

BOYNTON-WILLIAMS & ASSOCIATES

ARCHITECTURE

PLANNING

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NORMAN

DALLAS

TULSA

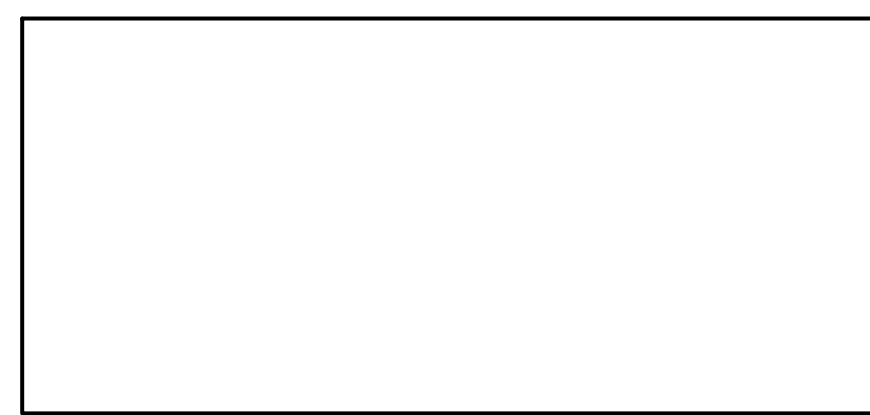
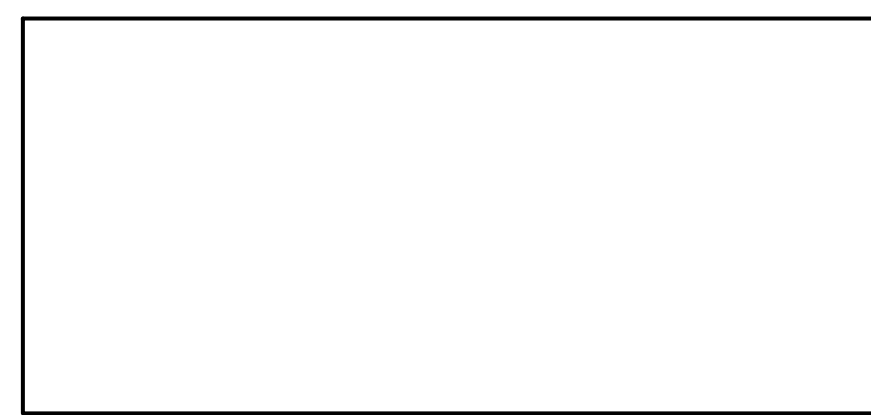
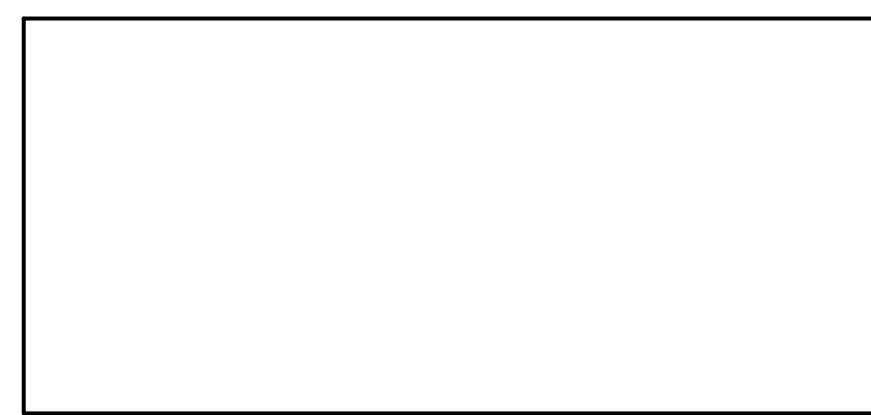
900 36TH AVE N.W. SUITE 100 NORMAN, OK 73072 405-329-0423 FAX 405-364-1439

A Professional Corporation Member: American Institute of Architects

ROOF REPLACEMENT & HVAC RENOVATION

Canadian County Office Building

201 N. CHOCTAW AVE.
EL RENO, OKLAHOMA 73036



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Abbreviations List (Architectural Only)

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

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

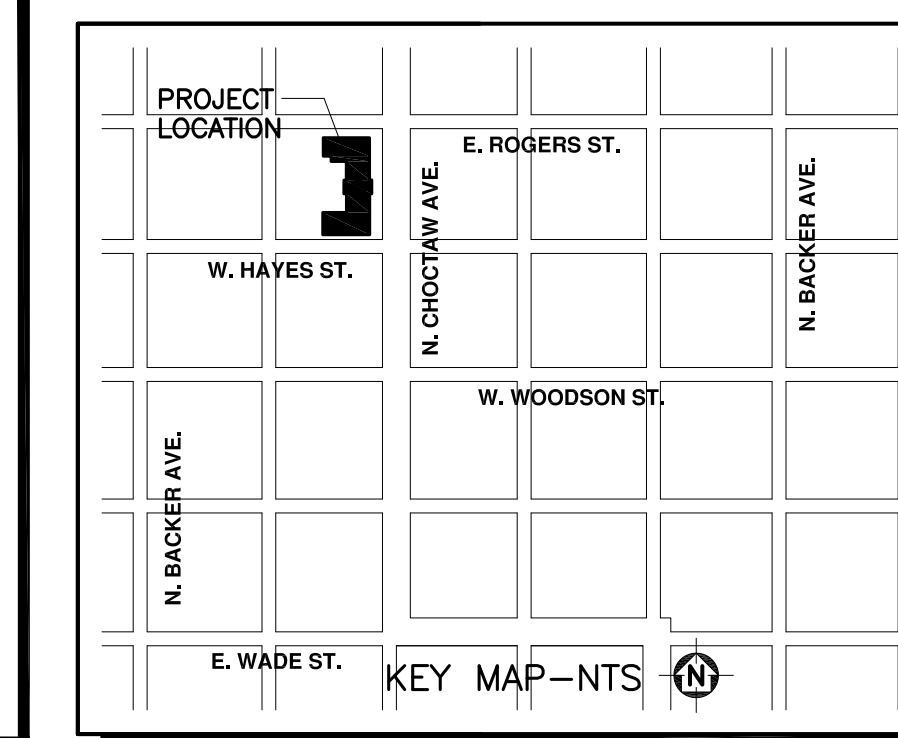
ELECTRICAL

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

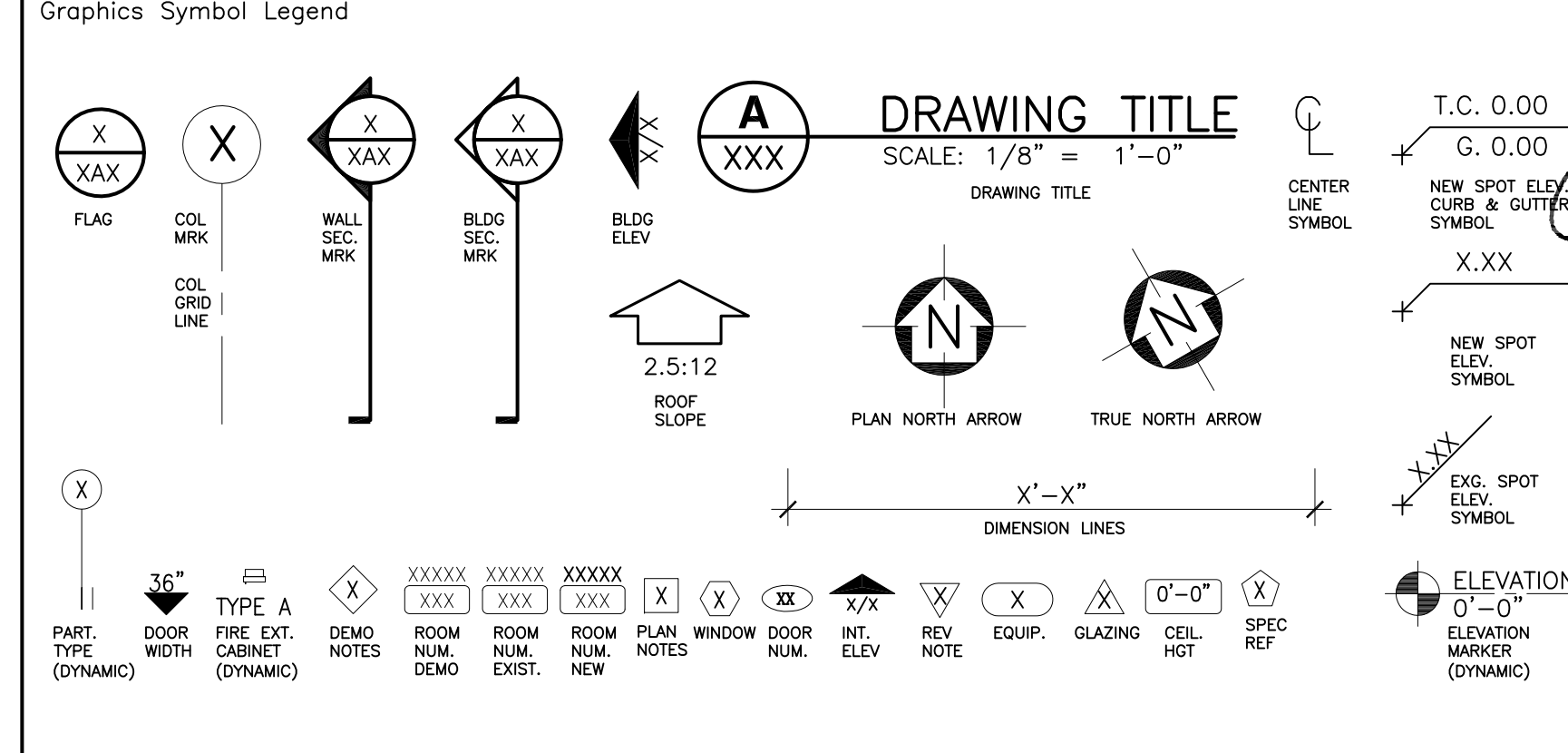
Code Data

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



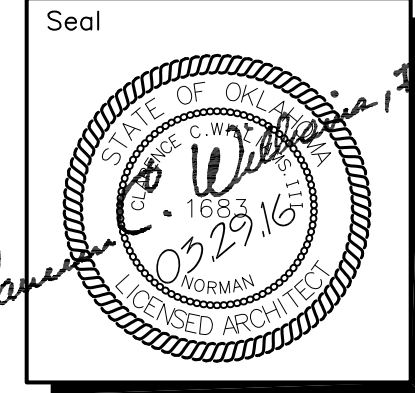
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Revisions

Issue Date
03.29.16

Project No.
N16001

Sheet No.
COV



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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 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.

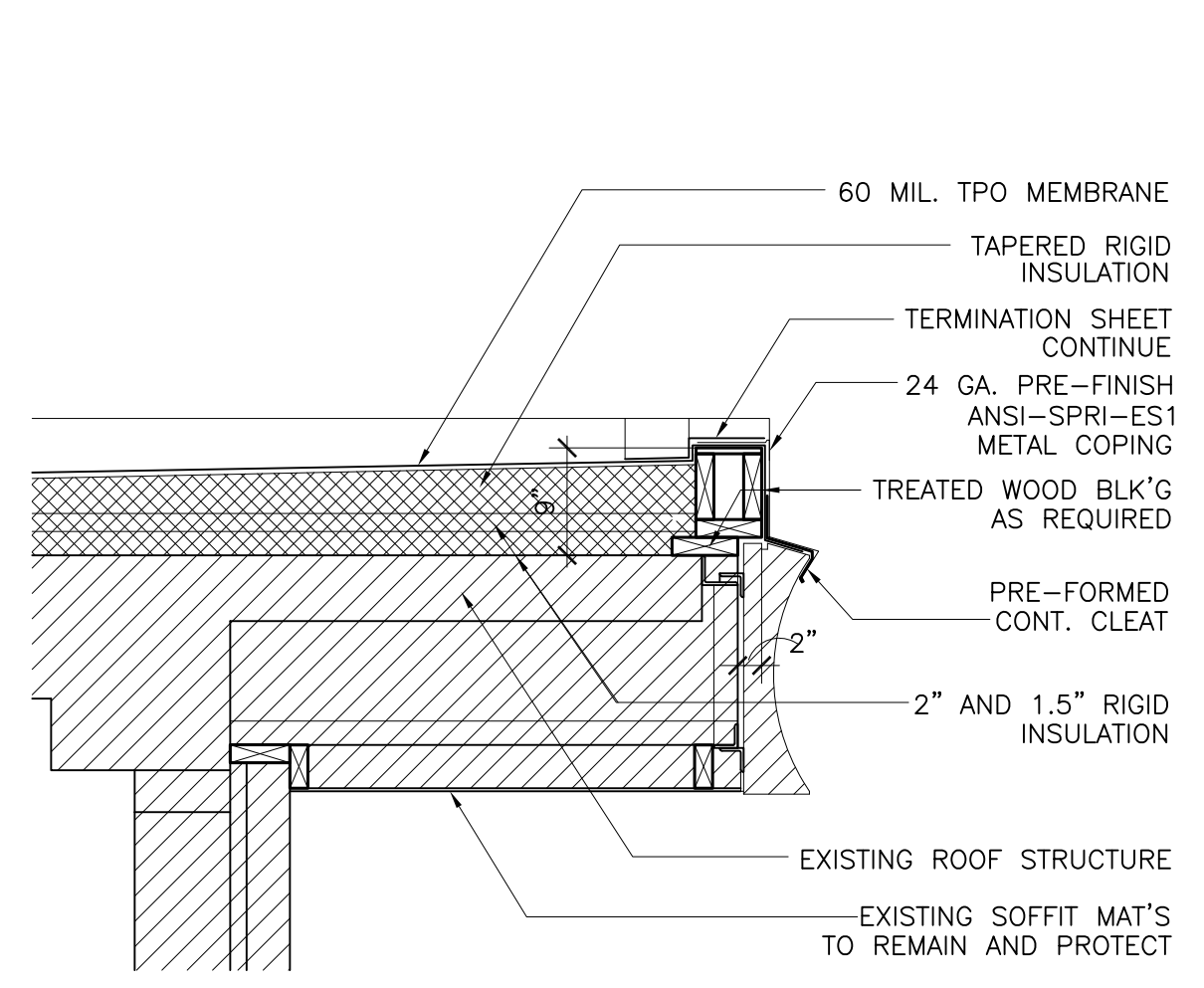
SCOPE OF WORKS:

- 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

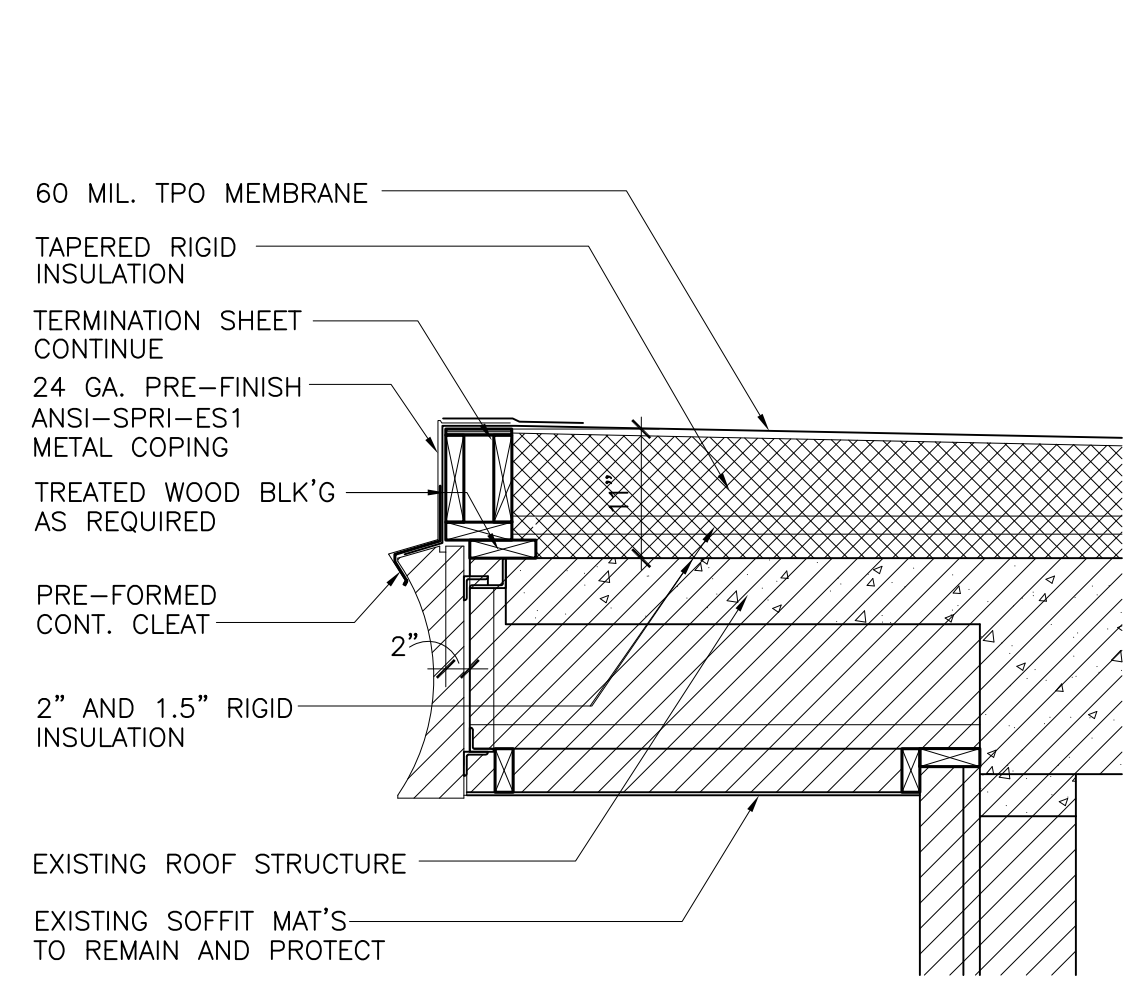
ALTERNATE: #1 - PROVIDE ADDITIONAL RECOVERY BOARD AS PER MANUFACTURER APPROVAL TO INCLUDE 2" MINIMUM HAIL DAMAGE TO THE 20 YEARS NDL WARRANTY.

LEGEND:

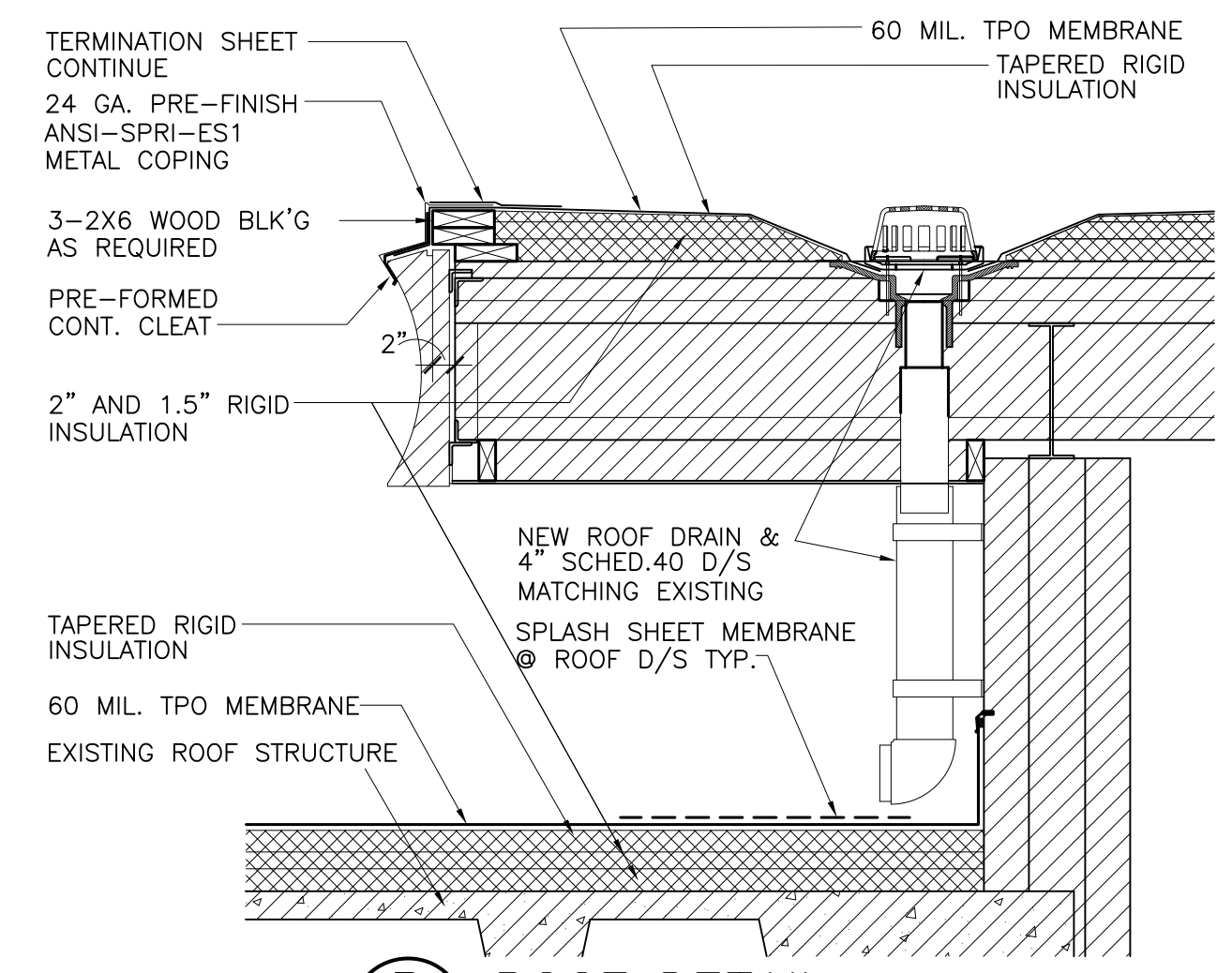
- EXISTING ROOF TOP UNIT
- LARGE EXISTING BARREL VENT
- NEW ROOF CRICKET 1/8" PER FOOT
- NEW ROOF SLOPE 1/4" PER FOOT
- EXISTING LARGE VENT
- DRAIN PIPE ON FACE OF WALL
- EXISTING ROOF DRAIN
- NEW ADDED ROOF DRAIN (2-REQUIRED)
- EXISTING ROOF HATCH
- EXISTING ANTENNA
- EXISTING SKY LIGHTS TO BE REMOVED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



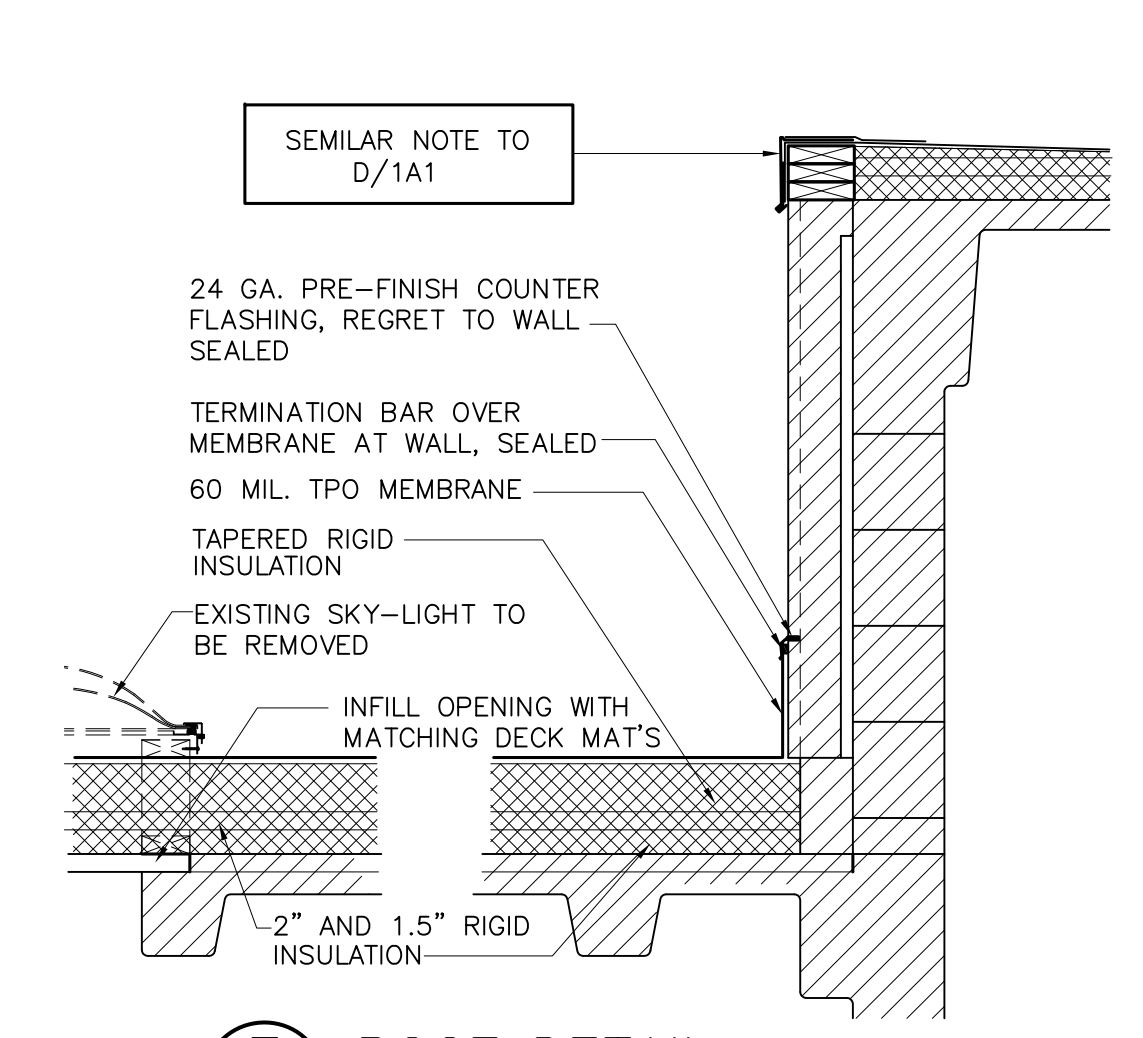
B ROOF DETAIL
1A1 SCALE: 3/4"=1'-0"



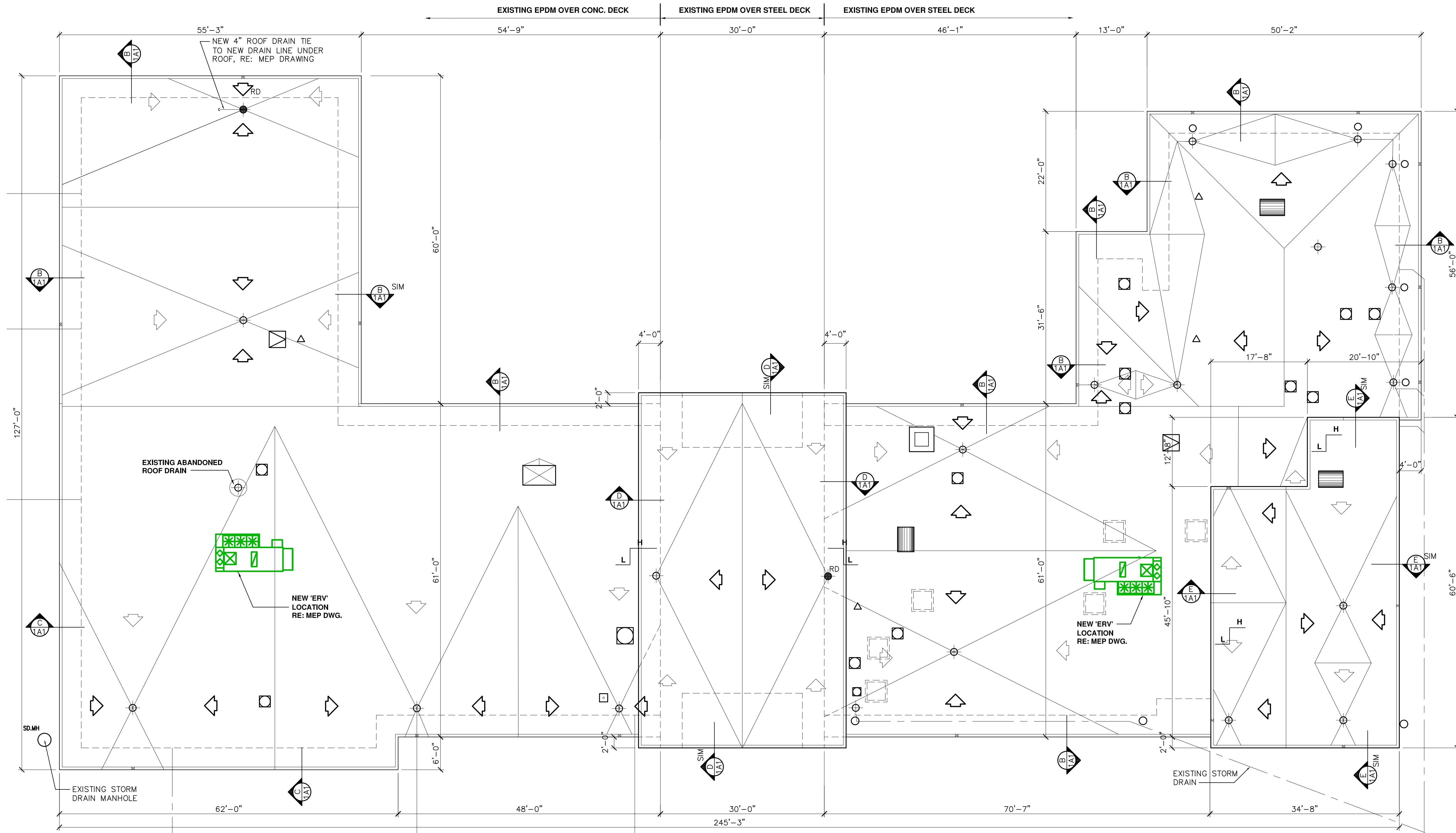
C ROOF DETAIL
1A1 SCALE: 3/4"=1'-0"



D ROOF DETAIL
1A1 SCALE: 3/4"=1'-0"

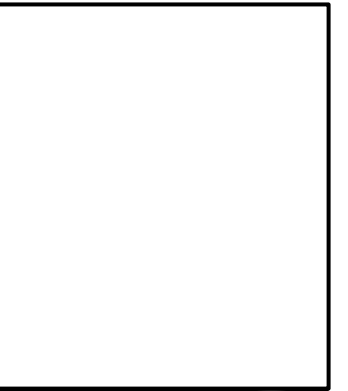
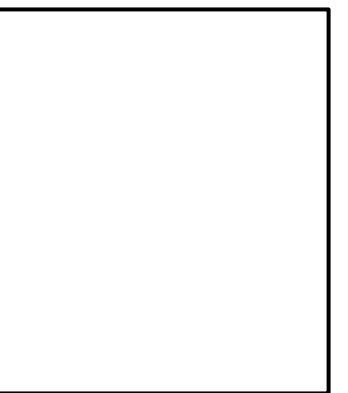
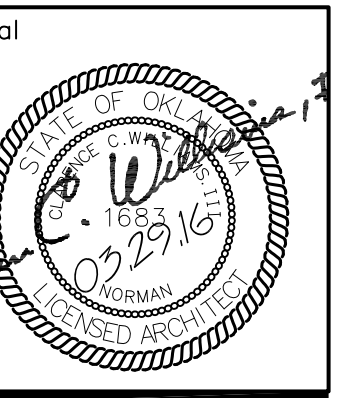


