALL DUCT DIMENSIONS SHOWN ON PLANS ARE NET FREE AREA'S. SHEET METAL SIZES SHALL BE INCREASED AS NECESSARY FOR LINING OR INSULATION.
- DUCT SYSTEMS SHALL BE CONSTRUCTED FOR THE SPECIFIC PRESSURE CLASSIFICATION AS INDICATED BY THE SPECIFICATIONS IN ACCORDANCE WITH THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS MANUAL.
- ALL LOW PRESSURE FLEXIBLE DUCT SHALL BE PROPERLY SUPPORTED WITH NO KINKS OR HARD BENDS, 5'-0" MAXIMUM LENGTH.
- LOW PRESSURE DUCT FITTINGS:
 - SUPPLY TAKE-OFF TO CEILING SUPPLY DIFFUSERS TO BE SPIN-IN TAP WITH DAMPER. REFER TO DETAILS ON PLANS.
 - ALL 90 DEGREE ROUND ELBOWS TO HAVE R/D = 1.5
 - ALL 90 DEGREE RECTANGULAR ELBOWS TO BE RADIIUSED. WHERE RADIIUSED FITTINGS CANNOT BE INSTALLED OR PLANS INDICATE, FITTINGS SHALL HAVE TURNING VANES.
- ALL LOW PRESSURE BRANCH SUPPLY AIR DUCTWORK SHALL HAVE A MANUAL VOLUME DAMPER FOR BALANCING.
- ALL DUCTWORK THAT HAS TO BE OFFSET DUE TO AN OBSTRUCTION, SHALL BE OFFSET AT A MAX 30 DEGREE SLOPE. OR OFFSET WITH TWO 45 DEG. ELBOWS WHERE SPACE DOES NOT ALLOW 30 DEGREE SLOPE. UNLESS OTHERWISE NOTED ON PLANS.
- CLOSELY COORDINATE LOCATIONS OF INSTALLED EQUIPMENT TO ACHIEVE THE GREATEST ACCESSIBILITY FOR MAINTENANCE PURPOSES.
- PROVIDE DUCT ACCESS DOOR WITHIN 18" AT:
 - EACH FIRE, SMOKE AND COMBINATION FIRE/SMOKE DAMPER
 - EACH CONTROL DAMPER
 - UPSTREAM AND DOWNSTREAM OF EACH AIR MEASURING STATION
 - UPSTREAM AND DOWNSTREAM OF EACH DUCT MOUNTED COIL
 - E. UPSTREAM AND DOWN STREAM OF EACH DUCT MOUNTED HUMIDIFIER.
- SIZE OF DOORS SHALL BE ADEQUATE FOR INSPECTION AND MAINTENANCE OF DUCT MOUNTED EQUIPMENT.
- ACCESS PANELS IN CEILINGS OTHER THAN LAY-IN TYPE:
 - PROVIDE A 24" X 24" PANEL FOR EACH TERMINAL AIR BOX.
 - PROVIDE A 24" X 24" PANEL FOR BALANCING DAMPERS, HUMIDIFIERS, VALVES, TRAPS, CLEAN OUTS, CONTROLS, FIRE DAMPERS, ETC.
- CLOSELY COORDINATE LOCATION OF ACCESS PANELS WITH INSTALLED EQUIPMENT TO ACHIEVE GREATEST ACCESSIBILITY FOR MAINTENANCE PURPOSES.
- ALL THERMOSTATS SHALL BE INSTALLED AT A HEIGHT OF 48" A.F.F.
- DRAWINGS ARE SCHEMATIC IN NATURE AND MAY NOT SHOW ALL OFFSETS, TRANSITIONS OR ACCESSORIES REQUIRED FOR A COMPLETE SYSTEM. CONTRACTOR SHALL PROVIDE A COMPLETE AND FUNCTIONING SYSTEM.
- DUCTWORK INSTALLATION SHALL BE FREE FROM RATTLES, VIBRATION AND MOVEMENT WHEN IN OPERATION. ALL DUCTWORK GREATER THAN 24" WIDE OR DEEP SHALL BE CROSS BROKEN TO PREVENT OIL CANNING.
- DUCT HANGERS SHALL BE 1" WIDE GALVANIZED STEEL STRAPS, CONFORMING TO SMACNA. HANGERS SHALL BE SPACED NOT MORE THAN 8'-0" ON CENTERS AND SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- EACH RUNOUT TO EACH SUPPLY AIR DEVICE SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION UNLESS OTHERWISE NOTED.

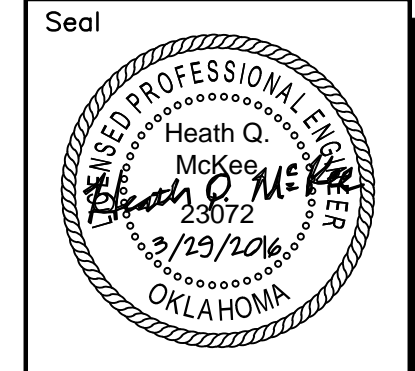


A
2M1 BASEMENT MECHANICAL FLOOR PLAN
SCALE: 1/8"=1'-0"

KEYED NOTES:

- CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION ON CONCRETE PAN AND ROUTE DUCT UP IN PAN, SAW CUT FLOOR ABOVE AND SLEEVE, FIRE SEAL AND PROVIDE FIRE DAMPER AND ACCESS PANEL AT FLOOR PENETRATION.
- ROUTE DUCT TIGHT TO BOTTOM OF FLOOR PAN.
- FIELD VERIFY EXACT OF EXISTING SUPPLY AIR DUCT. CONNECT NEW AHU DISCHARGE TO EXISTING SUPPLY AIR DUCT.
- FIELD VERIFY EXACT SIZE OF EXISTING RETURN AIR DUCT AND CONFIGURATION. CONNECT NEW AHU RETURN AIR TO EXISTING RETURN AIR PLENUM OR DUCT.

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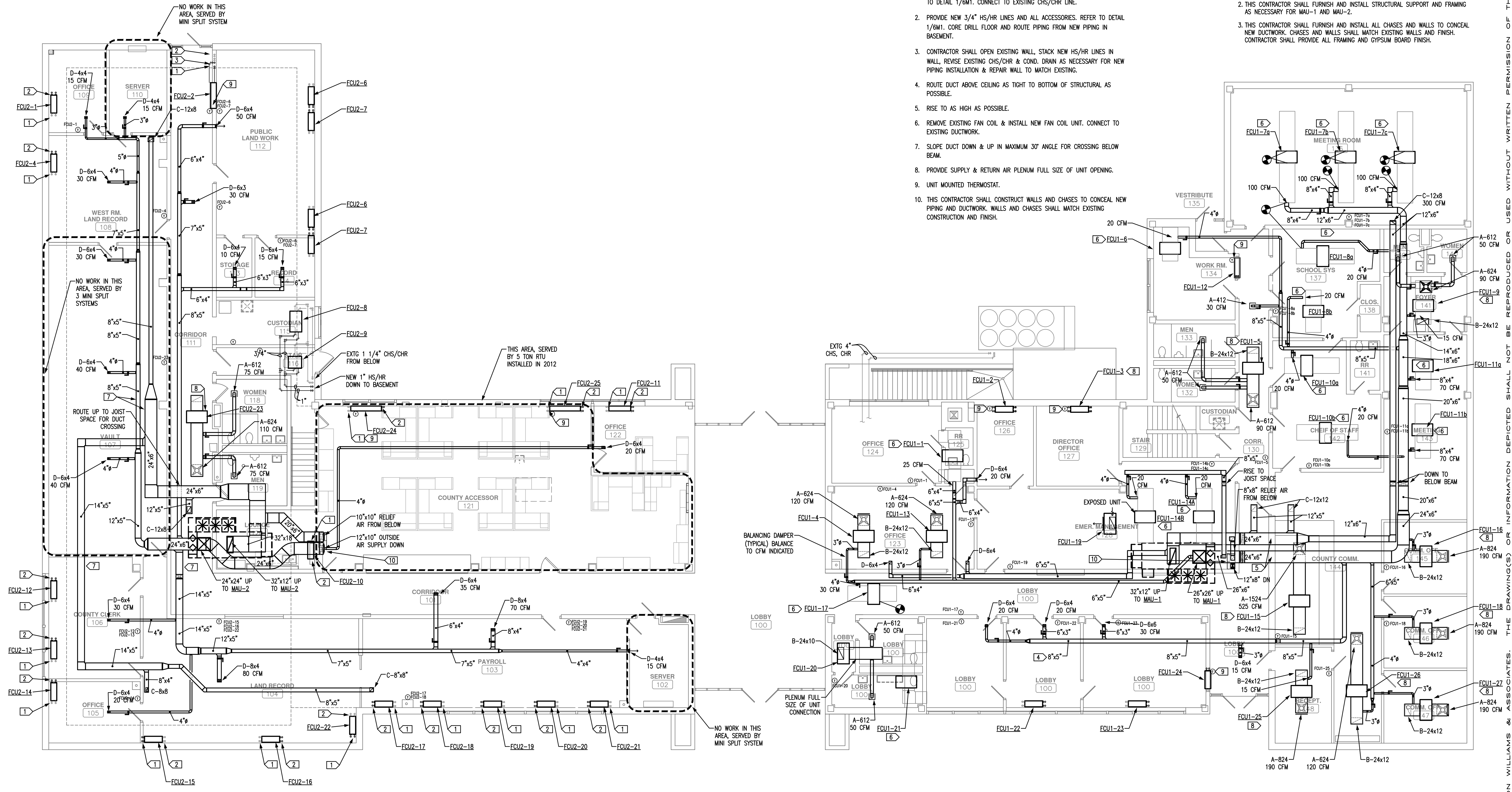
Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR
MECHANICAL PLAN

KEYED NOTES:

1. PROVIDE NEW SHUTOFF VALVE ALL ACCESSORIES & CONTROL VALVES. REFER TO DETAIL 1/6M1. CONNECT TO EXISTING CHS/CHR LINE.
2. PROVIDE NEW 3/4" HS/HR LINES AND ALL ACCESSORIES. REFER TO DETAIL 1/6M1. CORE DRILL FLOOR AND ROUTE PIPING FROM NEW PIPING IN BASEMENT.
3. CONTRACTOR SHALL OPEN EXISTING WALL, STACK NEW HS/HR LINES IN WALL, REVISE EXISTING CHS/CHR & COND. DRAIN AS NECESSARY FOR NEW PIPING INSTALLATION & REPAIR WALL TO MATCH EXISTING.
4. ROUTE DUCT ABOVE CEILING AS TIGHT TO BOTTOM OF STRUCTURAL AS POSSIBLE.
5. RISE TO AS HIGH AS POSSIBLE.
6. REMOVE EXISTING FAN COIL & INSTALL NEW FAN COIL UNIT. CONNECT TO EXISTING DUCTWORK.
7. SLOPE DUCT DOWN & UP IN MAXIMUM 30° ANGLE FOR CROSSING BELOW BEAM.
8. PROVIDE SUPPLY & RETURN AIR PLENUM FULL SIZE OF UNIT OPENING.
9. UNIT MOUNTED THERMOSTAT.
10. THIS CONTRACTOR SHALL CONSTRUCT WALLS AND CHASES TO CONCEAL NEW PIPING AND DUCTWORK. WALLS AND CHASES SHALL MATCH EXISTING CONSTRUCTION AND FINISH.

GENERAL DUCTWORK NOTES:

1. REFER TO SHEET 2M1 FOR GENERAL DUCTWORK NOTES.
2. THIS CONTRACTOR SHALL FURNISH AND INSTALL STRUCTURAL SUPPORT AND FRAMING AS NECESSARY FOR MAU-1 AND MAU-2.
3. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL CHASES AND WALLS TO CONCEAL NEW DUCTWORK. CHASES AND WALLS SHALL MATCH EXISTING WALLS AND FINISH. CONTRACTOR SHALL PROVIDE ALL FRAMING AND GYPSUM BOARD FINISH.



A FIRST FLOOR MECHANICAL PLAN
2M2 SCALE: 1/8"=1'-0"

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Revisions
Issue Date 03.29.16

Project No. N16001

Sheet No. 2M2



Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036

MECHANICAL
ROOF PLAN

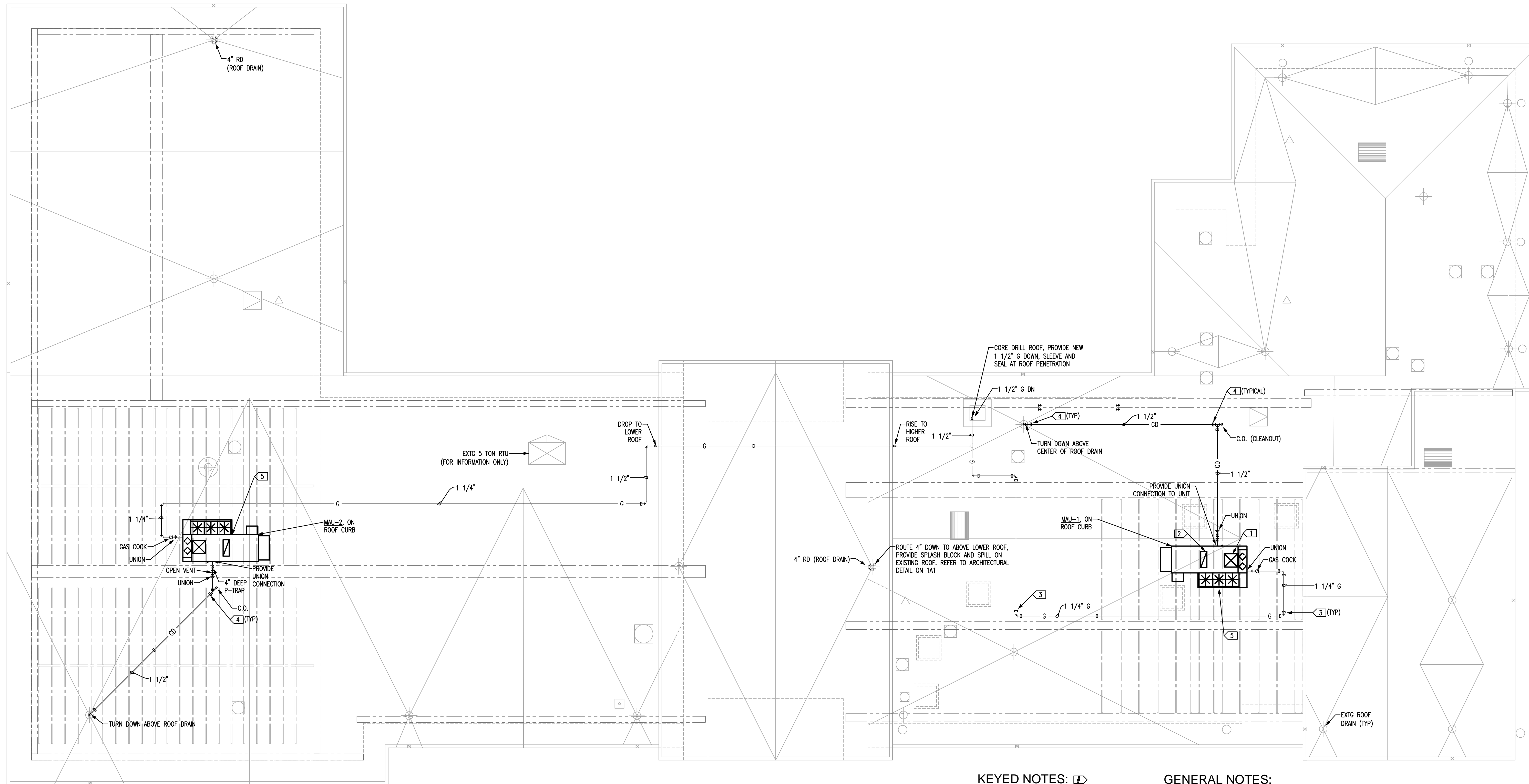
Revisions

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03.29.16

Project No.
N16001

Sheet No.
2M3

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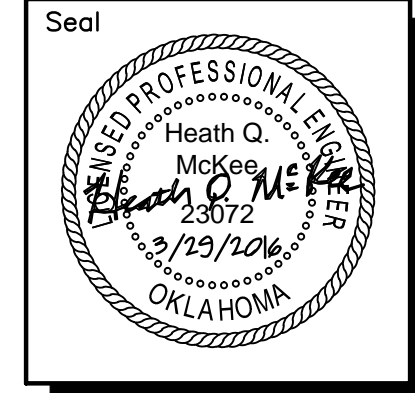
KEYED NOTES:

- 26"x 26" OUTSIDE AIR DUCT DOWN. SAW CUT THE ROOF BETWEEN EXISTING STRUCTURAL SUPPORT, DO NOT CUT INTO ANY OF THE EXISTING STRUCTURE.
- 32"x 12" RELIEF AIR DUCT FROM BELOW. SAW CUT THE ROOF BETWEEN EXISTING STRUCTURAL SUPPORT, DO NOT CUT INTO ANY OF THE EXISTING STRUCTURE.
- PROVIDE GAS PIPE SUPPORT AT MAXIMUM 10'-0" ON CENTER AND WITHIN 36" ON EACH SIDE OF ELBOW.
- PROVIDE CONDENSATE PIPE SUPPORT AT MAXIMUM 10'-0" ON CENTER AND WITHIN 36" OF EACH SIDE OF ELBOW OR CONNECTION.
- MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE EXISTING STRUCTURE AND SAW CUT THE ROOF FOR THE DUCT PENETRATIONS BETWEEN THE STRUCTURE. CONTRACTOR SHALL FURNISH AND INSTALL ANY NEEDED SUPPORT BRACING OR FRAMING OF EXISTING STRUCTURE AND OR ROOF DECK.

GENERAL NOTES:

- ALL EQUIPMENT REQUIRING SERVICE IS TO BE LOCATED AT LEAST 10 FEET FROM ROOF EDGE.
- OUTSIDE AIR INTAKES ARE TO BE LOCATED 15 FEET AWAY FROM ANY EXHAUST FAN OR VENT.
- COORDINATE ALL PENETRATIONS WITH STRUCTURAL AND ARCHITECTURAL PLANS.
- ALL ROOF PENETRATIONS ARE INTENDED TO BE WATER TIGHT. REFER TO ARCHITECTURAL ROOFING DETAILS. WHERE DETAILS ARE NOT SHOWN REFER TO MECHANICAL DETAILS AND THE NATIONAL ROOFING CONTRACTORS ASSOCIATIONS ROOFING AND WATER PROOFING MANUAL.

A MECHANICAL ROOF PLAN
SCALE: 1/8"=1'-0"
2M3

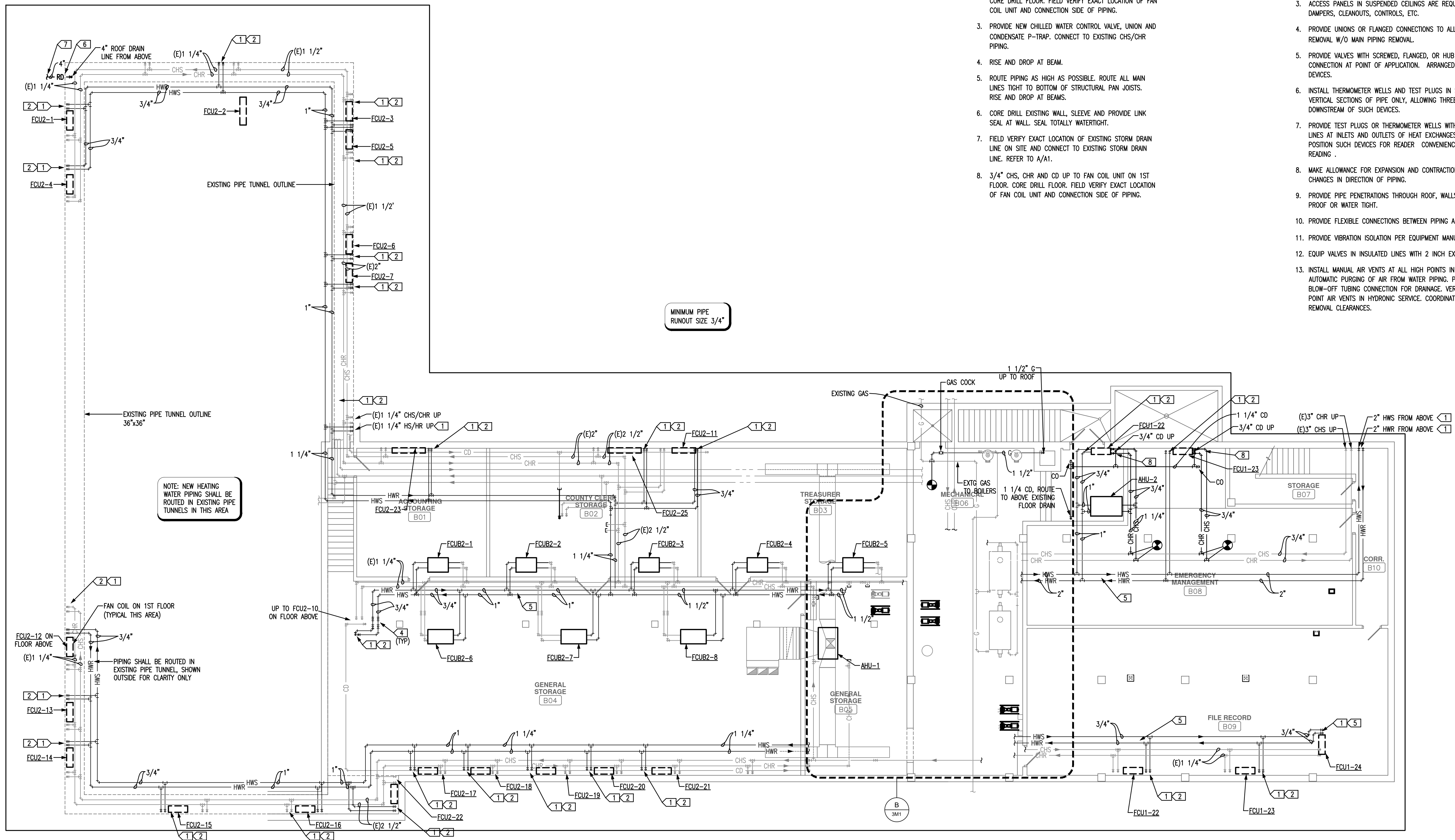


KEYED NOTES:

1. SLEEVE AND FIRE SEAL HS AND HR (HEATING WATER SUPPLY AND HEATING WATER RETURN) LINES AT RATED WALL PENETRATION, AND AT ALL WALL PENETRATIONS.
2. 3/4" HS AND HR UP TO FAN COIL UNIT ON 1ST FLOOR. CORE DRILL FLOOR. FIELD VERIFY EXACT LOCATION OF FAN COIL UNIT AND CONNECTION SIDE OF PIPING.
3. PROVIDE NEW CHILLED WATER CONTROL VALVE, UNION AND CONDENSATE P-TRAP. CONNECT TO EXISTING CHS/CHR PIPING.
4. RISE AND DROP AT BEAM.
5. ROUTE PIPING AS HIGH AS POSSIBLE. ROUTE ALL MAIN LINES TIGHT TO BOTTOM OF STRUCTURAL PAN JOISTS. RISE AND DROP AT BEAMS.
6. CORE DRILL EXISTING WALL, SLEEVE AND PROVIDE LINK SEAL AT WALL. SEAL TOTALLY WATERTIGHT.
7. FIELD VERIFY EXACT LOCATION OF EXISTING STORM DRAIN LINE ON SITE AND CONNECT TO EXISTING STORM DRAIN LINE. REFER TO A/A1.
8. 3/4" CHS, CHR AND CD UP TO FAN COIL UNIT ON 1ST FLOOR. CORE DRILL FLOOR. FIELD VERIFY EXACT LOCATION OF FAN COIL UNIT AND CONNECTION SIDE OF PIPING.

GENERAL PIPING NOTES:

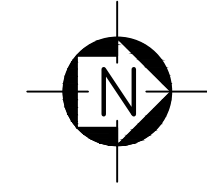
1. FOR TYPICAL STEAM, WATER AND REFRIGERANT PIPING CONNECTIONS TO EQUIPMENT SEE STANDARD EQUIPMENT DETAILS.
2. WATER PIPE CONNECTIONS TO AIR HEATING AND COOLING COILS SHALL BE MADE TO PROVIDE COUNTER FLOW BETWEEN WATER AND AIR.
3. ACCESS PANELS IN SUSPENDED CEILINGS ARE REQUIRED FOR ALL VALVES, TRAPS, DAMPERS, CLEANOUTS, CONTROLS, ETC.
4. PROVIDE UNIONS OR FLANGED CONNECTIONS TO ALLOW ITEMS OF EQUIPMENT REMOVAL W/O MAIN PIPING REMOVAL.
5. PROVIDE VALVES WITH SCREWED, FLANGED, OR HUB ENDS TO MATCH EXISTING CONNECTION AT POINT OF APPLICATION. ARRANGED TO ALLOW FOR REMOVAL OF DEVICES.
6. INSTALL THERMOMETER WELLS AND TEST PLUGS IN STRAIGHT HORIZONTAL OR VERTICAL SECTIONS OF PIPE ONLY, ALLOWING THREE DIAMETERS UPSTREAM AND DOWNSTREAM OF SUCH DEVICES.
7. PROVIDE TEST PLUGS OR THERMOMETER WELLS WITH THERMOMETERS ON WATER LINES AT INLETS AND OUTLETS OF HEAT EXCHANGES OR HEAT TRANSFER DEVICES. POSITION SUCH DEVICES FOR READER CONVENIENCE, ACCESS, AND EASE OF READING.
8. MAKE ALLOWANCE FOR EXPANSION AND CONTRACTION BY USE OF SWING JOINTS OR CHANGES IN DIRECTION OF PIPING.
9. PROVIDE PIPE PENETRATIONS THROUGH ROOF, WALLS OR FLOORS TO YIELD FIRE PROOF OR WATER TIGHT.
10. PROVIDE FLEXIBLE CONNECTIONS BETWEEN PIPING AND ROTATING EQUIPMENT.
11. PROVIDE VIBRATION ISOLATION PER EQUIPMENT MANUFACTURER'S RECOMMENDATION.
12. EQUIP VALVES IN INSULATED LINES WITH 2 INCH EXTENSION NECKS.
13. INSTALL MANUAL AIR VENTS AT ALL HIGH POINTS IN PIPING SYSTEM TO ALLOW AUTOMATIC PURGING OF AIR FROM WATER PIPING. PROVIDE VALVE AND PIPE BLOW-OFF TUBING CONNECTION FOR DRAINAGE. VERIFY SERVICE CLEARANCE FOR HIGH POINT AIR VENTS IN HYDRONIC SERVICE. COORDINATE WITH OTHER TRADES TO ENSURE REMOVAL CLEARANCES.