E ROOF DETAIL
1A1 SCALE: 3/4"=1'-0"



A ROOF PLAN
1A1 SCALE: 1"=10'-0"





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

OVERALL PLANS AND PLAN NOTES

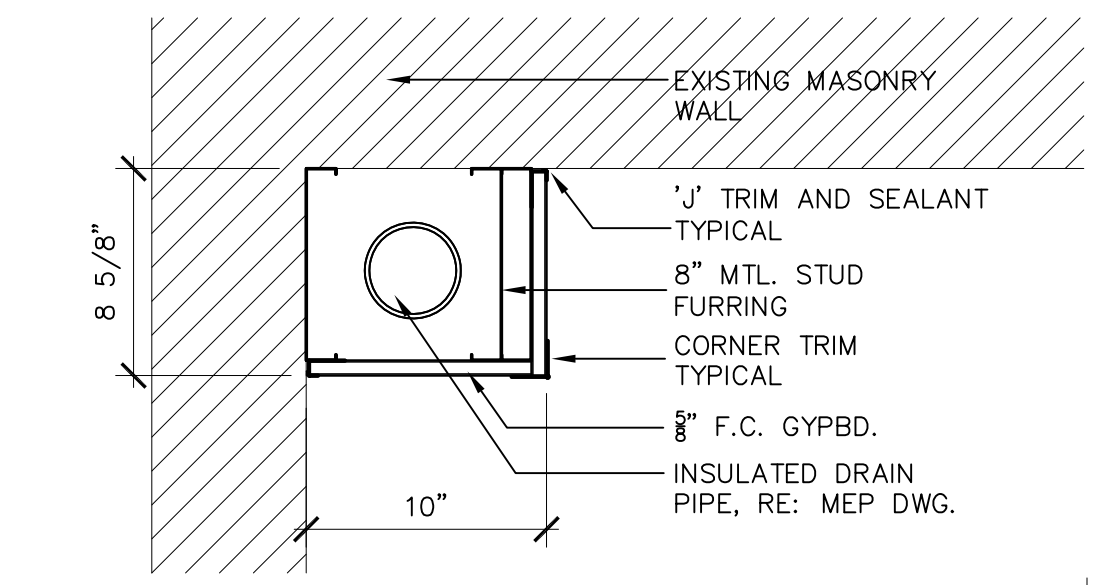
Revisions

Issue Date
03.29.16

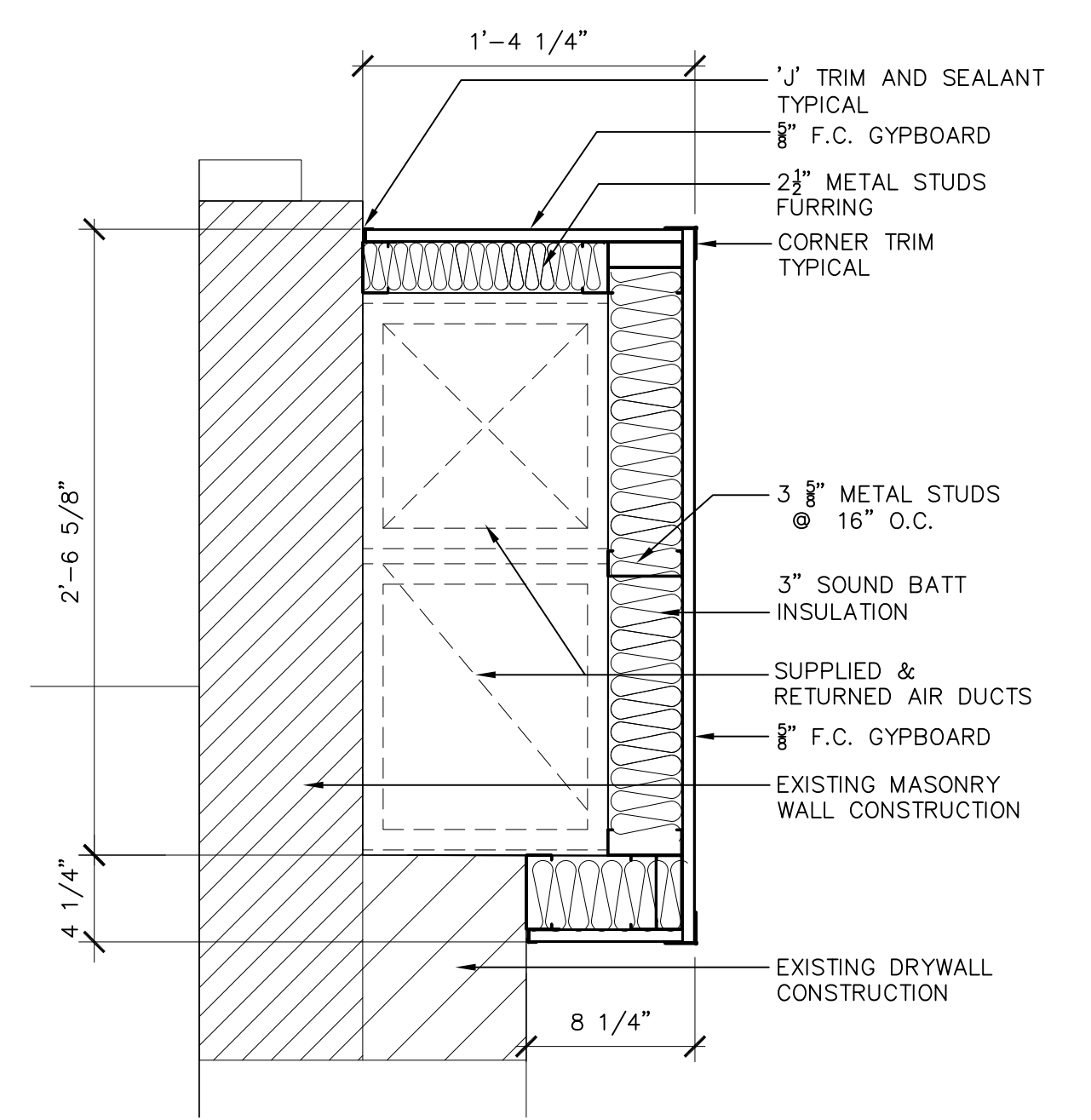
Project No.
N16001

Sheet No.
2A1

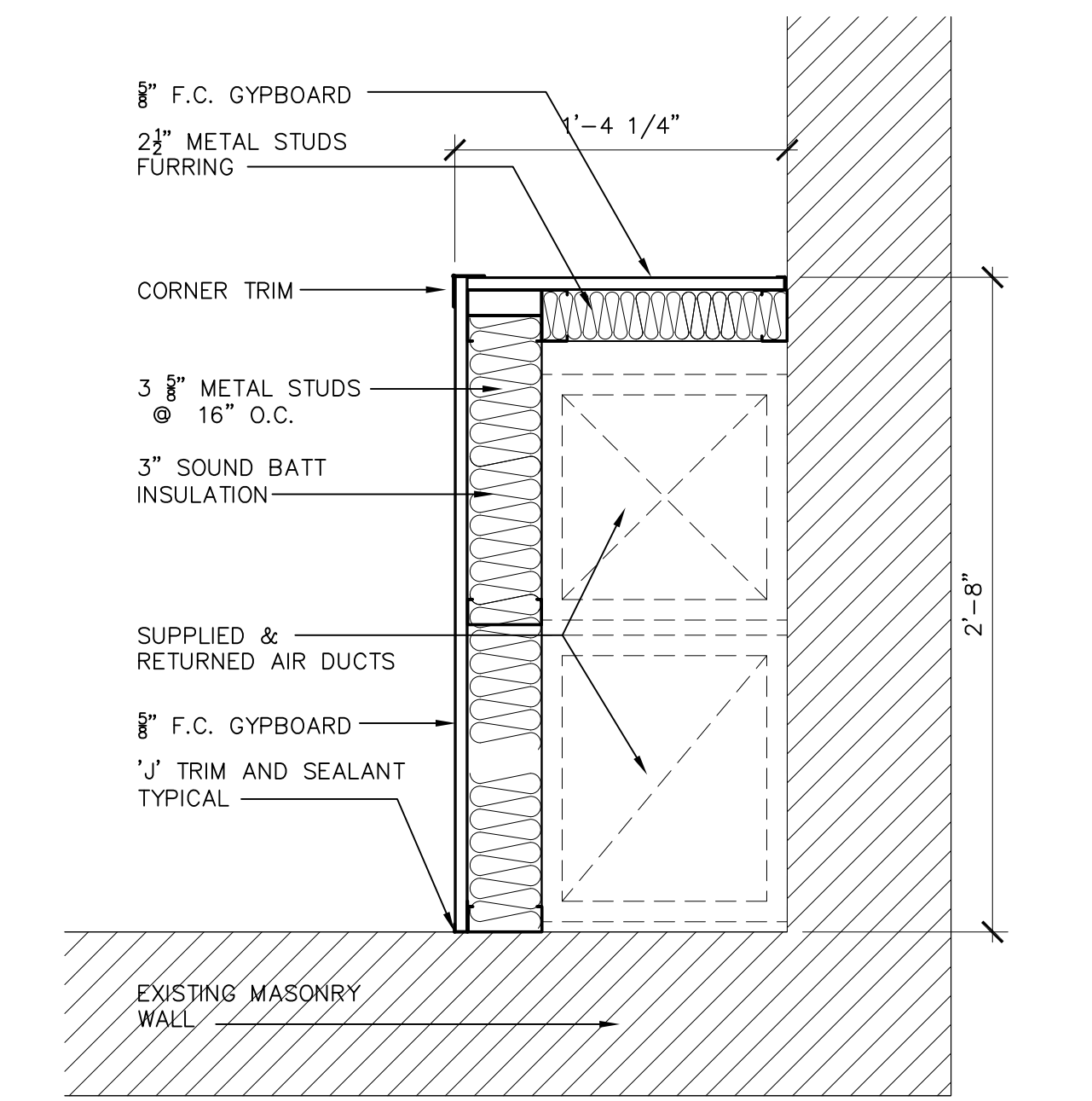
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E PLAN DETAIL @ DUCT CHEST
SCALE: 1 1/2"=1'-0"

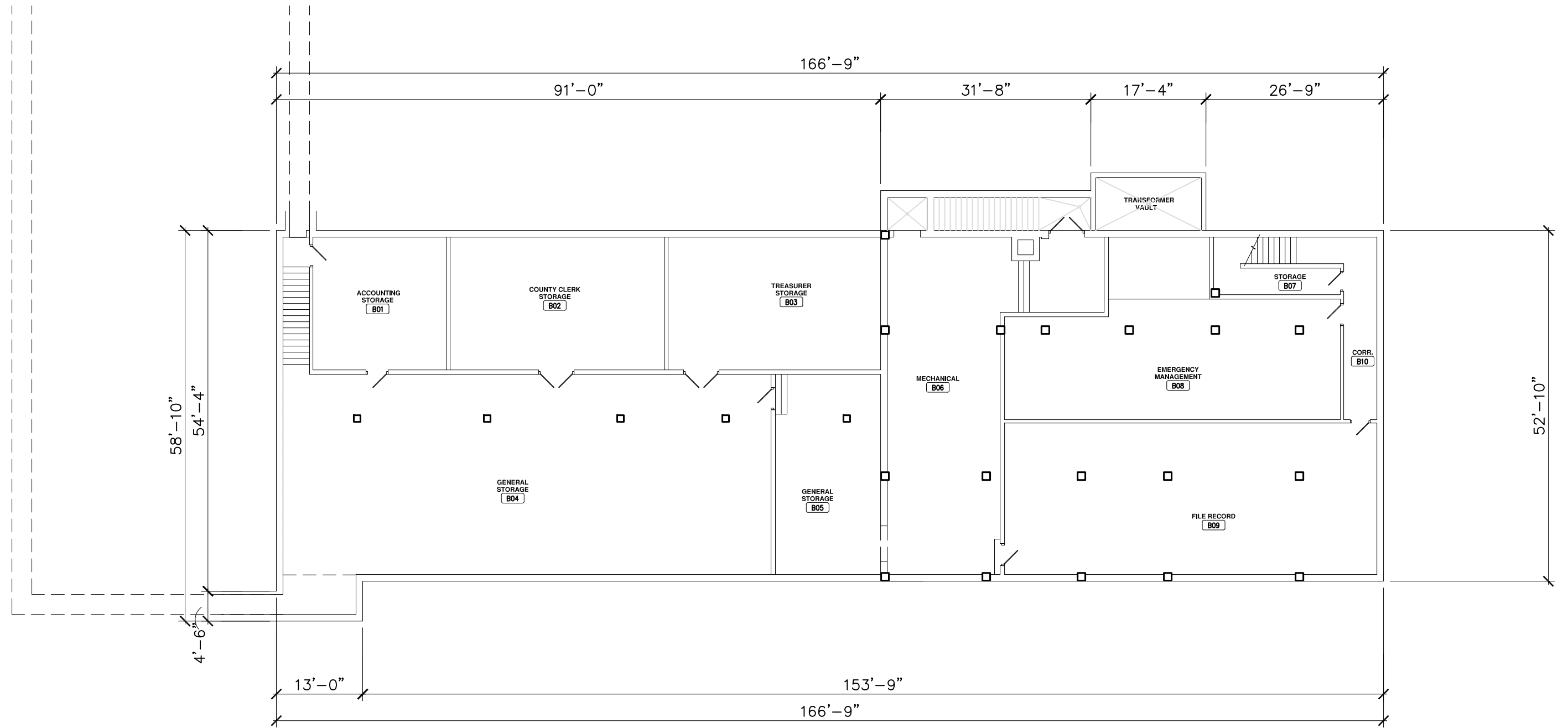


D PLAN DETAIL @ DUCT CHEST
SCALE: 1 1/2"=1'-0"

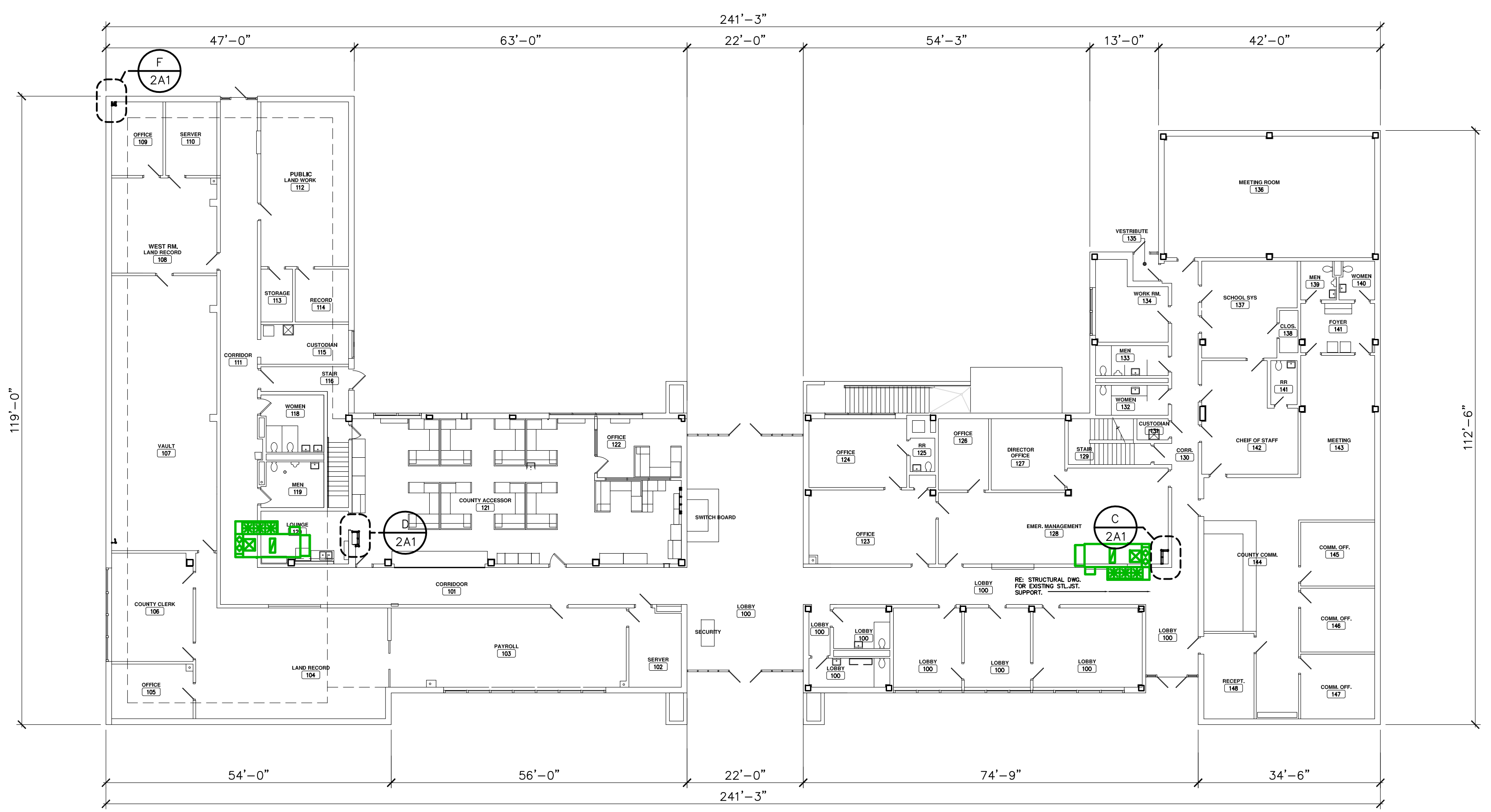


C PLAN DETAIL @ DUCT CHEST
SCALE: 1 1/2"=1'-0"

- 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.



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



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

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:

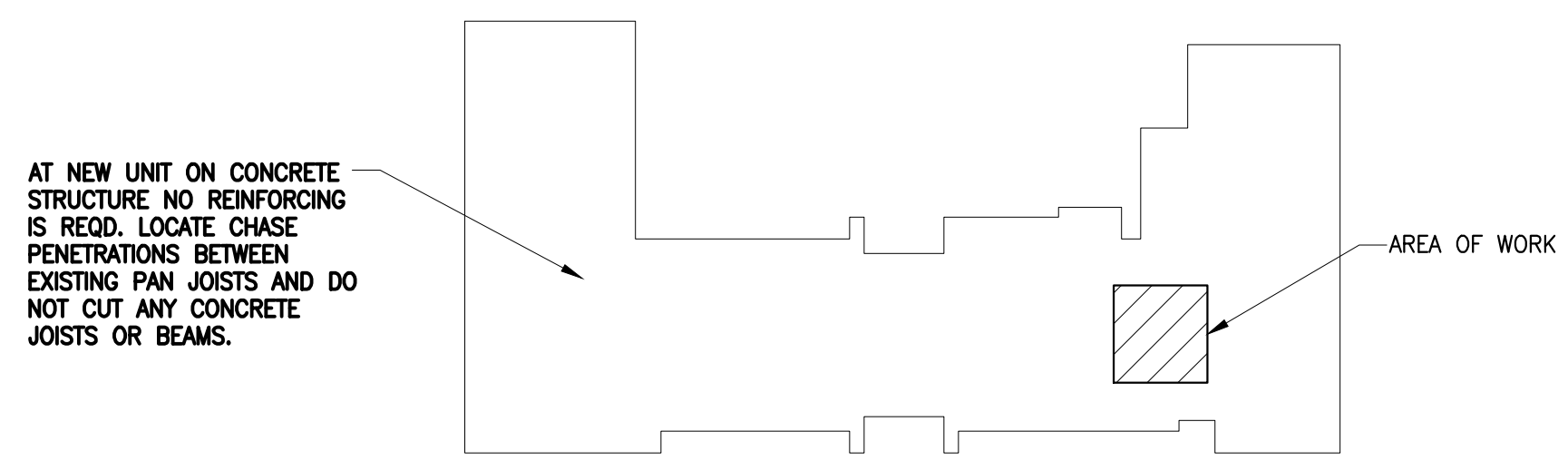
	YIELD	ASTM SPEC.
A. W, M, S, HP OR STRUCTURAL TEE SHAPES:	50 KSI	A572 OR A992
B. OTHER SHAPES, BARS AND PLATES:	36 KSI	A36
C. STRUCTURAL STEEL TUBING:	46 KSI	A500, GRADE B
D. STRUCTURAL STEEL PIPE:	35 KSI	A53, GRADE B OR A500, GRADE B
E. ANCHOR BOLTS:	36 KSI	A36
F. HEADED STUD ANCHORS:	50 KSI	A108, GRADES 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



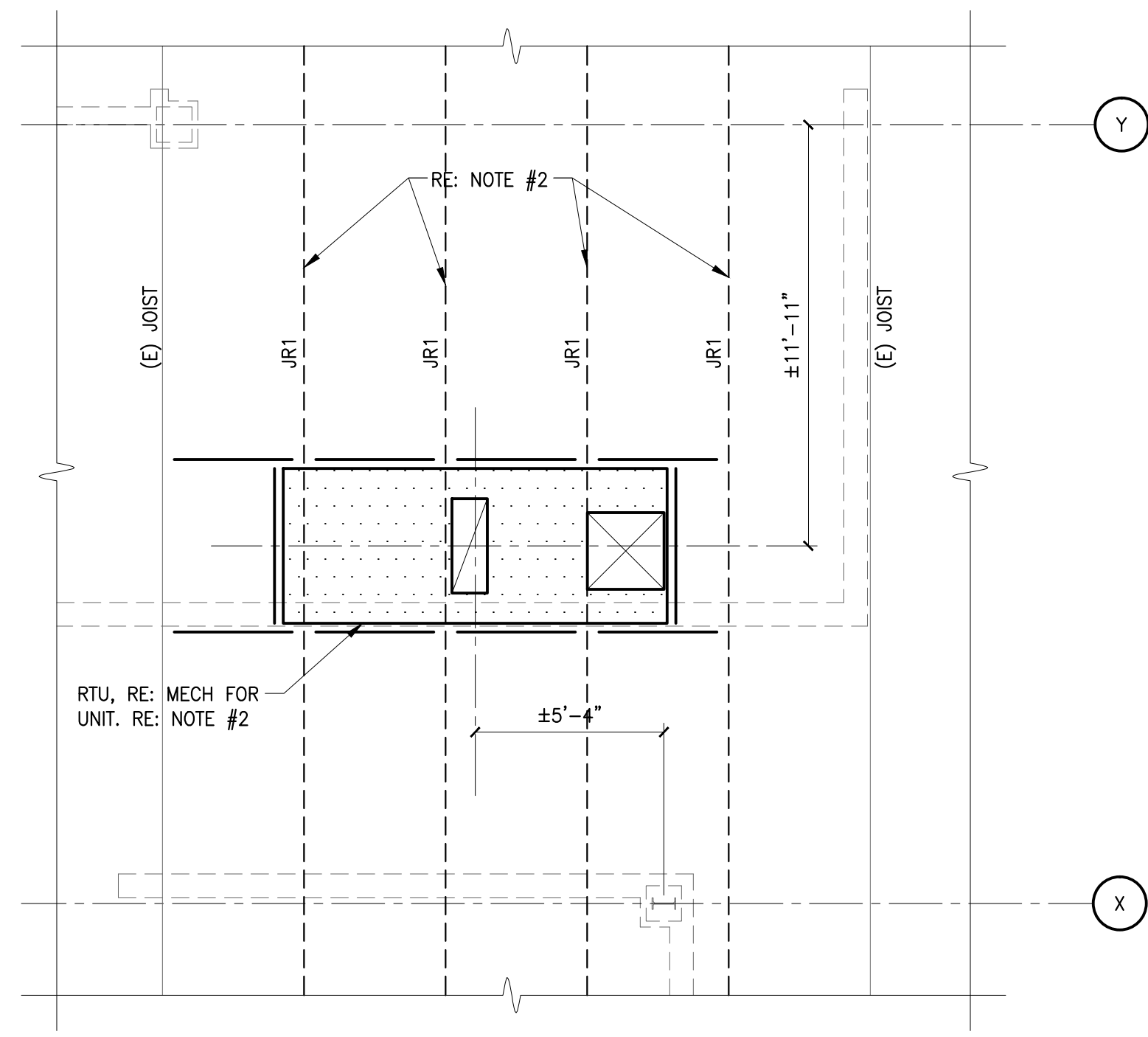
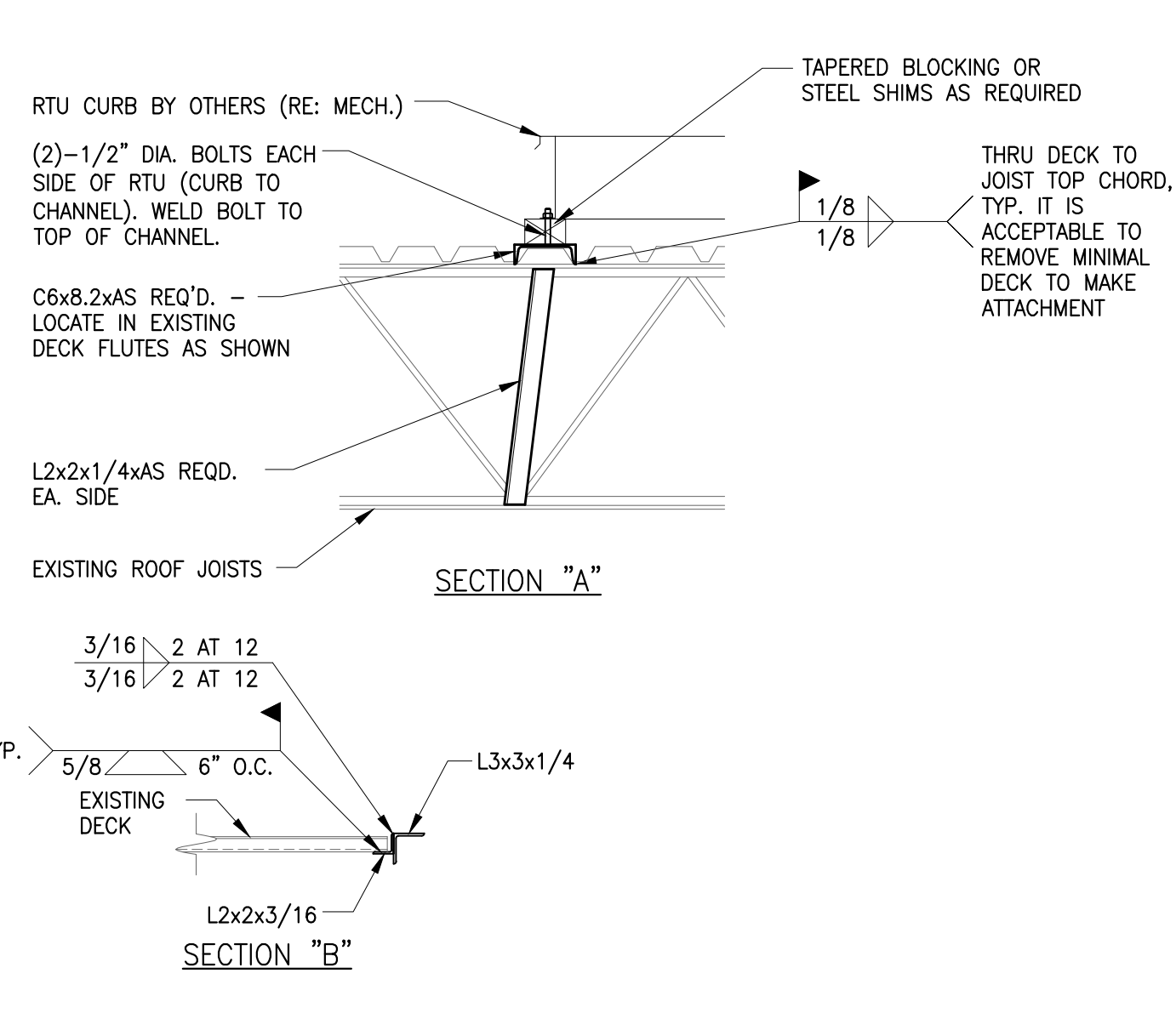
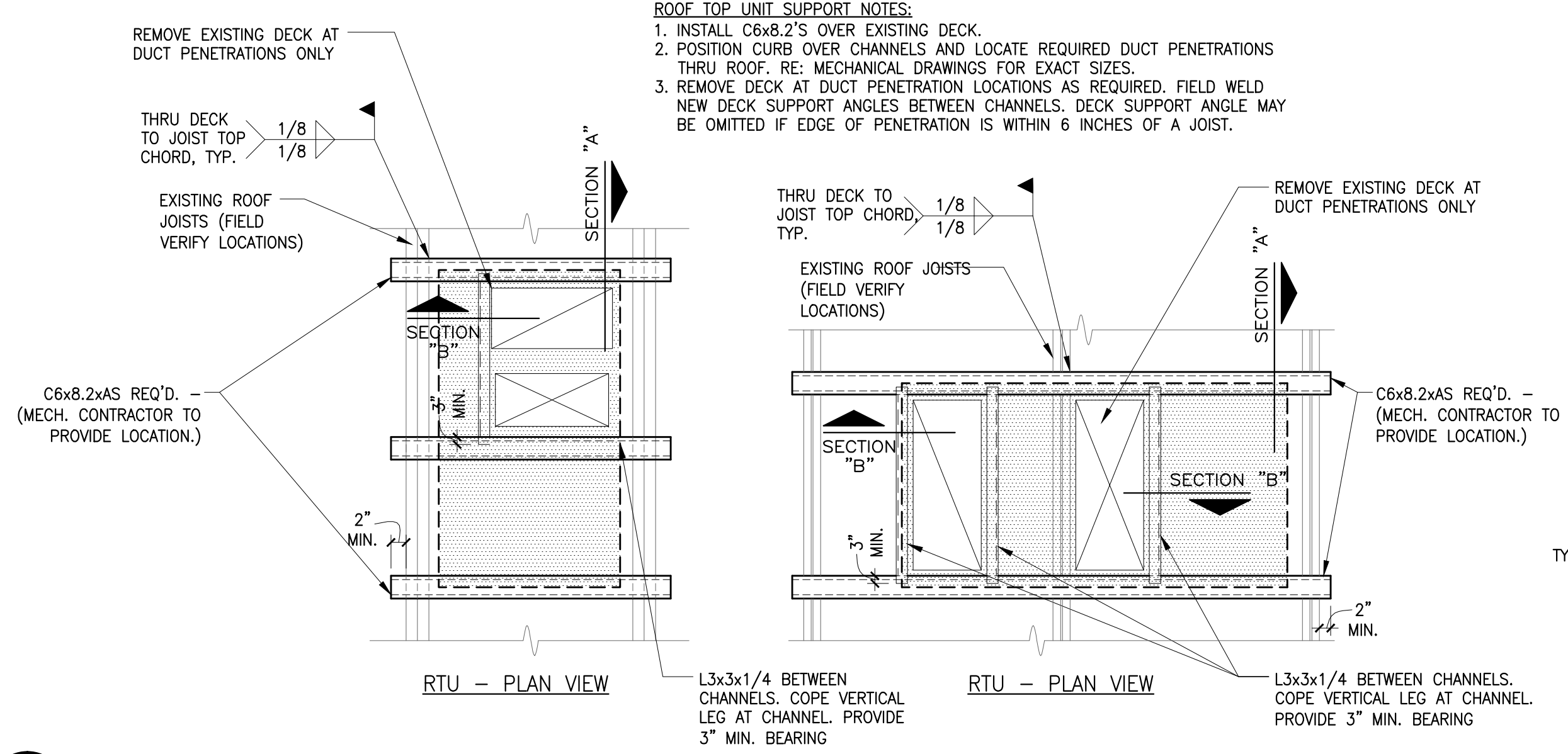
KEY PLAN

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"

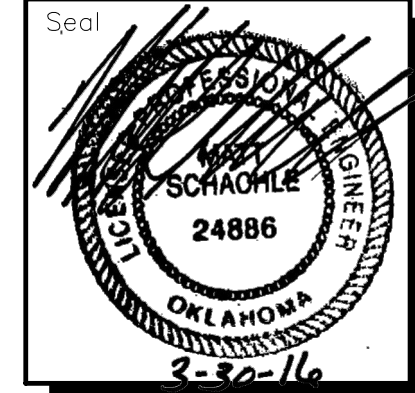
2 RTU FRAMING AT EXISTING ROOF
3/4"=1'-0"

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PARTIAL EXISTING ROOF PLAN AND GENERAL NOTES

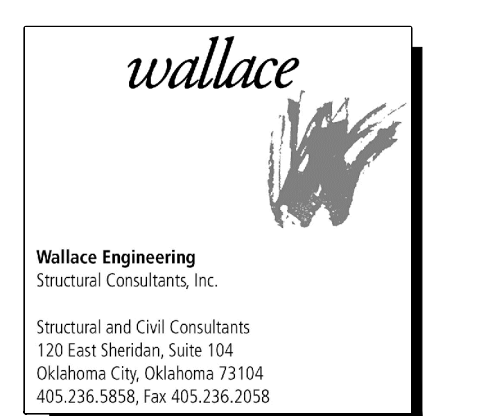
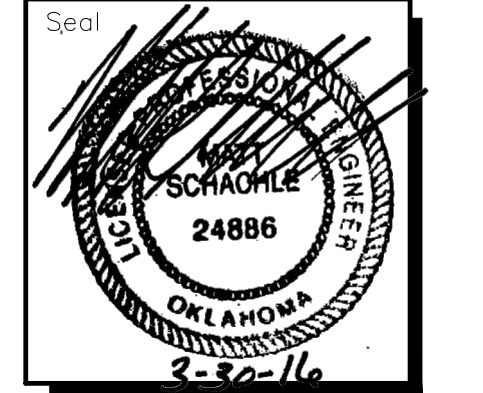
Revisions

Issue Date
03.30.16

Project No.
N16001

Sheet No.
1S1

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Revisions
Issue Date
03.30.16

Project No.
N16001
Sheet No.
1S2

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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:
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

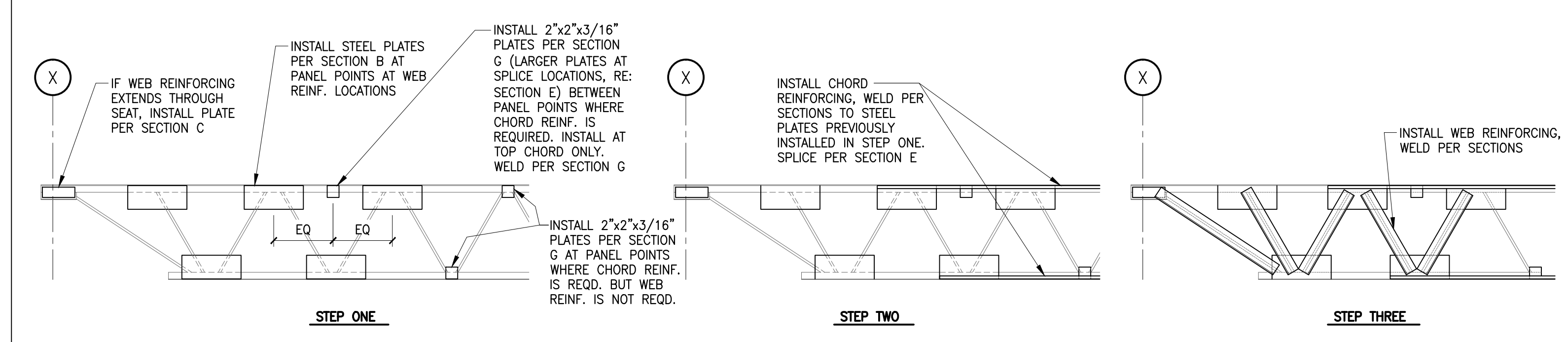
IN ALL CASES, THE UNDERSIZE PORTION OF THE WELD SHALL NOT EXCEED 10% OF THE WELD LENGTH.
6. POROSITY: THE SUM OF SURFACE (PIPING) POROSITY DIAMETERS SHALL NOT EXCEED 1/16 INCH IN ANY 1 INCH OF DESIGN WELD LENGTH.
7. UNDERCUT: FOR MATERIAL LESS THAN 1 INCH THICK, UNDERCUT SHALL NOT EXCEED 1/32 INCH, WITH 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 REINF. 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.

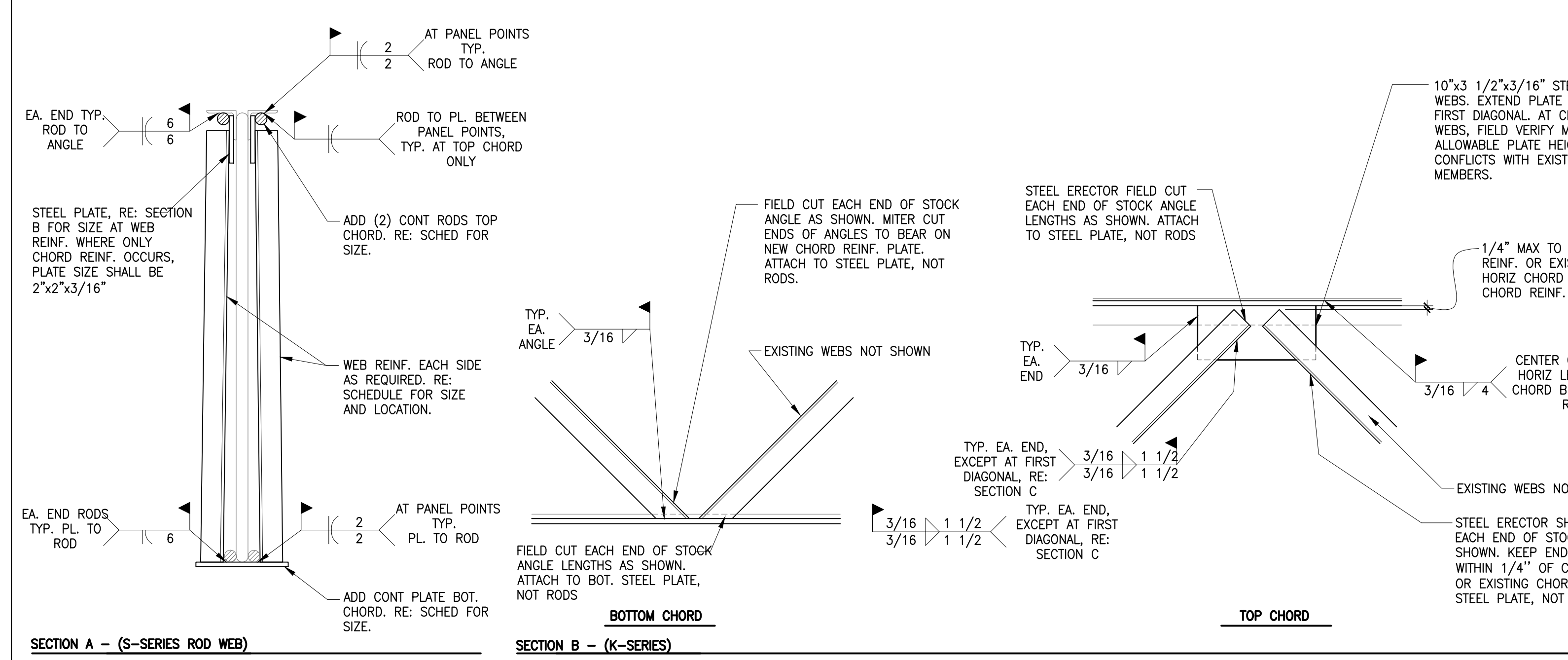
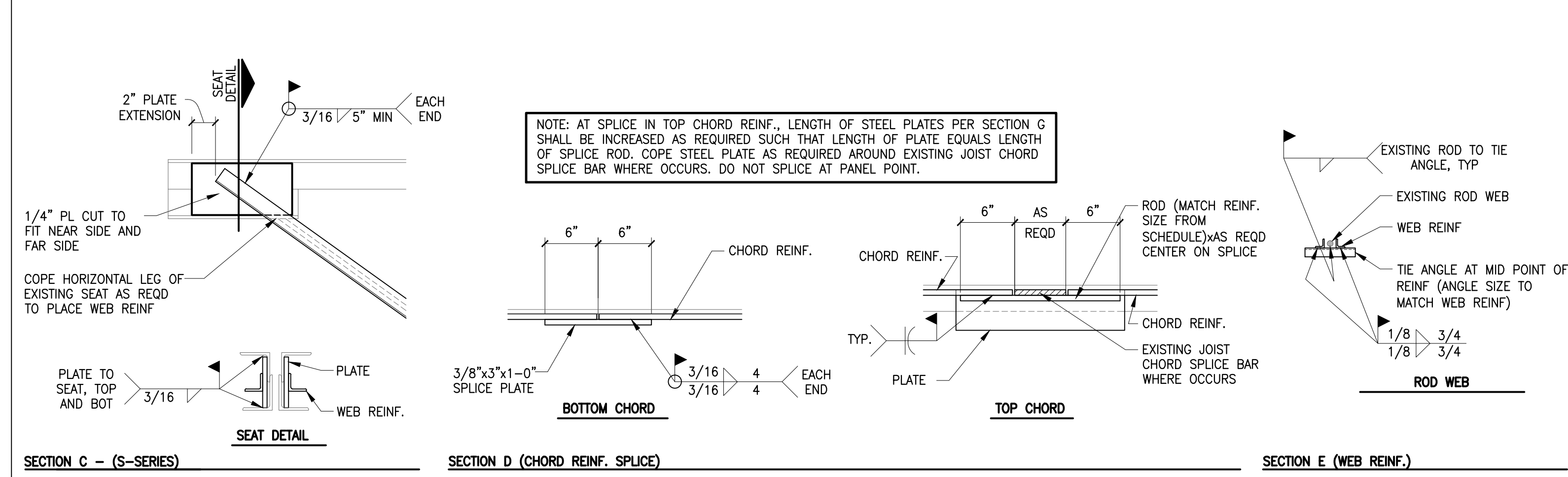
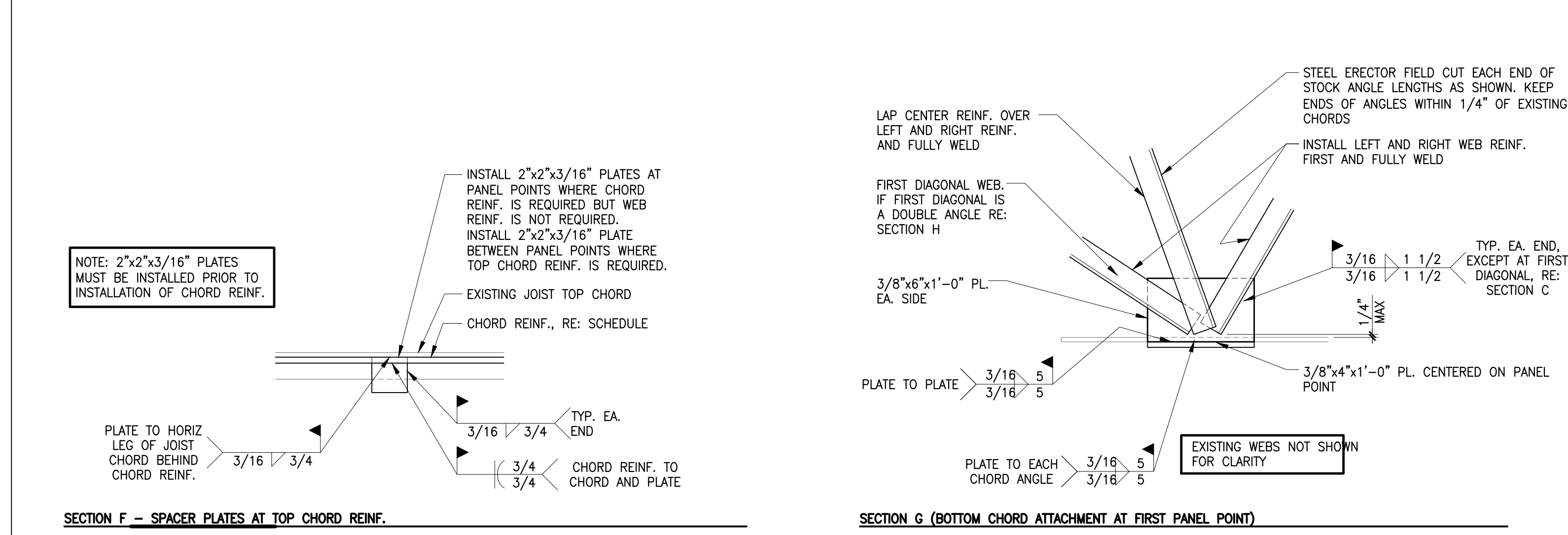
JOIST REINFORCEMENT SCHEDULE

JOIST REINFORCEMENT DESIGNATION, K-SERIES (RE: PLAN SHEETS)	TOP CHORD REINF.	BOT CHORD REINF.	CHORD REINF.			WEB REINF.	WEB REINF.			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

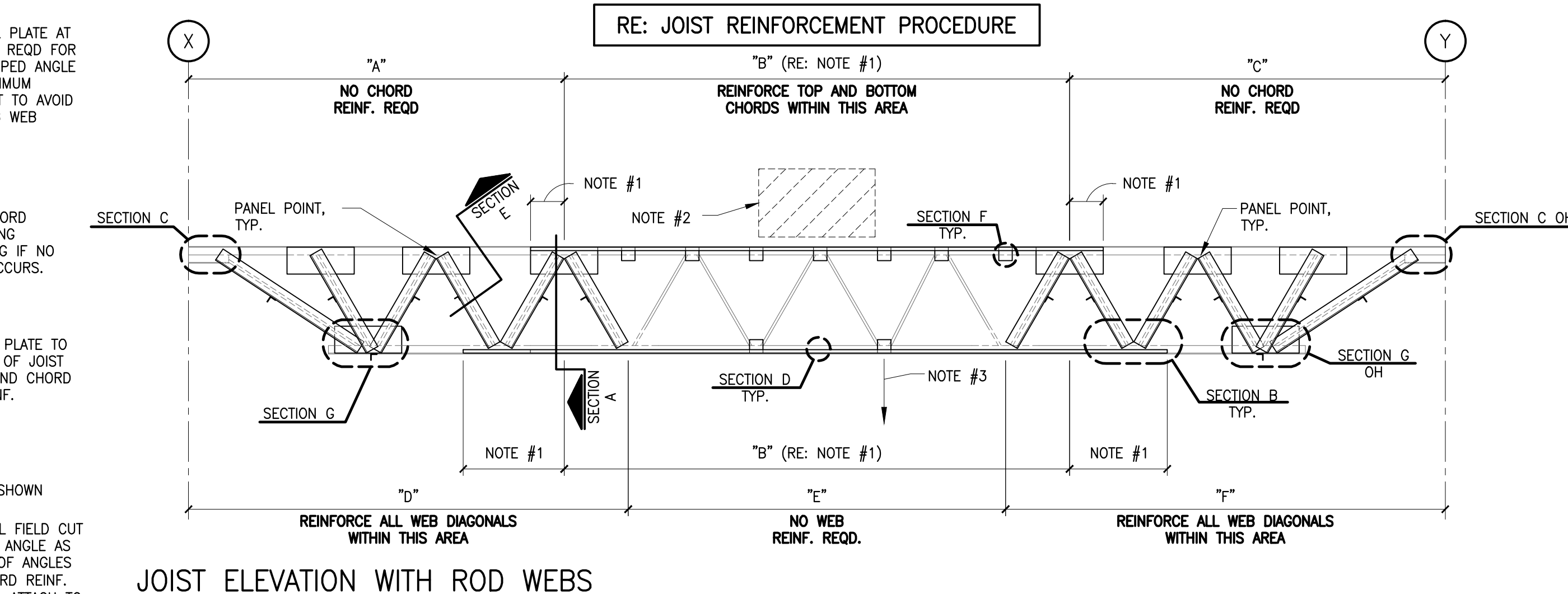
NOTES:
1. DIMENSION "B" IS THE MINIMUM REQUIRED LENGTH OF TOP AND BOTTOM CHORD REINFORCEMENT. FIELD VERIFY PANEL POINT LOCATIONS AND EXTEND TOP AND BOTTOM CHORD REINF. TO OUTER EDGE OF STEEL PLATE AT PANEL POINT.
2. RE: PLAN FOR NEW EQUIPMENT, RE: 2-1S1 FOR ADDITIONAL REINFORCEMENT. DO NOT SET EQUIPMENT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



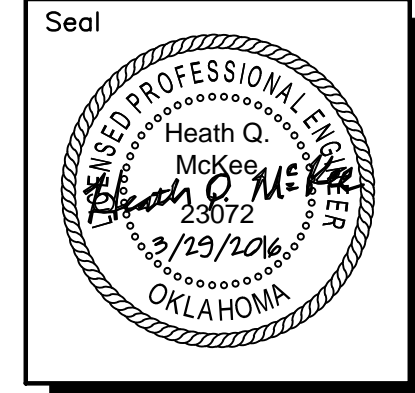
JOIST REINFORCEMENT PROCEDURE



1 JOIST REINFORCEMENT DETAIL -- (K-SERIES) (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)



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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EL RENO, OKLAHOMA 73036

Revisions

Issue Date
03.29.16

Project No.
N16001

Sheet No.
OMO

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

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	VTR	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

AIR DEVICE IDENTIFICATION

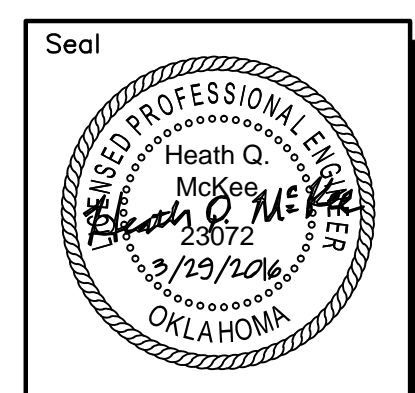
SUPPLY DIFFUSER, CEILING, SQUARE
 TYPE (MARK): X-XXXX
 AIRFLOW: XXXCFM
 NECK SIZE: X-XXXX
 FACE SIZE: X-XXXX

RETURN OR EXHAUST AIR GRILLE, CEILING
 TYPE (MARK): X-XXXX
 FACE SIZE: X-XXXX

LINEAR DIFFUSER
 TYPE (MARK): X-XXXX
 AIRFLOW: XXXCFM
 # OF SLOTS: XXXX
 LENGTH: XXXX

WALL DIFFUSER
 TYPE (MARK): X-XXXX
 AIRFLOW: XXXCFM
 FACE SIZE: X-XXXX

SUPPLY DIFFUSER, ROUND
 TYPE (MARK): X-XXXX
 AIRFLOW: XXXCFM
 NECK SIZE: X-XXXX

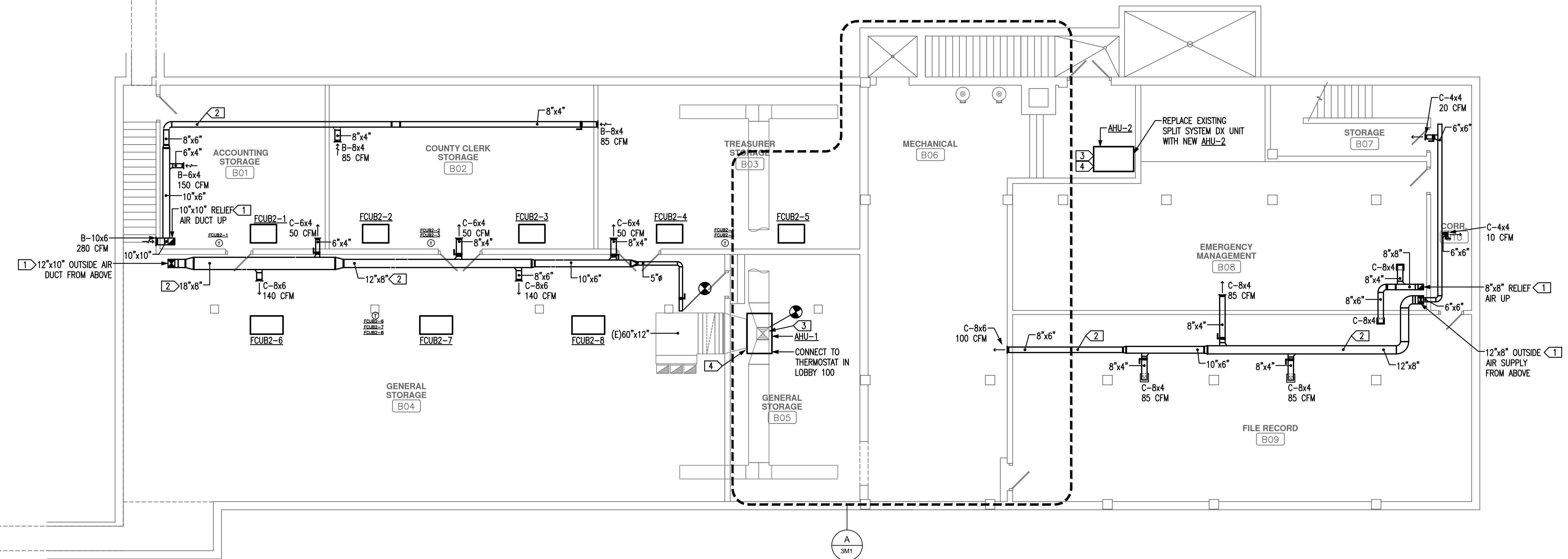


Revisions
Issue Date 03.29.16

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.

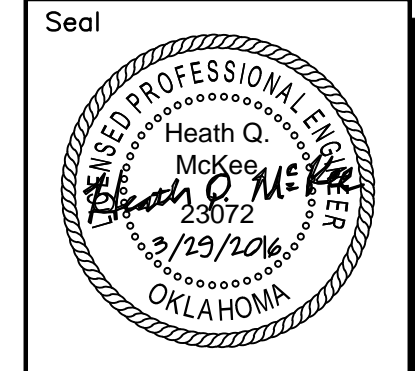


A BASEMENT MECHANICAL FLOOR PLAN
SCALE: 1/8"=1'-0"
2M1

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. CHICKTAW AVE.
EL RENO, OKLAHOMA 73036

FIRST FLOOR
MECHANICAL PLAN

Revisions
Issue Date
03.29.16

Project No.
N16001

Sheet No.
2M2

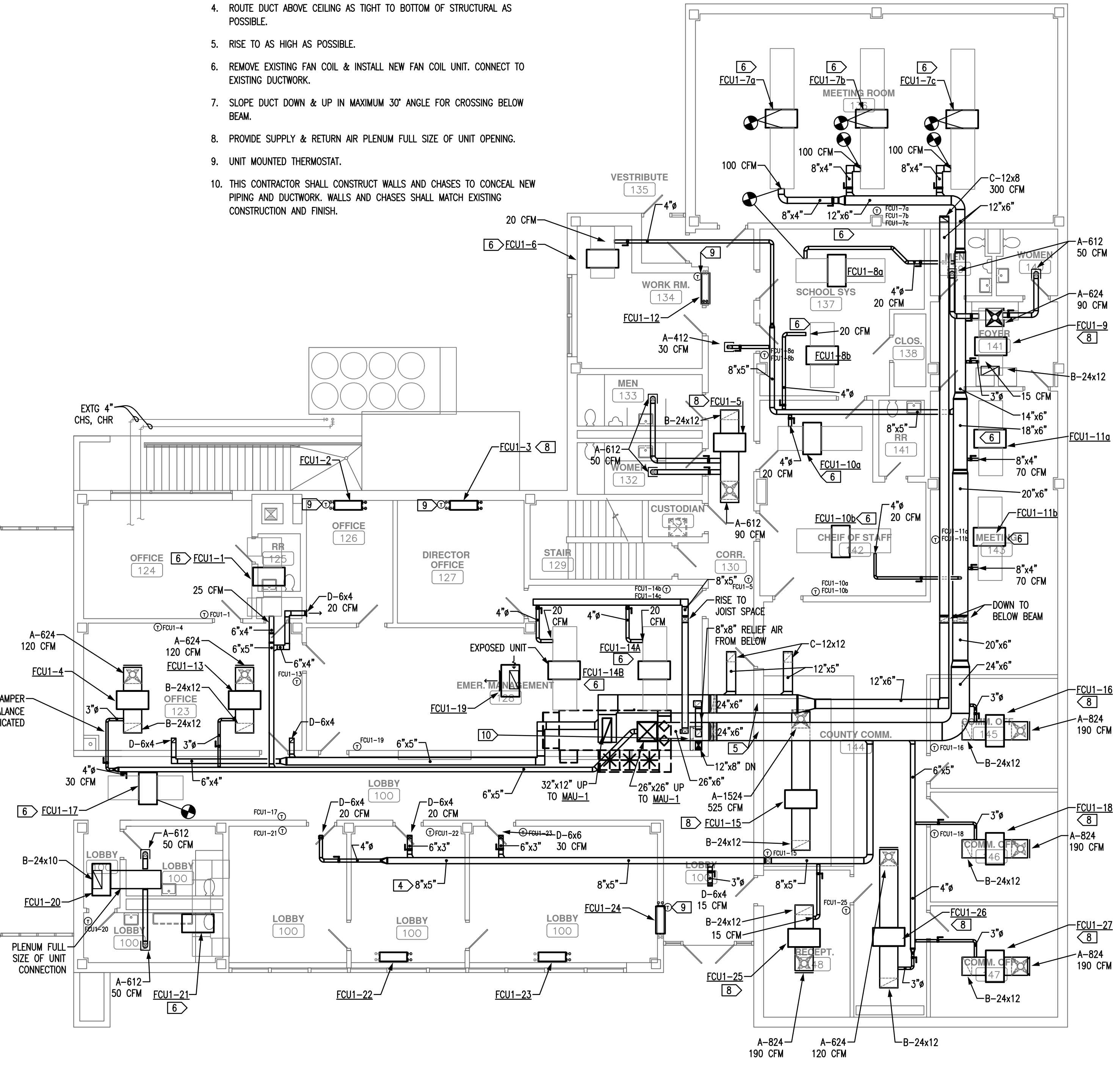
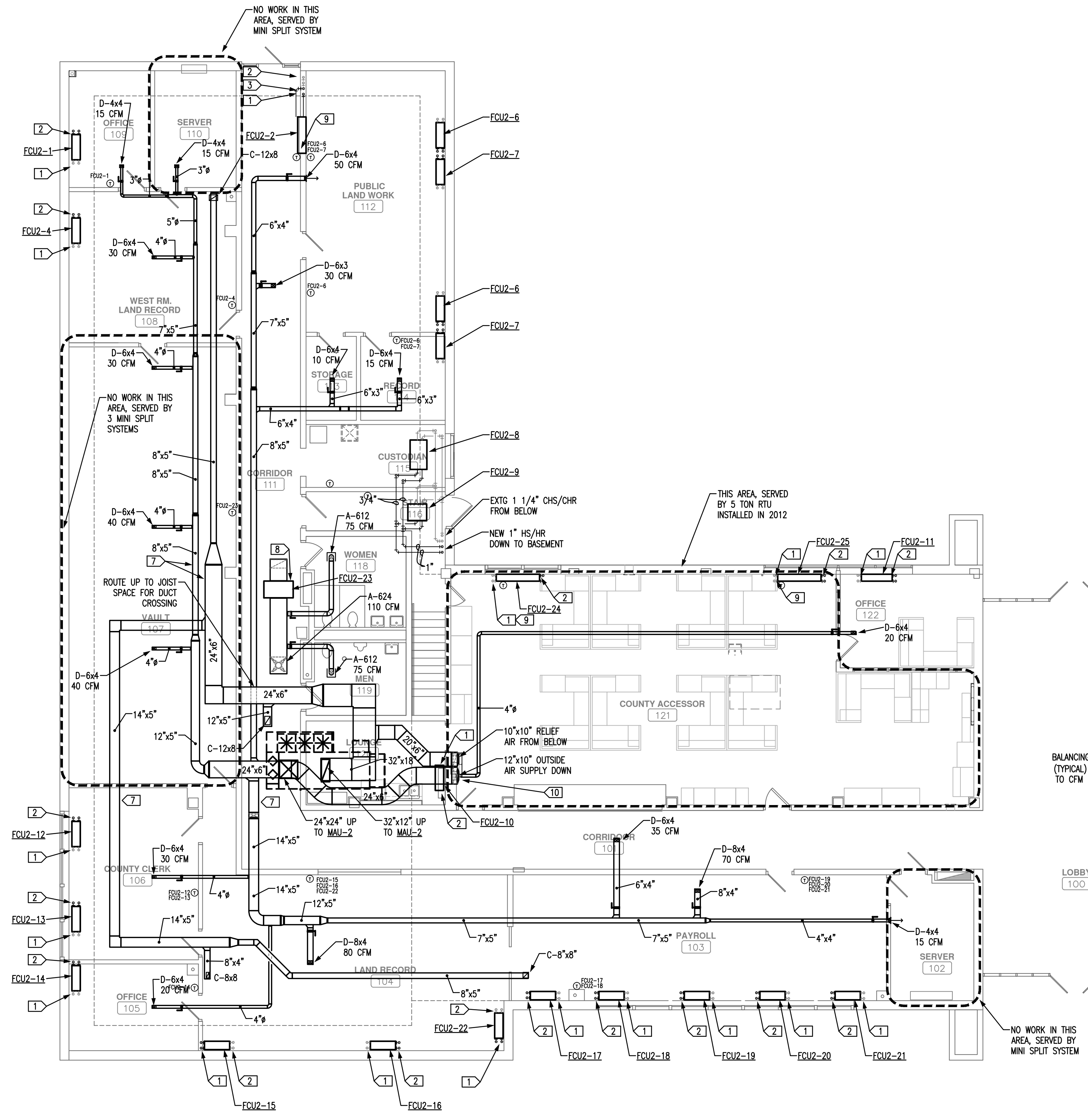
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KEYED NOTES:

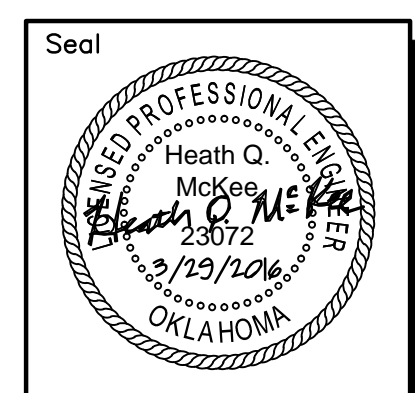
1. PROVIDE NEW SHUTOFF VALVE ALL ACCESSORIES & CONTROL VALVES. REFER TO DETAIL 1/6M1. CONNECT TO EXISTING CHS/CHR LINE.
2. PROVIDE NEW 3/4" HS/HR LINES AND ALL ACCESSORIES. REFER TO DETAIL 1/6M1. CORE DRILL FLOOR AND ROUTE PIPING FROM NEW PIPING IN BASEMENT.
3. CONTRACTOR SHALL OPEN EXISTING WALL, STACK 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"



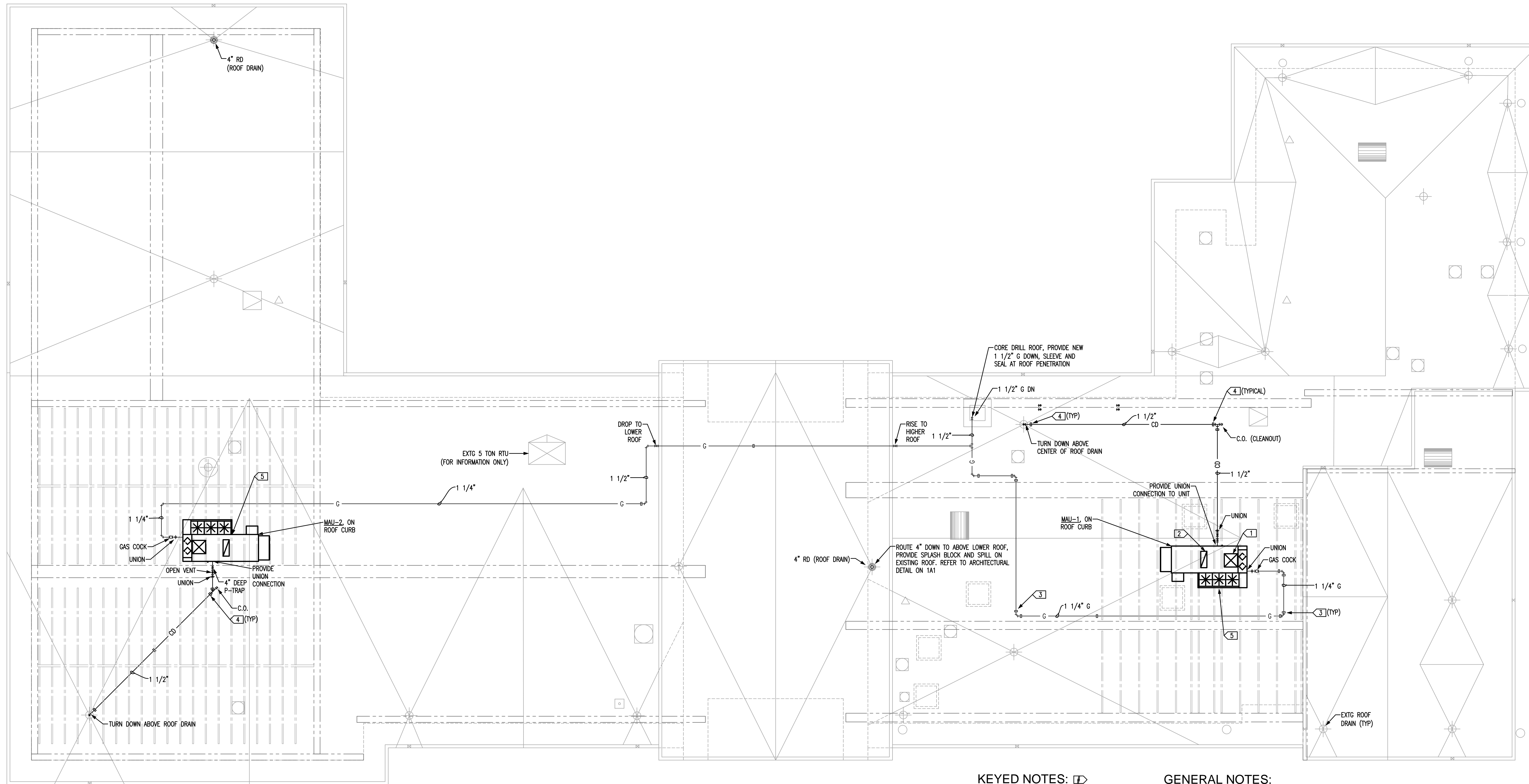
Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
MECHANICAL
ROOF PLAN

Revisions
Issue Date
03.29.16

Project No.
N16001

Sheet No.
2M3

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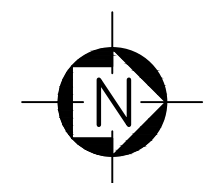
KEYED NOTES:

- 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



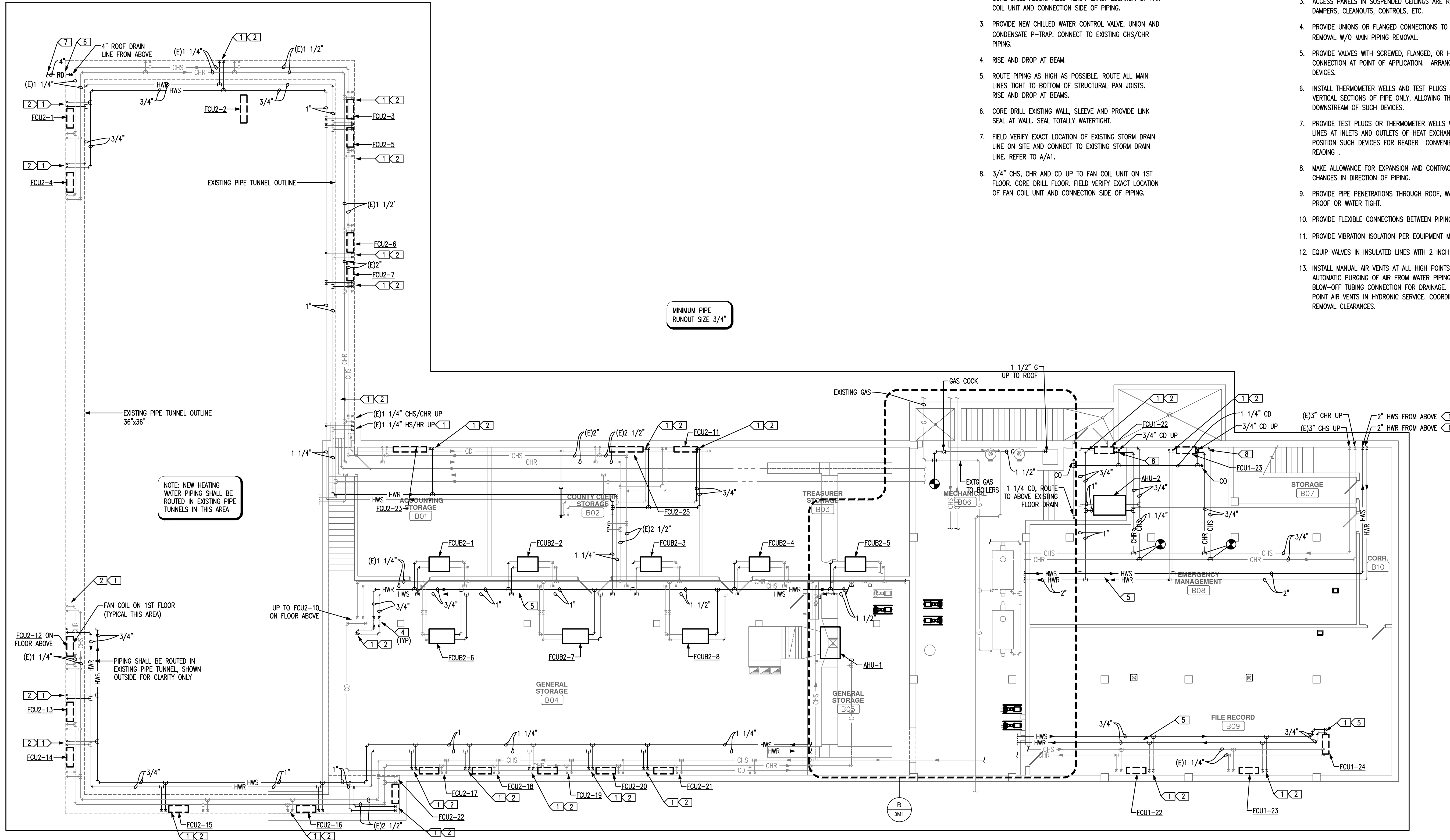


KEYED NOTES:

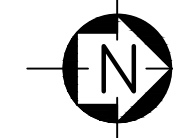
1. SLEEVE AND FIRE SEAL HS AND HR (HEATING WATER SUPPLY AND HEATING WATER RETURN) LINES AT RATED WALL PENETRATION, AND AT ALL WALL PENETRATIONS.
2. 3/4" HS AND HR UP TO FAN COIL UNIT ON 1ST FLOOR. CORE DRILL FLOOR. FIELD VERIFY EXACT LOCATION OF FAN COIL UNIT AND CONNECTION SIDE OF PIPING.
3. PROVIDE 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.



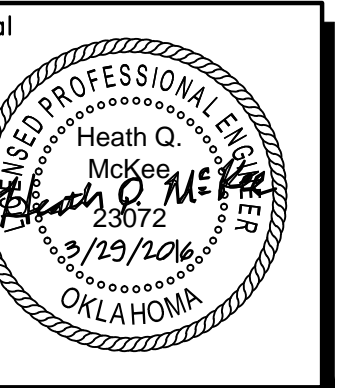
A BASEMENT HYDRONIC PIPING PLAN
2M4 SCALE: 1/8"=1'-0"



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Revisions
Issue Date 03.29.16

Project No. N16001
Sheet No. 2M4



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

FIRST FLOOR HYDRONIC
PIPING PLAN

Revisions

Issue Date
03.29.16

Project No.
N16001

Sheet No.

2M5

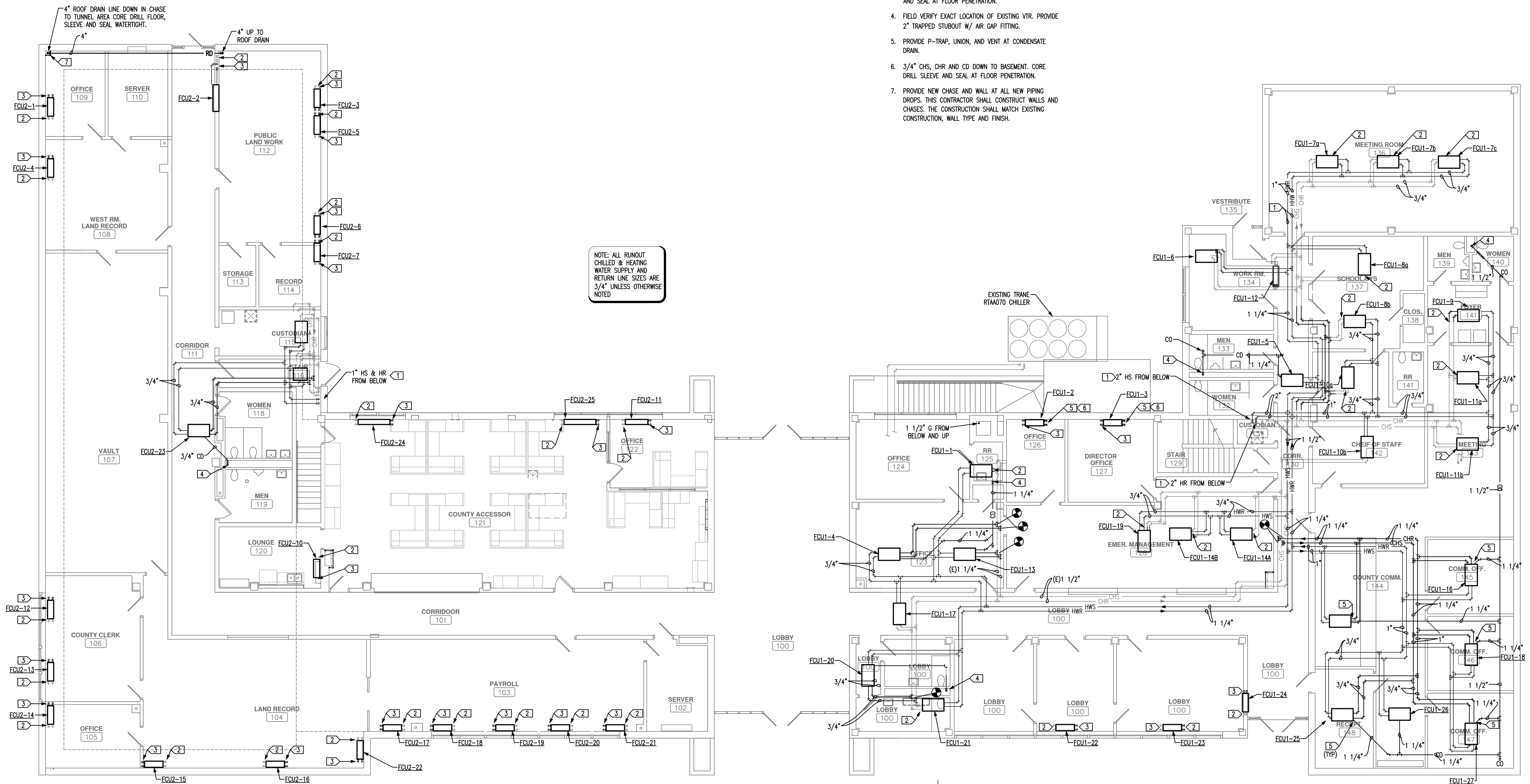
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KEYED NOTES:

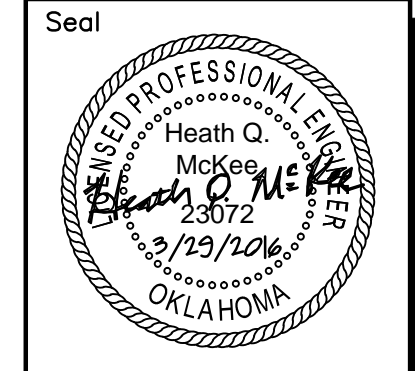
1. SLEEVE AND FIRE SEAL HS AND HR (HEATING WATER SUPPLY AND HEATING WATER RETURN) LINES AT RATED WALL PENETRATION AND ALL FLOOR PENETRATIONS.
2. PROVIDE NEW CONTROL VALVE, STRAINER, P-TRAP AND CONNECT TO EXISTING CHS/CHR LINES. CLEAN CONDENSATE DRAIN LINE AND REPAIR ALL LEAKS. FIELD VERIFY EXACT LOCATION 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.



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



Revisions	
Issue Date	03.29.16

Project No.	N16001
Sheet No.	2MD1

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DEMOLITION NOTES:

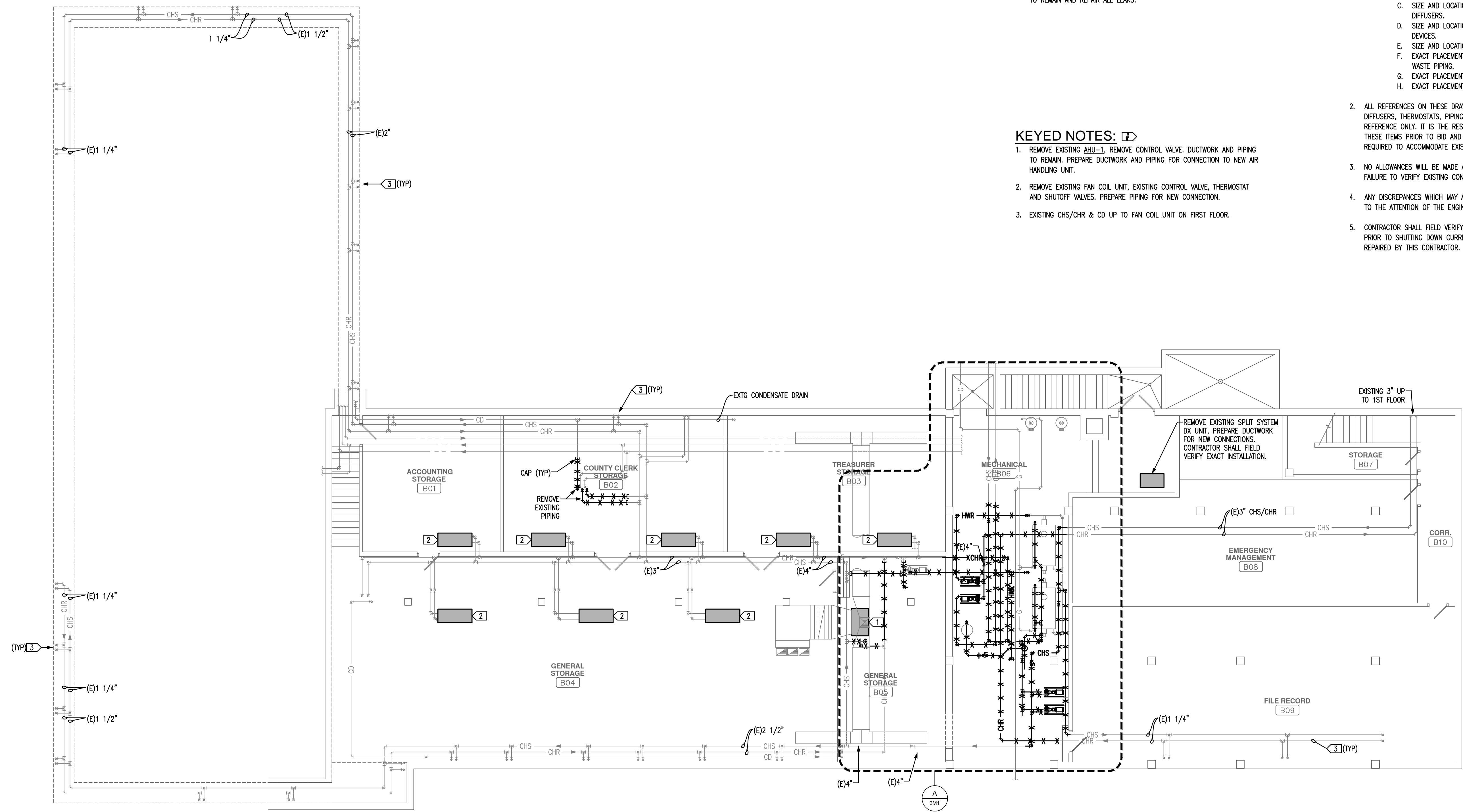
1. REMOVING ALL EXISTING MECHANICAL EQUIPMENT SHOWN SHADED.
2. REMOVE ALL EXISTING PIPING AS INDICATED B AN "X" MARK. CAP OR PLUG AS NECESSARY.
3. CONTRACTOR SHALL PRESSURE TEST ALL EXISTING PIPING TO REMAIN AND REPAIR ALL LEAKS.

FIELD VERIFICATION NOTES:

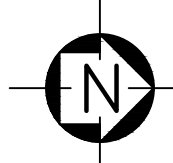
1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED.
 - A. EXACT PLACEMENT, SIZE, CAPACITY, MANUFACTURER AND CONDITION OF ALL EXISTING HVAC EQUIPMENT WITHIN SCOPE OF WORK, WHETHER SPECIFICALLY SHOWN OR 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.

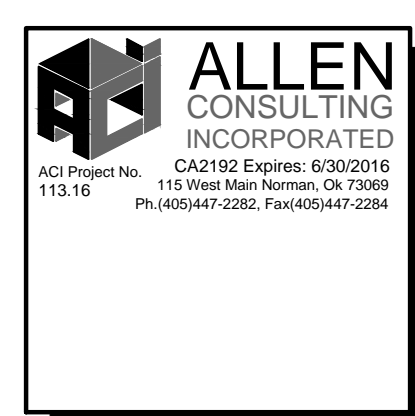
KEYED NOTES:

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





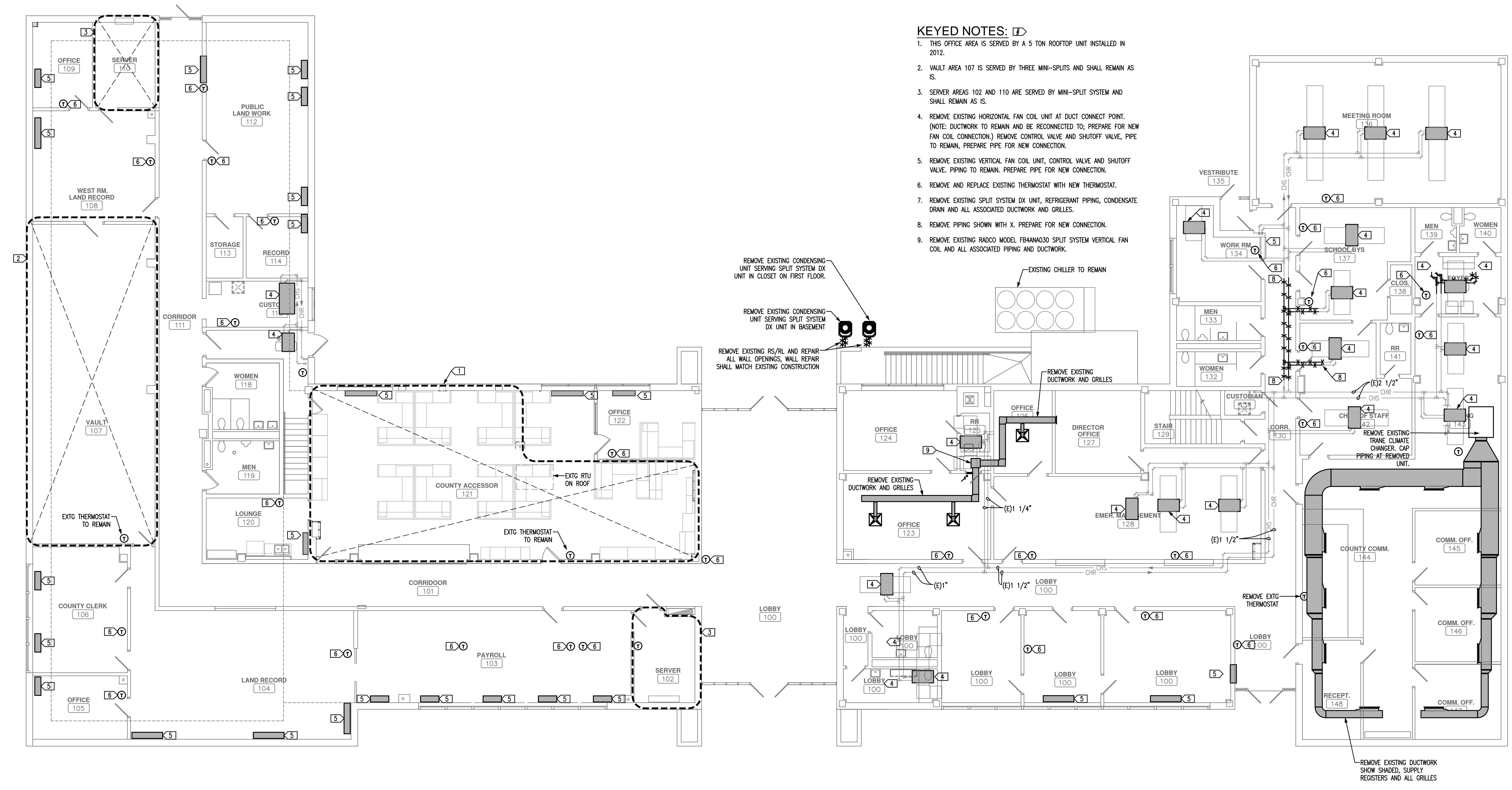
Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR MECHANICAL
DEMOLITION PLAN

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.

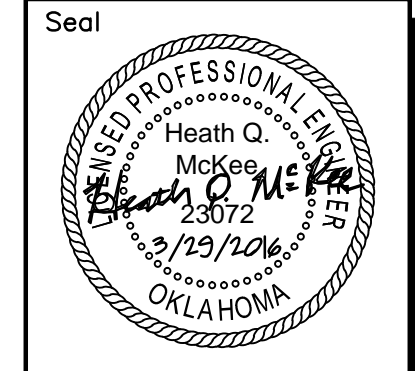


A FIRST FLOOR MECHANICAL DEMOLITION PLAN
2MD2 SCALE: 1/8"=1'-0"

Revisions
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.
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ENLARGED BASEMENT MECHANICAL
DEMOLITION AND NEW FLOOR PLAN

Revisions
Issue Date 03.29.16

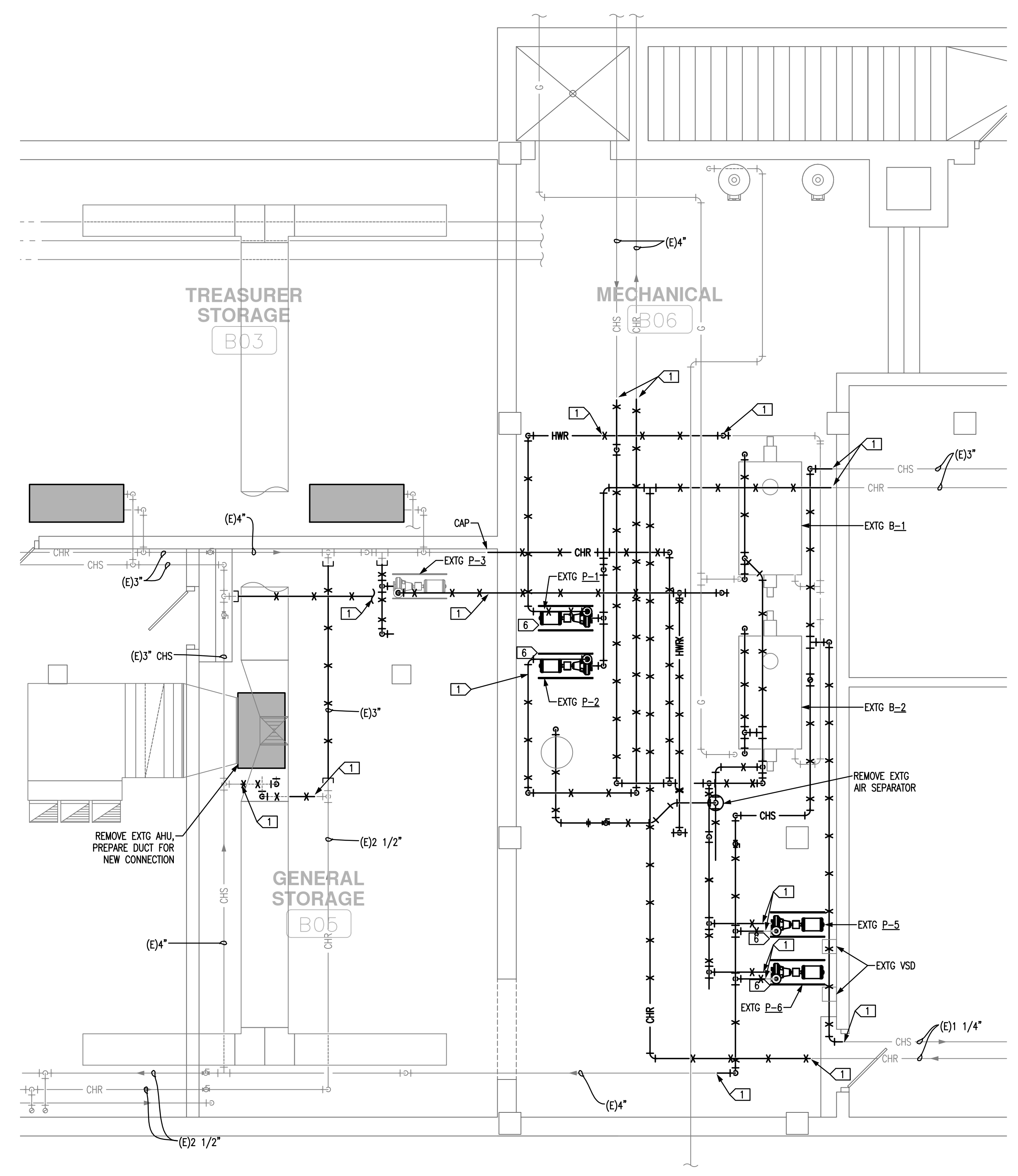
Project No. N16001
Sheet No. 3M1

GENERAL NOTES:

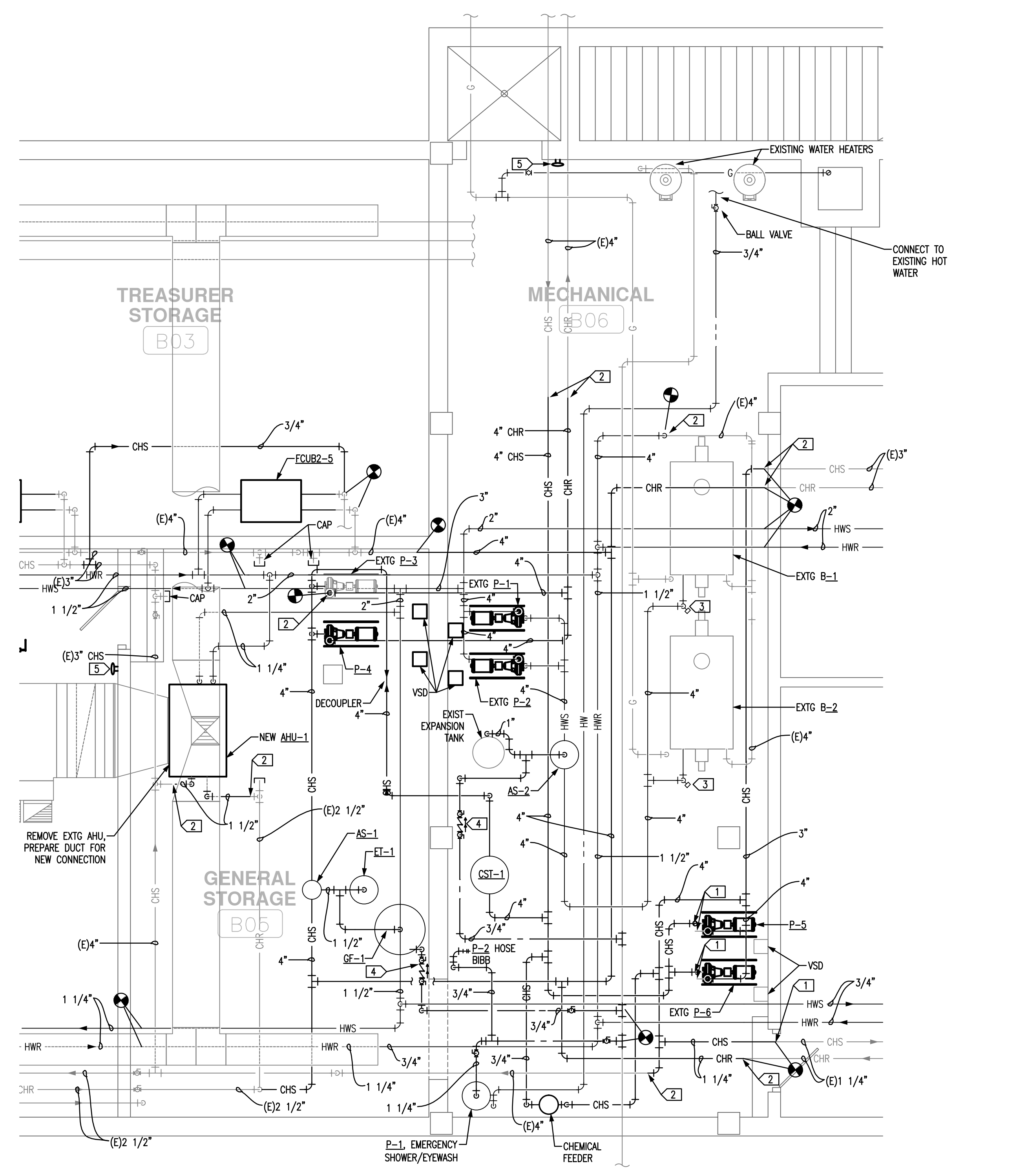
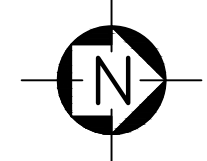
1. REMOVE ALL PIPING INDICATED WITH AN X.