NOTE: NEW HEATING WATER PIPING SHALL BE ROUTED IN EXISTING PIPE TUNNELS IN THIS AREA

MINIMUM PIPE RUNOUT SIZE 3/4"

A BASEMENT HYDRONIC PIPING PLAN
2M4 SCALE: 1/8"=1'-0"



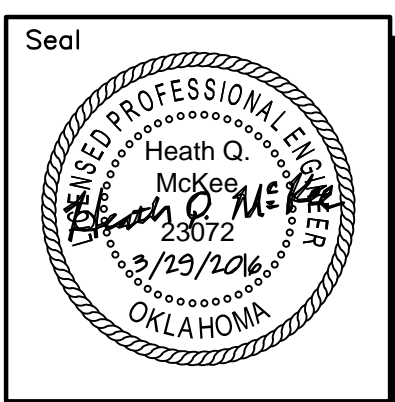
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Revisions

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Project No.
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Sheet No.
2M4



Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR HYDRONIC
PIPING PLAN

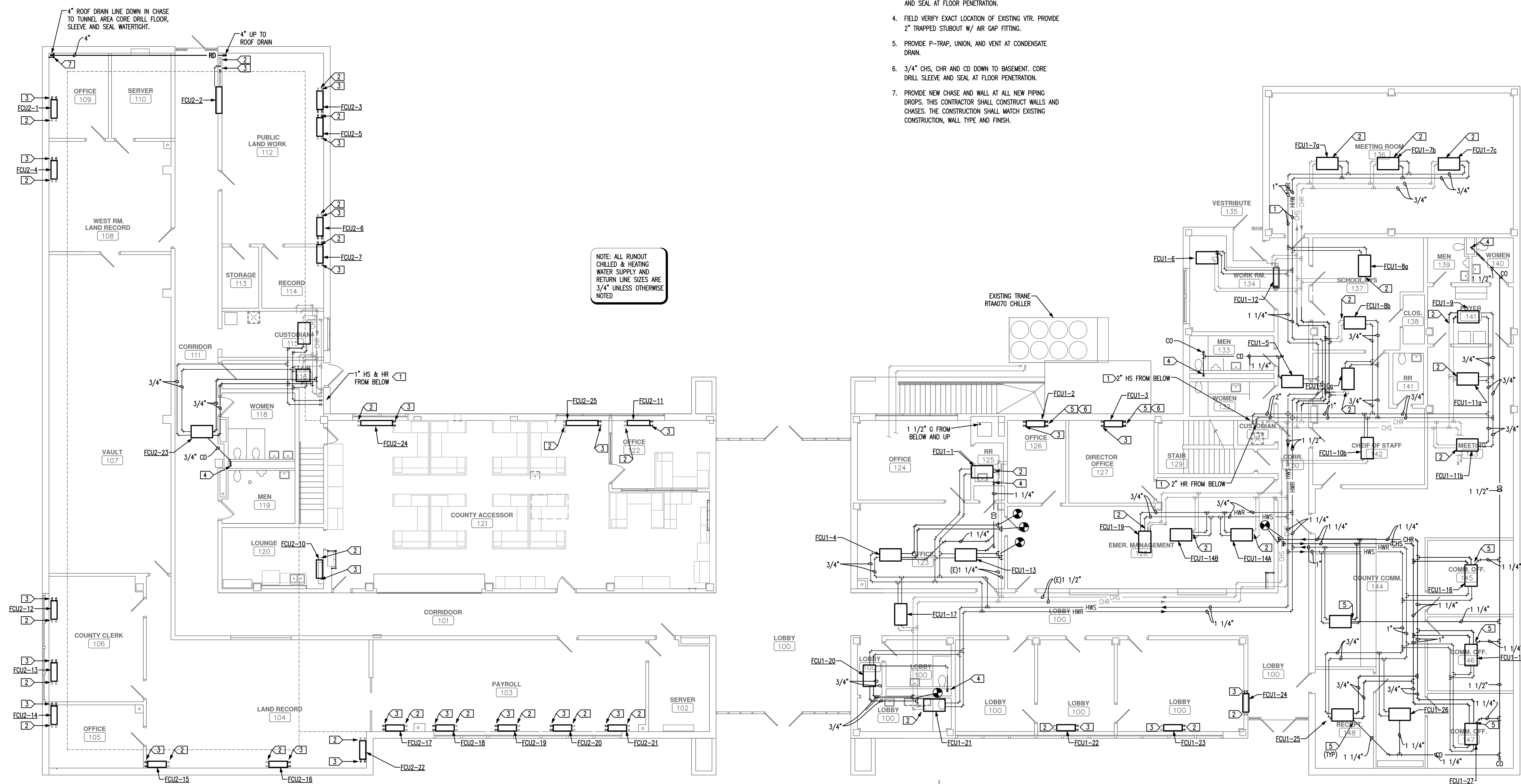
KEYED NOTES:

1. SLEEVE AND FIRE SEAL HS AND HR (HEATING WATER SUPPLY AND HEATING WATER RETURN) LINES AT RATED WALL PENETRATION AND ALL FLOOR PENETRATIONS.
2. PROVIDE NEW CONTROL VALVE, STRAINER, P-TRAP AND CONNECT TO EXISTING CHS/CHR LINES. CLEAN CONDENSATE DRAIN LINE AND REPAIR ALL LEAKS. FIELD VERIFY EXACT LOCATION OF EXISTING CHS/CHR AND CD (CONDENSATE DRAIN LINE).
3. 3/4" HS AND HR LINES DOWN, CORE DRILL AND SLEEVE AND SEAL AT FLOOR PENETRATION.
4. FIELD VERIFY EXACT LOCATION OF EXISTING VTR. PROVIDE 2" TRAPPED STUBOUT W/ AIR GAP FITTING.
5. PROVIDE P-TRAP, UNION, AND VENT AT CONDENSATE DRAIN.
6. 3/4" CHS, CHR AND CD DOWN TO BASEMENT. CORE DRILL SLEEVE AND SEAL AT FLOOR PENETRATION.
7. PROVIDE NEW CHASE AND WALL AT ALL NEW PIPING DROPS. THIS CONTRACTOR SHALL CONSTRUCT WALLS AND CHASES. THE CONSTRUCTION SHALL MATCH EXISTING CONSTRUCTION, WALL TYPE AND FINISH.

GENERAL PIPING NOTES:

1. REFER TO SHEET 2M4 FOR GENERAL PIPING NOTES.
2. ALL FAN EXISTING COIL UNITS SHALL BE REPLACED WITH NEW FAN COIL UNITS. CONTRACTOR SHALL PRESSURE TEST ALL EXISTING PIPING, CLEAN ALL CONDENSATE DRAINS AND INSTALL NEW P-TRAPS WITH CLEANOUT, UNIONS AND VENT ON LEAVING SIDE.
3. THIS CONTRACTOR SHALL PROVIDE A FRAMING AND WALLS TO CONCEAL PIPING. ALL NEW PIPING SHALL BE CONCEALED IN WALL EITHER NEW OR EXISTING. NEW WALL AND CHASES SHALL MATCH EXISTING WALL CONSTRUCTION AND FINISH.

NOTE: ALL RUNOUT CHILLED & HEATING WATER SUPPLY AND RETURN LINE SIZES ARE 3/4" UNLESS OTHERWISE NOTED



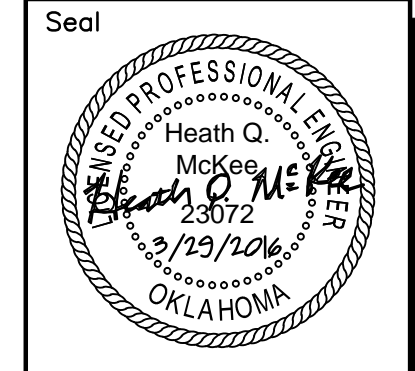
A FIRST FLOOR HYDRONIC PIPING PLAN
2M5 SCALE: 1/8"=1'-0"

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Revisions

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Project No.
N16001
Sheet No.
2M5



Revisions
Issue Date
03.29.16

Project No.
N16001
Sheet No.
2MD1

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DEMOLITION NOTES:

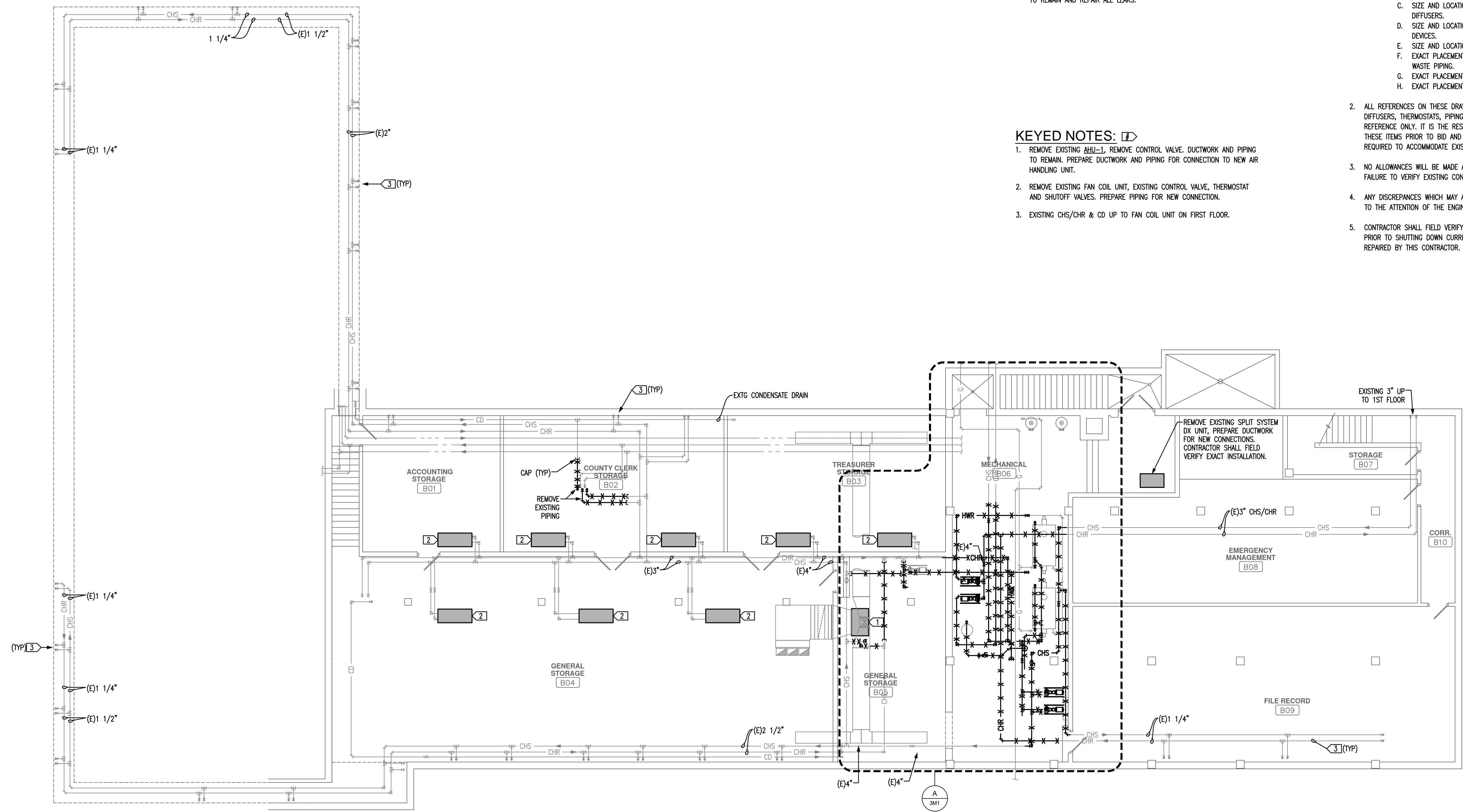
1. REMOVING ALL EXISTING MECHANICAL EQUIPMENT SHOWN SHADED.
2. REMOVE ALL EXISTING PIPING AS INDICATED BY AN "X" MARK. CAP OR PLUG AS NECESSARY.
3. CONTRACTOR SHALL PRESSURE TEST ALL EXISTING PIPING TO REMAIN AND REPAIR ALL LEAKS.

FIELD VERIFICATION NOTES:

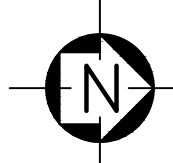
1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED:
 - A. EXACT PLACEMENT, SIZE, CAPACITY, MANUFACTURER AND CONDITION OF ALL EXISTING HVAC EQUIPMENT WITHIN SCOPE OF WORK, WHETHER SPECIFICALLY SHOWN OR NOT.
 - B. SIZE AND LOCATION OF ALL EXISTING DUCTWORK.
 - C. SIZE AND LOCATION OF ALL EXISTING GRILLES, REGISTERS AND DIFFUSERS.
 - D. SIZE AND LOCATION OF ALL EXISTING THERMOSTATIC CONTROL DEVICES.
 - E. SIZE AND LOCATION OF ALL EXISTING HYDRONIC PIPING.
 - F. EXACT PLACEMENT, SIZE AND INVERT ELEVATION OF ALL EXISTING WASTE PIPING.
 - G. EXACT PLACEMENT AND SIZE OF ALL EXISTING COLD WATER PIPING.
 - H. EXACT PLACEMENT AND SIZE OF ALL EXISTING VENT PIPING.
2. ALL REFERENCES ON THESE DRAWINGS TO EXISTING EQUIPMENT, DUCTWORK, DIFFUSERS, THERMOSTATS, PIPING, EXISTING WASTE, WASTER AND VENT PIPING IS FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL THESE ITEMS PRIOR TO BID AND INCLUDE IN HIS BID ANY AND ALL AMOUNTS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.
3. NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
4. ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION.
5. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPING AND EXAMINE FOR LEAKS PRIOR TO SHUTTING DOWN CURRENT SYSTEM. ALL EXISTING LEAKS SHALL BE REPAIRED BY THIS CONTRACTOR.

KEYED NOTES:

1. REMOVE EXISTING AHU-1, REMOVE CONTROL VALVE, DUCTWORK AND PIPING TO REMAIN. PREPARE DUCTWORK AND PIPING FOR CONNECTION TO NEW AIR HANDLING UNIT.
2. REMOVE EXISTING FAN COIL UNIT, EXISTING CONTROL VALVE, THERMOSTAT AND SHUTOFF VALVES. PREPARE PIPING FOR NEW CONNECTION.
3. EXISTING CHS/CHR & CD UP TO FAN COIL UNIT ON FIRST FLOOR.



A BASEMENT MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/8"=1'-0"
2MD1





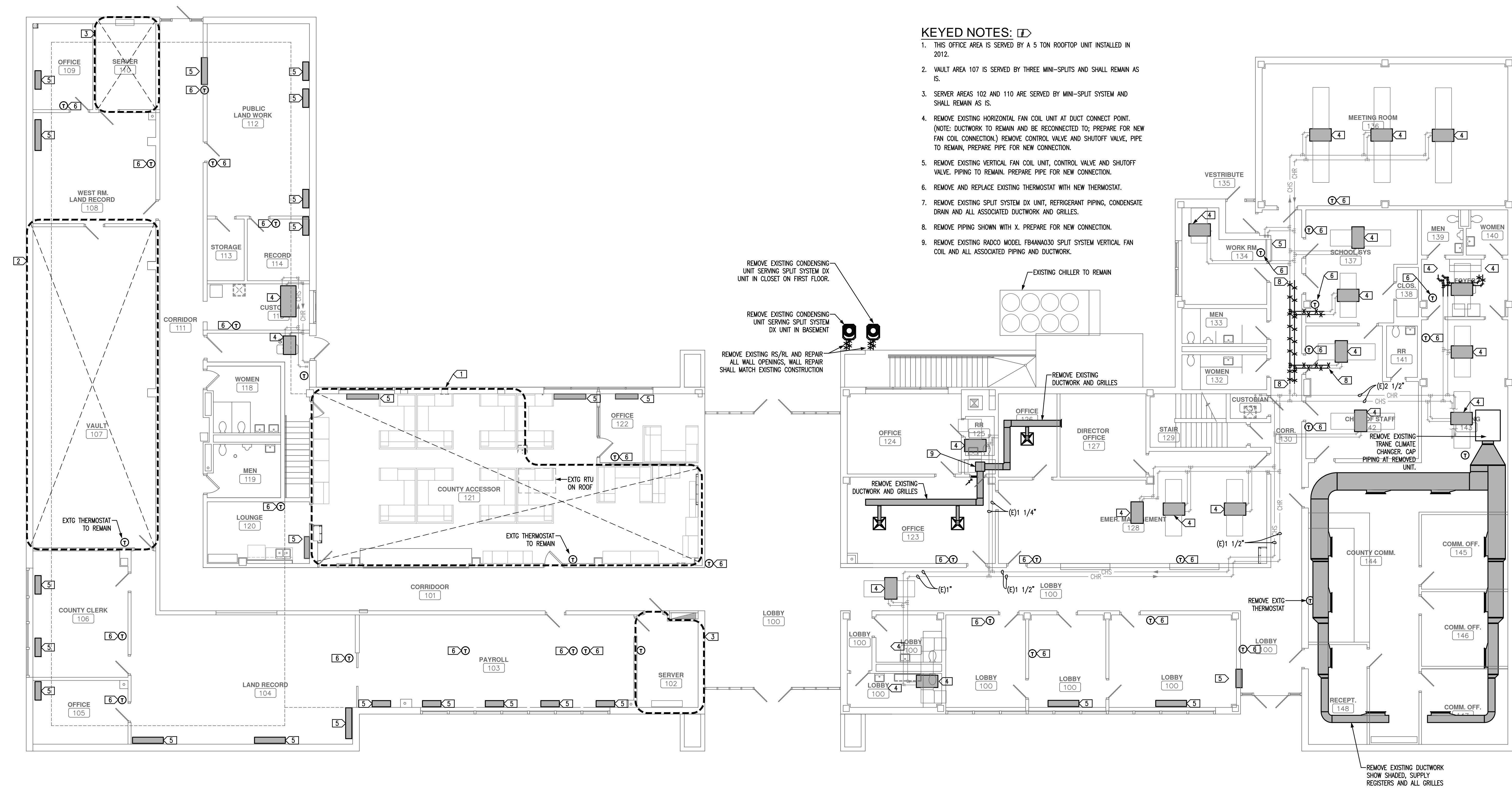
Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR MECHANICAL
DEMOLITION PLAN

GENERAL NOTES:

1. REFER TO FIELD VERIFICATION NOTES ON SHEET 2MD1.

KEYED NOTES:

1. THIS OFFICE AREA IS SERVED BY A 5 TON ROOFTOP UNIT INSTALLED IN 2012.
2. VAULT AREA 107 IS SERVED BY THREE MINI-SPLITS AND SHALL REMAIN AS IS.
3. SERVER AREAS 102 AND 110 ARE SERVED BY MINI-SPLIT SYSTEM AND SHALL REMAIN AS IS.
4. REMOVE EXISTING HORIZONTAL FAN COIL UNIT AT DUCT CONNECT POINT. (NOTE: DUCTWORK TO REMAIN AND BE RECONNECTED TO; PREPARE FOR NEW FAN COIL CONNECTION.) REMOVE CONTROL VALVE AND SHUTOFF VALVE, PIPE TO REMAIN, PREPARE PIPE FOR NEW CONNECTION.
5. REMOVE EXISTING VERTICAL FAN COIL UNIT, CONTROL VALVE AND SHUTOFF VALVE. PIPING TO REMAIN. PREPARE PIPE FOR NEW CONNECTION.
6. REMOVE AND REPLACE EXISTING THERMOSTAT WITH NEW THERMOSTAT.
7. REMOVE EXISTING SPLIT SYSTEM DX UNIT, REFRIGERANT PIPING, CONDENSATE DRAIN AND ALL ASSOCIATED DUCTWORK AND GRILLES.
8. REMOVE PIPING SHOWN WITH X. PREPARE FOR NEW CONNECTION.
9. REMOVE EXISTING RADCO MODEL FB44A030 SPLIT SYSTEM VERTICAL FAN COIL AND ALL ASSOCIATED PIPING AND DUCTWORK.



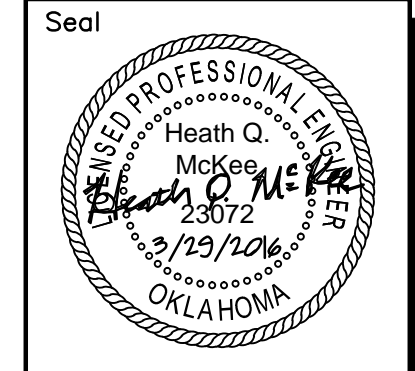
A FIRST FLOOR MECHANICAL DEMOLITION PLAN
2MD2 SCALE: 1/8"=1'-0"

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Issue Date 03.29.16

Project No. N16001

Sheet No. 2MD2

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Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036

ENLARGED BASEMENT MECHANICAL
DEMOLITION AND NEW FLOOR PLAN

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Issue Date 03.29.16

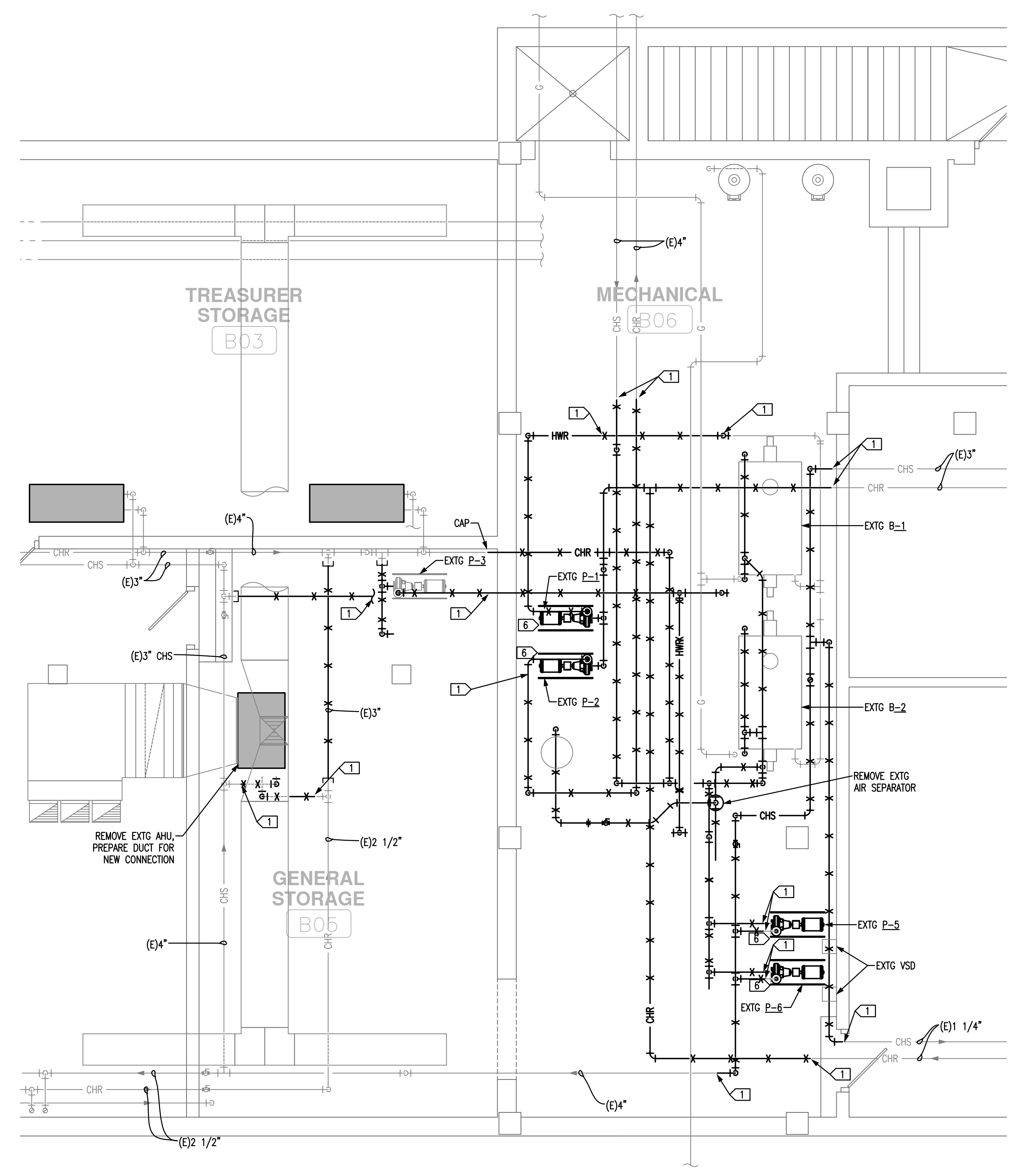
Project No. N16001
Sheet No. 3M1

GENERAL NOTES:

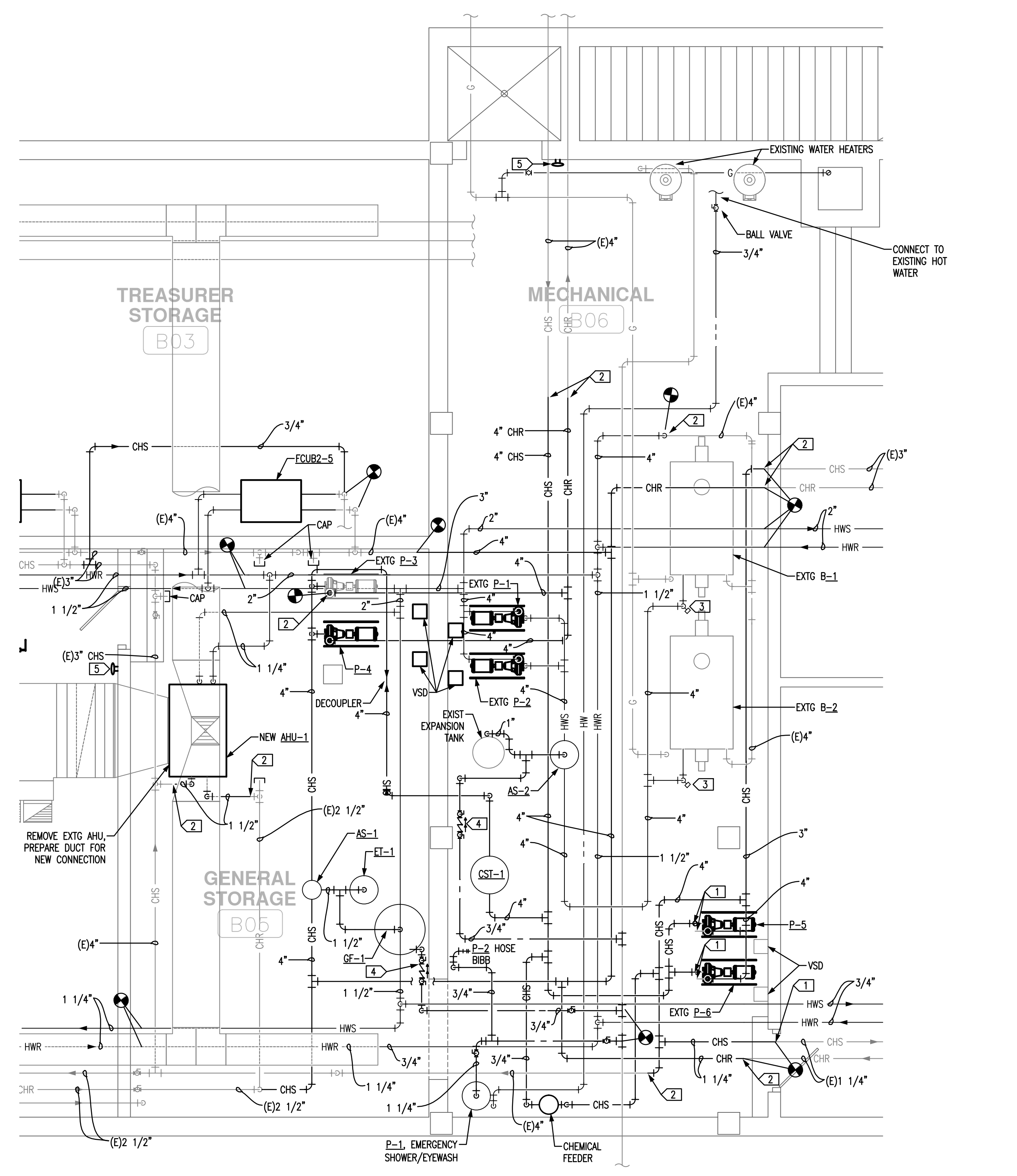
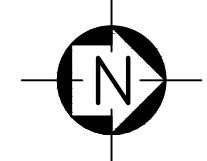
1. REMOVE ALL PIPING INDICATED WITH AN X.

KEYED NOTES:

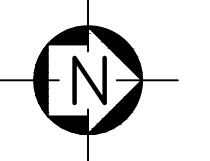
1. REMOVE EXISTING PIPING TO THIS POINT. PREPARE PIPING TO REMAIN FOR NEW CONNECTION.
2. CONNECT TO EXISTING PIPING AT THIS POINT. FIELD VERIFY EXACT LOCATION.
3. PROVIDE BOILER CONTROL VALVE, INTERLOCK WITH BOILER FIRING. OPEN WHEN BOILER IS ON, CLOSE WHEN BOILER IS OFF.
4. REDUCED PRESSURE BACKFLOW PREVENTER. MOUNT ON WALL AT MAXIMUM OF 7'-0" AFF.
5. PROVIDE EMERGENCY SHUTOFF SWITCH TO BOILERS. REFER TO CONTROL DRAWINGS.
6. REMOVE EXISTING PUMP.



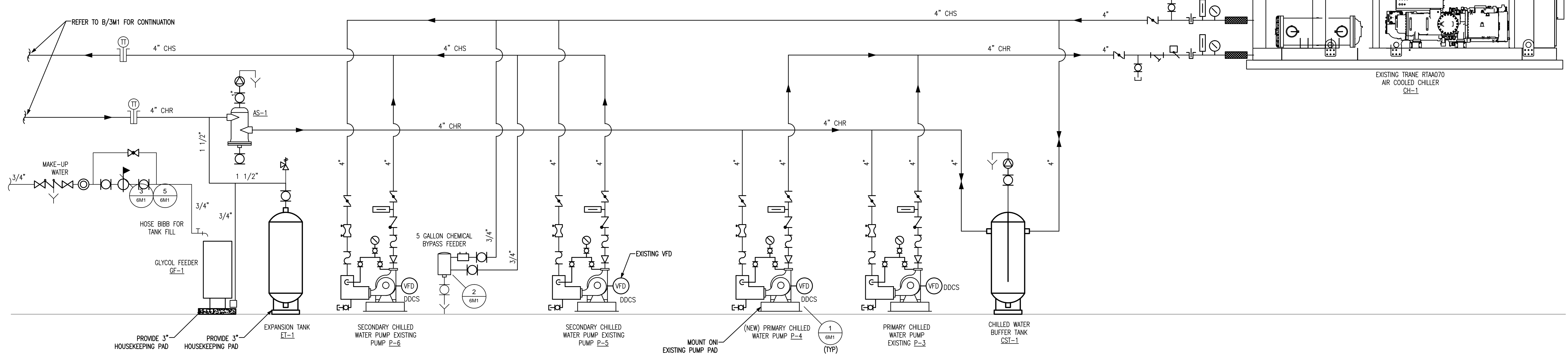
A ENLARGED BASEMENT MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"



B ENLARGED BASEMENT MECHANICAL FLOOR PLAN
SCALE: 1/4"=1'-0"



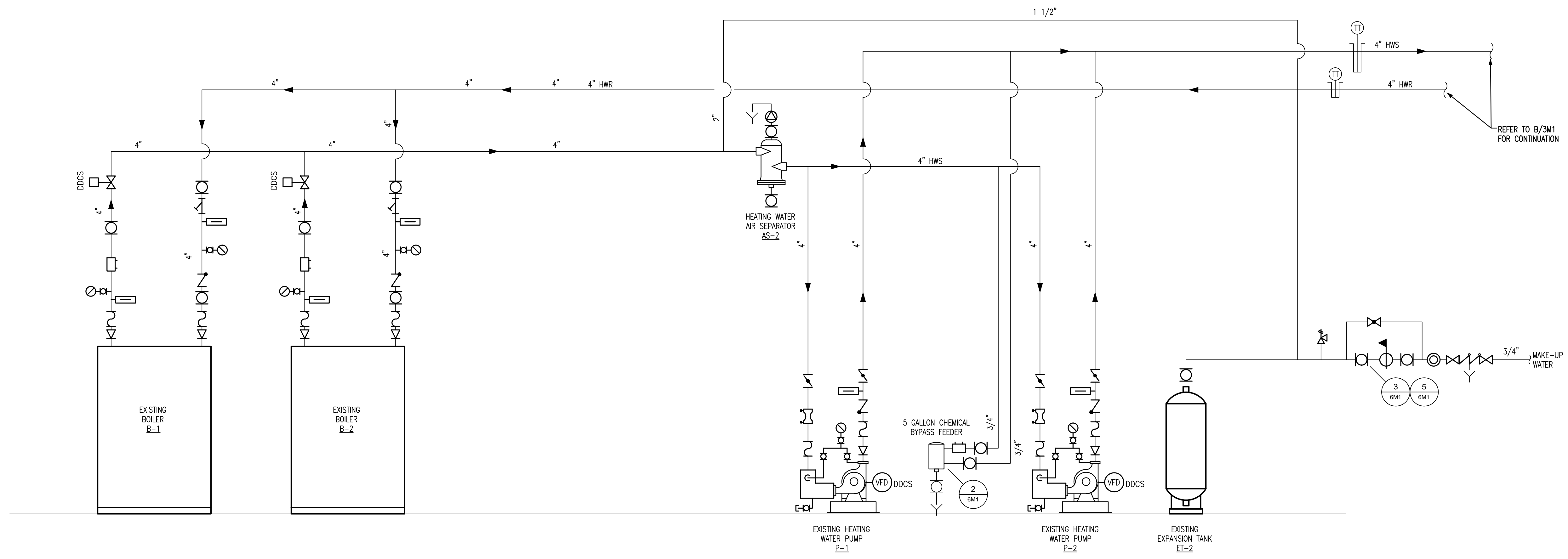
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A NEW CHILLED WATER PIPING FLOW DIAGRAM (EXISTING CENTRAL PLANT)
SCALE: NOT TO SCALE.
REFER:

PIPING DIAGRAM SYMBOL LEGEND:

- CONTROL VALVE
- BUTTERFLY VALVE
- BALL VALVE
- CHECK VALVE
- BACKFLOW PREVENTER
- STRAINER
- FLEXIBLE CONNECTION
- REDUCER
- AIR VENT
- AUTOMATIC FLOW CONTROL VALVE
- PRESSURE AND TEMPERATURE TEST PLUG
- TEMPERATURE GAGE
- TEMPERATURE SENSOR
- PRESSURE GAUGE
- FLOW METER
- PRESSURE REDUCING VALVE
- WATER METER
- PRESSURE RELIEF VALVE
- VENTURI VALVE WITH PRESSURE PORTS



B NEW HEATING WATER PIPING FLOW DIAGRAM (EXISTING CENTRAL PLANT)
SCALE: NOT TO SCALE.
REFER:

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Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
CHILLED AND HEATING WATER
FLOW DIAGRAM

Revisions

Issue Date	03.29.16
Project No.	N16001
Sheet No.	4M1



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A Professional Corporation Member: American Institute of Architects



ALLEN CONSULTING INCORPORATED

Fan Coil Unit Schedule table with columns for MARK, UNIT CONFIGURATION, FAN DATA, CHILLED WATER COIL DATA, HEATING WATER COIL DATA, and NOTES.

Air Handling Unit Schedule table with columns for MARK, SUPPLY FAN DATA, COOLING COIL CAPACITY DATA, HEATING COIL CAPACITY DATA, WEIGHT, MANUFACTURER, and REMARKS.

Pump Schedule table with columns for MARK, TYPE, SERVICE, FLOW (GPM), HEAD (FT), HP, RPM, VOLTAGE/PHASE, PUMP EFF. (%), PUMP WEIGHT, PUMP SIZE, MANUFACTURER MODEL, NOTES, and REMARKS.

Energy Recovery Ventilation Unit table with columns for MARK, MANUFACTURER MODEL, UNIT WEIGHT, SUPPLY FAN, EXHAUST FAN, HEAT WHEEL SUMMER, HEAT WHEEL WINTER, DIRECT EXPANSION COOLING, GAS HEAT, OUTDOOR AIR AND EXHAUST AIR FILTERS, SUPPLY AIR FILTER, and ELECTRICAL DATA.

Air Separator Schedule table with columns for MARK, FLOW GPM, PIPE SIZE, STRAINER, MAX P.D., SERVICE, MANUFACTURER MODEL, WEIGHT, and REMARKS.

Diffuser Schedule table with columns for MARK, DESCRIPTION, MANUFACTURER MODEL, DAMPER, CORE, COLOR, MOUNT, and REMARKS.

Chilled Water Buffer Tank Schedule table with columns for MARK, FLUID, DISCHARGE FLOW, CHANGE FLOW, CONN SIZES, MAX P.D., UNIT WEIGHT, MANUFACTURER MODEL, FLUID, and REMARKS.

Expansion Tank Schedule table with columns for MARK, VOLUME (GAL), ACCEPTANCE (GAL), SYSTEM TEMP (F), MAX VOLUME (GAL), PRE-CHARGE (PSI), FLUID, WEIGHT, MANUFACTURER MODEL, and REMARKS.

Plumbing Fixture Schedule table with columns for MARK, FIXTURE, MANUFACTURER MODEL, SIZE/MOUNT, ROUGH-IN SCHEDULE, FITTINGS & REMARKS.

Glycol Make Up Unit Schedule table with columns for MARK, CAPACITY (GPM @ PSI), TANK SIZE, DIMENSIONS, TANK CONN SIZE, PRESSURE RANGE, PUMP DATA, UNIT WEIGHT, MANUFACTURER MODEL, FLUID, and REMARKS.

Drain Schedule table with columns for MARK, TYPE, MANUFACTURER MODEL, BODY MATERIAL, STRAINER MATERIAL, and REMARKS.

Revisions

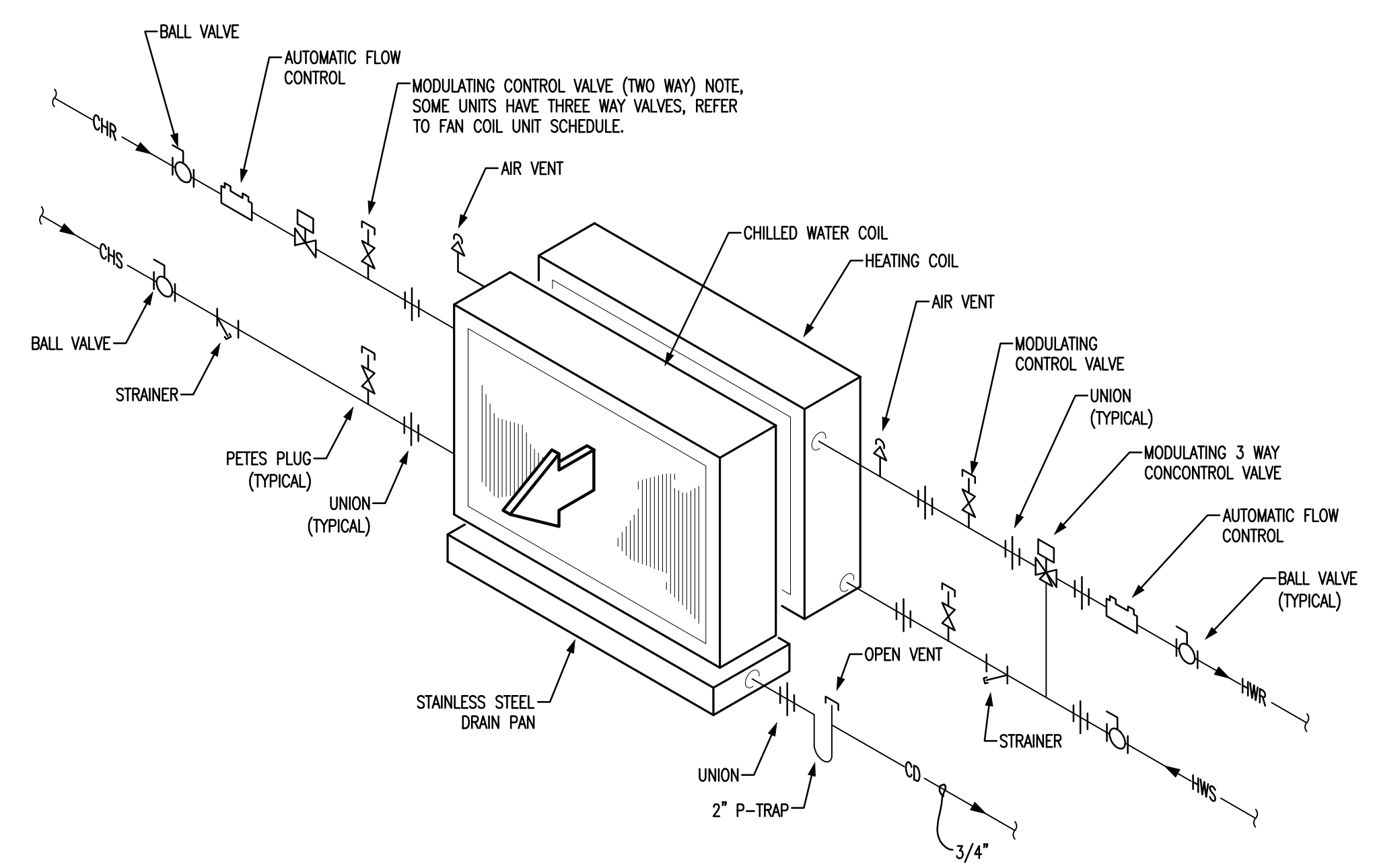
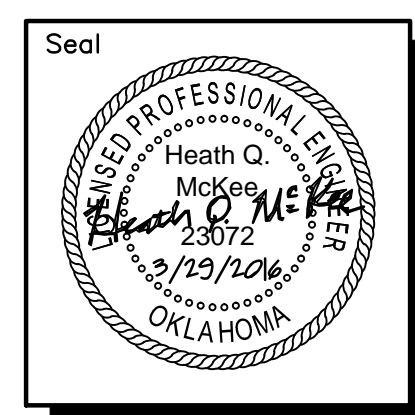
Issue Date 03.29.16

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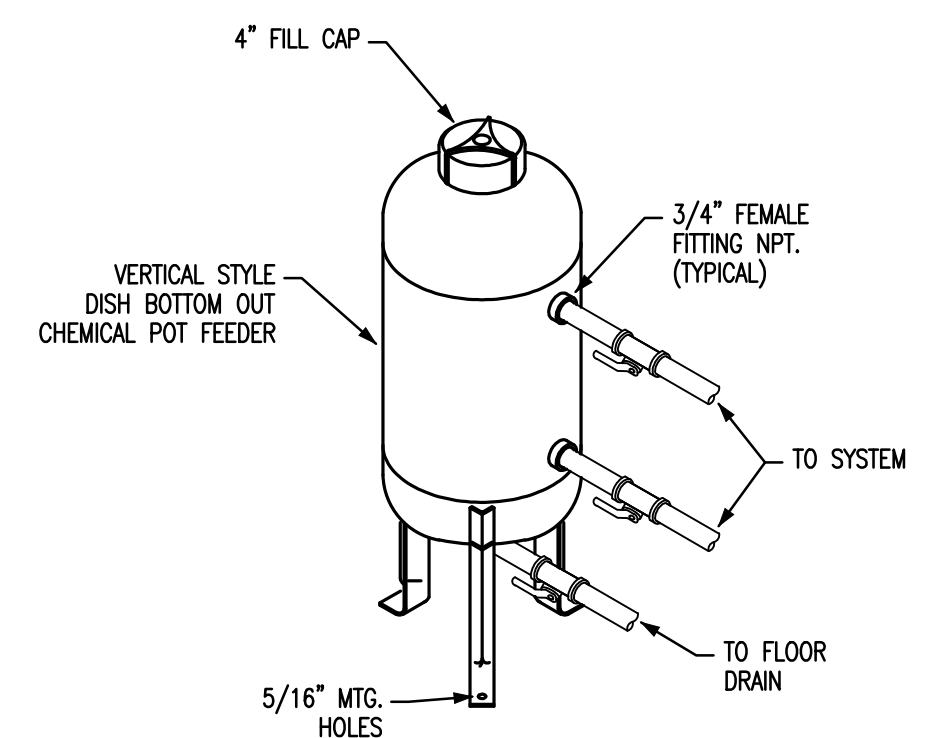
Sheet No.

5M1

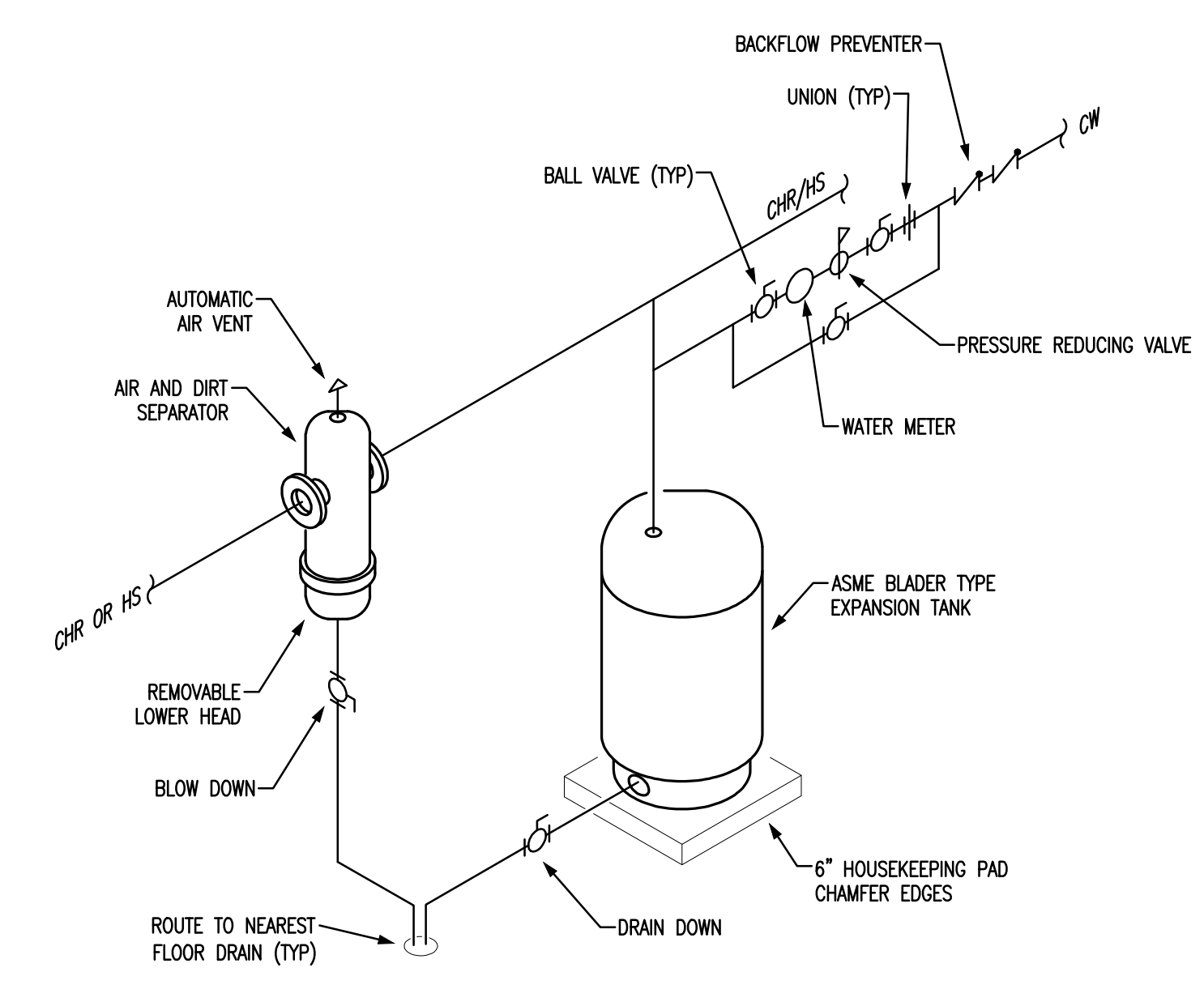
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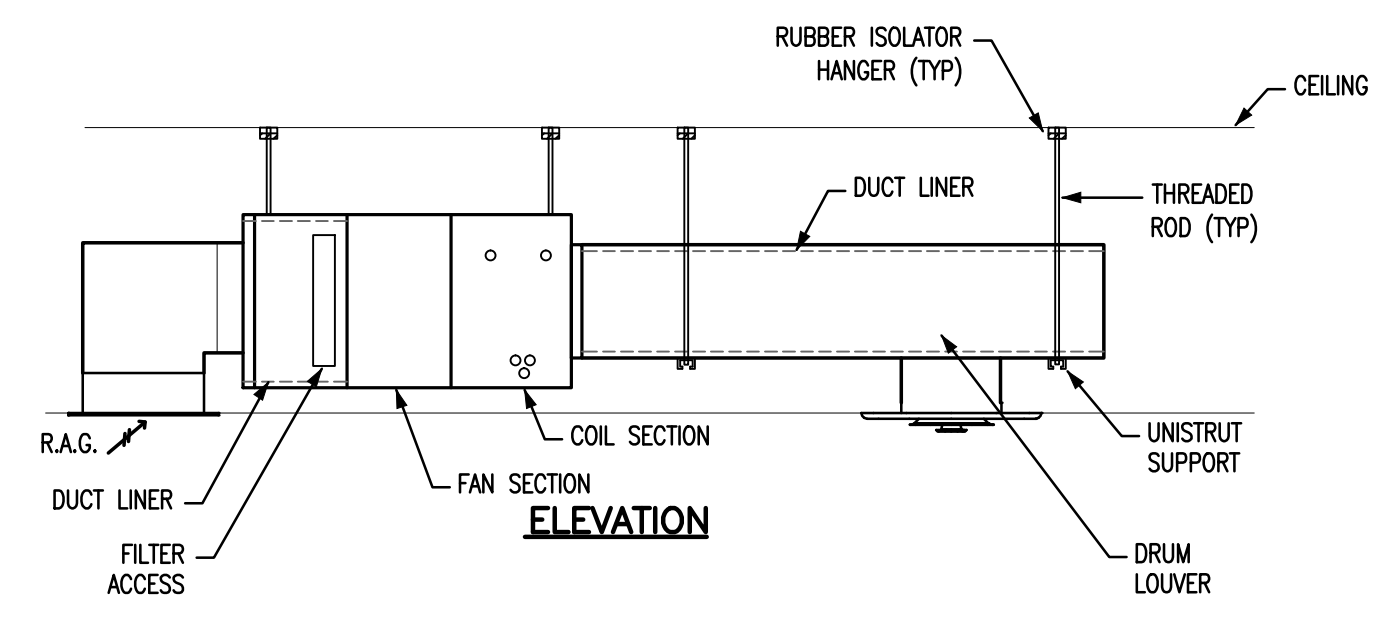
1 FAN COIL PIPING DETAIL
SCALE: NTS
REFER:



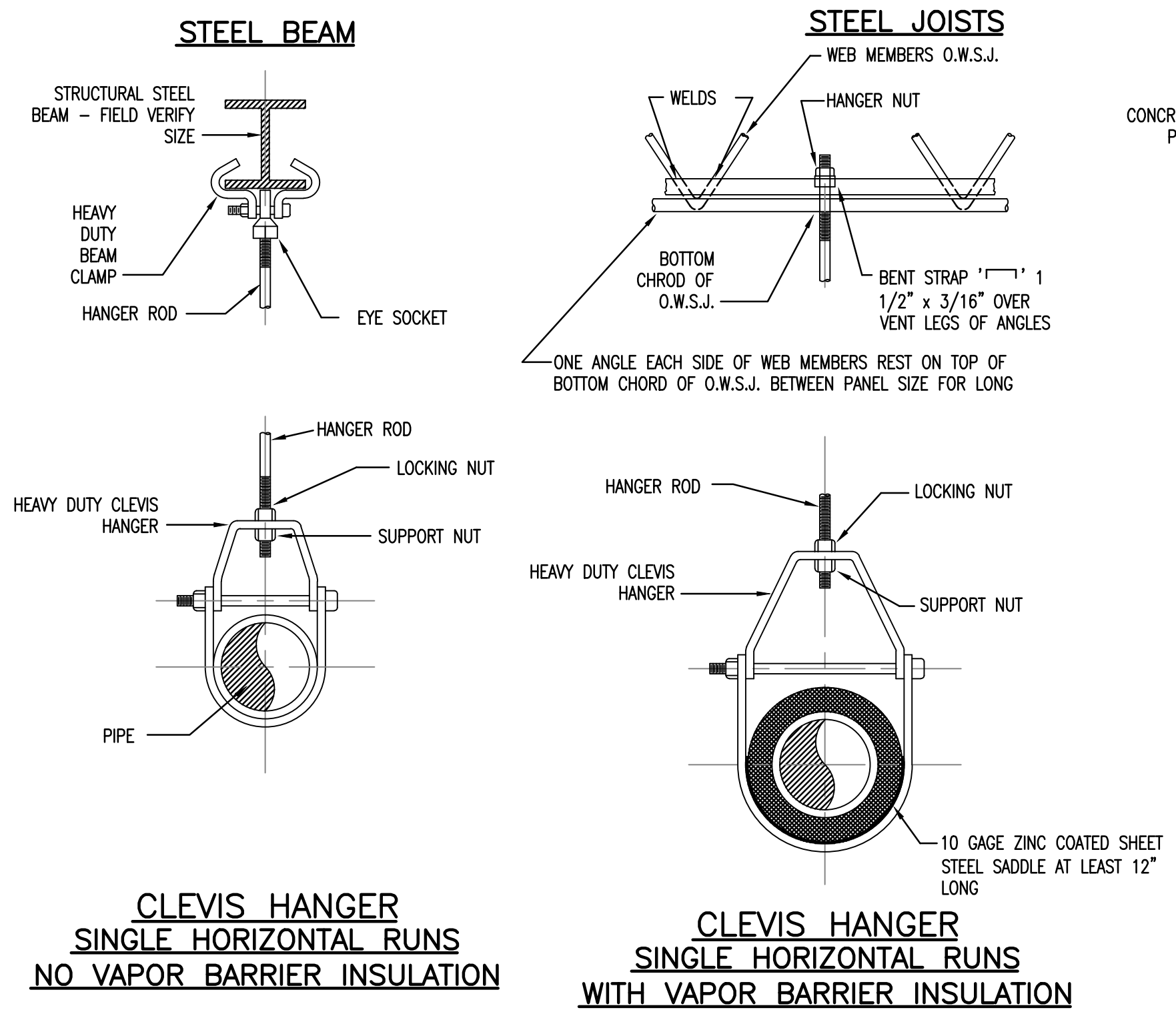
2 CHEMICAL POT FEEDER DETAIL
SCALE: NTS
REFER:



3 EXPANSION TANK PIPING DETAIL
SCALE: NTS
REFER:



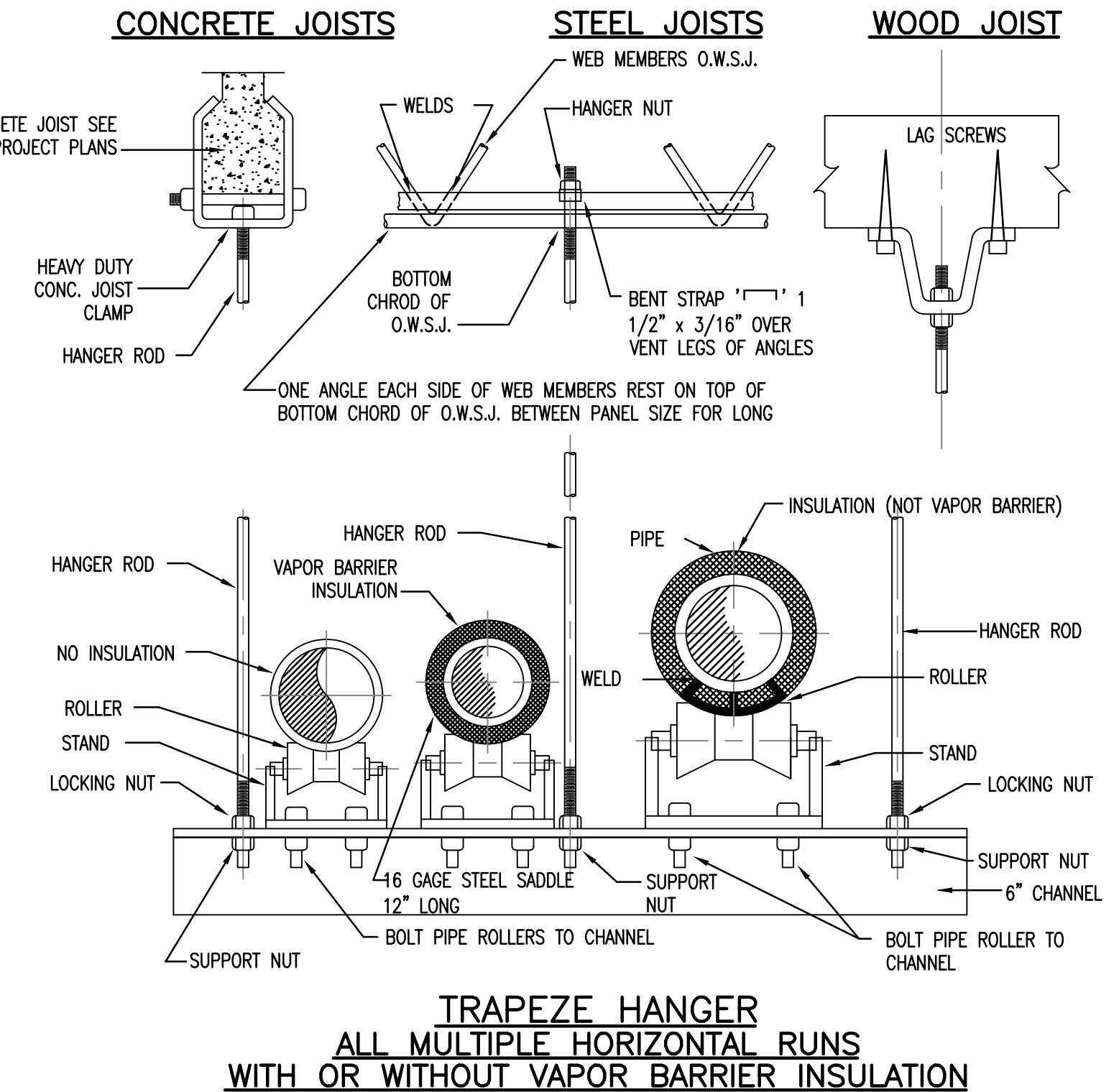
4 FAN COIL UNIT DETAIL
SCALE: NTS
REFER:



CLEVIS HANGER SINGLE HORIZONTAL RUNS NO VAPOR BARRIER INSULATION
CLEVIS HANGER SINGLE HORIZONTAL RUNS WITH VAPOR BARRIER INSULATION

NOTE: PROVIDE UNISTRUT SPANNING FROM JOIST TO JOIST TO CONNECT HANGER FROM WHEN PIPING OR DUCT DOES NOT FALL ON JOIST LINE. (TYPICAL)

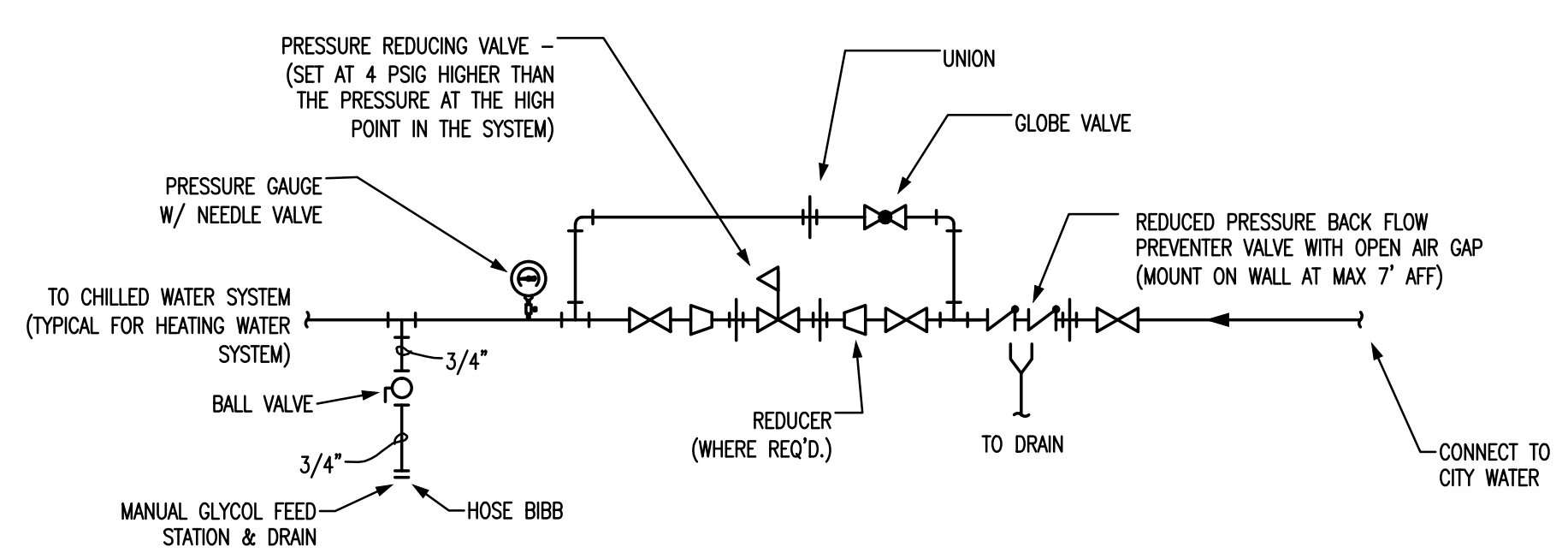
6 PIPE HANGER DETAIL
SCALE: NTS
REFER:



TRAPEZE HANGER ALL MULTIPLE HORIZONTAL RUNS WITH OR WITHOUT VAPOR BARRIER INSULATION

NOTE: PROVIDE UNISTRUT SPANNING FROM JOIST TO JOIST TO CONNECT HANGER FROM WHEN PIPING OR DUCT DOES NOT FALL ON JOIST LINE. (TYPICAL)

7 PIPE HANGER DETAIL
SCALE: NTS
REFER:



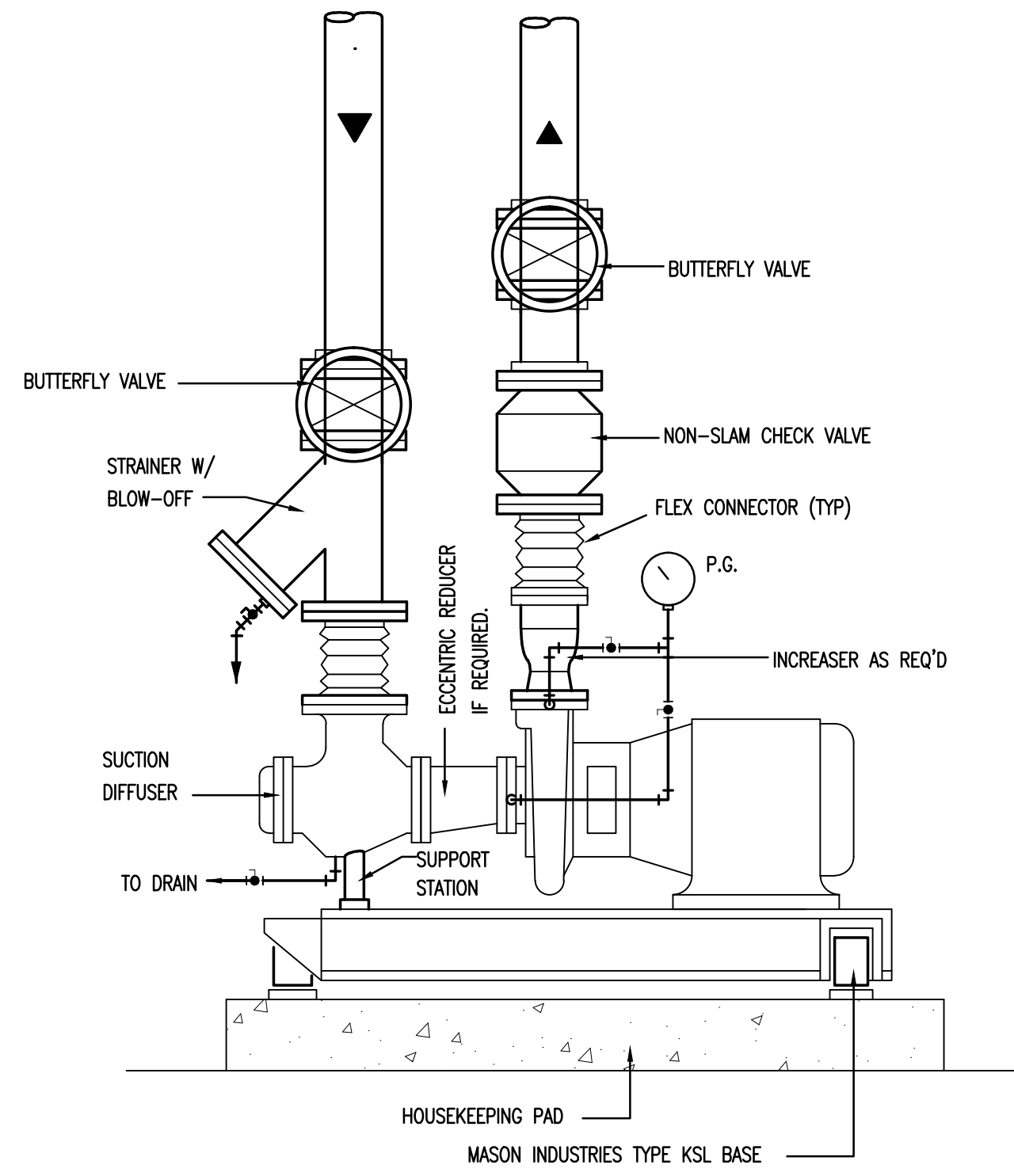
5 MAKEUP WATER CONNECTION DETAIL
SCALE: NTS
REFER:

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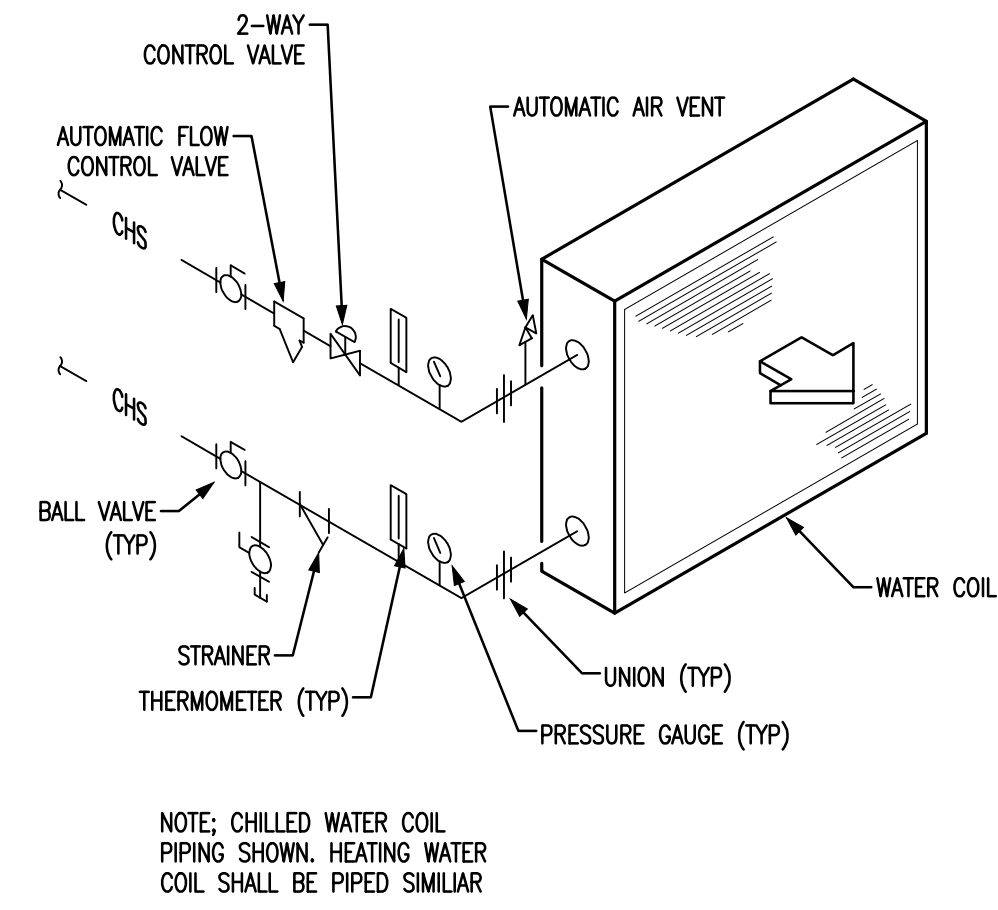
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201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
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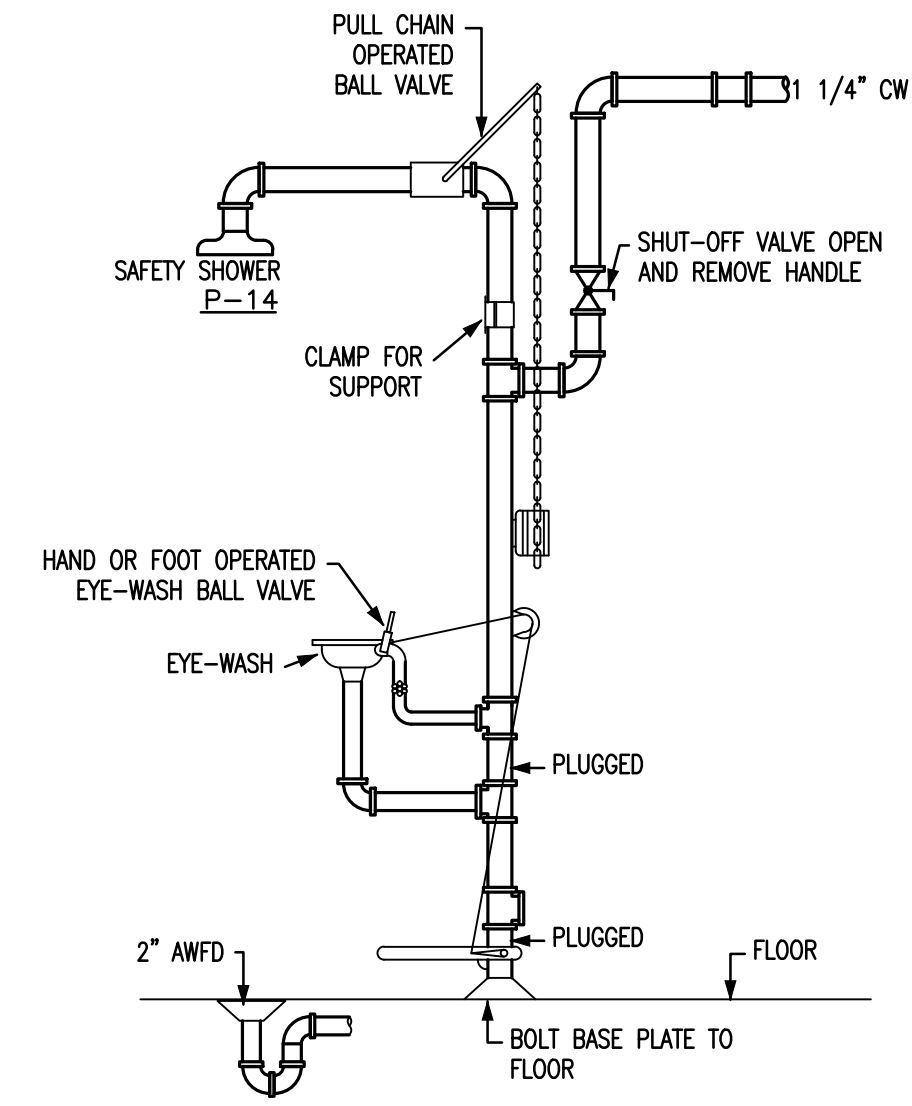
Project No.
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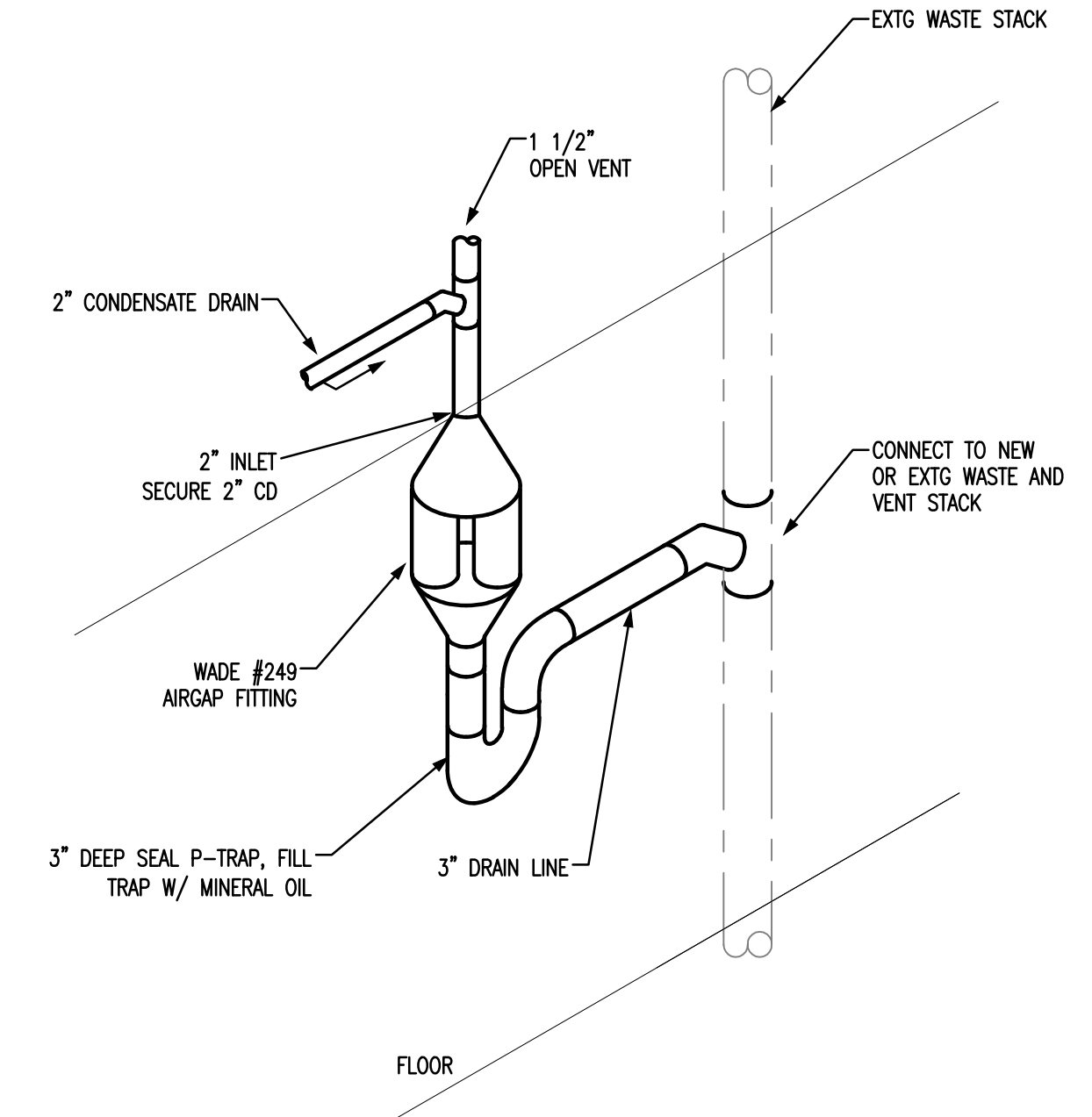
1 **BASE MOUNTED PUMP DETAIL**
SCALE: NTS
REFER:



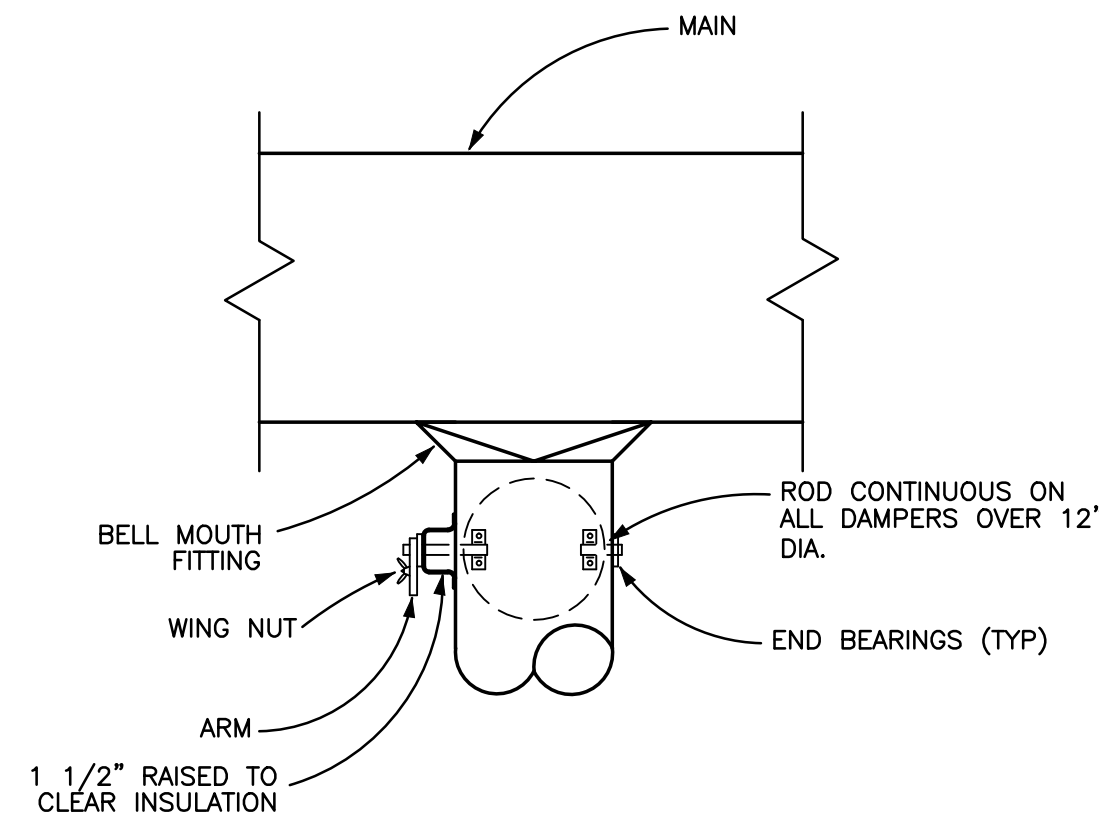
2 **WATER COIL PIPING - AHU**
SCALE: NTS
REFER:



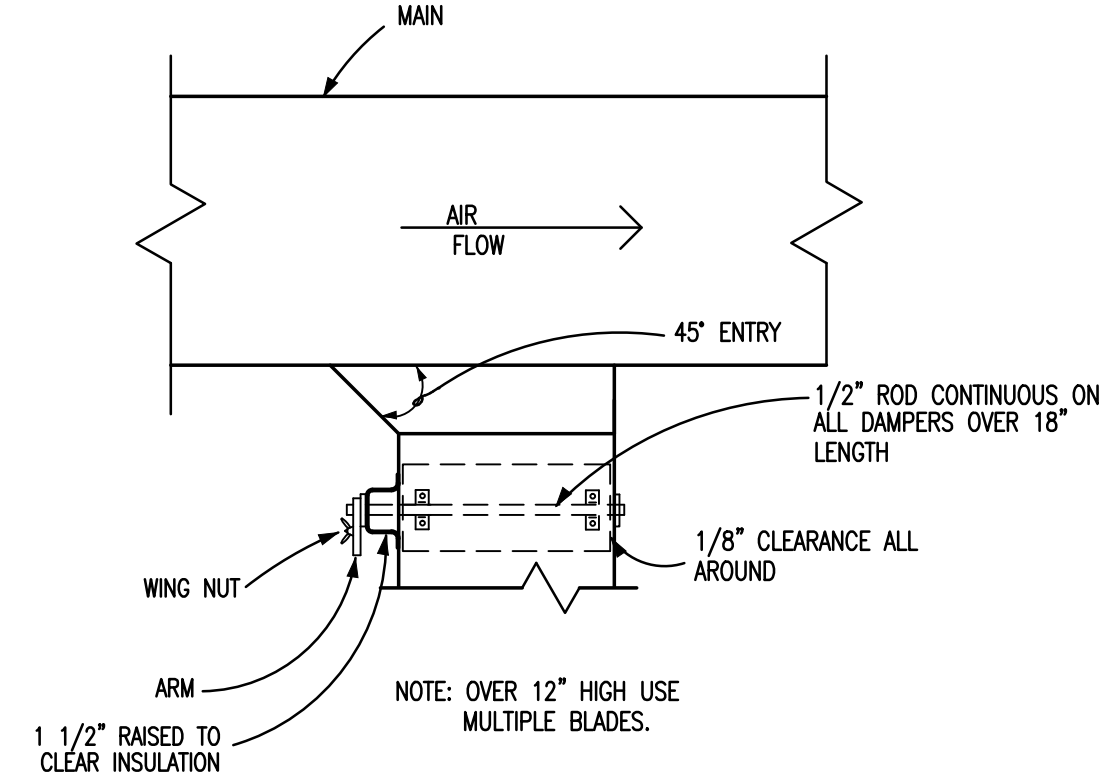
3 **SAFETY SHOWER + EYE-WASH**
SCALE: NTS
REFER:



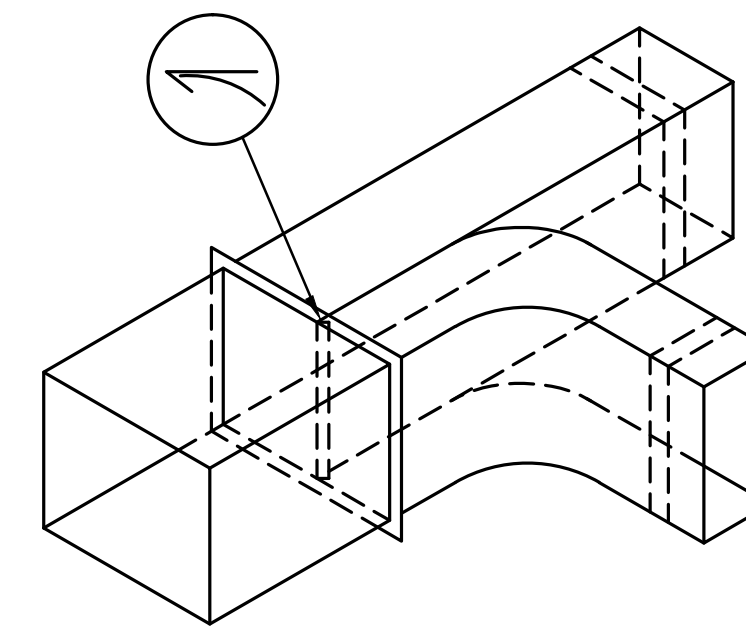
4 **CONDENSATE DRAIN WITH AIRGAP DETAIL**
SCALE: NTS
REFER:



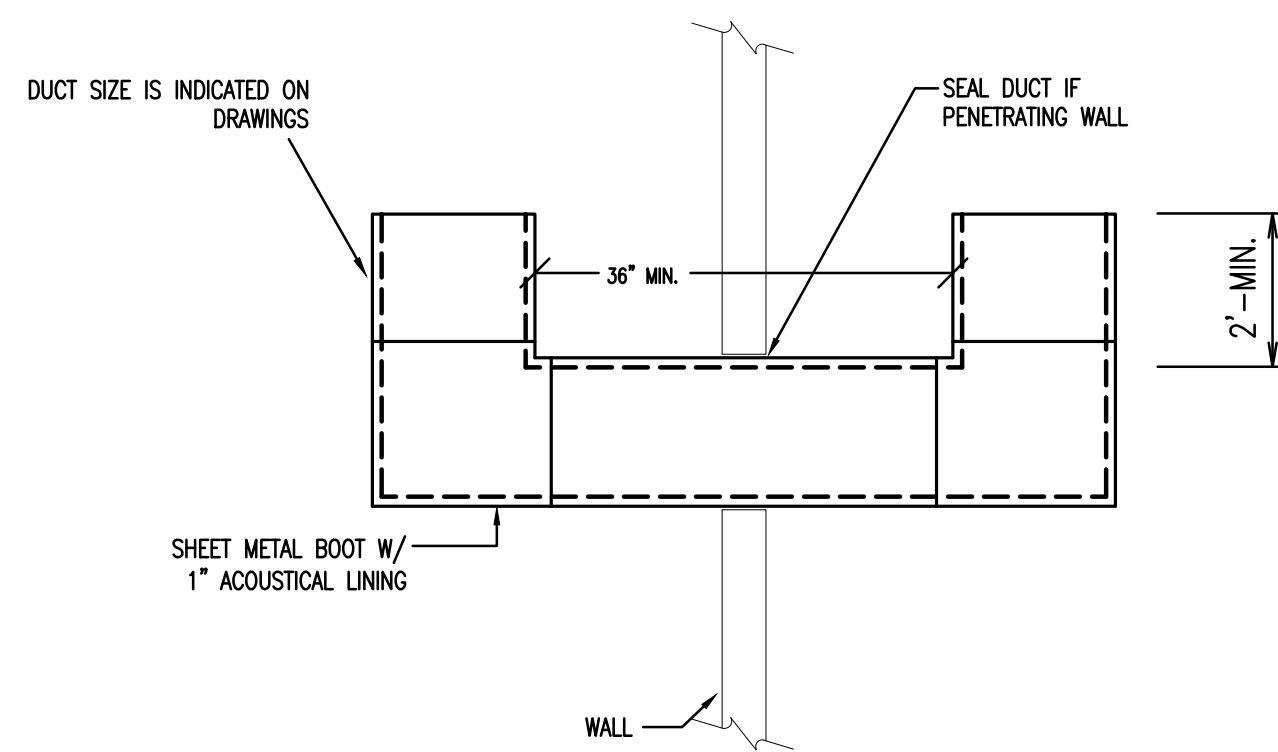
5 **ROUND BRANCH DUCT TAKEOFF DETAIL**
SCALE: NTS
REFER:



6 **RECTANGULAR BRANCH TAKEOFF DETAIL**
SCALE: NTS
REFER:



7 **SPLITTER DAMPER DETAIL**
SCALE: NTS
REFER:



8 **TRANSFER DUCT DETAIL**
SCALE: NTS
REFER:



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Project No.
N16001
Sheet No.
7M1

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Chilled Water System Sequence of Operation

Chilled Water System - Chiller Manager - Run Conditions:
The Chilled water system shall be enabled to run whenever:

- A definable number of Chilled water coils need Chilled
- AND the outside air temperature is greater than 54°F (adj.).

To prevent short cycling, the Chiller manager shall run for and be off for minimum adjustable times (both user definable).

Chiller shall run subject to its own internal safeties and controls.

Alarms shall be provided as follows:

- Chiller1 Failure.

Chilled Water Primary Pump Run Conditions:

The two primary chilled water pumps shall run anytime the chiller is called to run. The primary chilled water pump shall also run for freeze protection whenever the outside air temperature is less than 38°F (adj.).

The lead pump shall start prior to the chiller being enabled and shall stop only after the chiller is disabled. The pump(s) shall therefore have:

- A user adjustable delay on start.
- AND a user adjustable delay on stop.

The delay times shall be set appropriately to allow for orderly chilled water system start-up, shutdown and sequencing.

The two pumps shall operate in a lead/standby fashion.

- The lead pump shall run first.
- On failure of the lead pump, the standby pump shall run and the lead pump shall turn off.

The designated lead pump shall rotate upon one of the following conditions (user selectable):

- manually through a software switch
- if pump runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:

- Primary Chilled Water Pump 1
 - Failure: Commanded on, but the status is off.
 - Running in Hand: Commanded off, but the status is on.
 - Runtime Exceeded: Status runtime exceeds a user definable limit.
- Primary Chilled Water Pump 2
 - Failure: Commanded on, but the status is off.
 - Running in Hand: Commanded off, but the status is on.
 - Runtime Exceeded: Status runtime exceeds a user definable limit.

Chiller:

The chiller shall be enabled a user adjustable time after pump statuses are proven on. The chiller shall therefore have a user adjustable delay on start.

The delay time shall be set appropriately to allow for orderly chilled water system start-up, shutdown and sequencing.

The chiller shall run subject to its own internal safeties and controls.

Alarms shall be provided as follows:

- Chiller Failure: Commanded on, but the status is off.
- Chiller Running in Hand: Commanded off, but the status is on.
- Chiller Runtime Exceeded: Status runtime exceeds a user definable limit.

Chiller Chilled Water Supply Setpoint:

The chiller shall maintain a chilled water supply temperature setpoint as determined by its own internal controls (provided by others).

Chilled Water Temperature Monitoring:

The following temperatures shall be monitored:

- Chilled water supply.
- Chilled water return.

Alarms shall be provided as follows:

- High Chilled Water Supply Temp: If the Chilled water supply temperature is greater than 55°F (adj.).

Low Chilled Water Supply Temp: If the Chilled water supply temperature is less than 38°F (adj.).

Chilled Water Secondary Pump Run Conditions:

The Chilled water pumps shall be enabled whenever Chillers are enabled.

To prevent short cycling, the pump shall run for a minimum time and be off for a minimum time (both user adjustable).

Chilled Water Secondary Pump Lead/Lag Operation:

The two variable speed Chilled water pumps shall operate in a lead/lag fashion.

- The lead pump shall run first.
- On failure of the lead pump, the lag pump shall run and the lead pump shall turn off.
- On decreasing Chilled water differential pressure, the lag pump shall stage on and run in unison with the lead pump to maintain Chilled water differential pressure setpoint.

The designated lead pump shall rotate upon one of the following conditions (user selectable):

- manually through a software switch
- if pump runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:

Chilled Water Pump 1

- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.
- VFD Fault.

Chilled Water Pump 2

- Failure: Commanded on, but the status is off.
- Running in Hand: Commanded off, but the status is on.
- Runtime Exceeded: Status runtime exceeds a user definable limit.
- VFD Fault.

Chilled Water Differential Pressure Control:

The controller shall measure Chilled water differential pressure and modulate the Chilled water pump VFDs in sequence to maintain its Chilled water differential pressure setpoint.

The following setpoints are recommended values. All setpoints shall be field adjusted during the commissioning period to meet the requirements of actual field conditions.

The controller shall modulate Chilled water pump speeds to maintain a Chilled water differential pressure of 12lb/in2 (adj.). The VFDs minimum speed shall not drop below 20% (adj.).

On dropping Chilled water differential pressure, the VFDs shall stage on and run to maintain setpoint as follows:

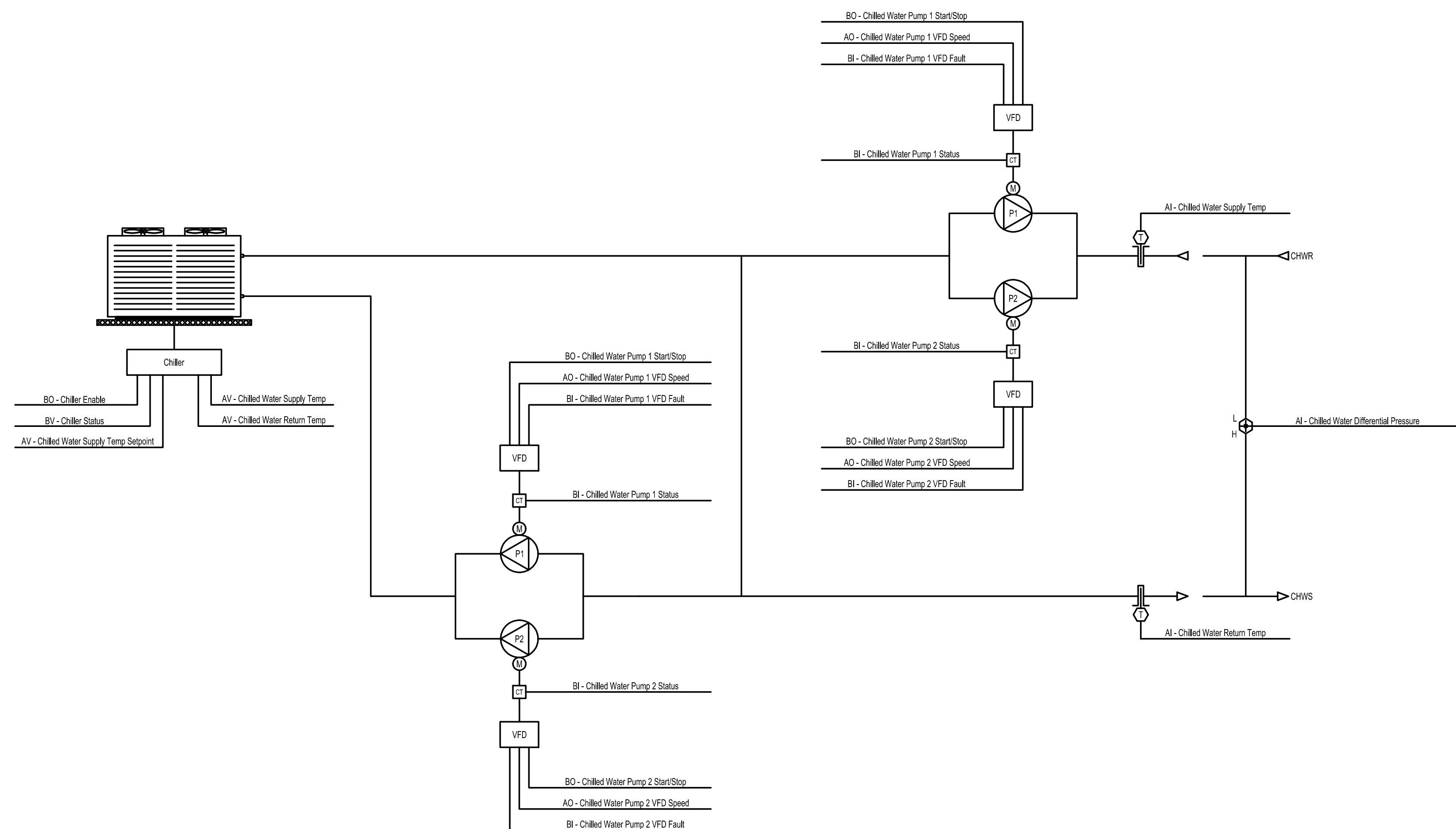
- The controller shall modulate the lead VFD to maintain setpoint.
- If the lead VFD speed is greater than a setpoint of 90% (adj.), the lag VFD shall stage on.
- The lag VFD shall ramp up to match the lead VFD speed and then run in unison with the lead VFD to maintain setpoint.

On rising Chilled water differential pressure, the VFDs shall stage off as follows:

- If the VFDs speeds drops back to 60% (adj.) below setpoint, the lag VFD shall stage off.
- The lead VFD shall continue to run to maintain setpoint.

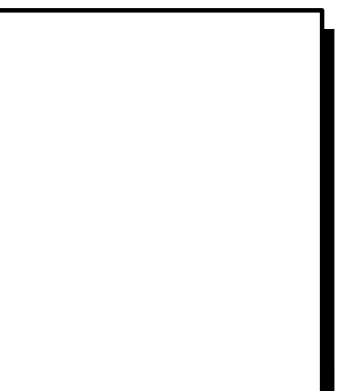
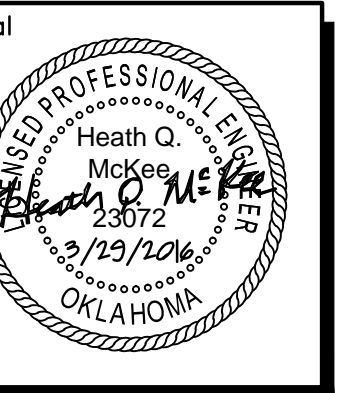
Alarms shall be provided as follows:

- High Chilled Water Differential Pressure: If 25% (adj.) greater than setpoint.
- Low Chilled Water Differential Pressure: If 25% (adj.) less than setpoint.



A CHILLED WATER SYSTEM CONTROL DIAGRAM
7M1 SCALE: NOT TO SCALE

Point Name	Hardware Points				Software Points						
	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphic
Primary Chilled Water Supply Temp					X				X		X
Primary Chilled Water Return Temp					X				X		X
Primary Chiller Pump 1 Status						X			X		X
Primary Chiller Pump 2 Status						X			X		X
Chiller Status						X				X	X
Primary Chilled Water Pump 1 Start/Stop				X							X
Primary Chilled Water Pump 2 Start/Stop				X							X
Chiller Enable				X							X
Chilled Water Differential Pressure	X								X		X
Chilled Water Return Temp	X								X		X
Chilled Water Supply Temp	X								X		X
Chilled Water Pump 1 VFD Speed		X							X		X
Chilled Water Pump 2 VFD Speed		X							X		X
Chilled Water Pump 1 Status				X					X		X
Chilled Water Pump 2 Status				X					X		X
Chilled Water Pump 1 VFD Fault				X						X	X
Chilled Water Pump 2 VFD Fault				X						X	X
Chilled Water Pump 1 Start/Stop				X					X		X
Chilled Water Pump 2 Start/Stop				X					X		X
Outside Air Temp					X						X
Chilled Water Differential Pressure Setpoint					X						X
High Chilled Water Differential Pressure										X	
Low Chilled Water Differential Pressure										X	
Primary Chilled Water Pump 1 Failure										X	
Primary Chilled Water Pump 2 Failure										X	
Primary Chilled Water Pump 1 Running in Hand										X	
Primary Chilled Water Pump 2 Running in Hand										X	
Primary Chilled Water Pump 1 Runtime Exceeded										X	
Primary Chilled Water Pump 2 Runtime Exceeded										X	
Chiller Failure										X	
Chilled Water Pump 1 Failure										X	
Chilled Water Pump 2 Failure										X	
Chilled Water Pump 1 Running in Hand										X	
Chilled Water Pump 2 Running in Hand										X	
Chilled Water Pump 1 Runtime Exceeded										X	
Chilled Water Pump 2 Runtime Exceeded										X	
High Chilled Water Supply Temp										X	
Low Chilled Water Supply Temp										X	
Totals	3	2	7	2	4	3	0	0	13	19	21
			Total Hardware (14)						Total Software (39)		



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Project No.
N16001

Sheet No.
7M2

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Fan Coil Unit (4 pipe) Sequence of Operation

Run Conditions - Scheduled:

The unit shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
 - A 74°F (adj.) cooling setpoint
 - A 70°F (adj.) heating setpoint.
- Unoccupied Mode (night setback): The unit shall maintain
 - A 85°F (adj.) cooling setpoint.
 - A 55°F (adj.) heating setpoint.