KEYED NOTES:

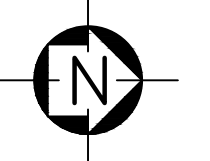
1. REMOVE EXISTING PIPING TO THIS POINT. PREPARE PIPING TO REMAIN FOR NEW CONNECTION.
2. CONNECT TO EXISTING PIPING AT THIS POINT. FIELD VERIFY EXACT LOCATION.
3. PROVIDE BOILER CONTROL VALVE, INTERLOCK WITH BOILER FIRING. OPEN WHEN BOILER IS ON, CLOSE WHEN BOILER IS OFF.
4. REDUCED PRESSURE BACKFLOW 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.



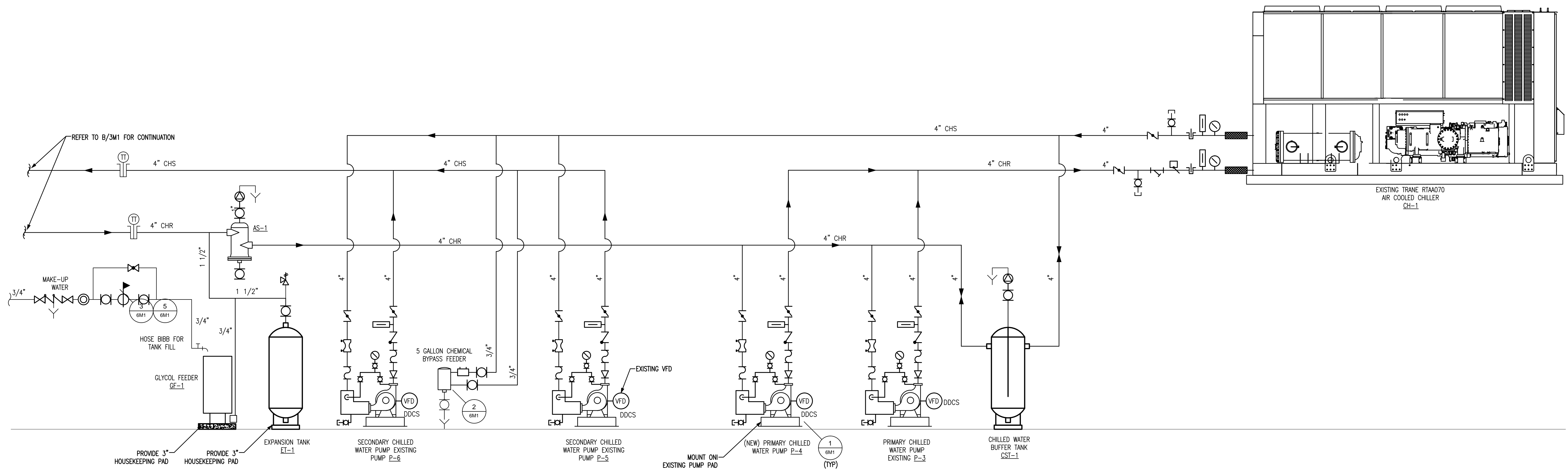
A ENLARGED BASEMENT MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"



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

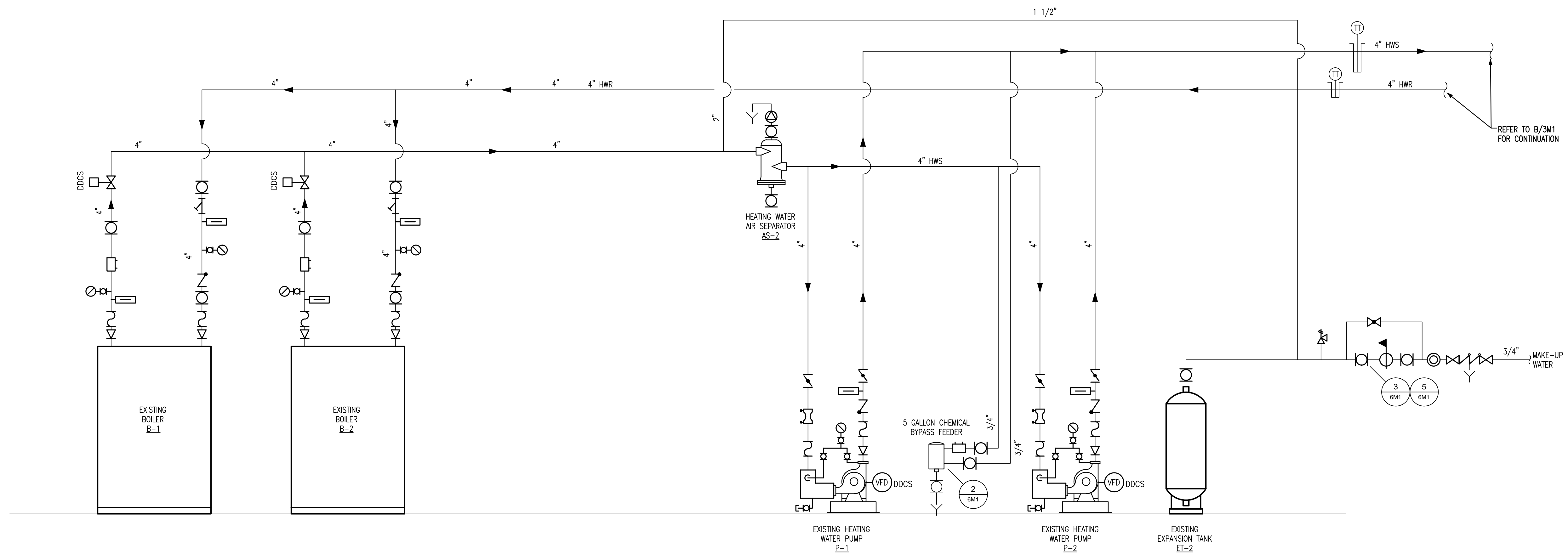


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A NEW CHILLED WATER PIPING FLOW DIAGRAM (EXISTING CENTRAL PLANT)
SCALE: NOT TO SCALE;
REFER:

- 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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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, and various performance metrics.

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, 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), MIN TEMP (F), MAX TEMP (F), PRE-CHARGE (psi), FLUID, WEIGHT, MANUFACTURER MODEL, and REMARKS.

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

Glycol Make Up Unit Schedule table with columns for MARK, CAPACITY (GPM @ PSI), TANK SIZE, TANK DIMENSIONS, 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

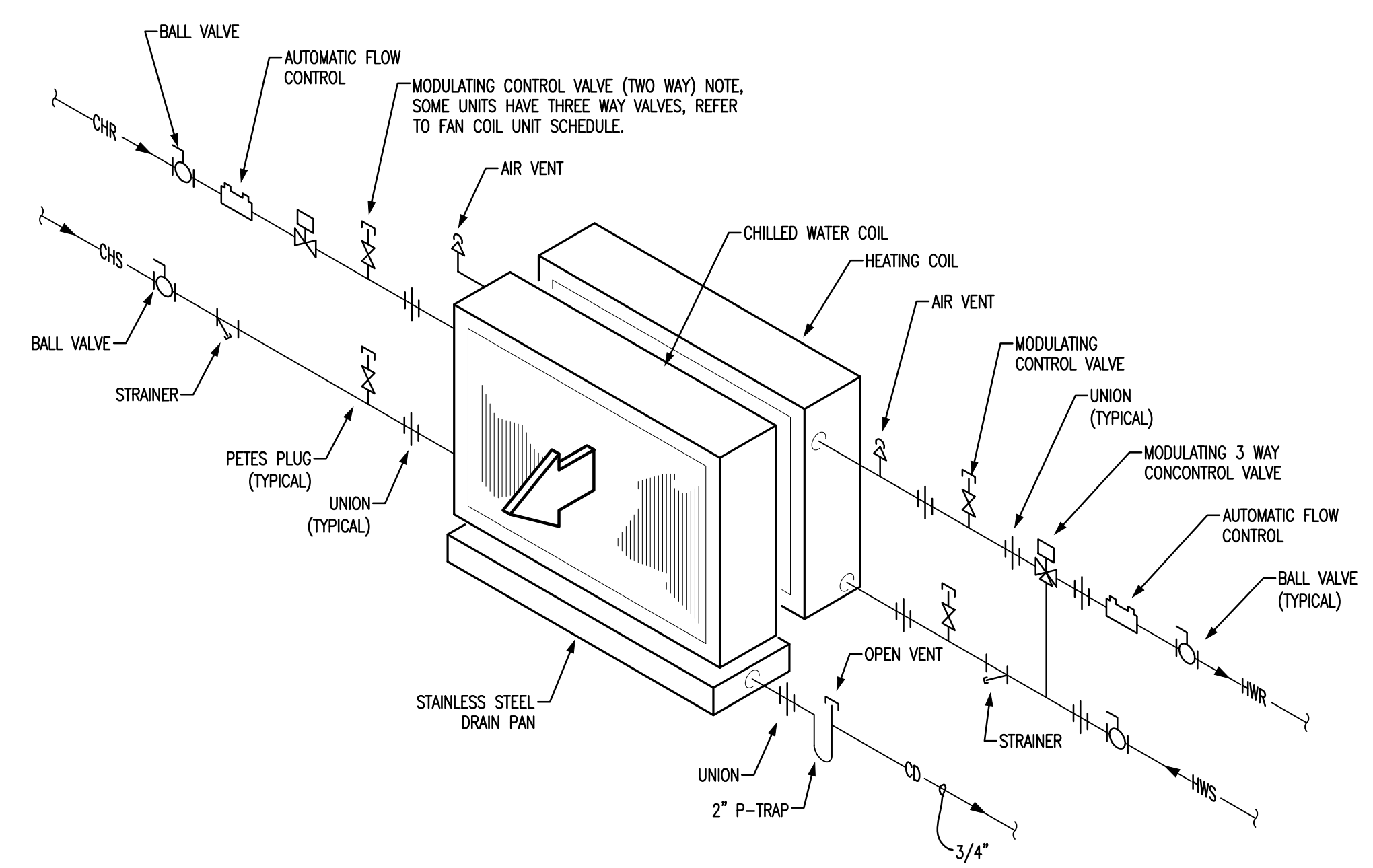
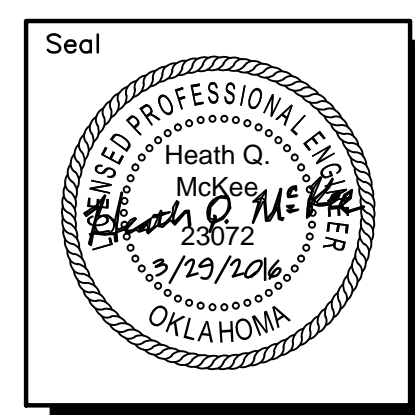
Issue Date
03.29.16

Project No.
N16001

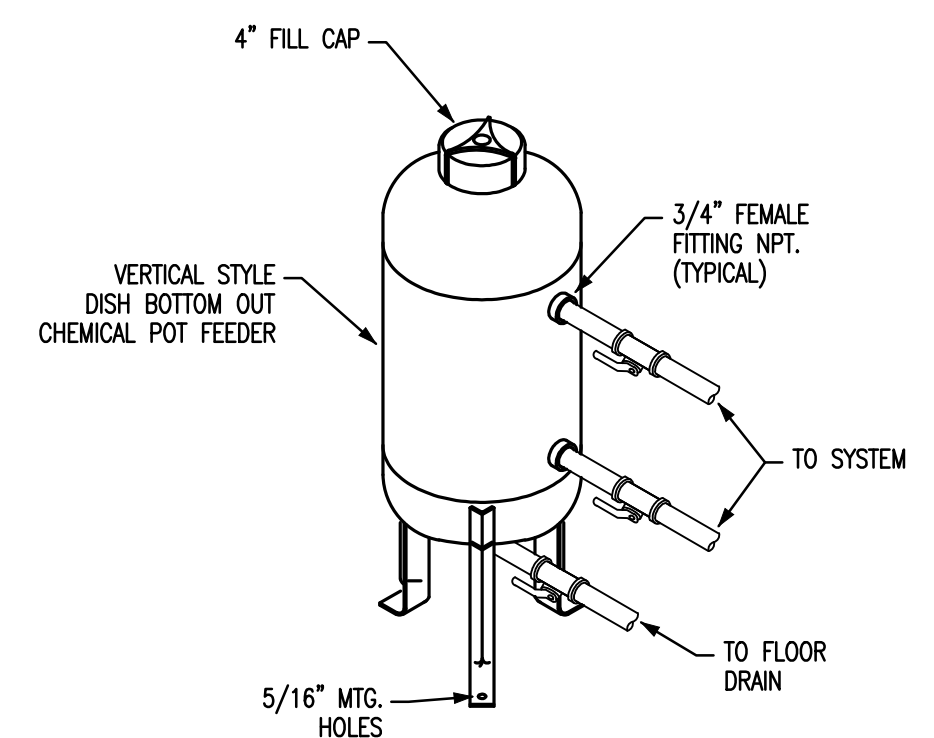
Sheet No.

5M1

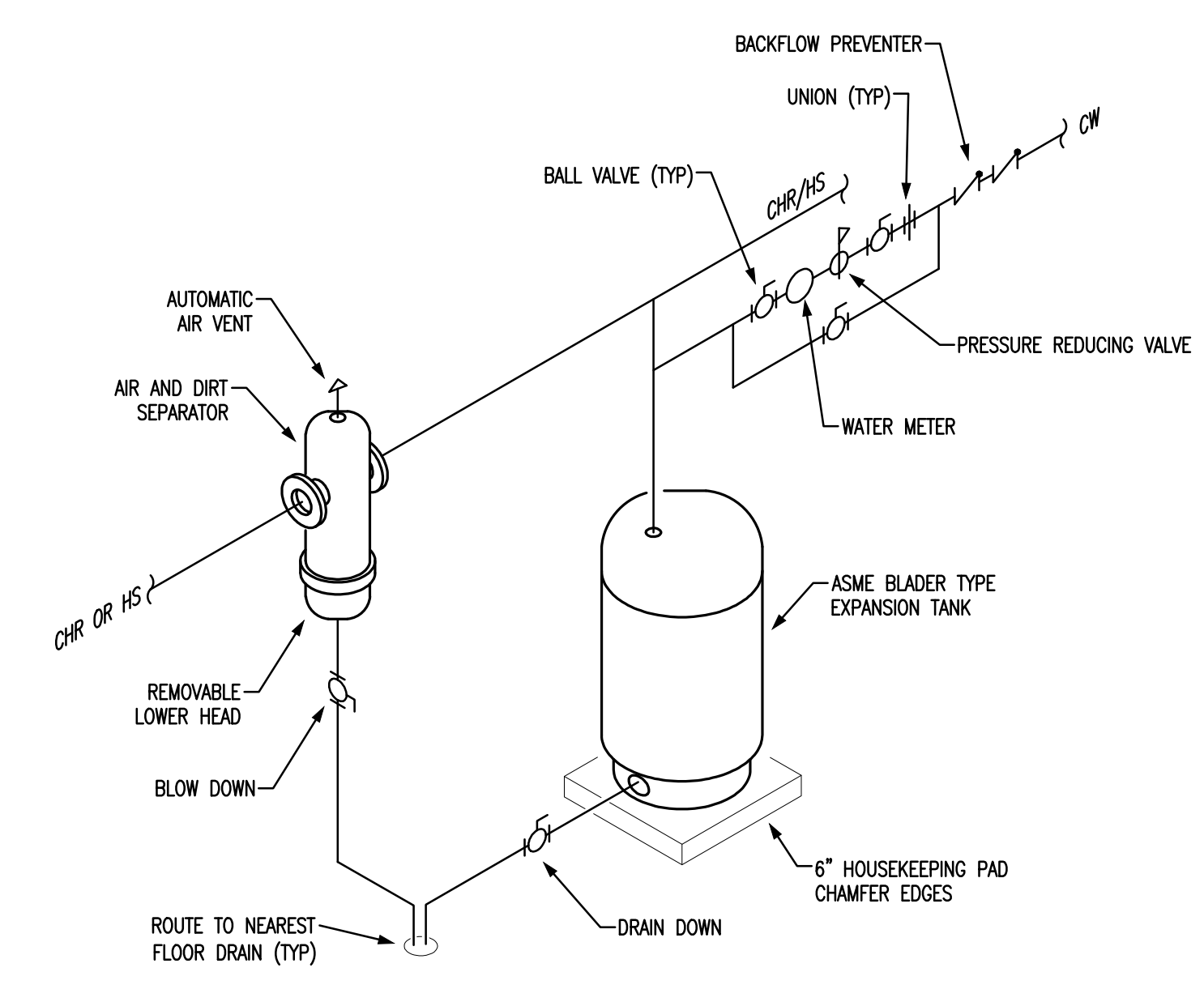
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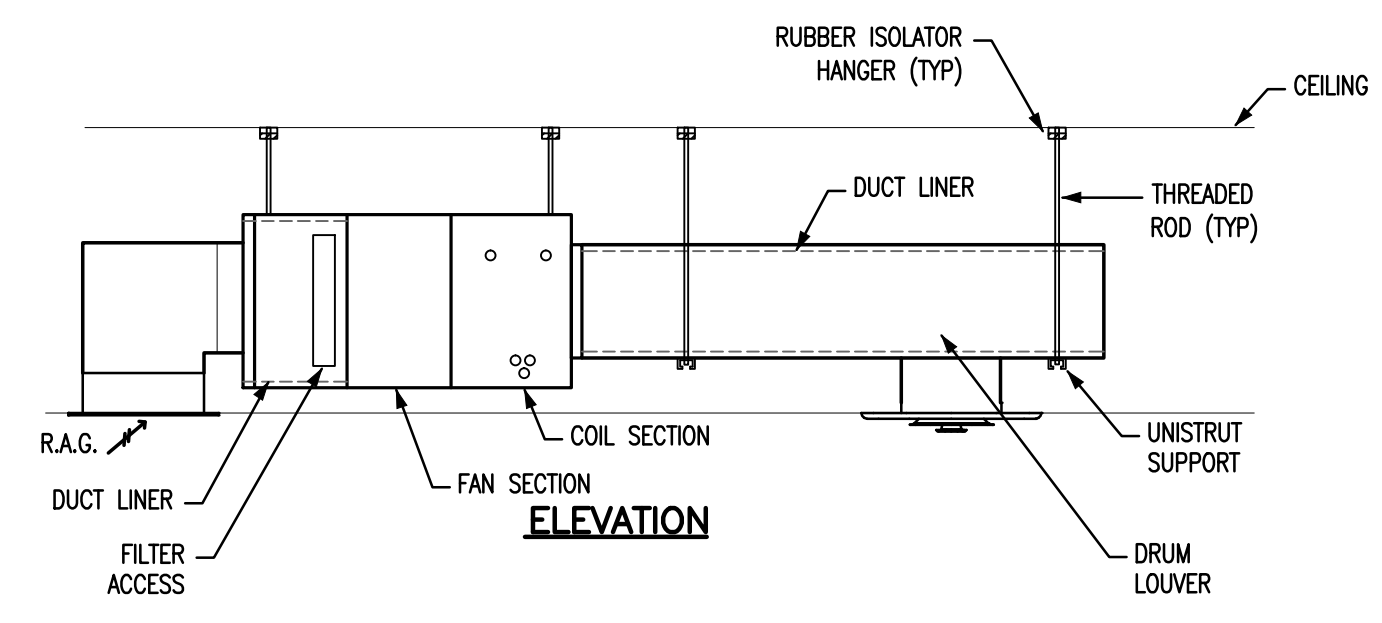
1 FAN COIL PIPING DETAIL
SCALE: NTS
REFER:



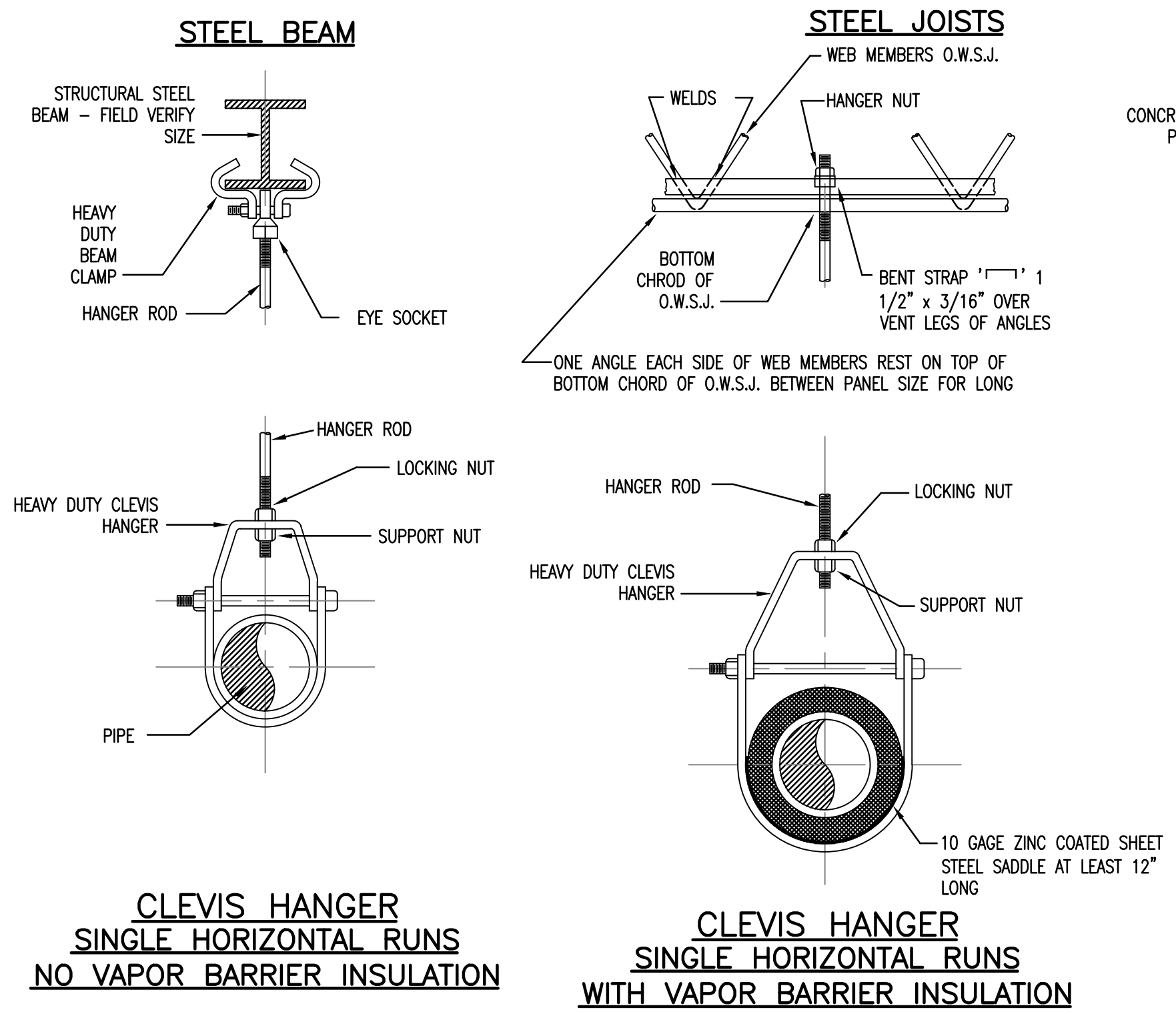
2 CHEMICAL POT FEEDER DETAIL
SCALE: NTS
REFER:



3 EXPANSION TANK PIPING DETAIL
SCALE: NTS
REFER:



4 FAN COIL UNIT DETAIL
SCALE: NTS
REFER:

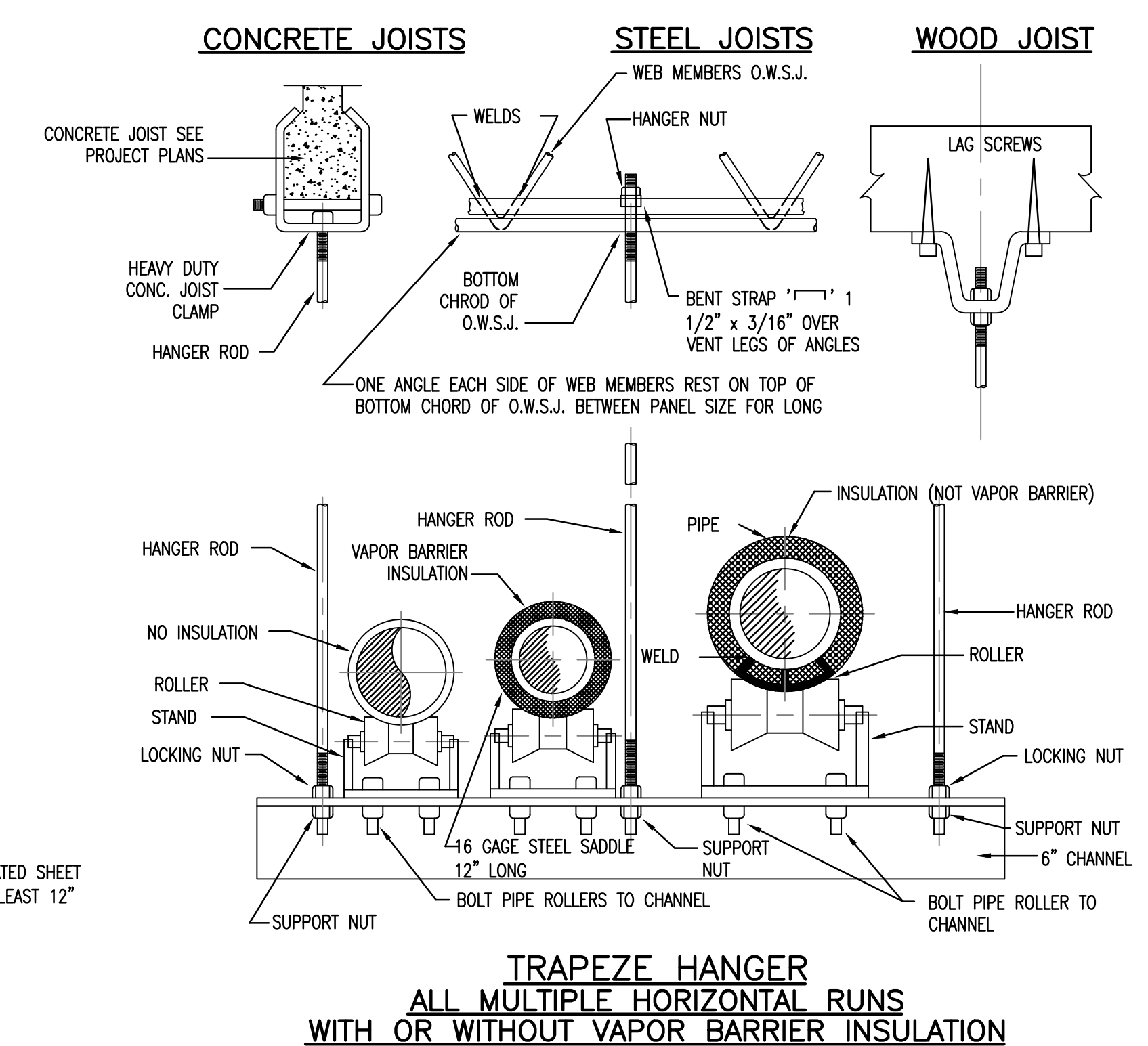


**CLEVIS HANGER
SINGLE HORIZONTAL RUNS
NO VAPOR BARRIER INSULATION**

**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)

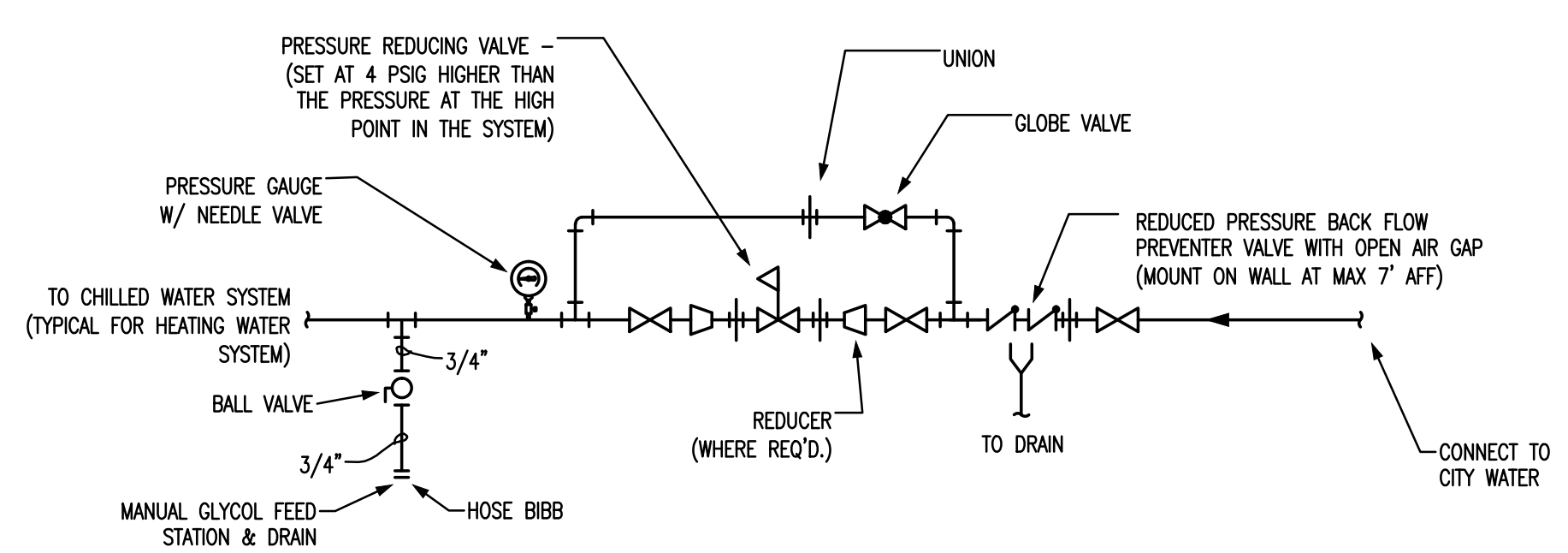
6 PIPE HANGER DETAIL
SCALE: NTS
REFER:



**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:



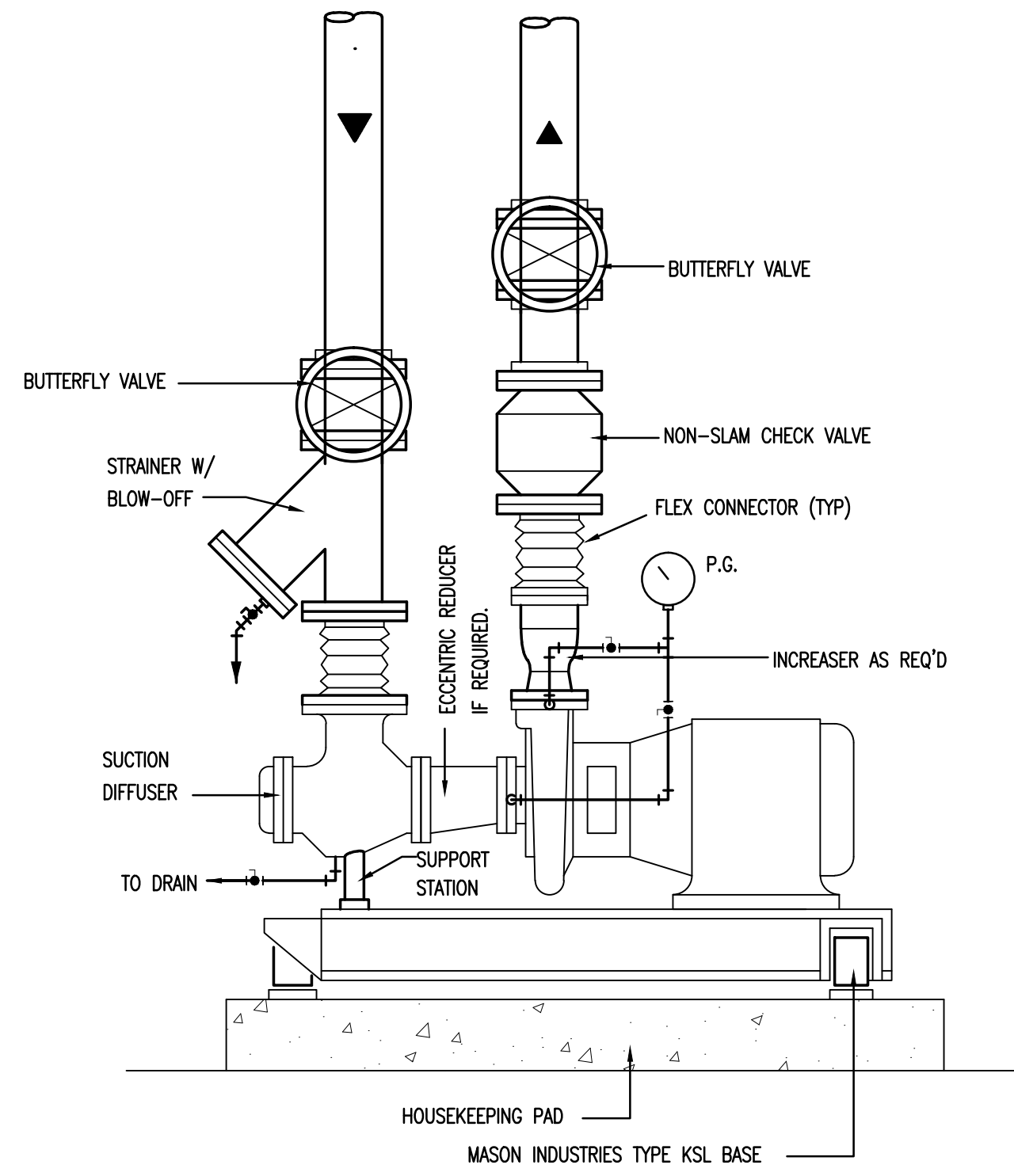
5 MAKEUP WATER CONNECTION DETAIL
SCALE: NTS
REFER:

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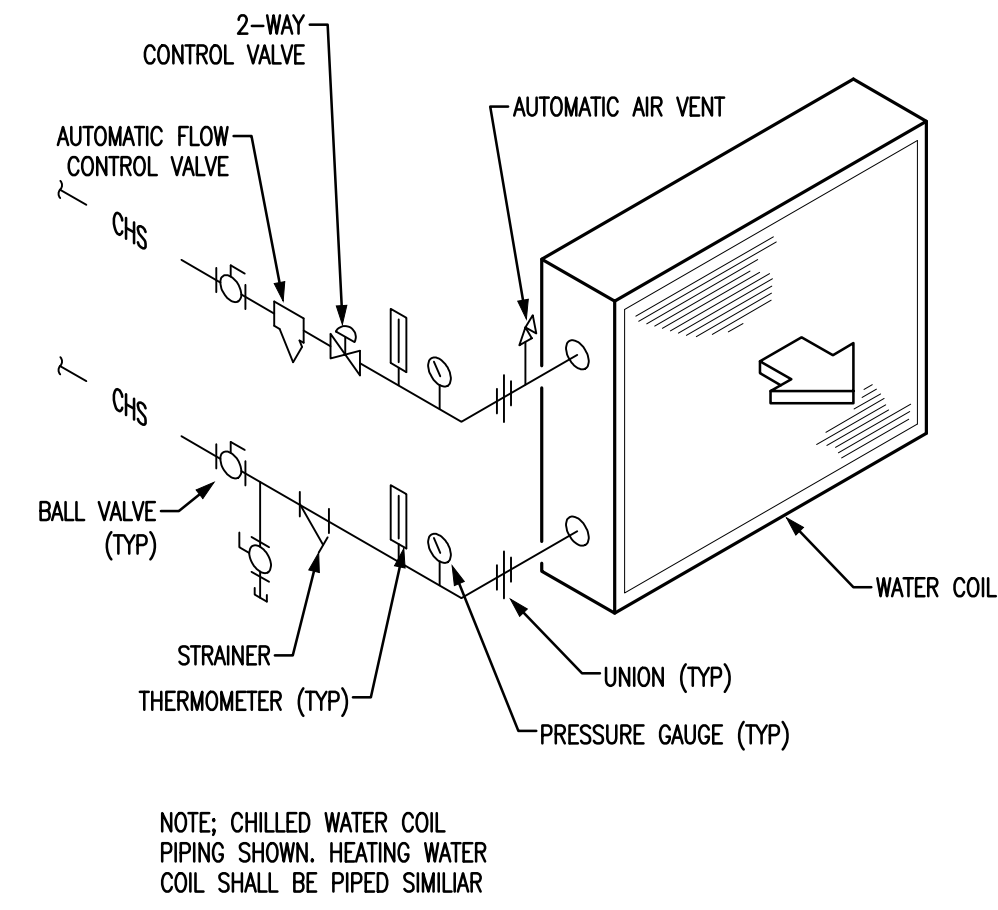
**Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING**
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
MECHANICAL
DETAILS

Revisions
Issue Date 03.29.16

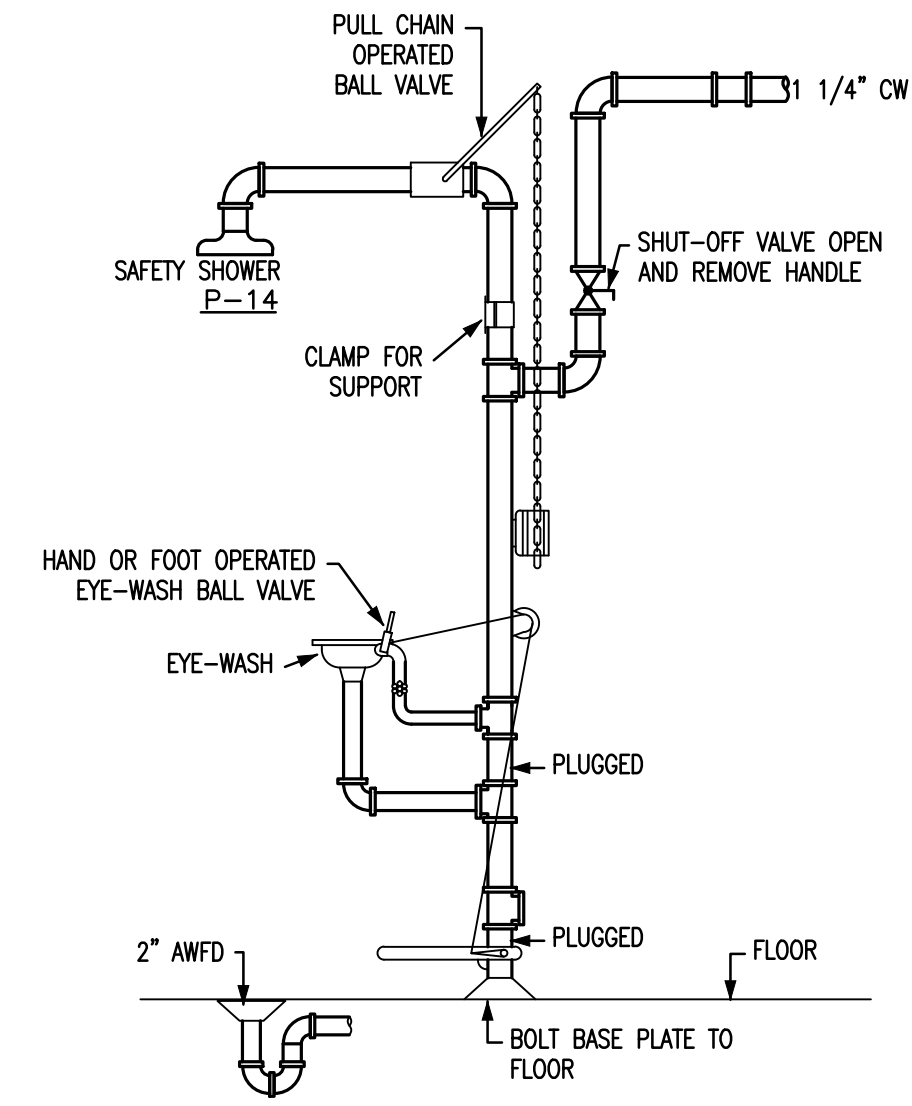
Project No. N16001
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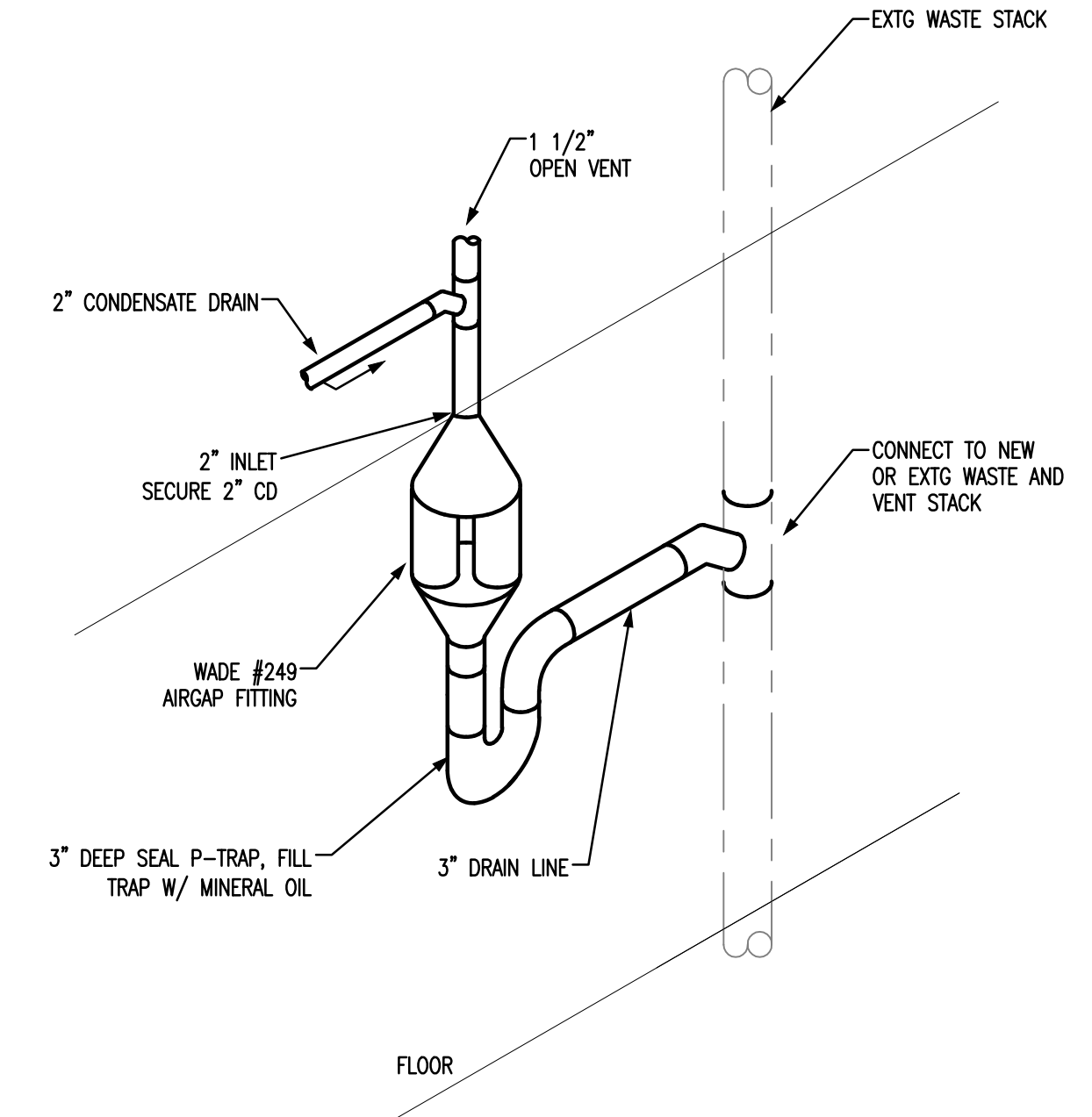
1 BASE MOUNTED PUMP DETAIL
SCALE: NTS
REFER:



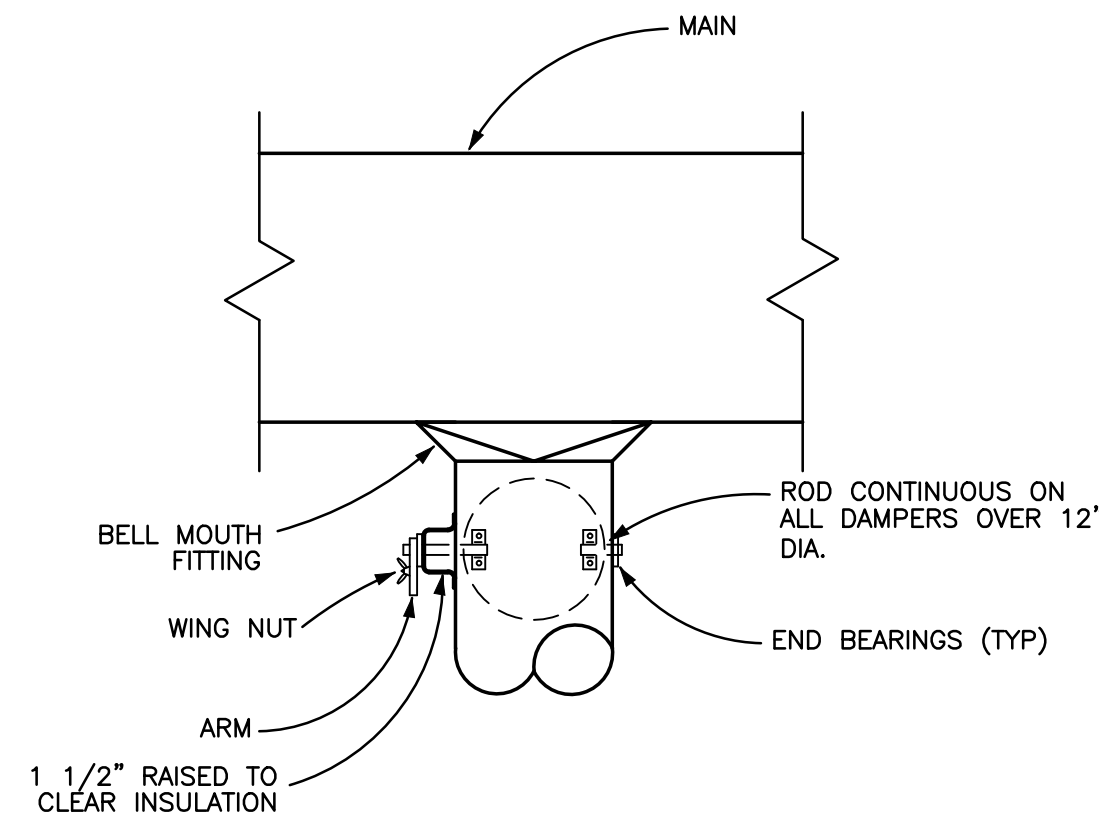
2 WATER COIL PIPING - AHU
SCALE: NTS
REFER:



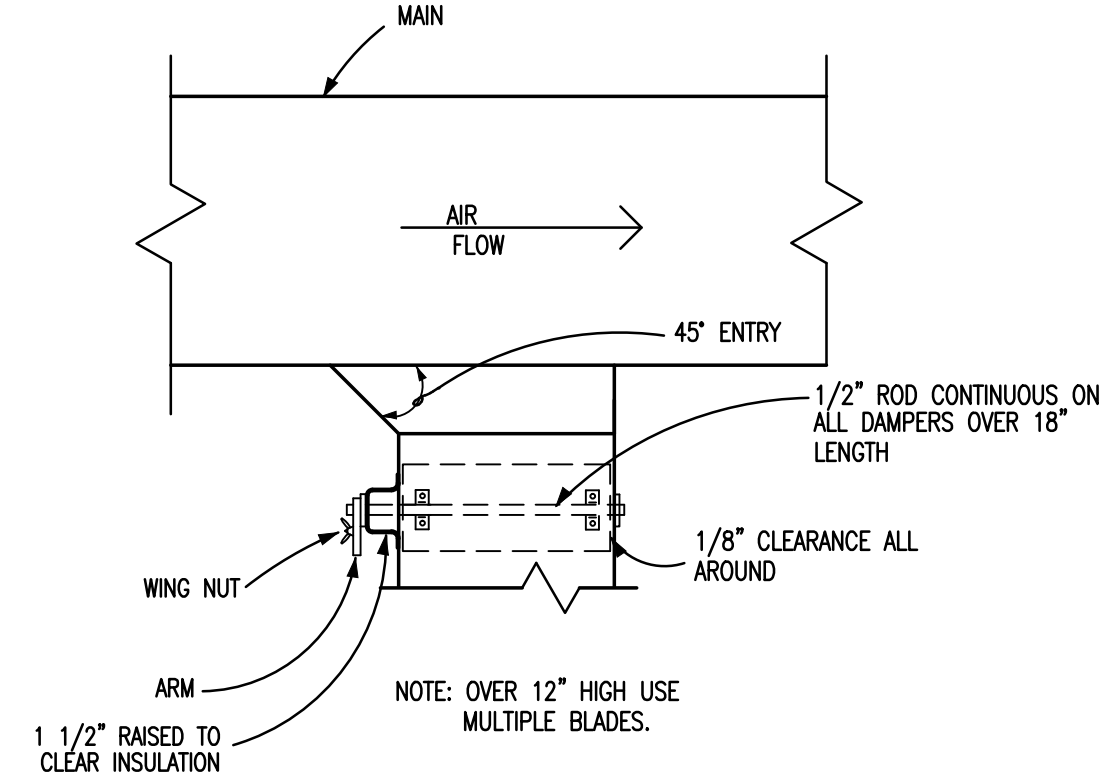
3 SAFETY SHOWER + EYE-WASH
SCALE: NTS
REFER:



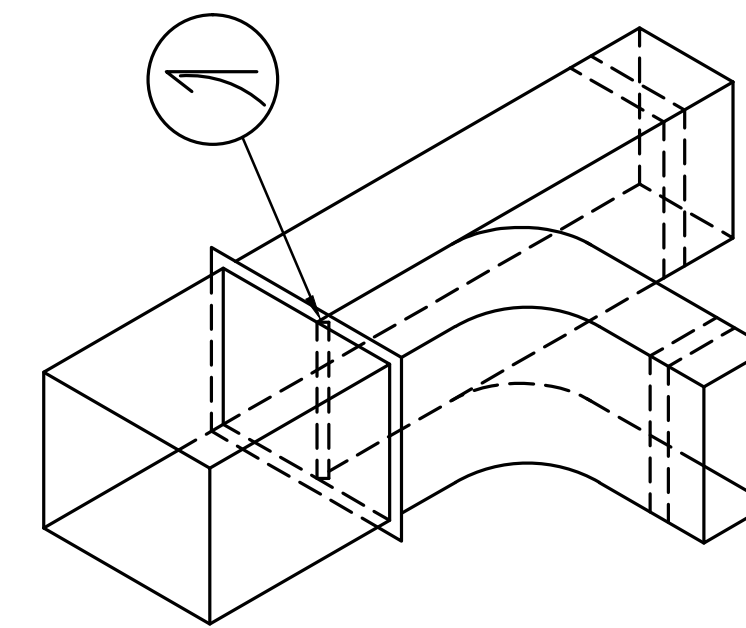
4 CONDENSATE DRAIN WITH AIRGAP DETAIL
SCALE: NTS
REFER:



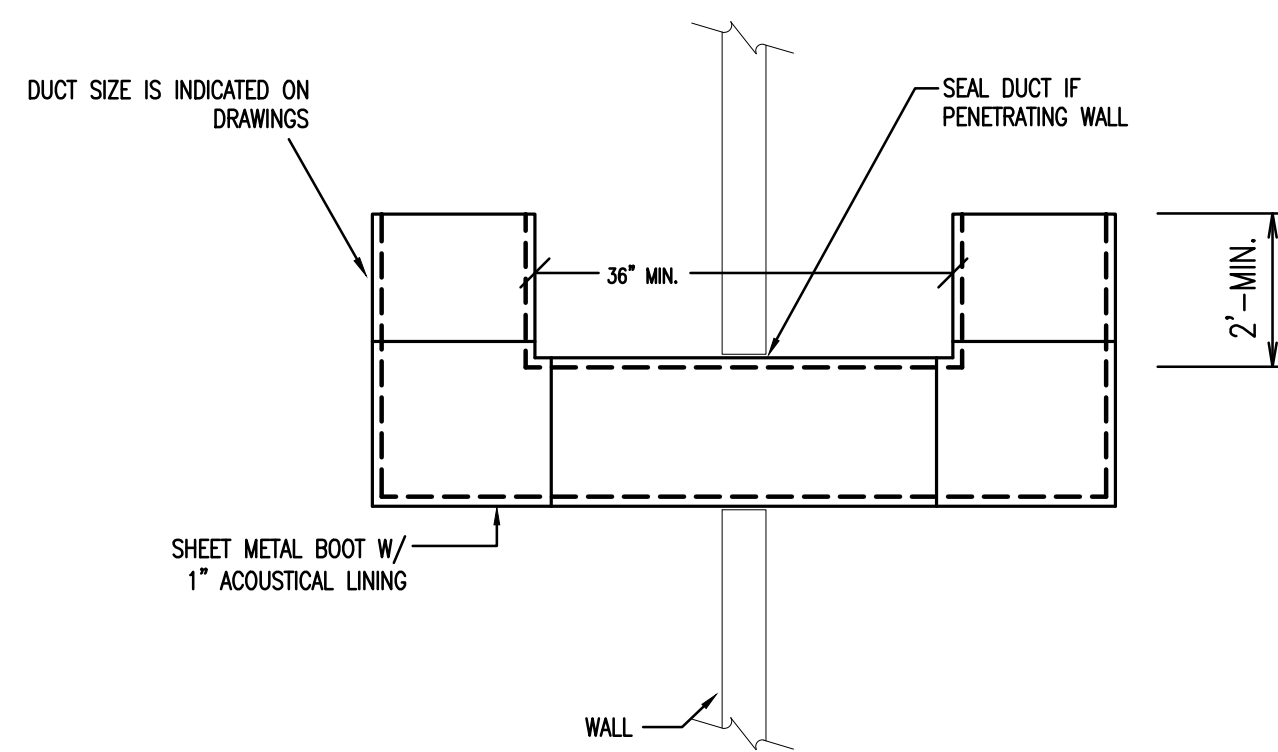
5 ROUND BRANCH DUCT TAKEOFF DETAIL
SCALE: NTS
REFER:



6 RECTANGULAR BRANCH TAKEOFF DETAIL
SCALE: NTS
REFER:



7 SPLITTER DAMPER DETAIL
SCALE: NTS
REFER:



8 TRANSFER DUCT DETAIL
SCALE: NTS
REFER:



Roof Replacement & HVAC Renovation
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201 N. CHOCKTAW AVE.
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Project No.
N16001

Sheet No.
6M2

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

Revisions

Issue Date
03.29.16

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:

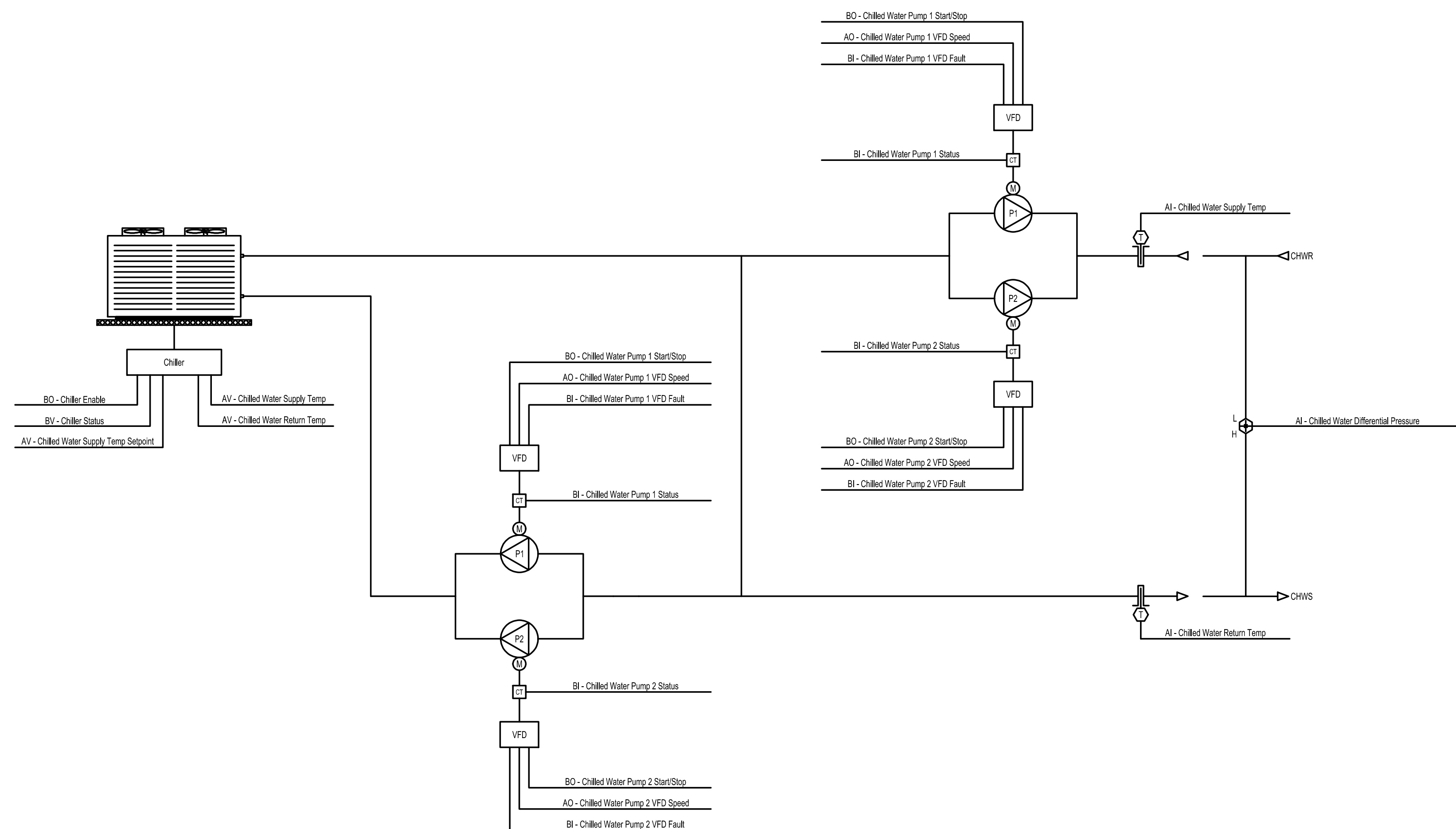
- The controller shall modulate the lead VFD to maintain setpoint.
- If the lead VFD speed is greater than a setpoint of 90% (adj.), the lag VFD shall stage on.
- The lag VFD shall ramp up to match the lead VFD speed and then run in unison with the lead VFD to maintain setpoint.

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.

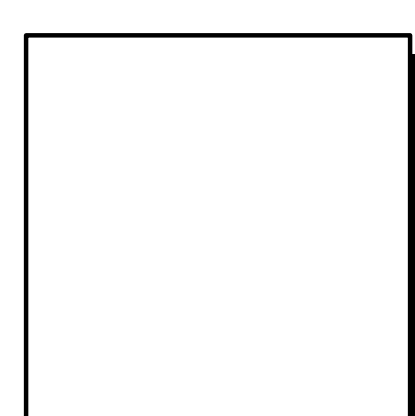
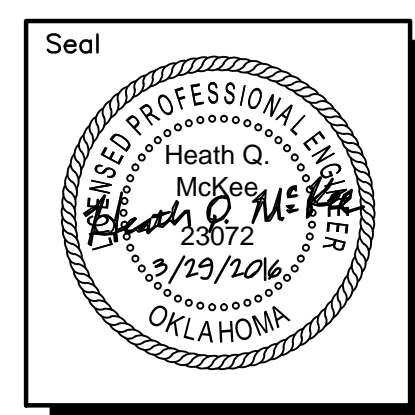
Alarms shall be provided as follows:

- 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							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sched	Trend	Alarm		
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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MECHANICAL
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Revisions
Issue Date
03.29.16

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:

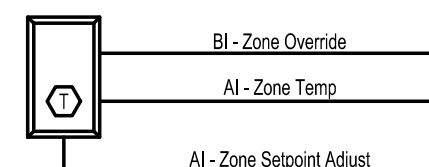
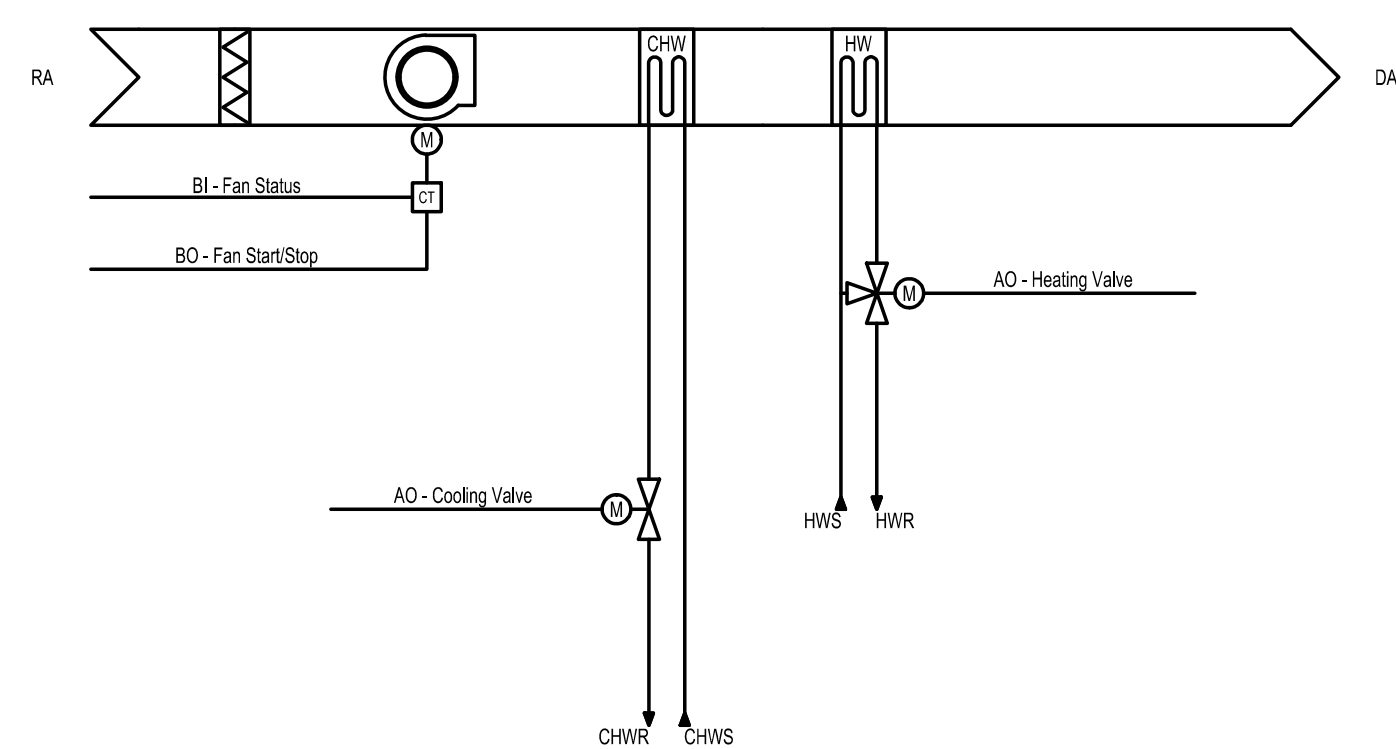
- High Level: Condensate has reached high level.

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.

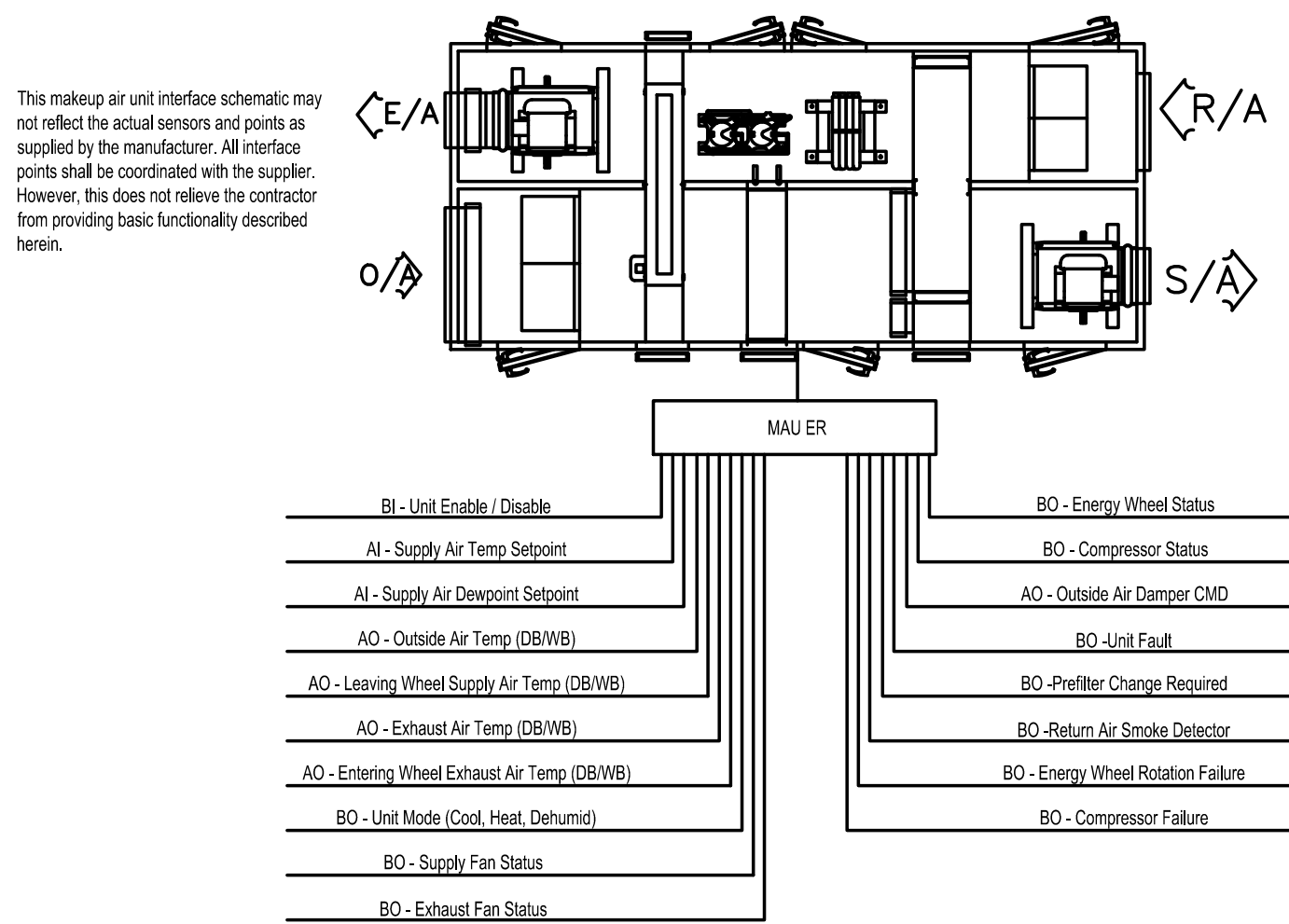
Alarms shall be provided through BAS as follows:

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

General Unit Fault:

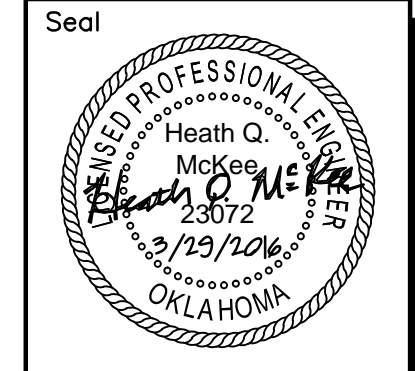
The factory provided MAU controller shall monitor the status of the unit and report any fault other than those listed specifically elsewhere as a general fault.

- 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)								



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

Revisions
Issue Date
03.29.16

Project No.
N16001

Sheet No.
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.

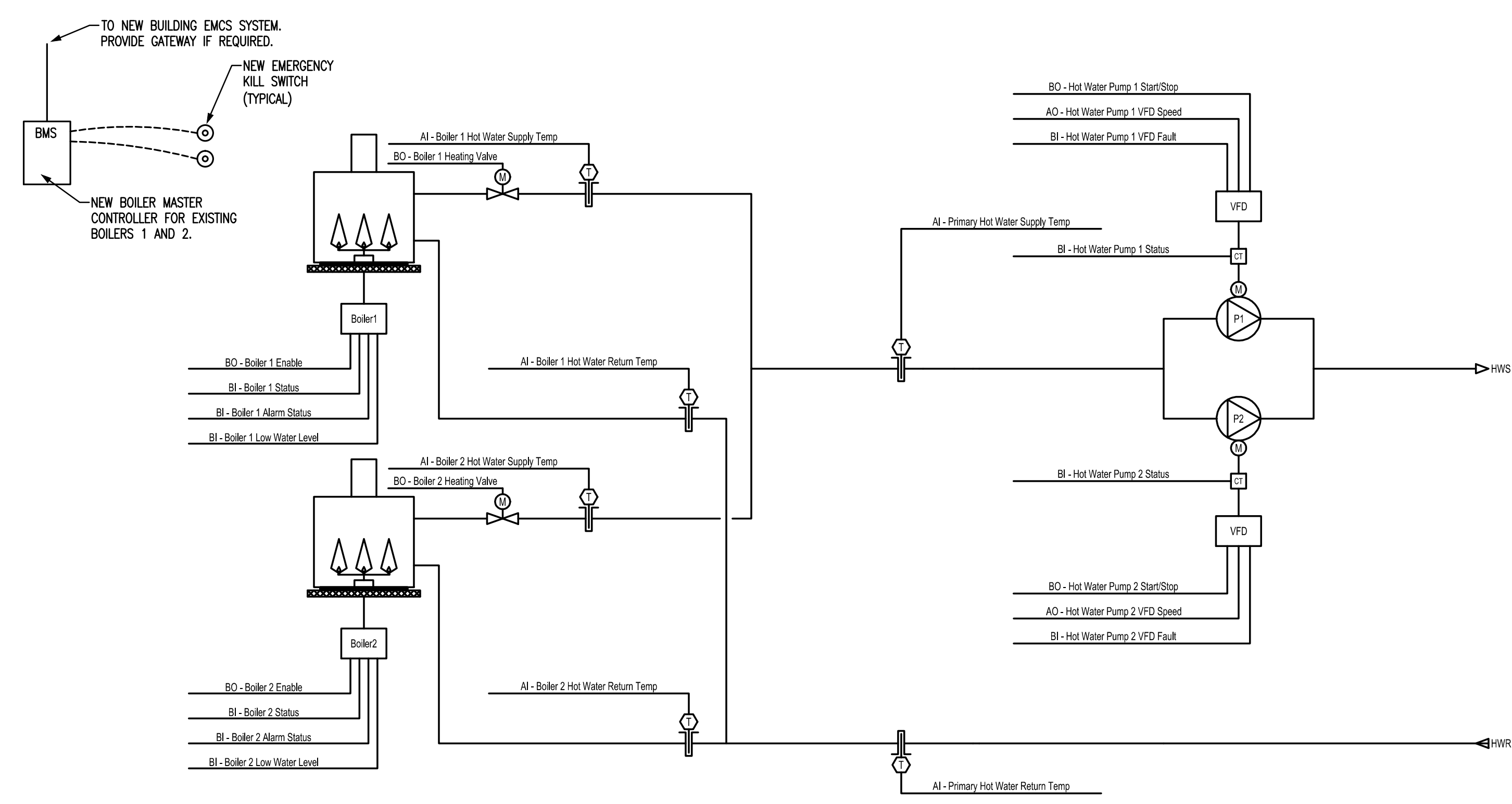
Hot Water Supply Temperature Setpoint:
The boiler shall maintain a hot water supply temperature setpoint as determined by its own internal controls (provided by others).

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.

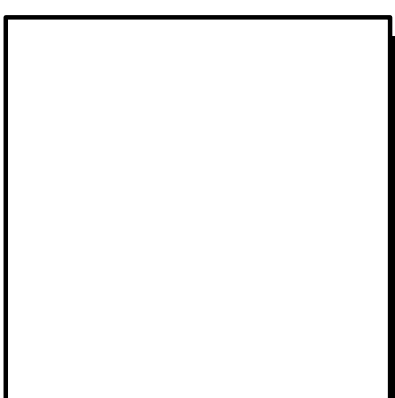
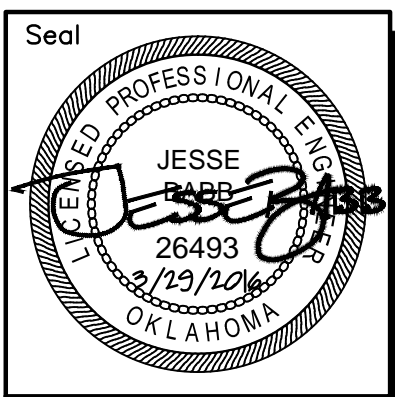
Alarms shall be provided as follows:

- 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
7M3 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)				



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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																																																																																																																																																																																										
<p>LIGHTING LETTER WITHIN OR ADJACENT TO FIXTURE INDICATES FIXTURE TYPE. RE: FIXTURE SCHEDULE</p> <p> LIGHTING FIXTURE, RECESSED IN CEILING</p> <p> LIGHTING FIXTURE ON EMERGENCY OR STANDBY POWER SOURCE</p> <p> STRIP LIGHTING FIXTURE</p> <p> STRIP LIGHTING FIXTURE ON EMERGENCY OR STANDBY POWER SOURCE</p> <p> LIGHTING FIXTURE CEILING MOUNTED</p> <p> LIGHTING FIXTURE ON EMERGENCY OR STANDBY POWER SOURCE</p> <p> LIGHTING FIXTURE WALL MOUNTED</p> <p> OUTDOOR FLOODLIGHT FIXTURE</p> <p> EMERGENCY "BUGEYE" FIXTURE</p> <p> EXIT LIGHT WALL MOUNTED 8'-0" AFF TO CENTER, UNO SHADED AREA(S) INDICATE ILLUMINATED FACE(S)</p> <p> EXIT LIGHT CEILING MOUNTED</p> <p> EXTERIOR POLE MOUNTED LIGHTING FIXTURE</p> <p>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)</p> <p> SIMPLEX RECEPTACLE OUTLET</p> <p> DUPLEX RECEPTACLE OUTLET</p> <p> QUADPLEX RECEPTACLE OUTLET</p> <p> CLOCK OUTLET</p> <p> SPECIAL PURPOSE RECEPTACLE MOUNTED 48" AFF, UNO RE: PLANS</p> <p> GFCI RECEPTACLE</p> <p> RECEPTACLE MOUNTED 6" ABOVE COUNTER (OR HEIGHT SHOWN)</p> <p> WEATHER-PROOF GFCI RECEPTACLE</p> <p> SIMPLEX FLOOR OUTLET</p> <p> CEILING MOUNTED RECEPTACLE OUTLET</p> <p> DUPLEX FLOOR OUTLET</p> <p> QUADPLEX FLOOR OUTLET</p> <p> SPECIAL PURPOSE FLOOR OUTLET, RE: PLANS</p> <p> FLOOR BOX WITH RECEPTACLES (FLOOR PLUG)</p> <p> FLOOR BOX WITH HARDWIRED CONNECTION TO FURNITURE (FURNITURE FEED)</p> <p>PLUGMOLD</p> <p>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)</p> <p> SINGLE POLE, SINGLE THROW WALL SWITCH</p> <p> DOUBLE POLE, SINGLE THROW WALL SWITCH</p> <p> THREE WAY WALL SWITCH</p> <p> FOUR WAY WALL SWITCH</p> <p> 0-10V DIMMER SWITCH, LEVITON IP710-LFZ OR EQUAL</p> <p> PRESET LIGHTING CONTROL ENTRY SWITCH</p> <p> OCCUPANCY SENSOR WALL SWITCH</p> <p> MANUAL MOTOR STARTER</p> <p> KEY SWITCH</p> <p> LOW VOLTAGE SWITCH</p> <p> SPRING WOUND TIMER SWITCH. (TORK #A560MH OR EQUAL)</p>		<p>CIRCUITING/RACEWAY</p> <p> CONDUIT ROUTED EXPOSED</p> <p> CONDUIT ROUTED CONCEALED WITHIN OR BELOW FLOOR OR CONCRETE</p> <p> HOMERUN TO PANEL INDICATED. ARROWHEADS INDICATE NUMBER OF CCTS.</p> <p> PART CIRCUIT HOMERUN</p> <p> LOW VOLTAGE WIRING IN CONDUIT</p> <p> CONDUIT IN OPEN TRENCH</p> <p> CONDUIT INSTALLED BY DIRECT BORE</p> <p> CONDUIT TURNING UP</p> <p> CONDUIT TURNING DOWN</p> <p> CONDUIT CHANGE IN ELEVATION</p> <p> CONDUIT CAPPED FOR FUTURE USE</p> <p>CONTROL/MISC</p> <p> PUSHBUTTON STATION</p> <p> PHOTOELECTRIC CELL. MOUNT FACING NORTH WHENEVER POSSIBLE</p> <p> THERMOSTAT OR TEMPERATURE SENSOR MOUNTED 48" AFF TO CENTER, UNO.</p> <p> CONTROL DEVICE: LS = LIMIT SWITCH, FS = FLOAT SWITCH, SV = SOLENOID VALVE</p> <p> GROUND ROD</p> <p> GROUND WELL</p> <p> METER</p> <p> CEILING MOUNTED OCCUPANCY SENSOR</p> <p> LONG RANGE CEILING MOUNTED OCCUPANCY SENSOR</p> <p> WALL MOUNTED OCCUPANCY SENSOR</p> <p> POWER PACK/RELAY FOR OCCUPANCY SENSORS</p> <p> BOLD LINETYPES REPRESENT NEW WORK</p> <p> SUBDUED LINETYPES REPRESENT EXISTING WORK</p> <p> BOLD & DASHED LINETYPES REPRESENT DEMOLITION WORK</p> <p>POWER DISTRIBUTION</p> <p> 480V PANELBOARD SURFACE MOUNTED, UNO</p> <p> 480V PANELBOARD FLUSH MOUNTED, UNO</p> <p> 208V PANELBOARD SURFACE MOUNTED, UNO</p> <p> 208V PANELBOARD FLUSH MOUNTED, UNO</p> <p> SAFETY DISCONNECT SWITCH PROVIDED WITH EQUIPMENT</p> <p> MOTOR STARTER OR CONTROL PANEL FURNISHED WITH EQUIPMENT</p> <p> VARIABLE FREQUENCY DRIVE</p> <p> MOTOR (HORSEPOWER AS INDICATED)</p> <p> JUNCTION BOX</p> <p> JUNCTION BOX, WALL MOUNTED</p> <p> PULL BOX</p> <p> UNDERFLOOR DUCT JUNCTION BOX</p> <p> DRY TYPE TRANSFORMER MOUNTED ON 3" CONCRETE HOUSE KEEPING PAD. CHAMFER ALL CORNERS OF PAD.</p> <p> GROUND BAR</p>		<p>FIRE ALARM</p> <p> FIRE ALARM CONTROL PANEL</p> <p> FIRE ALARM SYSTEM ANNUNCIATOR</p> <p> MANUAL PULL STATION (MTD. 46" AFF TO CENTER, UNO)</p> <p> COMBINATION HORN/STROBE (MTD. 81" AFF TO BOTTOM, UNO)</p> <p> ALARM STROBE LIGHT (MTD. 81" AFF TO BOTTOM, UNO)</p> <p> SMOKE DETECTOR (UF = UNDERFLOOR)</p> <p> HEAT DETECTOR</p> <p> DUCT MOUNTED SMOKE DETECTOR</p> <p> BEAM SMOKE DETECTOR - DETECTOR</p> <p> BEAM SMOKE DETECTOR - REFLECTOR</p> <p> FLOW SWITCH</p> <p> TAMPERS SWITCH</p> <p> PRESSURE SWITCH</p> <p> ABORT SWITCH</p> <p> CONTROL ZAM</p> <p> INDIVIDUAL ADDRESSABLE MODULE</p> <p> MAGNETIC DOOR HOLDER</p> <p>COMMUNICATIONS PROVIDE 4" SQUARE, 2-1/8" DEEP BOX WITH APPROPRIATE SINGLE-GANG DEVICE RING FLUSH MOUNTED 18" AFF AND 1" CONDUIT WITH PULL WIRE TO 6" ABOVE CEILING, UNO</p> <p> DATA OUTLET</p> <p> TELEPHONE OUTLET</p> <p> WALL MOUNT TELEPHONE AT 54" AFF TO CENTER, UNO.</p> <p> COMBINATION TELEPHONE/DATA OUTLET</p> <p> DATA FLOORBOX OUTLET</p> <p> TELEPHONE FLOORBOX OUTLET</p> <p> COMBINATION TELEPHONE/DATA FLOORBOX OUTLET</p> <p> INTERCOM CALL STATION</p> <p>PAGING/SOUND SUBSCRIPTS: R RECESS WP WEATHERPROOF S SURFACE VC VOLUME CONTROL DB DOUBLE BAFFLE</p> <p> SPEAKER - CEILING MOUNTED (RECESSED, UNO)</p> <p> SPEAKER - WALL MOUNTED</p> <p> SPEAKER - TRUMPET TYPE (WALL MOUNTED, UNO)</p> <p> CALL STATION</p> <p> BUZZER</p> <p> VOLUME CONTROL WALL MOUNTED 46" AFF TO CENTER, UNO</p> <p>SECURITY/INTRUSION ALARM</p> <p> REMOTE DOOR LOCK/UNLOCK CONNECTION</p> <p> CARD READER</p> <p> SECURITY CAMERA</p> <p> DOOR CONTACT</p> <p> KEYPAD</p> <p> MOTION SENSOR</p> <p> GLASS BREAK SENSOR</p> <p> CARBON MONOXIDE DETECTOR</p>																																																																																																																																																																																									
		<p>ABBREVIATIONS</p> <table border="0"> <tr> <th>ABBREVIATION</th> <th>DESCRIPTION</th> </tr> <tr> <td>A OR AMP</td> <td>AMPERES</td> </tr> <tr> <td>AC</td> <td>ALTERNATING CURRENT</td> </tr> <tr> <td>AFF</td> <td>ABOVE FINISHED FLOOR</td> </tr> <tr> <td>AFG</td> <td>ABOVE FINISHED GRADE</td> </tr> <tr> <td>AL</td> <td>ALUMINUM</td> </tr> <tr> <td>ATC</td> <td>ASYMMETRICAL AMPS INTERRUPTING CAPACITY</td> </tr> <tr> <td>ARF</td> <td>ABOVE RAISED FLOOR</td> </tr> <tr> <td>AWG</td> <td>AMERICAN WIRE GAUGE</td> </tr> <tr> <td>AV</td> <td>AUDIBLE AND VISUAL</td> </tr> <tr> <td>BAS</td> <td>BUILDING AUTOMATION SYSTEM</td> </tr> <tr> <td>BFF</td> <td>BELOW FINISHED FLOOR</td> </tr> <tr> <td>BFG</td> <td>BELOW FINISHED GRADE</td> </tr> <tr> <td>BKR</td> <td>BREAKER</td> </tr> <tr> <td>BOF</td> <td>BOTTOM OF FIXTURE</td> </tr> <tr> <td>BLDG</td> <td>BUILDING</td> </tr> <tr> <td>CL</td> <td>CONDUIT</td> </tr> <tr> <td>CB</td> <td>CIRCUIT BREAKER</td> </tr> <tr> <td>CCT</td> <td>CIRCUIT</td> </tr> <tr> <td>CU</td> <td>COPPER</td> </tr> <tr> <td>DDC</td> <td>DIRECT DIGITAL CONTROL</td> </tr> <tr> <td>EG</td> <td>EQUIPMENT GROUND</td> </tr> <tr> <td>ELEC</td> <td>ELECTRICAL</td> </tr> <tr> <td>EMCS</td> <td>ENERGY MANAGEMENT & CONTROL SYSTEM</td> </tr> <tr> <td>EMT</td> <td>ELECTRICAL METALLIC TUBING</td> </tr> <tr> <td>EP</td> <td>EXPLOSION PROOF</td> </tr> <tr> <td>ETC.</td> <td>ET CETERA</td> </tr> <tr> <td>EWG</td> <td>ELECTRIC WATER COOLER</td> </tr> <tr> <td>EXIST. OR E</td> <td>EXISTING</td> </tr> <tr> <td>FA</td> <td>FIRE ALARM</td> </tr> <tr> <td>FIC</td> <td>FIBER OPTIC INTERCONNECT CENTER</td> </tr> <tr> <td>FMC</td> <td>FLEXIBLE METALLIC CONDUIT</td> </tr> <tr> <td>GFI OR GFCI</td> <td>GROUND FAULT CIRCUIT INTERRUPTER</td> </tr> <tr> <td>GND.</td> <td>GROUND</td> </tr> <tr> <td>HPS</td> <td>HIGH PRESSURE SODIUM</td> </tr> <tr> <td>HV</td> <td>HIGH VOLTAGE</td> </tr> <tr> <td>HZ</td> <td>HERTZ</td> </tr> <tr> <td>IA</td> <td>INTRUSION ALARM</td> </tr> <tr> <td>IE.</td> <td>THAT IS</td> </tr> <tr> <td>IG.</td> <td>ISOLATED GROUND</td> </tr> <tr> <td>KV</td> <td>KILOVOLTS</td> </tr> <tr> <td>KVA</td> <td>KILOVOLT AMPERES</td> </tr> <tr> <td>KWH</td> <td>KILOWATT HOUR</td> </tr> <tr> <td>LTFMC</td> <td>LIQUID TIGHT FLEXIBLE METALLIC CONDUIT</td> </tr> <tr> <td>LV</td> <td>LOW VOLTAGE</td> </tr> <tr> <td>MAX</td> <td>MAXIMUM</td> </tr> <tr> <td>MCA</td> <td>MINIMUM CIRCUIT AMPACITY</td> </tr> <tr> <td>MCB</td> <td>MAIN CIRCUIT BREAKER</td> </tr> <tr> <td>MCC</td> <td>MOTOR CONTROL CENTER</td> </tr> <tr> <td>MCP</td> <td>MOTOR CIRCUIT PROTECTOR</td> </tr> <tr> <td>MH</td> <td>MANHOLE</td> </tr> <tr> <td>MIN</td> <td>MINIMUM</td> </tr> <tr> <td>MISC.</td> <td>MISCELLANEOUS</td> </tr> <tr> <td>MLO</td> <td>MAIN LUGS ONLY</td> </tr> <tr> <td>MOUNTING</td> <td>MOUNTING</td> </tr> <tr> <td>N/A</td> <td>NOT APPLICABLE</td> </tr> <tr> <td>N.C.</td> <td>NORMALLY CLOSED</td> </tr> <tr> <td>NEC</td> <td>NATIONAL ELECTRICAL CODE</td> </tr> <tr> <td>NEUT.</td> <td>NEUTRAL</td> </tr> <tr> <td>NIC</td> <td>NOT IN CONTRACT</td> </tr> <tr> <td>N.O.</td> <td>NORMALLY OPEN</td> </tr> <tr> <td>NL</td> <td>NIGHT LIGHT (CONNECT TO UNSWITCHED CIRCUIT)</td> </tr> <tr> <td>OC</td> <td>ON CENTER</td> </tr> <tr> <td>OH</td> <td>OVERHEAD</td> </tr> <tr> <td>PC</td> <td>PART CIRCUIT</td> </tr> <tr> <td>PNL</td> <td>PANELBOARD</td> </tr> <tr> <td>PTT</td> <td>PUSH TO TEST</td> </tr> <tr> <td>PVC</td> <td>POLYVINYL CHLORIDE</td> </tr> <tr> <td>RE.</td> <td>REFERENCE</td> </tr> <tr> <td>RGSC</td> <td>RIGID GALVANIZED STEEL CONDUIT</td> </tr> <tr> <td>SCH</td> <td>SCHEDULE</td> </tr> <tr> <td>SPECS</td> <td>CONTRACT SPECIFICATIONS</td> </tr> <tr> <td>S/N</td> <td>SOLID NEUTRAL</td> </tr> <tr> <td>TEL</td> <td>TELEPHONE</td> </tr> <tr> <td>TIB</td> <td>TELEPHONE TERMINAL BOARD</td> </tr> <tr> <td>TYP</td> <td>TYPICAL</td> </tr> <tr> <td>UG</td> <td>UNDERGROUND</td> </tr> <tr> <td>UGC</td> <td>UNDERGROUND COMMUNICATIONS</td> </tr> <tr> <td>UGE</td> <td>UNDERGROUND ELECTRIC</td> </tr> <tr> <td>UGT</td> <td>UNDERGROUND TELEPHONE</td> </tr> <tr> <td>UL</td> <td>UNDERWRITERS LABORATORIES</td> </tr> <tr> <td>UNO</td> <td>UNLESS NOTED OTHERWISE</td> </tr> <tr> <td>V</td> <td>VOLTS</td> </tr> <tr> <td>VFD</td> <td>VARIABLE FREQUENCY DRIVE</td> </tr> <tr> <td>W</td> <td>WATTS</td> </tr> <tr> <td>WAP</td> <td>WIRELESS ACCESS POINT</td> </tr> <tr> <td>WP</td> <td>WEATHERPROOF</td> </tr> <tr> <td>W/</td> <td>WITH</td> </tr> <tr> <td>W/O</td> <td>WITHOUT</td> </tr> <tr> <td>XFMR</td> <td>TRANSFORMER</td> </tr> <tr> <td>ø</td> <td>PHASE</td> </tr> <tr> <td>+48"</td> <td>MOUNTING HEIGHT ABOVE FINISHED FLOOR OR FINISHED GRADE</td> </tr> <tr> <td>-48"</td> <td>MOUNTING HEIGHT BELOW FINISHED FLOOR OR FINISHED GRADE</td> </tr> </table>		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.	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NOTE: ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT

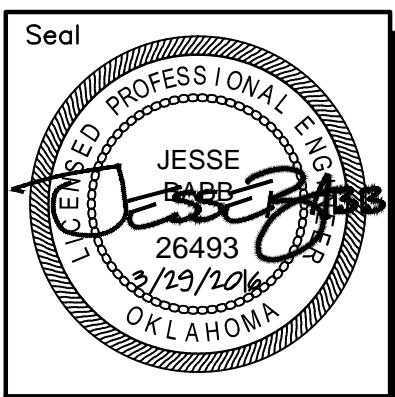


BOYNTON-WILLIAMS & ASSOCIATES

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PLANNING
INTERIORS

900 36TH AVE. N.W.
SUITE 100
NORMAN, OK 73072
405-329-0423
FAX 405-364-1439

A Professional Corporation
Member: American Institute
of Architects



ALLEN CONSULTING INCORPORATED
CAZ192 Expires 6/30/2018
A21 Project No. 115-16 115 West Main Norman, OK 73069
Ph: (405)447-2282 Fax: (405)447-2284

**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:

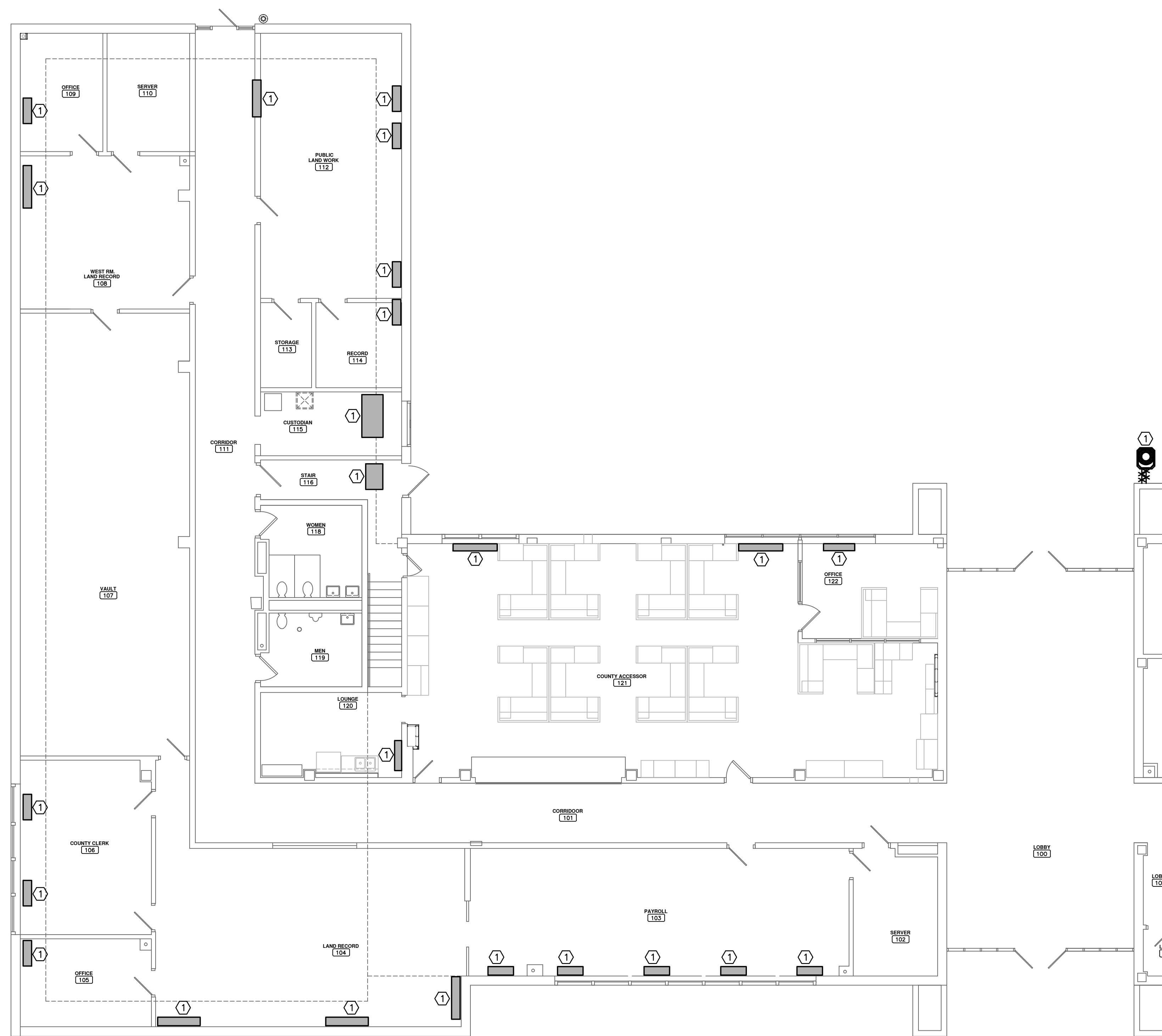
- CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED
 - EXACT PLACEMENT, SIZE, CAPACITY, MANUFACTURER AND CONDITION OF ALL EXISTING ELECTRICAL EQUIPMENT WITHIN SCOPE OF WORK, WHETHER SPECIFICALLY SHOWN OR NOT.
 - SIZE AND LOCATION OF ALL EXISTING PANELS AND FEEDERS.
 - SIZE AND LOCATION OF SERVICE ENTRANCE.
- 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.
- NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
- ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION.