Alarms shall be provided as follows:

- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Zone Setpoint Adjust:

The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Optimal Start:

The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.

Zone Unoccupied Override:

A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

Fan:

The fan shall run anytime the unit is commanded to run, unless shutdown on safeties.

Cooling Coil Valve:

The controller shall measure the zone temperature and modulate the cooling coil valve to maintain its cooling setpoint.

The cooling shall be enabled whenever:

- Outside air temperature is greater than 60°F (adj.).
- AND the zone temperature is above cooling setpoint.
- AND the fan is on.

Heating Coil Valve:

The controller shall measure the zone temperature and modulate the heating coil valve to maintain its heating setpoint.

The heating shall be enabled whenever:

- Outside air temperature is less than 65°F (adj.).
- AND the zone temperature is below heating setpoint.
- AND the fan is on.

High Level Condensate Switch Status:

The condensate switch shall monitor high condensate level.

Alarms shall be provided as follows:

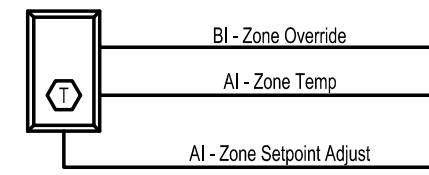
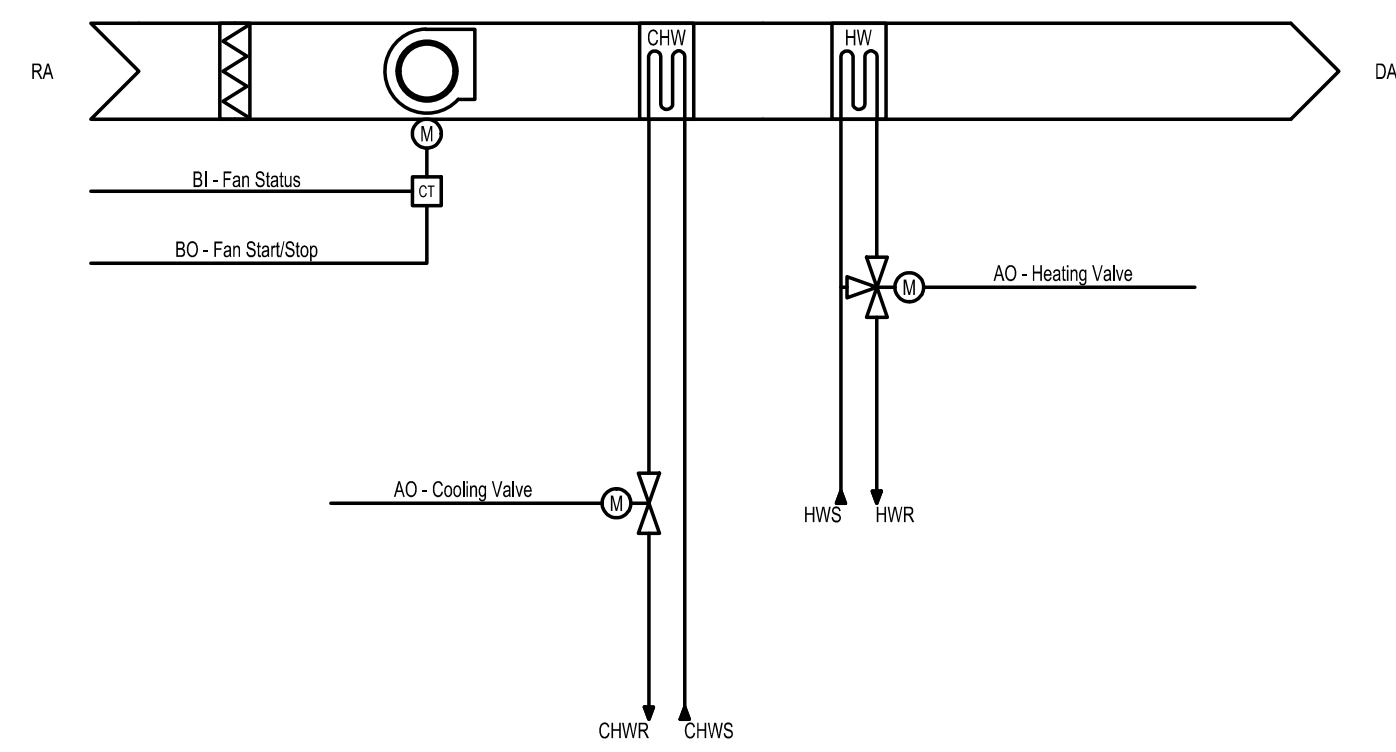
- High Level: Condensate has reached high level.

Fan Status:

The controller shall monitor the fan status.

Alarms shall be provided as follows:

- Fan Failure: Commanded on, but the status is off.
- Fan in Hand: Commanded off, but the status is on.
- Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).



A FAN COIL (4 PIPE) CONTROL DIAGRAM (TYPICAL ALL FAN COILS)
7M2 SCALE: NOT TO SCALE

Point Name	Hardware Points				Software Points						Show On Graphic	
	AI	AO	BI	BO	AV	BV	Sched	Trend	Alarm			
Zone Temp	X							X		X		
Zone Setpoint Adjust	X									X		
Cooling Valve		X					X			X		
Heating Valve		X					X			X		
Zone Override			X				X			X		
Fan Status			X							X		
Fan Start/Stop				X			X			X		
Schedule							X					
Heating Setpoint							X			X		
Cooling Setpoint							X			X		
High Zone Temp									X			
Low Zone Temp									X			
High Level Condensate Switch			X									
Fan Failure									X			
Fan in Hand									X			
Fan Runtime Exceeded									X			
High Level Condensate									X			
Totals	2	2	3	1	0	0	1	7	6	9		
		Total Hardware (8)			Total Software (14)							

MAU with Factory Controls and Energy Recovery - Sequence of Operation

MAU Interface:

Current MAU status and operating conditions will be monitored by BAS through its factory provided MAU controller communications interface port. The interface will monitor and trend the points as shown on the Points List.

Run Conditions - Scheduled:

The unit shall run according to a user definable BAS time schedule in the following modes:

- Occupied Mode: The unit shall maintain
 - A 68°F (adj.) supply air setpoint
 - A 55°F (adj.) supply air dewpoint setpoint

Alarms shall be provided though BAS as follows:

- High Supply Air Temp: If the supply air temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Supply Air Temp: If the supply air temperature is less than the heating setpoint by a user definable amount (adj.).
- High Return Air Humidity: If the return air humidity is greater than 70% (adj.).

Supply Air Smoke Detection:

The unit shall shut down and generate an alarm upon receiving a supply air smoke detector status.

Energy Recovery:

When in the occupied mode, the MAU controller shall measure operate the energy recovery wheel.

Alarms shall be provided through BAS as follows:

- Wheel rotation failure: If the wheel does not rotate when command on.

Prefilter Differential Pressure Monitor:

The factory provided MAU controller shall monitor the differential pressure across the outside air and exhaust air prefilter.

Alarms shall be provided through BAS as follows:

- Outside Air Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).
- Exhaust Air Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).

Compressor Failure Pressure Switch:

The factory provided MAU controller shall monitor the status of the compressor pressure switch.

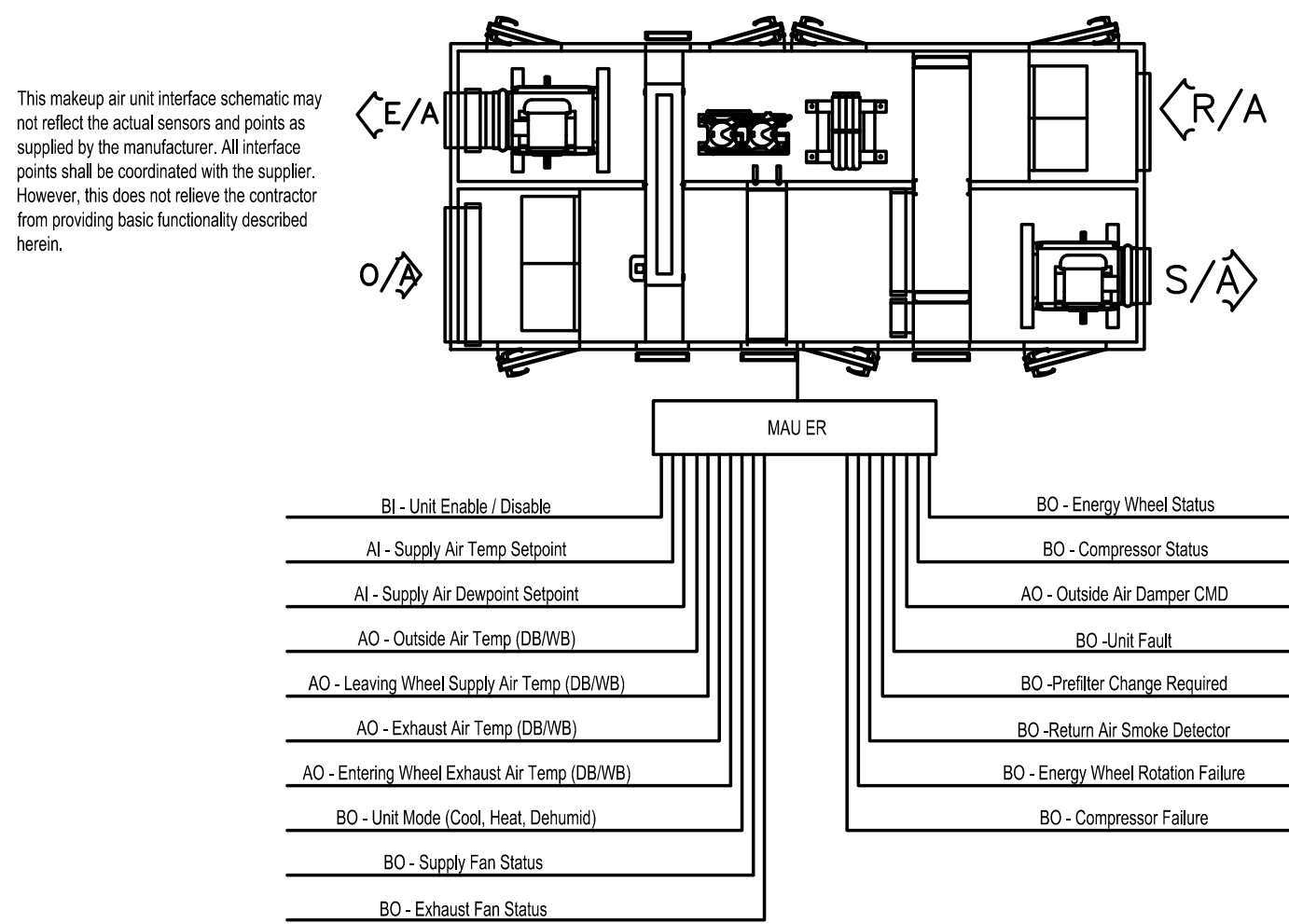
Alarms shall be provided through BAS as follows:

- High or Low Refrigerant Pressure: If the refrigerant pressure switch shuts the unit off on high or low pressure.

General Unit Fault:

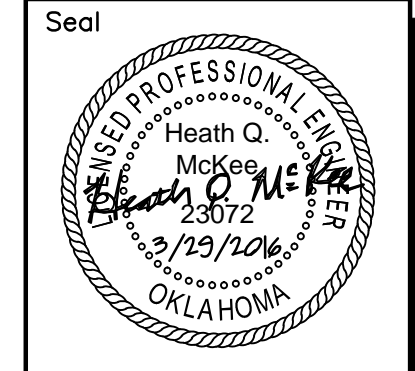
The factory provided MAU controller shall monitor the status of the unit and report any fault other than those listed specifically elsewhere as a general fault.

- General Fault: If the unit has a fault.



A MAU-1 & MAU-2 WITH FC & ER CONTROL DIAGRAM
7M2 SCALE: NOT TO SCALE

Point Name	Hardware Points				Software Points							Show On Graphic		
	AI	AO	BI	BO	AI	AO	BI	BO	Loop	Sched	Trend		Alarm	
Unit Enable/Disable							X						X	
Supply Air Temp Setpoint					X						X		X	
Supply Air Dewpoint Setpoint					X						X		X	
Outside Air Temp (DB/WB)						X							X	
Leaving Wheel Supply Air (DB/WB)						X							X	
Exhaust Air Temp (DB/WB)						X							X	
Entering Wheel Exhaust Air Temp (DB/WB)						X							X	
Unit Mode (Cool, Heat, Dehumid)							X						X	
Supply Fan Status								X					X	
Exhaust Fan Status								X					X	
Compressor Status								X			X		X	
Energy Wheel Status								X					X	
Outside Air Damper CMD						X							X	
Schedule									X					
High Supply Air Temp											X		X	
Low Supply Air Temp											X		X	
High Return Air Humidity											X		X	
Wheel Rotation Failure								X			X		X	
Unit Fault								X			X		X	
Prefilter Change Required								X			X		X	
Compressor Failure								X			X		X	
Return Air Smoke Detector								X			X		X	
Totals	0	0	0	0	2	5	1	10	0	1	3	8	21	
		Total Hardware (0)				Total Software (30)								



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7M3

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Heating Water System Sequence of Operation

Heating Water System - Boiler Manager - Run Conditions:
The hot water system shall be enabled to run whenever:

- A definable number of hot water coils need heating
- AND the outside air temperature is less than 65°F (adj.).

To prevent short cycling, the boiler manager shall run for and be off for minimum adjustable times (both user definable).

Each boiler shall run subject to its own internal safeties and controls.

The boiler system shall also run for freeze protection whenever the outside air temperature is less than 38°F (adj.).

Hot Water Pump Lead/Standby Operation:
The two hot water pumps shall operate in a lead/standby fashion.

- The lead pump shall run first.
- On failure of the lead pump, the standby pump shall run and the lead pump shall turn off.

The designated lead pump shall rotate upon one of the following conditions (user selectable):

- manually through a software switch
- if pump runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:

- Hot Water Pump 1
 - Failure: Commanded on, but the status is off.
 - Running in Hand: Commanded off, but the status is on.
 - Runtime Exceeded: Status runtime exceeds a user definable limit.
- Hot Water Pump 2
 - Failure: Commanded on, but the status is off.
 - Running in Hand: Commanded off, but the status is on.
 - Runtime Exceeded: Status runtime exceeds a user definable limit.

Boiler Lead/Standby Operation:
The two boilers shall operate in a lead/standby fashion when called to run and flow is proven. When a boiler is enabled it's associated control valve shall open.

- The lead boiler shall run first.
- On failure of the lead boiler, the standby boiler shall run and the lead boiler shall turn off.

The designated lead boiler shall rotate upon one of the following conditions: (user selectable):

- manually through a software switch
- if boiler runtime (adj.) is exceeded
- daily
- weekly
- monthly

Alarms shall be provided as follows:

- Boiler 1
 - Failure: Commanded on but the status is off.
 - Running in Hand: Commanded off but the status is on.
 - Runtime Exceeded: Status runtime exceeds a user definable limit.
- Boiler 2
 - Failure: Commanded on but the status is off.
 - Running in Hand: Commanded off but the status is on.
 - Runtime Exceeded: Status runtime exceeds a user definable limit.
- Lead Boiler Failure: The lead boiler is in failure and the standby boiler is on.

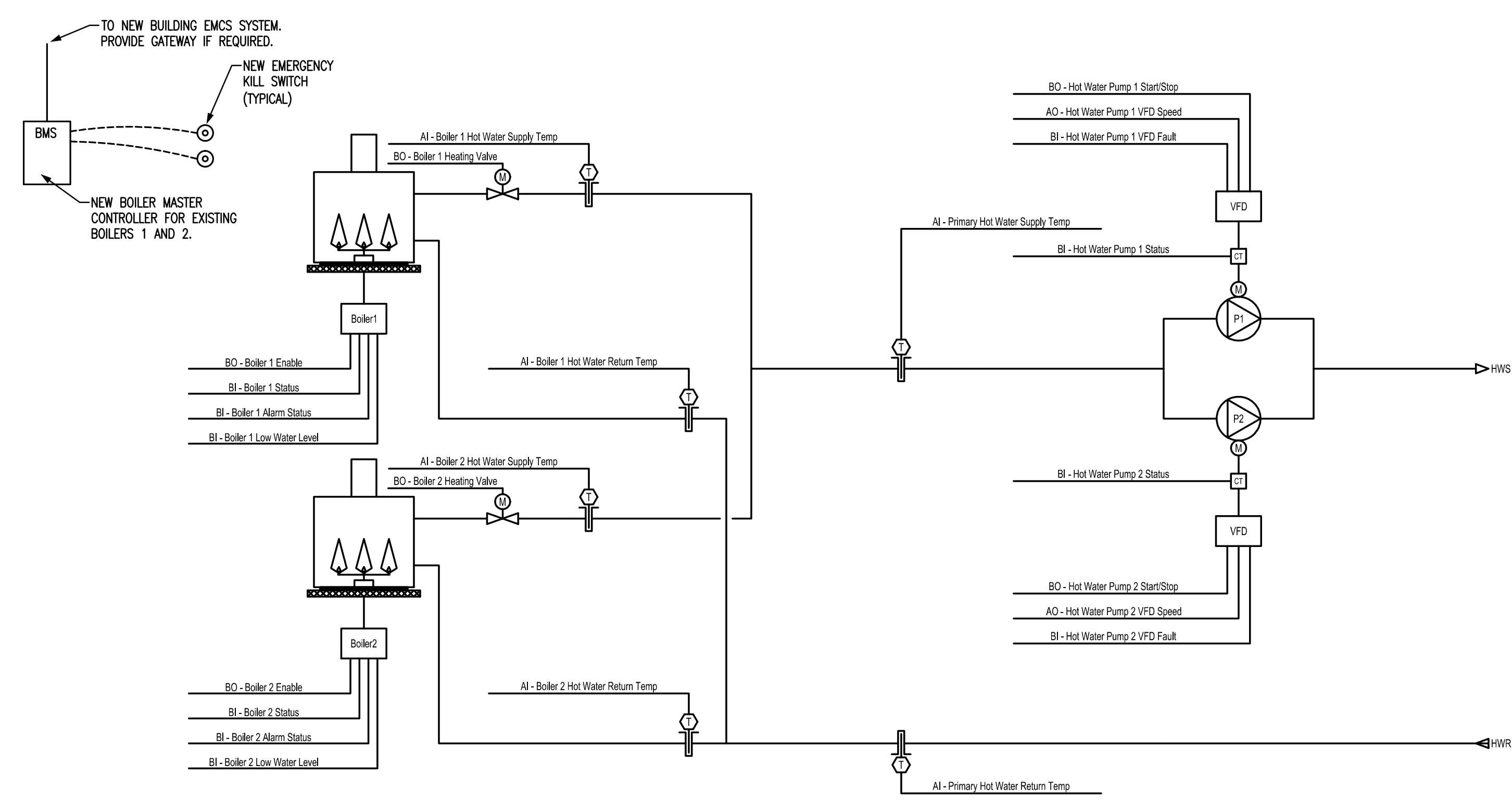
Hot Water Supply Temperature Setpoint:
The boiler shall maintain a hot water supply temperature setpoint as determined by its own internal controls (provided by others).

Hot Water Temperature Monitoring:
The following temperatures shall be monitored:

- Hot water supply.
- Hot water return.
- Boiler 1 hot water supply.
- Boiler 1 hot water return.
- Boiler 2 hot water supply.
- Boiler 2 hot water return.

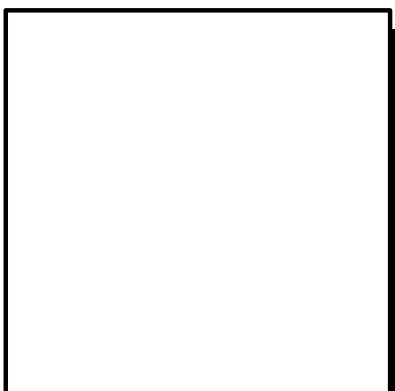
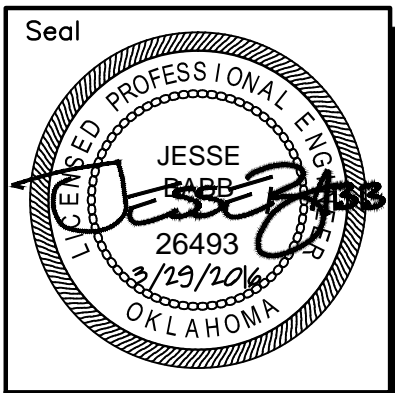
Alarms shall be provided as follows:

- High Hot Water Supply Temp: If the hot water supply temperature is greater than 200°F (adj.).
- Low Hot Water Supply Temp: If the hot water supply temperature is less than 100°F (adj.).



A HEATING WATER SYSTEM CONTROL DIAGRAM
SCALE: NOT TO SCALE

Point Name	Hardware Points				Software Points							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm		
Primary Hot Water Supply Temp					X					X		X
Primary Hot Water Return Temp					X							X
Boiler 1 Hot Water Return Temp	X									X		X
Boiler 1 Hot Water Supply Temp	X									X		X
Boiler 2 Hot Water Return Temp	X									X		X
Boiler 2 Hot Water Supply Temp	X									X		X
Boiler 1 Alarm Status			X							X	X	X
Boiler 1 Low Water Level			X							X	X	X
Boiler 2 Alarm Status			X							X	X	X
Boiler 2 Low Water Level			X							X	X	X
Hot Water Pump 1 Status			X							X		X
Hot Water Pump 2 Status			X							X		X
Boiler 1 Status											X	X
Boiler 2 Status											X	X
Hot Water Differential Pressure	X									X		X
Hot Water Return Temp	X									X		X
Hot Water Supply Temp	X									X		X
Hot Water Pump 1 VFD Speed		X								X		X
Hot Water Pump 2 VFD Speed		X								X		X
Hot Water Pump 1 Status			X							X		X
Hot Water Pump 2 Status			X							X		X
Hot Water Pump 1 VFD Fault			X								X	X
Hot Water Pump 2 VFD Fault			X								X	X
Hot Water Pump 1 Start/Stop				X						X		X
Hot Water Pump 2 Start/Stop				X						X		X
Boiler 1 Enable			X									X
Boiler 2 Enable			X									X
Boiler 1 Hot Water Valve			X									X
Boiler 2 Hot Water Valve			X									X
Outside Air Temp					X							X
Hot Water Differential Pressure Setpoint					X							X
High Hot Water Differential Pressure										X		
Low Hot Water Differential Pressure										X		
Hot Water Pump 1 Failure										X		
Hot Water Pump 2 Failure										X		
Hot Water Pump 1 Running in Hand										X		
Hot Water Pump 2 Running in Hand										X		
Hot Water Pump 1 Runtime Exceeded										X		
Hot Water Pump 2 Runtime Exceeded										X		
Boiler 1 Failure										X		
Boiler 2 Failure										X		
Boiler 1 Running in Hand										X		
Boiler 2 Running in Hand										X		
Lead Boiler Failure										X		X
Boiler 1 Runtime Exceeded										X		
Boiler 2 Runtime Exceeded										X		
High Hot Water Supply Temp										X		
Low Hot Water Supply Temp										X		
Totals	7	2	10	6	4	0	0	0	0	21	25	32
				Total Hardware (25)				Total Software (50)				



Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHICKTAW AVE.
EL RENO, OKLAHOMA 73036

ELECTRICAL LEGEND PLAN

Revisions

Issue Date
03.29.16

Project No.
N16001

Sheet No.
1E1

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ELECTRICAL LEGEND		ABBREVIATIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
LIGHTING LETTER WITHIN OR ADJACENT TO FIXTURE INDICATES FIXTURE TYPE. RE: FIXTURE SCHEDULE		CIRCUITING/RACEWAY	
	LIGHTING FIXTURE, RECESSED IN CEILING		CONDUIT ROUTED EXPOSED
	LIGHTING FIXTURE ON EMERGENCY OR STANDBY POWER SOURCE		CONDUIT ROUTED CONCEALED WITHIN OR BELOW FLOOR OR CONCRETE
	STRIP LIGHTING FIXTURE		HOMERUN TO PANEL INDICATED. ARROWHEADS INDICATE NUMBER OF CCTS.
	STRIP LIGHTING FIXTURE ON EMERGENCY OR STANDBY POWER SOURCE		PART CIRCUIT HOMERUN
	LIGHTING FIXTURE CEILING MOUNTED		LOW VOLTAGE WIRING IN CONDUIT
	LIGHTING FIXTURE ON EMERGENCY OR STANDBY POWER SOURCE		CONDUIT IN OPEN TRENCH
	LIGHTING FIXTURE WALL MOUNTED		CONDUIT INSTALLED BY DIRECT BORE
	OUTDOOR FLOODLIGHT FIXTURE		CONDUIT TURNING UP
	EMERGENCY "BUGEYE" FIXTURE		CONDUIT TURNING DOWN
	EXIT LIGHT WALL MOUNTED 8'-0" AFF TO CENTER, UNO SHADED AREA(S) INDICATE ILLUMINATED FACE(S)		CONDUIT CHANGE IN ELEVATION
	EXIT LIGHT CEILING MOUNTED		CONDUIT CAPPED FOR FUTURE USE
	EXTERIOR POLE MOUNTED LIGHTING FIXTURE	CONTROL/MISC	
RECEPTACLES MOUNT 18" AFF TO CENTER, UNO SUBSCRIPTS: GFI GROUND FAULT CIRCUIT INTERRUPTER WP WEATHERPROOF WHILE IN USE (TAYMAC #20510 OR EQUAL) EP EXPLOSIONPROOF SP SURGE PROTECTED IG ISOLATED GROUND C COUNTER TOP MOUNTED (MOUNT 4" ABOVE BACKSPASH TO CENTER)			PUSHBUTTON STATION
	SIMPLEX RECEPTACLE OUTLET		PHOTOELECTRIC CELL. MOUNT FACING NORTH WHENEVER POSSIBLE
	DUPLEX RECEPTACLE OUTLET		THERMOSTAT OR TEMPERATURE SENSOR MOUNTED 48" AFF TO CENTER, UNO.
	QUADPLEX RECEPTACLE OUTLET		CONTROL DEVICE: LS = LIMIT SWITCH, FS = FLOAT SWITCH, SV = SOLENOID VALVE
	CLOCK OUTLET		GROUND ROD
	SPECIAL PURPOSE RECEPTACLE MOUNTED 48" AFF, UNO RE: PLANS		GROUND WELL
	GFCI RECEPTACLE		METER
	RECEPTACLE MOUNTED 6" ABOVE COUNTER (OR HEIGHT SHOWN)		CEILING MOUNTED OCCUPANCY SENSOR
	WEATHER-PROOF GFCI RECEPTACLE		LONG RANGE CEILING MOUNTED OCCUPANCY SENSOR
	SIMPLEX FLOOR OUTLET		WALL MOUNTED OCCUPANCY SENSOR
	CEILING MOUNTED RECEPTACLE OUTLET		POWER PACK/RELAY FOR OCCUPANCY SENSORS
	DUPLEX FLOOR OUTLET		BOLD LINETYPES REPRESENT NEW WORK
	QUADPLEX FLOOR OUTLET		SUBDUED LINETYPES REPRESENT EXISTING WORK
	SPECIAL PURPOSE FLOOR OUTLET, RE: PLANS		BOLD & DASHED LINETYPES REPRESENT DEMOLITION WORK
	FLOOR BOX WITH RECEPTACLES (FLOOR PLUG)	POWER DISTRIBUTION	
	FLOOR BOX WITH HARDWIRED CONNECTION TO FURNITURE (FURNITURE FEED)		480V PANELBOARD SURFACE MOUNTED, UNO
	PLUGMOLD		480V PANELBOARD FLUSH MOUNTED, UNO
SWITCHES MOUNT 42" AFF TO CENTER, UNO SUBSCRIPTS: WP WEATHERPROOF (TAYMAC #40110 OR EQUAL) EP EXPLOSIONPROOF LV LOW VOLTAGE P PILOT LIGHT C COUNTER TOP MOUNTED (MOUNT 4" ABOVE BACKSPASH TO CENTER)			208V PANELBOARD SURFACE MOUNTED, UNO
	SINGLE POLE, SINGLE THROW WALL SWITCH		208V PANELBOARD FLUSH MOUNTED, UNO
	DOUBLE POLE, SINGLE THROW WALL SWITCH		SAFETY DISCONNECT SWITCH PROVIDED WITH EQUIPMENT
	THREE WAY WALL SWITCH		MOTOR STARTER OR CONTROL PANEL FURNISHED WITH EQUIPMENT
	FOUR WAY WALL SWITCH		VARIABLE FREQUENCY DRIVE
	0-10V DIMMER SWITCH, LEVITON IP710-LFZ OR EQUAL		MOTOR (HORSEPOWER AS INDICATED)
	PRESET LIGHTING CONTROL ENTRY SWITCH		JUNCTION BOX
	OCCUPANCY SENSOR WALL SWITCH		JUNCTION BOX, WALL MOUNTED
	MANUAL MOTOR STARTER		PULL BOX
	KEY SWITCH		UNDERFLOOR DUCT JUNCTION BOX
	LOW VOLTAGE SWITCH		DRY TYPE TRANSFORMER MOUNTED ON 3" CONCRETE HOUSE KEEPING PAD. CHAMFER ALL CORNERS OF PAD.
	SPRING WOUND TIMER SWITCH. (TORK #A560MH OR EQUAL)		GROUND BAR
		FIRE ALARM	
	FIRE ALARM CONTROL PANEL		FIRE ALARM SYSTEM ANNUNCIATOR
	MANUAL PULL STATION (MTD. 46" AFF TO CENTER, UNO)		COMBINATION HORN/STROBE (MTD. 81" AFF TO BOTTOM, UNO)
	ALARM STROBE LIGHT (MTD. 81" AFF TO BOTTOM, UNO)		SMOKE DETECTOR (UF = UNDERFLOOR)
	HEAT DETECTOR		BEAM SMOKE DETECTOR - DETECTOR
	DUCT MOUNTED SMOKE DETECTOR		BEAM SMOKE DETECTOR - REFLECTOR
	FLOW SWITCH		TAMPER SWITCH
	PRESSURE SWITCH		ABORT SWITCH
	CONTROL ZAM		INDIVIDUAL ADDRESSABLE MODULE
	MAGNETIC DOOR HOLDER		DATA OUTLET
			TELEPHONE OUTLET
			WALL MOUNT TELEPHONE AT 54" AFF TO CENTER, UNO.
			COMBINATION TELEPHONE/DATA OUTLET
			DATA FLOORBOX OUTLET
			TELEPHONE FLOORBOX OUTLET
			COMBINATION TELEPHONE/DATA FLOORBOX OUTLET
			INTERCOM CALL STATION
		PAGING/SOUND	
		SUBSCRIPTS: R RECESS WP WEATHERPROOF S SURFACE VC VOLUME CONTROL DB DOUBLE BAFFLE	
	SPEAKER - CEILING MOUNTED (RECESSED, UNO)		SPEAKER - WALL MOUNTED
	SPEAKER - TRUMPET TYPE (WALL MOUNTED, UNO)		CALL STATION
	BUZZER		VOLUME CONTROL WALL MOUNTED 46" AFF TO CENTER, UNO
		SECURITY/INTRUSION ALARM	
	REMOTE DOOR LOCK/UNLOCK CONNECTION		CARD READER
	SECURITY CAMERA		DOOR CONTACT
	KEYPAD		MOTION SENSOR
	GLASS BREAK SENSOR		CARBON MONOXIDE DETECTOR

NOTE: ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT

ABBREVIATION	DESCRIPTION
A OR AMP	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ATC	ASYMMETRICAL AMPS INTERRUPTING CAPACITY
ARF	ABOVE RAISED FLOOR
AWG	AMERICAN WIRE GAUGE
AV	AUDIBLE AND VISUAL
BAS	BUILDING AUTOMATION SYSTEM
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BKR	BREAKER
BOF	BOTTOM OF FIXTURE
BLDG	BUILDING
CL	CONDUIT
CB	CIRCUIT BREAKER
CCT	CIRCUIT
CU	COPPER
DDC	DIRECT DIGITAL CONTROL
EG	EQUIPMENT GROUND
ELEC	ELECTRICAL
EMCS	ENERGY MANAGEMENT & CONTROL SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EP	EXPLOSION PROOF
ETC.	ET CETERA
EWG	ELECTRIC WATER COOLER
EXIST. OR E	EXISTING
FA	FIRE ALARM
FIC	FIBER OPTIC INTERCONNECT CENTER
FMC	FLEXIBLE METALLIC CONDUIT
GFI OR GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND.	GROUND
HPS	HIGH PRESSURE SODIUM
HV	HIGH VOLTAGE
HZ	HERTZ
IA	INTRUSION ALARM
IE.	THAT IS
IG.	ISOLATED GROUND
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KWH	KILOWATT HOUR
LTFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
LV	LOW VOLTAGE
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MH	MANHOLE
MIN	MINIMUM
MISC.	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOUNTING	MOUNTING
N/A	NOT APPLICABLE
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEUT.	NEUTRAL
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NL	NIGHT LIGHT (CONNECT TO UNSWITCHED CIRCUIT)
OC	ON CENTER
OH	OVERHEAD
PC	PART CIRCUIT
PNL	PANELBOARD
PTT	PUSH TO TEST
PVC	POLYVINYL CHLORIDE
RE.	REFERENCE
RGSC	RIGID GALVANIZED STEEL CONDUIT
SCH	SCHEDULE
SPECS	CONTRACT SPECIFICATIONS
S/N	SOLID NEUTRAL
TEL	TELEPHONE
TIB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UG	UNDERGROUND
UGC	UNDERGROUND COMMUNICATIONS
UGE	UNDERGROUND ELECTRIC
UGT	UNDERGROUND TELEPHONE
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF
W/O	WITHOUT
XFMR	TRANSFORMER
ø	PHASE
+48"	MOUNTING HEIGHT ABOVE FINISHED FLOOR OR FINISHED GRADE
-48"	MOUNTING HEIGHT BELOW FINISHED FLOOR OR FINISHED GRADE

ELECTRICAL SHEET INDEX:

- 1E1 - ELECTRICAL LEGEND PLAN
- 2E1 - FIRST FLOOR ELECTRICAL DEMO PLAN - SOUTH
- 2E2 - FIRST FLOOR ELECTRICAL DEMO PLAN - NORTH
- 2E3 - BASEMENT ELECTRICAL DEMO PLAN
- 3E1 - FIRST FLOOR ELECTRICAL POWER PLAN - SOUTH
- 3E2 - FIRST FLOOR ELECTRICAL POWER PLAN - NORTH
- 3E3 - BASEMENT ELECTRICAL POWER PLAN

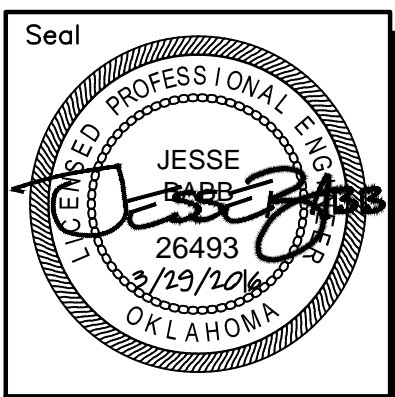


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ALLEN CONSULTING INCORPORATED
CAZ192 Expires 6/30/2018
A21 Project No. 115-16 115 West Main Norman, OK 73069
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**Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING**
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR
ELECTRICAL DEMO PLAN - SOUTH

Revisions

Issue Date
03.29.16

Project No.
N16001

Sheet No.
2E1

FIELD VERIFICATION NOTES:

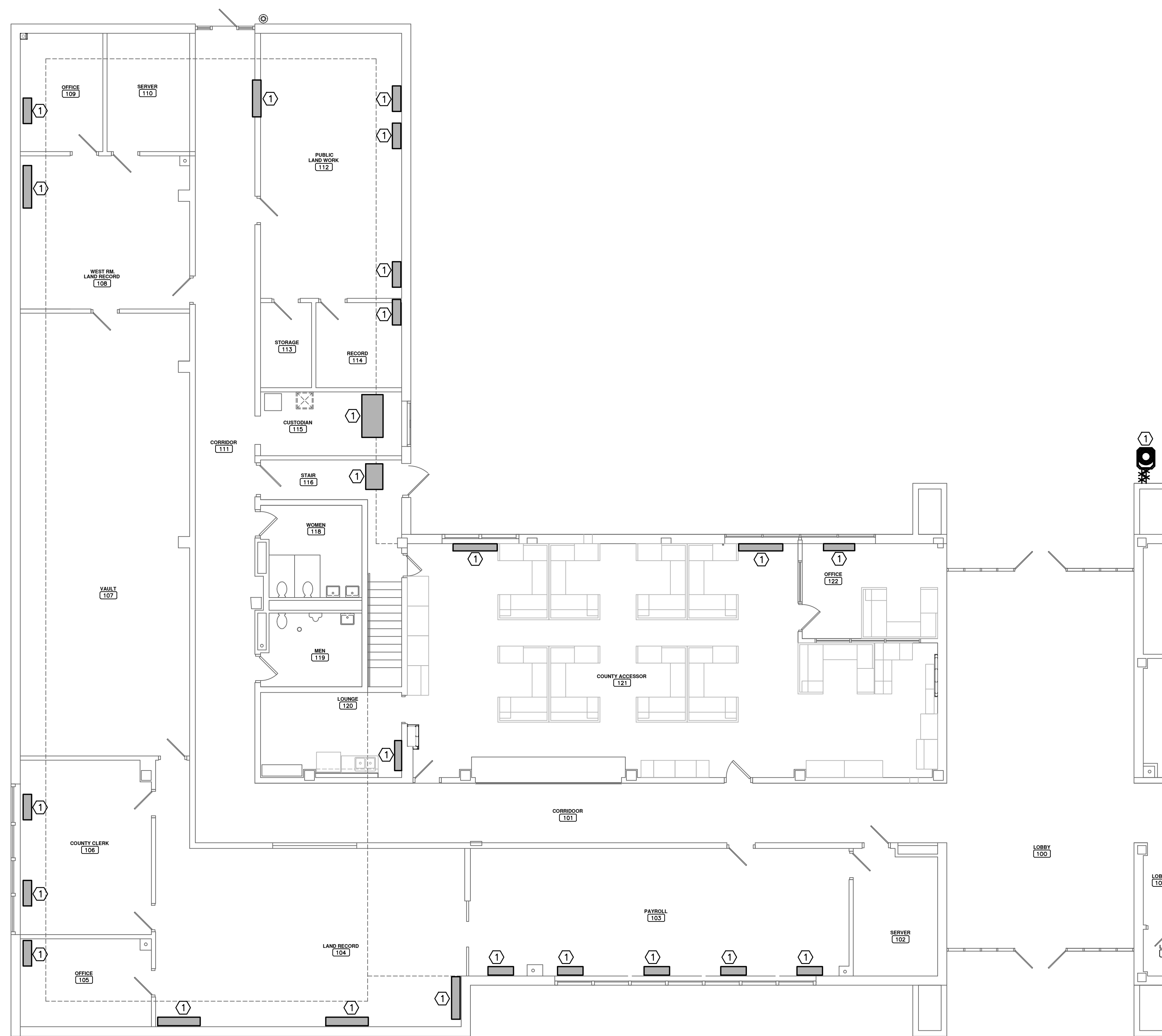
1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED
 - A. EXACT PLACEMENT, SIZE, CAPACITY, MANUFACTURER AND CONDITION OF ALL EXISTING ELECTRICAL EQUIPMENT WITHIN SCOPE OF WORK, WHETHER SPECIFICALLY SHOWN OR NOT.
 - B. SIZE AND LOCATION OF ALL EXISTING PANELS AND FEEDERS.
 - C. SIZE AND LOCATION OF SERVICE ENTRANCE.
2. ALL REFERENCES ON THESE DRAWINGS TO EXISTING PANELS AND DEVICES IS FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL THESE ITEMS PRIOR TO BID AND INCLUDE IN HIS BID ANY AND ALL AMOUNTS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.
3. NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
4. ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION.

GENERAL NOTES:

1. REMOVE ALL ABANDONED SURFACE RACEWAYS AND JUNCTION BOXES. EXISTING ABANDONED RECESSED JUNCTION BOXES SHALL BE REMOVED AND THE WALL PATCHED, OR A NEW BLANK COVERPLATE SHALL BE INSTALLED.
2. CONTRACTOR TO VERIFY EXISTING CONDITIONS ON-SITE AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO BID.

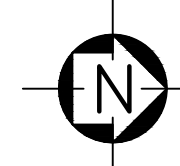
KEYED NOTES:

1. DEMO MECHANICAL EQUIPMENT ELECTRICAL DEVICES, CONDUIT, AND WIRING BACK TO POINT OF SERVICE. LABEL BREAKERS AS SPARE.

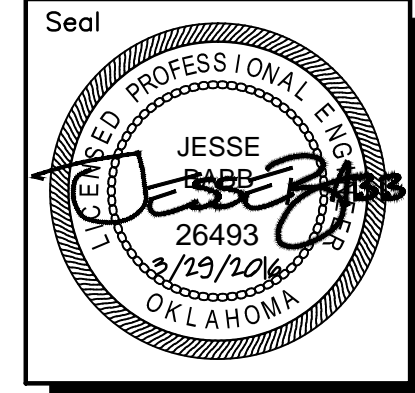


A
2E1

FIRST FLOOR
ELECTRICAL DEMO PLAN - SOUTH
SCALE: 1/8"=1'-0"



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Roof Replacement & HVAC Renovation
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FIRST FLOOR
ELECTRICAL DEMO PLAN - NORTH

Revisions
Issue Date
03.29.16

Project No.
N16001
Sheet No.
2E2

FIELD VERIFICATION NOTES:

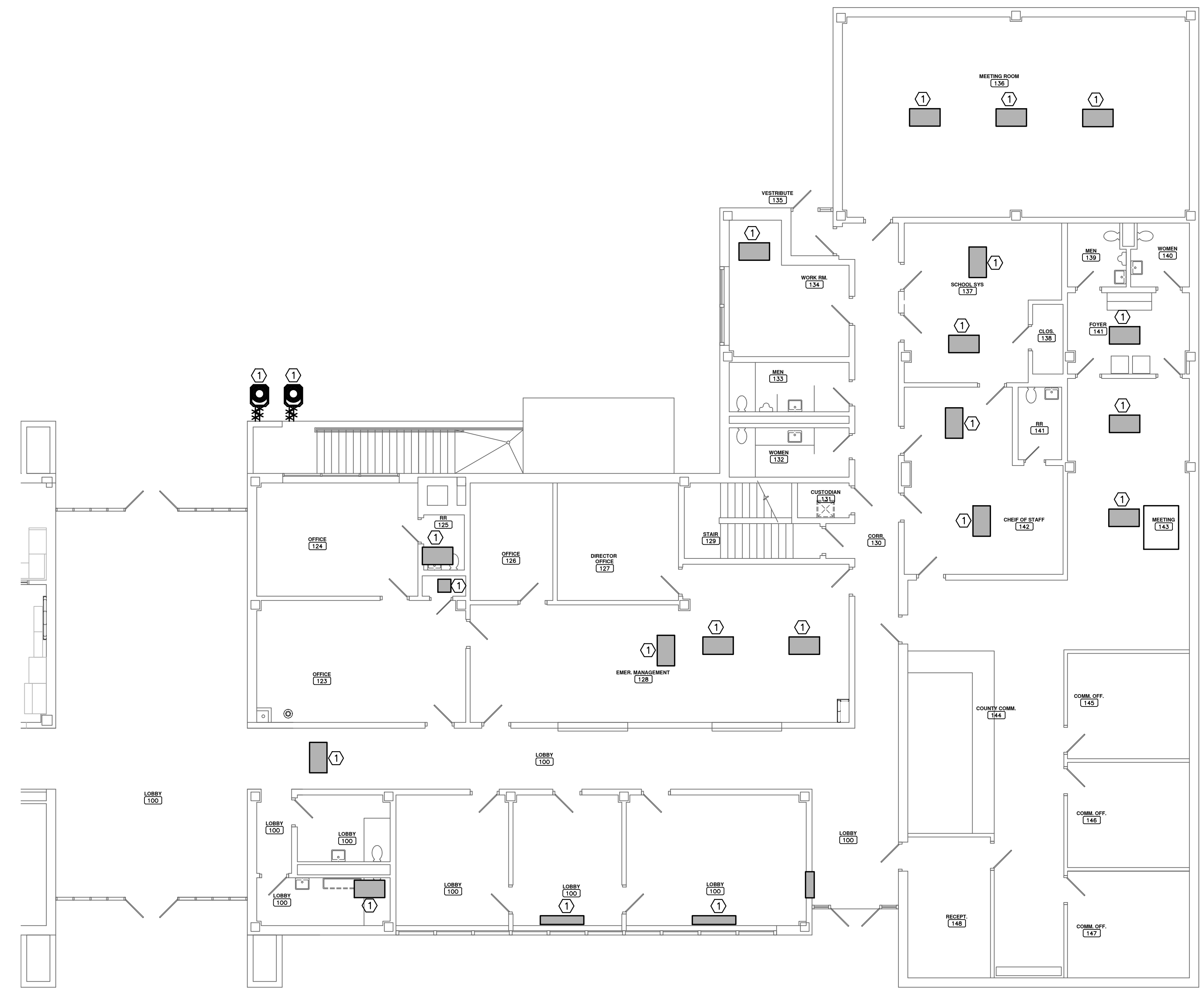
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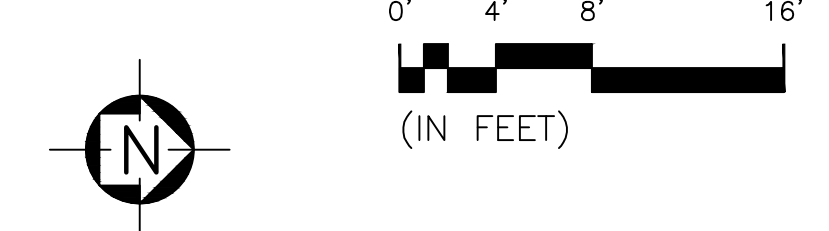
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2. CONTRACTOR TO VERIFY EXISTING CONDITIONS ON-SITE AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO BID.

KEYED NOTES:

1. DEMO MECHANICAL EQUIPMENT ELECTRICAL DEVICES, CONDUIT, AND WIRING BACK TO POINT OF SERVICE. LABEL BREAKERS AS SPARE.



A
2E2
FIRST FLOOR
ELECTRICAL DEMO PLAN - NORTH
SCALE: 1/8"=1'-0"



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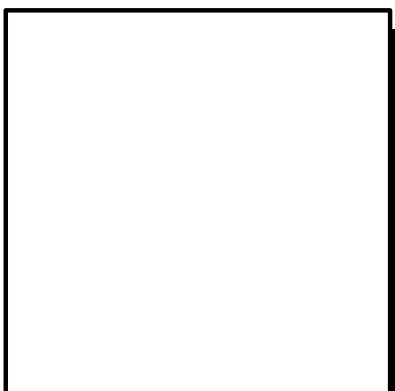
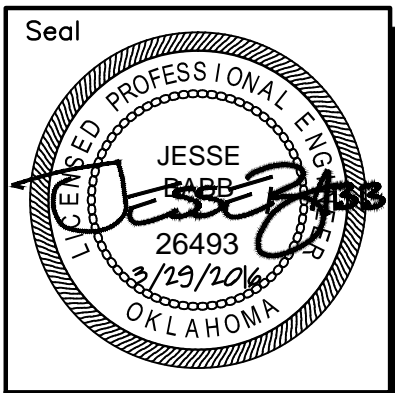


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Roof Replacement & HVAC Renovation
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201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
BASEMENT
ELECTRICAL DEMO PLAN

Revisions
Issue Date
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Project No.
N16001
Sheet No.
2E3

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FIELD VERIFICATION NOTES:

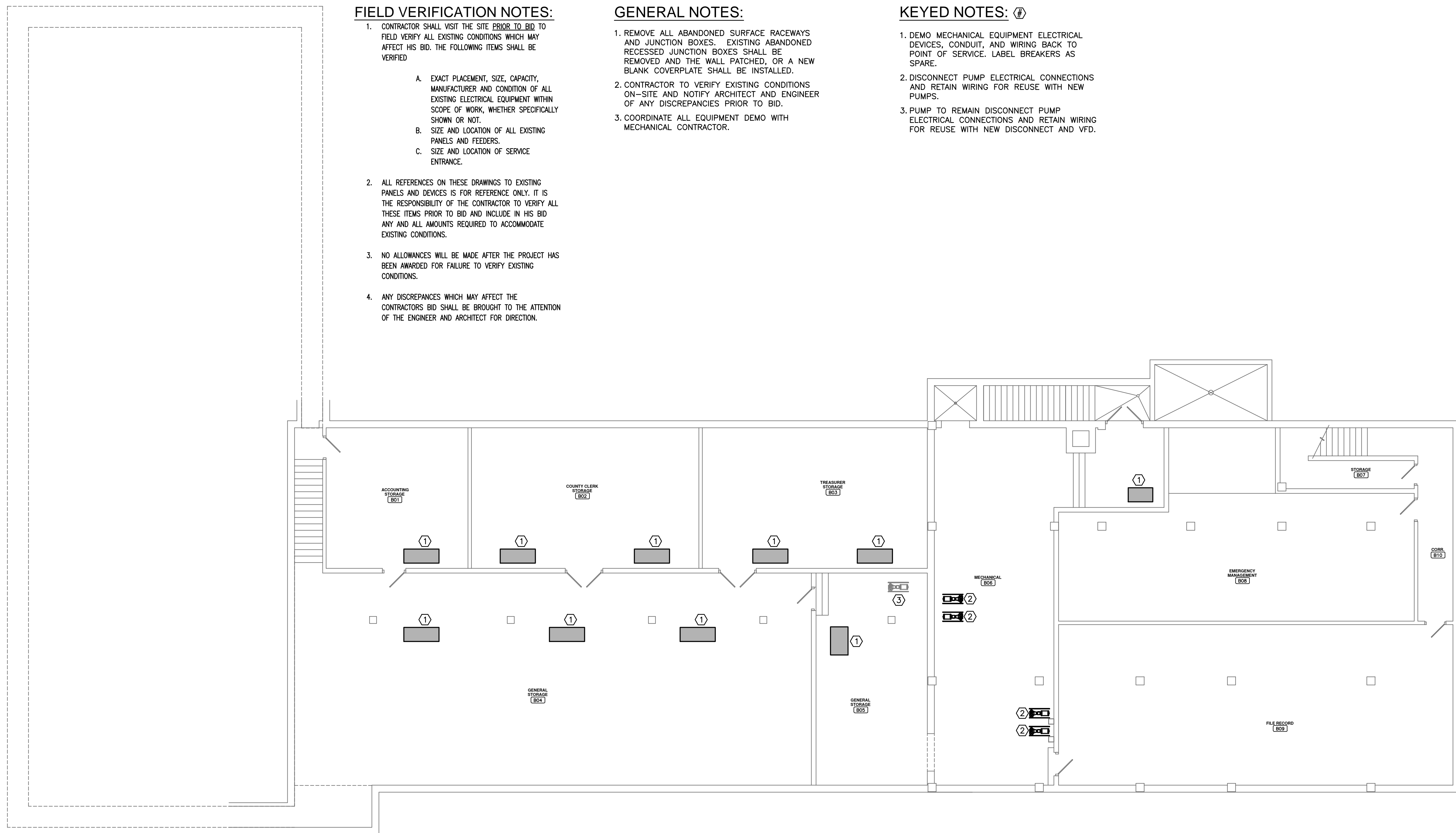
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GENERAL NOTES:

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- CONTRACTOR TO VERIFY EXISTING CONDITIONS ON-SITE AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO BID.
- COORDINATE ALL EQUIPMENT DEMO WITH MECHANICAL CONTRACTOR.

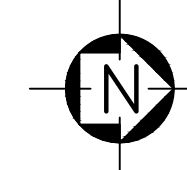
KEYED NOTES: (#)

- DEMO MECHANICAL EQUIPMENT ELECTRICAL DEVICES, CONDUIT, AND WIRING BACK TO POINT OF SERVICE. LABEL BREAKERS AS SPARE.
- DISCONNECT PUMP ELECTRICAL CONNECTIONS AND RETAIN WIRING FOR REUSE WITH NEW PUMPS.
- PUMP TO REMAIN DISCONNECT PUMP ELECTRICAL CONNECTIONS AND RETAIN WIRING FOR REUSE WITH NEW DISCONNECT AND VFD.



A
2E3

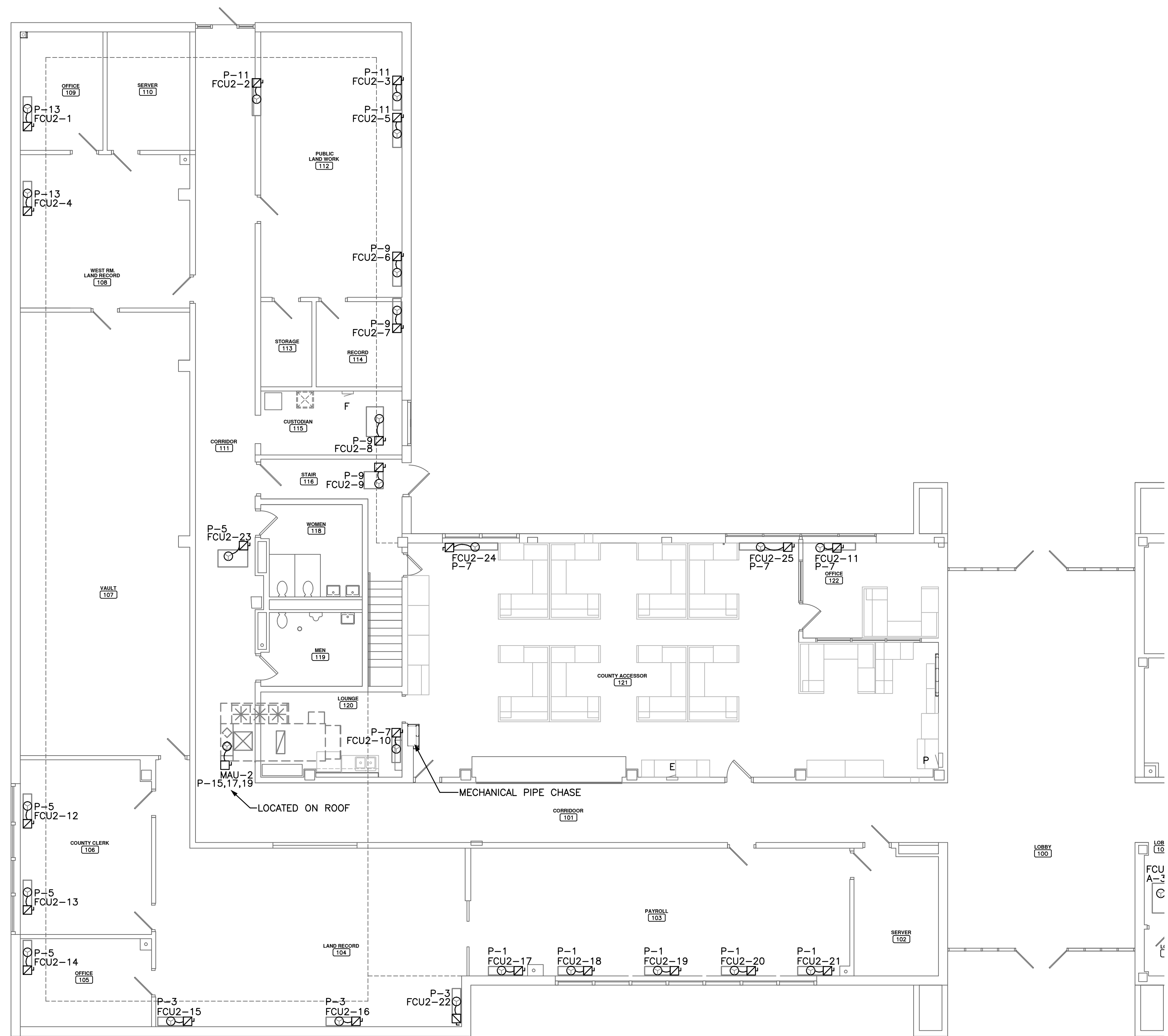
**BASEMENT
ELECTRICAL DEMO PLAN**
SCALE: 1/8"=1'-0"



FIRST FLOOR SOUTH WING MECHANICAL EQUIPMENT SCHEDULE													
CALLOUT	DESCRIPTION	VOLTS	HP	KVA	MCA	CIRCUIT	BREAKER	WIRE CALLOUT	DISCONNECT	DISCO PROV BY	DISCO INST BY	MOOP	NOTES
FCU2-1	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-13	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-2	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-11	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-3	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-11	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-4	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-13	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-5	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-11	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-6	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-9	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-7	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-9	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-8	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-9	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-9	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-9	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-10	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-7	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-11	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-7	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-12	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-5	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-13	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-5	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-14	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-5	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-15	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-3	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-16	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-3	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-17	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-1	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-18	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-1	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-19	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-1	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-20	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-1	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-21	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-1	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-22	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-3	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-23	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	P-5	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-24	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-7	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
FCU2-25	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	P-7	30/1	3/4"C,1#10,1#10N,1#10G	FUSED	EC	EC	15	
MAU-2	MAKE UP AIR UNIT	208V 3P 3W		10.4	36.1	P-15,17,19	50/3	3/4"C,3#8,1#10G	NON-FUSED	EC	EC	50	

GENERAL NOTES:

- COORDINATE EXACT LOCATIONS OF DEVICES SHOWN WITH OTHER EQUIPMENT. COORDINATE EXACT LOCATIONS OF CEILING MOUNTED DEVICES WITH LIGHTS, HVAC EQUIPMENT, AND OTHER DEVICES.
- COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE ALL RELAYS, CONNECTIONS, AND ALL DEVICES NECESSARY TO INTERLOCK EXHAUST FANS, DAMPERS, ETC WITH PROPER CONTROL DEVICES. SEE MECHANICAL PLANS FOR MORE DETAIL. PROVIDE 120V POWER FOR ALL MOTORIZED DAMPERS. INTERLOCK WITH CORRESPONDING EXHAUST FAN. ALL INDOOR TAC UNITS ARE POWERED VIA OUTDOOR UNITS. PROVIDE DISCONNECT AND WIRING BETWEEN UNITS.
- COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
- CIRCUIT LABELS CORRESPONDING TO EXISTING PANELS ARE FOR REFERENCE ONLY; CONTRACTOR TO VERIFY EXISTING CIRCUIT NUMBERS IN THE FIELD.



A
3E1
FIRST FLOOR
ELECTRICAL POWER PLAN - SOUTH
SCALE: 1/8"=1'-0"

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FIRST FLOOR
ELECTRICAL POWER PLAN - SOUTH

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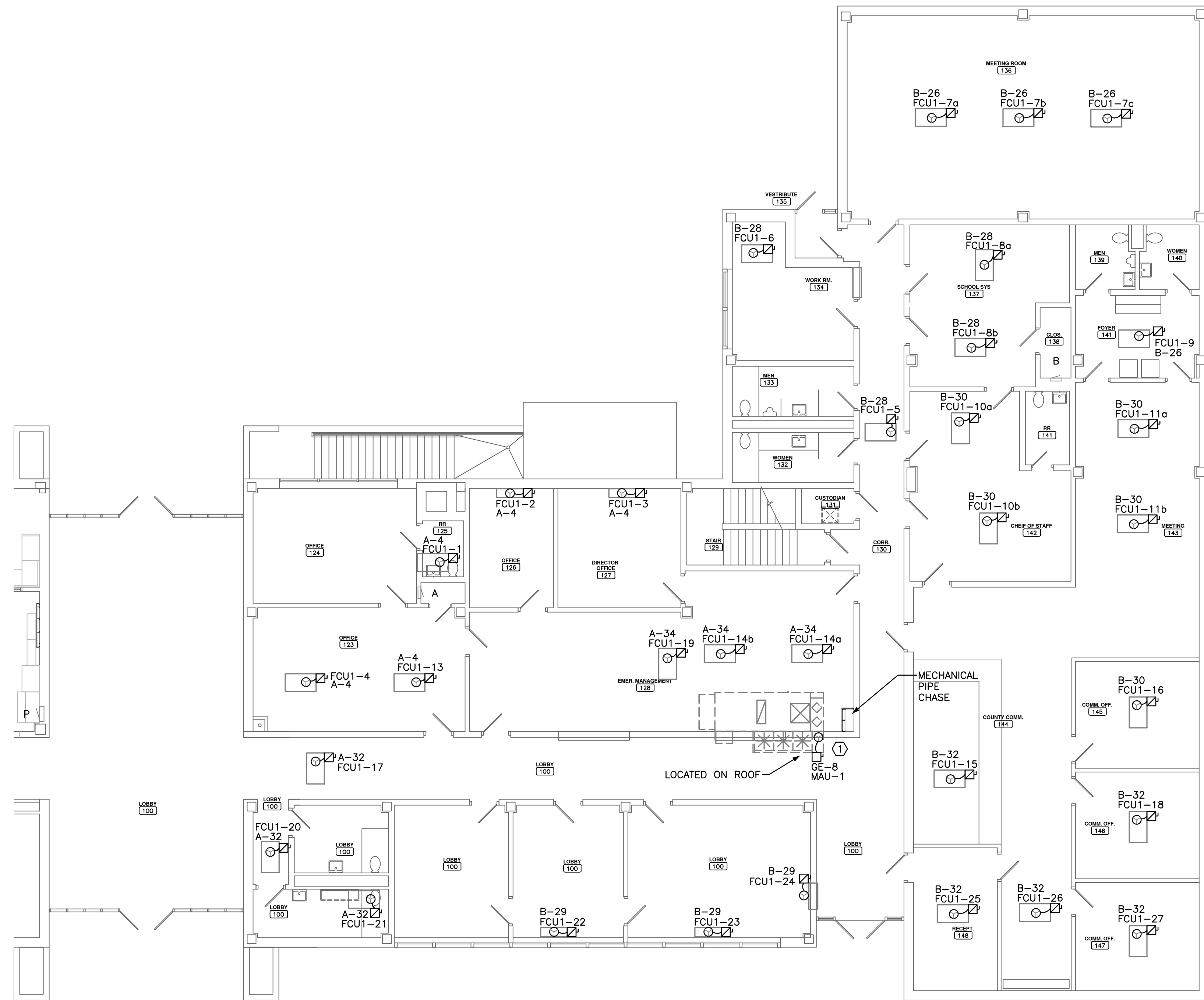
CALLOUT	DESCRIPTION	VOLTS	HP	KVA	MCA	CIRCUIT	BREAKER	WIRE CALLOUT	DISCONNECT	DISC PROV BY	DISC INST BY	MOCP	NOTES
FCU1-1	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-2	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-3	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-4	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-5	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-28	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-6	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-28	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-7a	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-26	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-7b	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-26	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-7c	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-26	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-8a	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-28	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-8b	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-28	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-9	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-26	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-10a	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-30	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-10b	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-30	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-11a	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-30	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-11b	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-30	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-13	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-14a	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-34	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-14b	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-34	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-15	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-16	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-30	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-17	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	A-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-18	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-19	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-34	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-20	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-21	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	A-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-22	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-29	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-23	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-29	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-24	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	B-29	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-25	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-26	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-27	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	B-32	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
MAU-1	MAKE UP AIR UNIT	208V 3P 3W		10.4	36.1	GE-8	50/3	3/4" C, 3#8, #10G	NON-FUSED	EC	EC	50	

GENERAL NOTES:

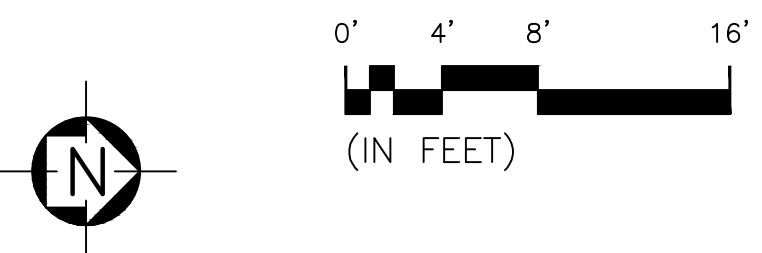
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KEYED NOTES:

- PANEL 'GE' IS A GENERAL ELECTRIC TYPE CCB PANEL LOCATED IN BASEMENT, REFER TO SHEET 3E3. PROVIDE NEW BREAKER IN SPARE PANEL SLOT. COORDINATE CONDUIT ROUTING THROUGH FIRST FLOOR LEVEL WITH MECHANICAL CONTRACTOR. USE EXISTING CHASE IF POSSIBLE OTHERWISE CORE DRILL NEW HOLE IN AREA TO BE COVERED BY DRYWALL NEXT TO NEW MECHANICAL PIPING/DUCT PATH. PROVIDE APPROVED PANEL BREAKER FILLER PLATE IN BOTTOM BREAKER SPACE OF PANEL.



A
3E2
FIRST FLOOR
ELECTRICAL POWER PLAN - NORTH
SCALE: 1/8"=1'-0"

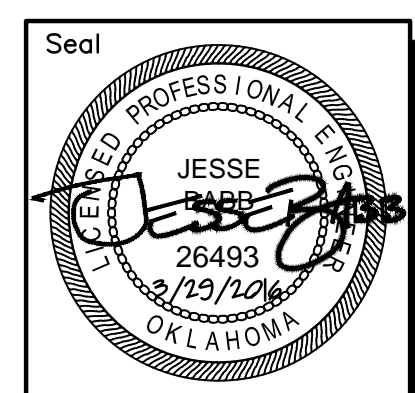


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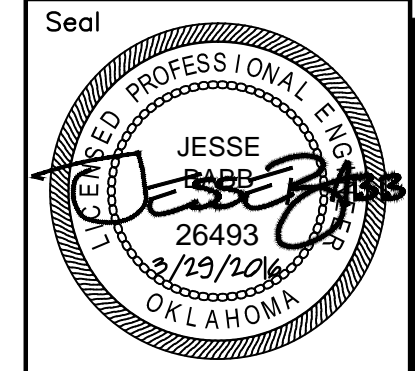
Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHICKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR
ELECTRICAL POWER PLAN - NORTH

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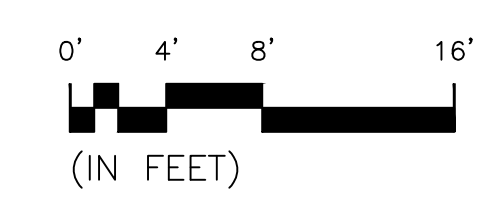
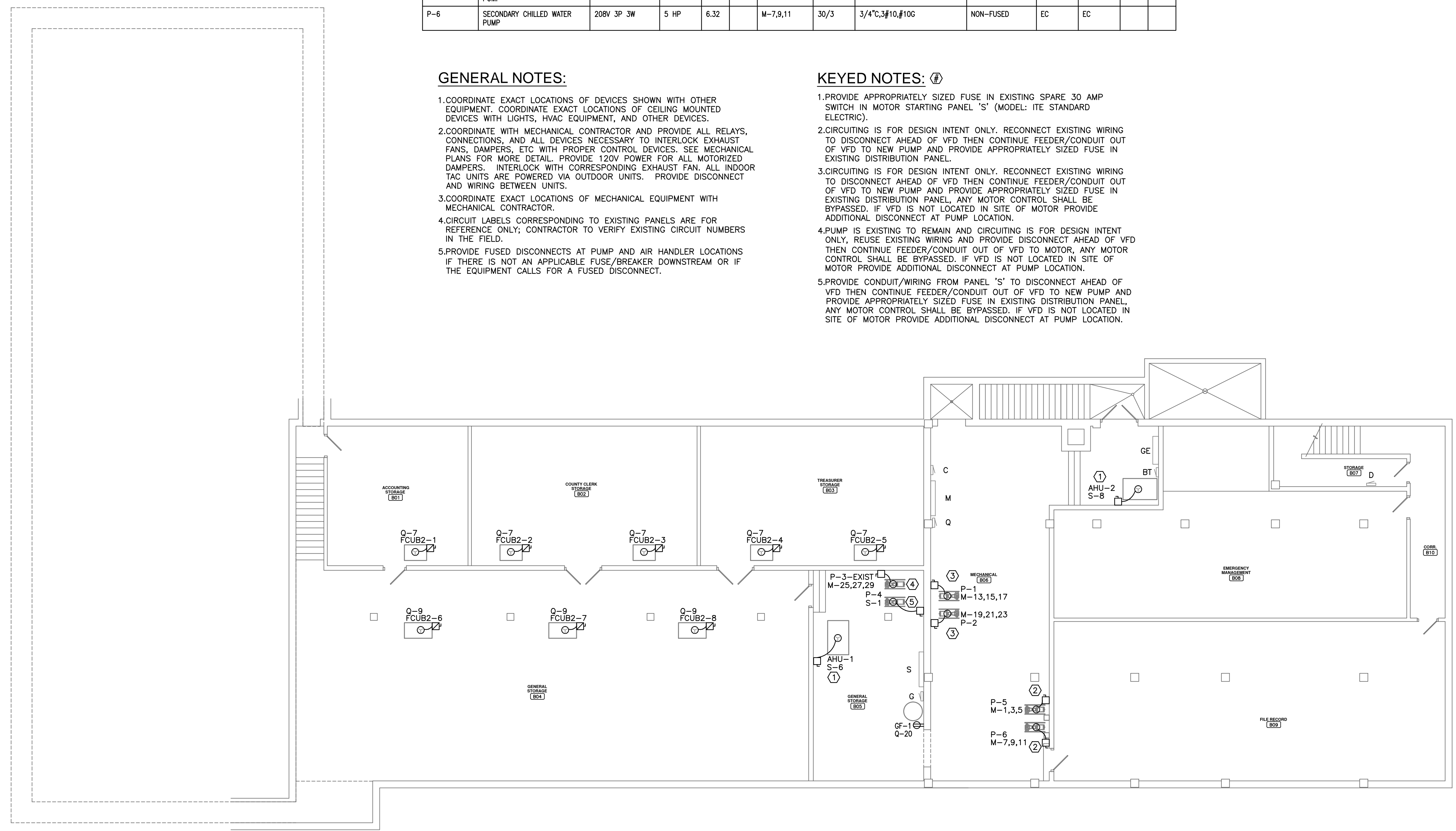
CALLOUT	DESCRIPTION	VOLTS	HP	KVA	MCA	CIRCUIT	BREAKER	WIRE CALLOUT	DISCONNECT	DISC PROV BY	DISC INST BY	MOCP	NOTES
AHU-1	AIR HANDLER UNIT	208V 3P 3W		2.6		S-6	15/3	3/4" C, 3#12, #12G	NON-FUSED	EC	EC	15	
AHU-2	AIR HANDLER UNIT	208V 3P 3W		2		S-8	15/3	3/4" C, 3#12, #12G	NON-FUSED	EC	EC	15	
FCUB2-1	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	Q-7	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-2	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	Q-7	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-3	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	Q-7	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-4	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	Q-7	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-5	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	Q-7	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-6	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	Q-9	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-7	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	Q-9	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
FCUB2-8	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	Q-9	30/1	3/4" C, 1#10, #10N, #10G	FUSED	EC	EC	15	
GF-1	GLYCOL MAKE UP UNIT	120V 1P 2W	1/2 HP	1.18		Q-20	20/1	3/4" C, 1#12, #12N, #12G	DUPLEX RECEPTACLE	EC	EC		
P-1	HEATING WATER PUMP	208V 3P 3W	3 HP	3.99		M-13,15,17	20/3	3/4" C, 3#12, #12G	NON-FUSED	EC	EC		
P-2	HEATING WATER PUMP	208V 3P 3W	3 HP	3.99		M-19,21,23	20/3	3/4" C, 3#12, #12G	NON-FUSED	EC	EC		
P-3-EXIST	PRIMARY CHILLED WATER PUMP	208V 3P 3W	3 HP	3.99		M-25,27,29	20/3	3/4" C, 3#12, #12G	NON-FUSED	EC	EC		
P-4	PRIMARY CHILLED WATER PUMP	208V 3P 3W	5 HP	6.32		S-1	30/3	3/4" C, 3#10, #10G	NON-FUSED	EC	EC		
P-5	SECONDARY CHILLED WATER PUMP	208V 3P 3W	5 HP	6.32		M-1,3,5	30/3	3/4" C, 3#10, #10G	NON-FUSED	EC	EC		
P-6	SECONDARY CHILLED WATER PUMP	208V 3P 3W	5 HP	6.32		M-7,9,11	30/3	3/4" C, 3#10, #10G	NON-FUSED	EC	EC		

GENERAL NOTES:

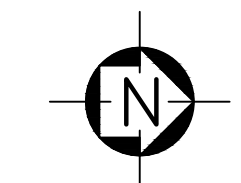
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- COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
- CIRCUIT LABELS CORRESPONDING TO EXISTING PANELS ARE FOR REFERENCE ONLY; CONTRACTOR TO VERIFY EXISTING CIRCUIT NUMBERS IN THE FIELD.
- PROVIDE FUSED DISCONNECTS AT PUMP AND AIR HANDLER LOCATIONS IF THERE IS NOT AN APPLICABLE FUSE/BREAKER DOWNSTREAM OR IF THE EQUIPMENT CALLS FOR A FUSED DISCONNECT.

KEYED NOTES:

- PROVIDE APPROPRIATELY SIZED FUSE IN EXISTING SPARE 30 AMP SWITCH IN MOTOR STARTING PANEL 'S' (MODEL: ITE STANDARD ELECTRIC).
- CIRCUITING IS FOR DESIGN INTENT ONLY. RECONNECT EXISTING WIRING TO DISCONNECT AHEAD OF VFD THEN CONTINUE FEEDER/CONDUIT OUT OF VFD TO NEW PUMP AND PROVIDE APPROPRIATELY SIZED FUSE IN EXISTING DISTRIBUTION PANEL.
- CIRCUITING IS FOR DESIGN INTENT ONLY. RECONNECT EXISTING WIRING TO DISCONNECT AHEAD OF VFD THEN CONTINUE FEEDER/CONDUIT OUT OF VFD TO NEW PUMP AND PROVIDE APPROPRIATELY SIZED FUSE IN EXISTING DISTRIBUTION PANEL, ANY MOTOR CONTROL SHALL BE BYPASSED. IF VFD IS NOT LOCATED IN SITE OF MOTOR PROVIDE ADDITIONAL DISCONNECT AT PUMP LOCATION.
- PUMP IS EXISTING TO REMAIN AND CIRCUITING IS FOR DESIGN INTENT ONLY, REUSE EXISTING WIRING AND PROVIDE DISCONNECT AHEAD OF VFD THEN CONTINUE FEEDER/CONDUIT OUT OF VFD TO MOTOR, ANY MOTOR CONTROL SHALL BE BYPASSED. IF VFD IS NOT LOCATED IN SITE OF MOTOR PROVIDE ADDITIONAL DISCONNECT AT PUMP LOCATION.
- PROVIDE CONDUIT/WIRING FROM PANEL 'S' TO DISCONNECT AHEAD OF VFD THEN CONTINUE FEEDER/CONDUIT OUT OF VFD TO NEW PUMP AND PROVIDE APPROPRIATELY SIZED FUSE IN EXISTING DISTRIBUTION PANEL, ANY MOTOR CONTROL SHALL BE BYPASSED. IF VFD IS NOT LOCATED IN SITE OF MOTOR PROVIDE ADDITIONAL DISCONNECT AT PUMP LOCATION.



A
3E3 BASEMENT ELECTRICAL POWER PLAN
SCALE: 1/8"=1'-0"



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