GENERAL NOTES:

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

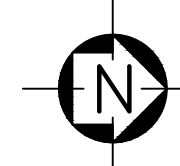
KEYED NOTES:

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

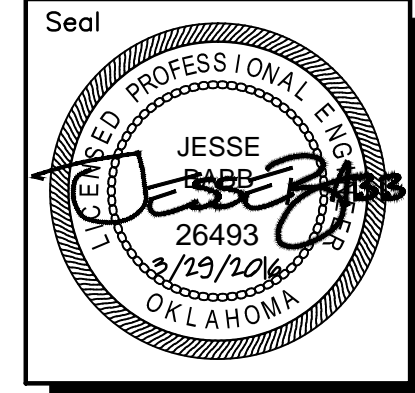


A
2E1

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



THIS DRAWING IS THE PROPERTY OF BOYNTON WILLIAMS & ASSOCIATES. THE DRAWING(S) OR INFORMATION DEPICTED SHALL NOT BE REPRODUCED OR USED WITHOUT WRITTEN PERMISSION OF THE ARCHITECT



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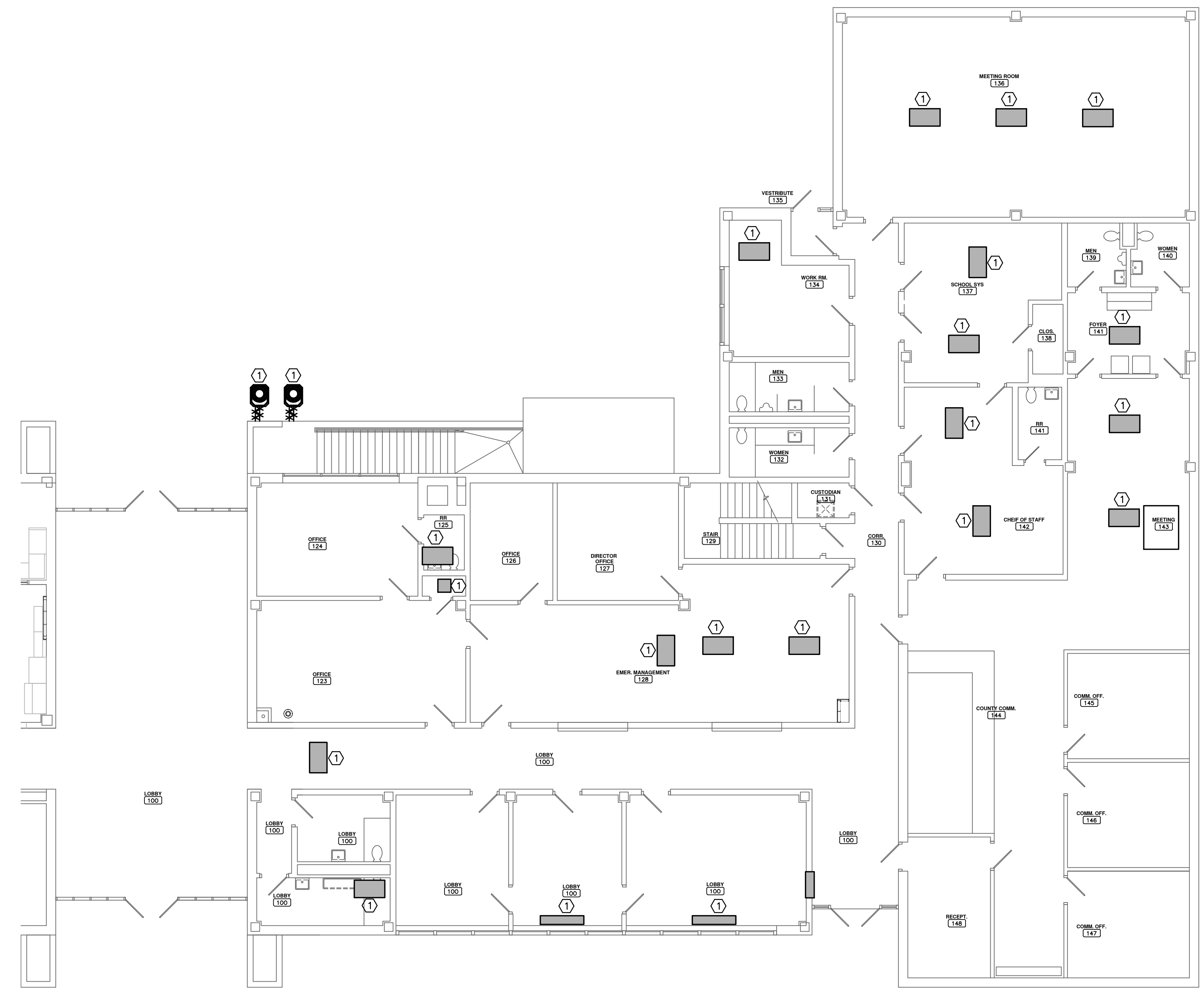
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 - B. SIZE AND LOCATION OF ALL EXISTING PANELS AND FEEDERS.
 - C. SIZE AND LOCATION OF SERVICE ENTRANCE.
2. ALL REFERENCES ON THESE DRAWINGS TO EXISTING PANELS AND DEVICES IS FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY 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:

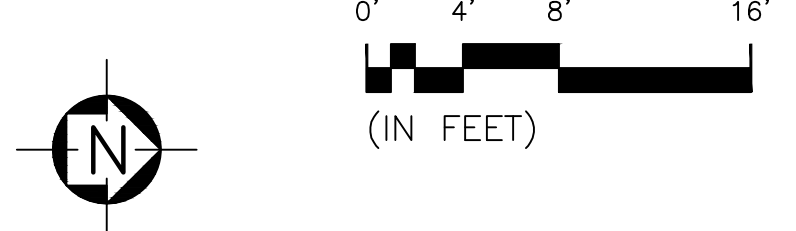
1. REMOVE ALL ABANDONED SURFACE RACEWAYS AND JUNCTION BOXES. EXISTING ABANDONED RECESSED JUNCTION BOXES SHALL BE REMOVED AND THE WALL PATCHED, OR A NEW BLANK COVERPLATE SHALL BE INSTALLED.
2. CONTRACTOR TO VERIFY EXISTING CONDITIONS ON-SITE AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR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

KEYED NOTES:

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



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



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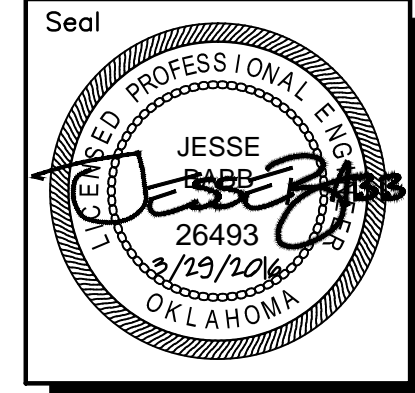
**Roof Replacement & HVAC Renovation
CANADIAN COUNTY OFFICE BUILDING**
201 N. CHOCKTAW AVE.
EL RENO, OKLAHOMA 73036
FIRST FLOOR
ELECTRICAL DEMO PLAN - NORTH

Revisions

Issue Date
03.29.16

Project No.
N16001

Sheet No.
2E2



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

Revisions
Issue Date
03.29.16

Project No.
N16001

Sheet No.
2E3

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FIELD VERIFICATION NOTES:

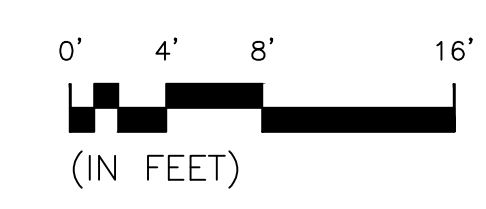
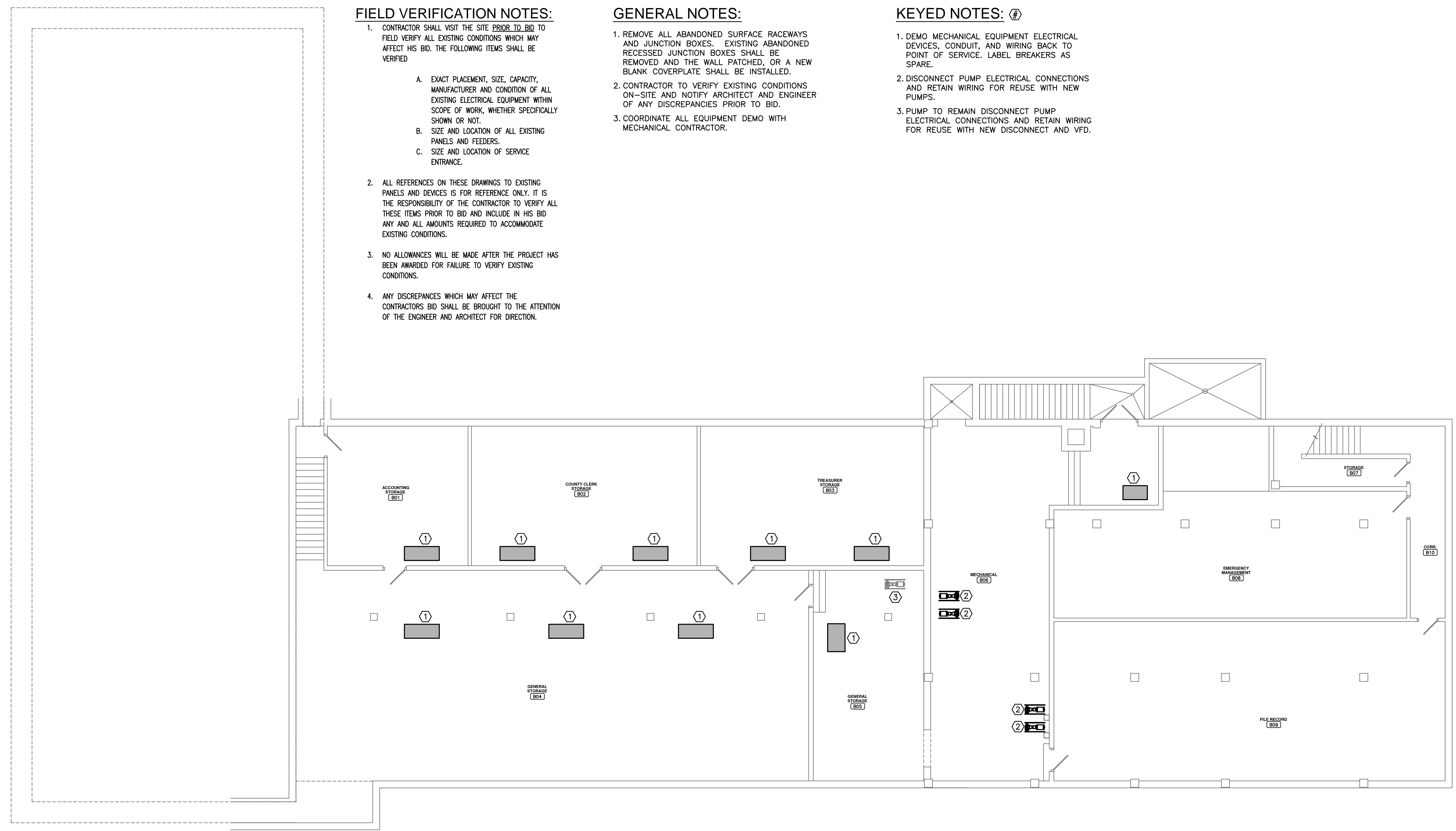
1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED
 - A. EXACT PLACEMENT, SIZE, CAPACITY, MANUFACTURER AND CONDITION OF ALL EXISTING ELECTRICAL EQUIPMENT WITHIN SCOPE OF WORK, WHETHER SPECIFICALLY SHOWN 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:

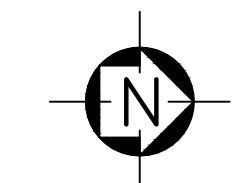
1. REMOVE ALL ABANDONED SURFACE RACEWAYS AND JUNCTION BOXES. EXISTING ABANDONED RECESSED JUNCTION BOXES SHALL BE REMOVED AND THE WALL PATCHED, OR A NEW BLANK COVERPLATE SHALL BE INSTALLED.
2. CONTRACTOR TO VERIFY EXISTING CONDITIONS ON-SITE AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR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

KEYED NOTES: (#)

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



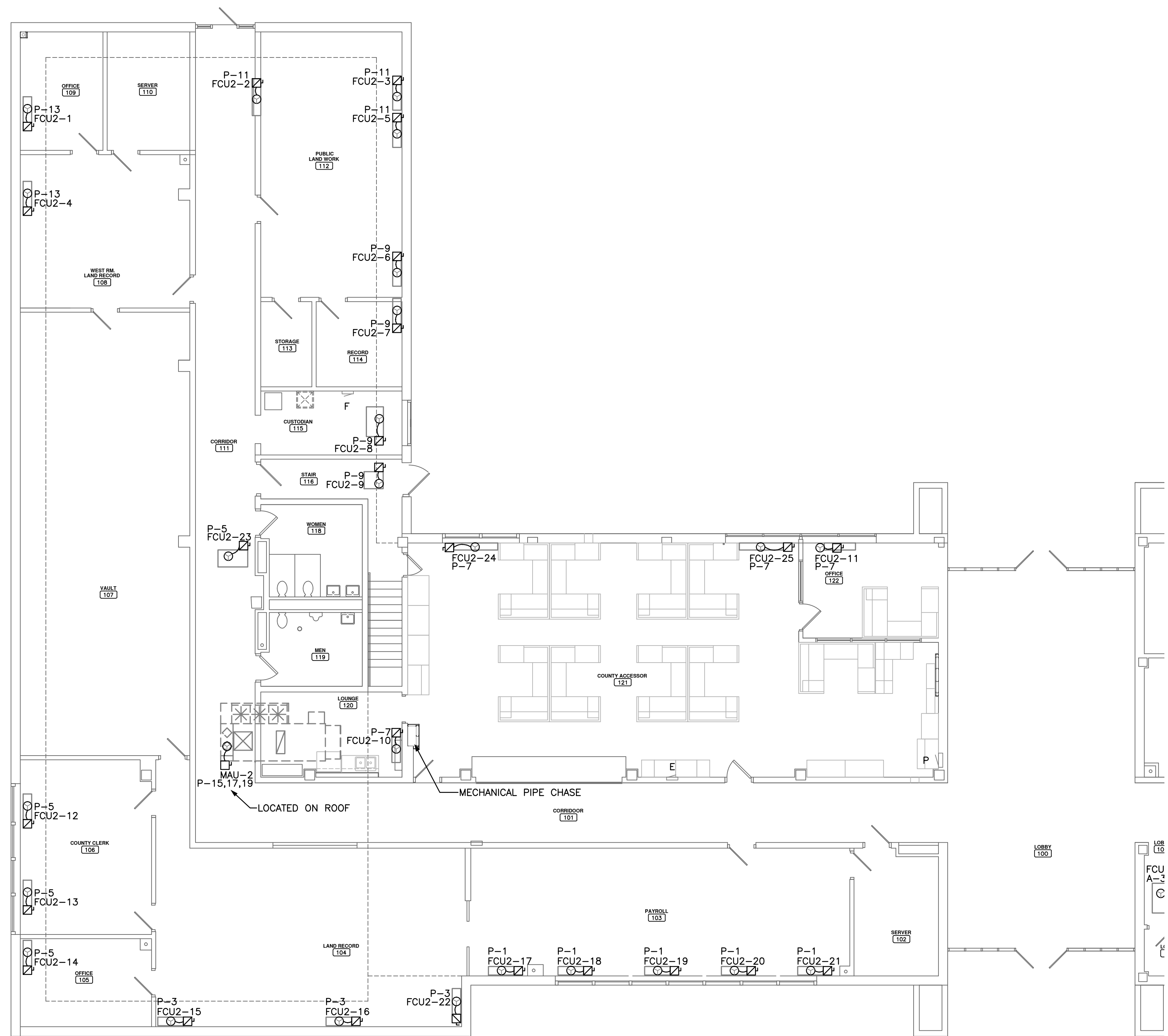
A
2E3 BASEMENT
ELECTRICAL DEMO PLAN
SCALE: 1/8"=1'-0"



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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Seal

ALLEN CONSULTING INCORPORATED
CA#192 Expires 6/30/2018
A/CJ Project No. 115-10
115 West Main Norman, OK 73069
Ph: (405)447-2282 Fax: (405)447-2284

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

FIRST FLOOR
ELECTRICAL POWER PLAN - SOUTH

Revisions

Issue Date
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Project No.
N16001

Sheet No.
3E1

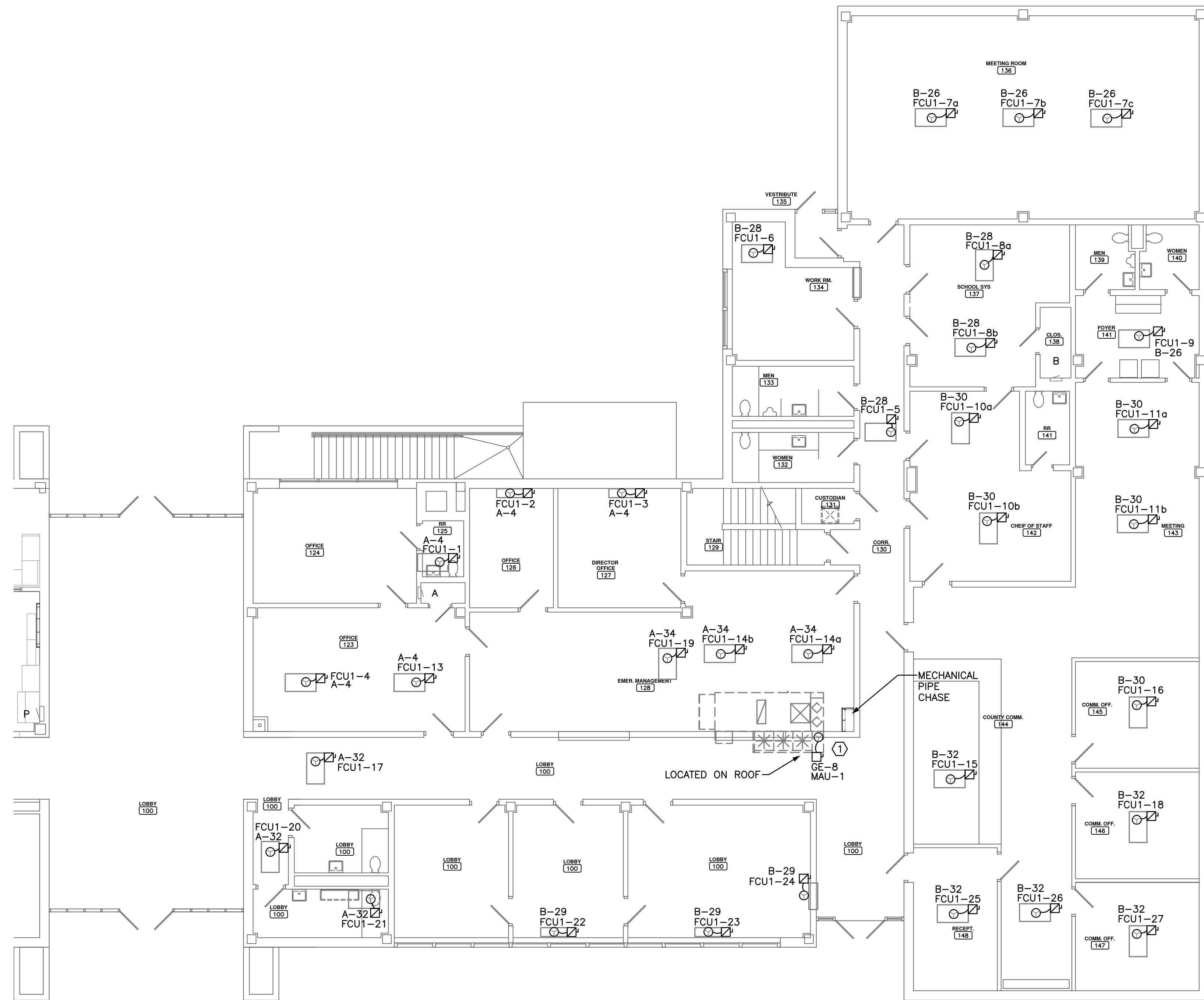
CALLOUT	DESCRIPTION	VOLTS	HP	KVA	MCA	CIRCUIT	BREAKER	WIRE CALLOUT	DISCONNECT	DISC PROV BY	DISC INST BY	MOCP	NOTES
FCU1-1	FAN COIL	120V 1P 2W	1/4 HP	0.7	3.9	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-2	FAN COIL	120V 1P 2W	1/8 HP	0.47	2.8	A-4	30/1	3/4" C, 1#10, #10G	FUSED	EC	EC	15	
FCU1-3	FAN COIL	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:

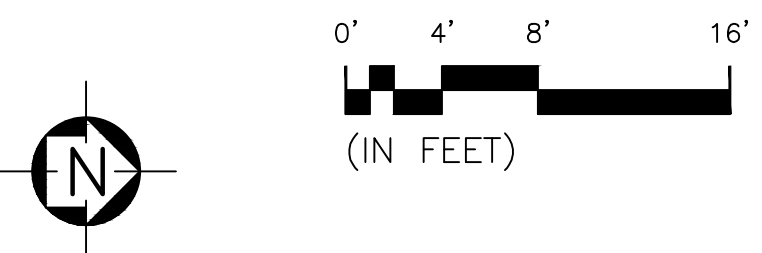
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- COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
- CIRCUIT LABELS CORRESPONDING TO EXISTING PANELS ARE FOR REFERENCE ONLY; CONTRACTOR TO VERIFY EXISTING CIRCUIT NUMBERS IN THE FIELD.

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"

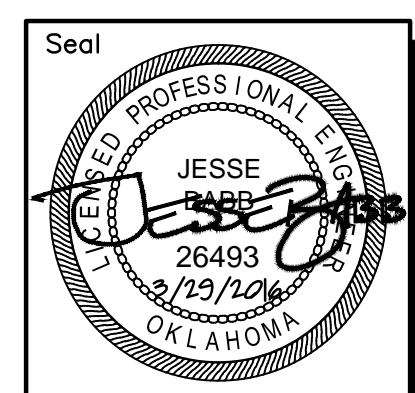


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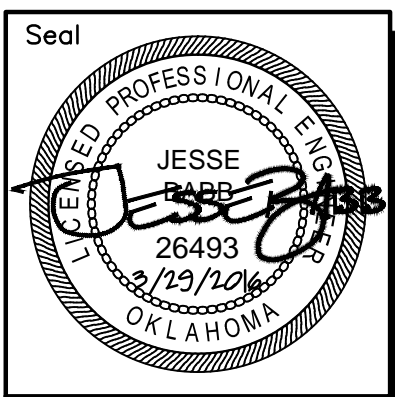
Roof Replacement & HVAC Renovation
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EL RENO, OKLAHOMA 73036
FIRST FLOOR
ELECTRICAL POWER PLAN - NORTH

Revisions
Issue Date
03.29.16

Project No.
N16001

Sheet No.
3E2

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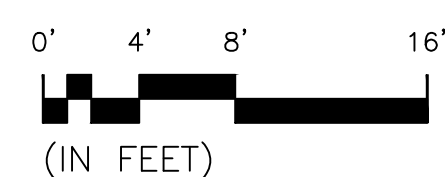
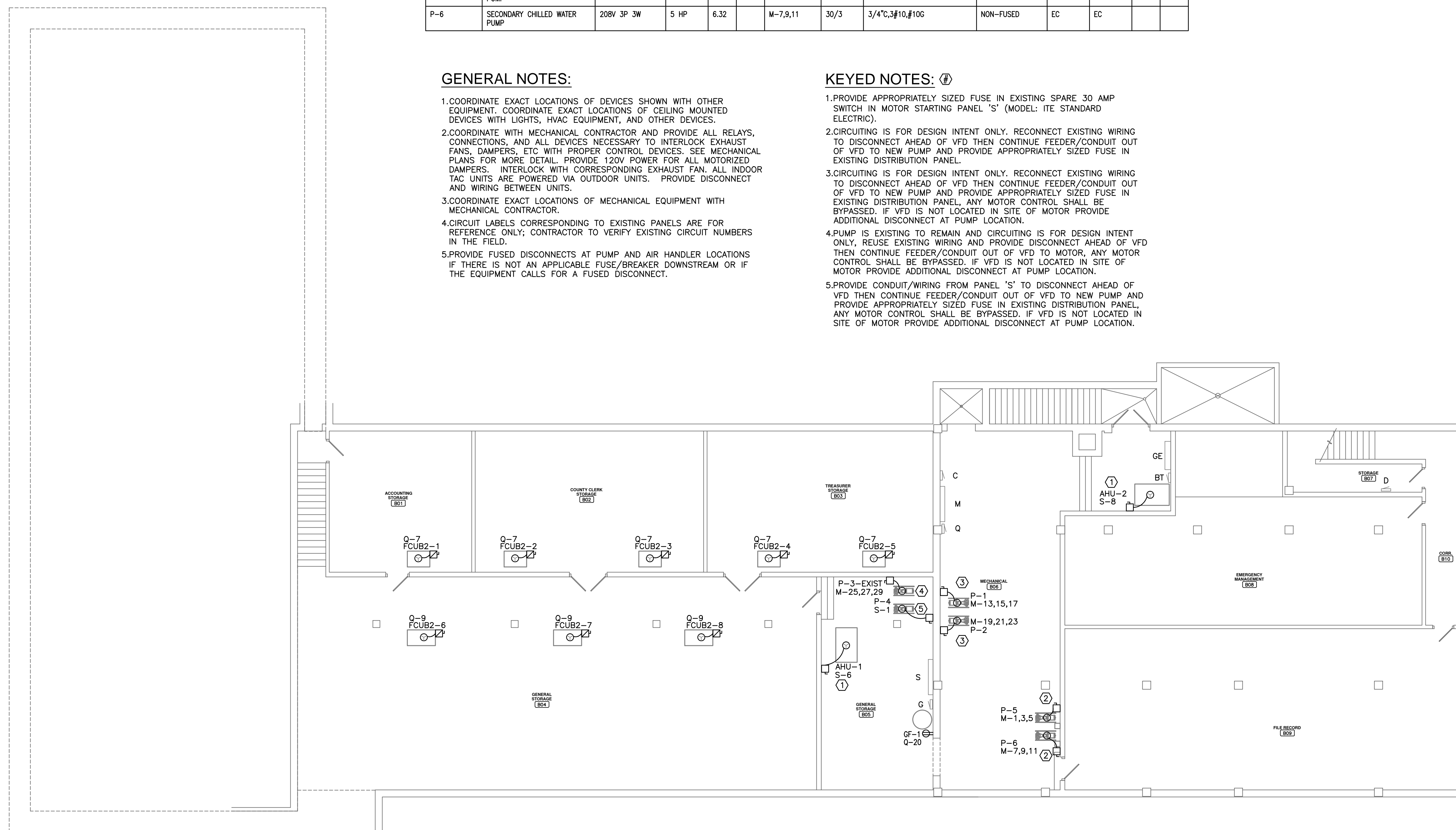
CALLOUT	DESCRIPTION	VOLTS	HP	KVA	MCA	CIRCUIT	BREAKER	WIRE CALLOUT	DISCONNECT	DISC PROV BY	DISC INST BY	MOCP	NOTES
AHU-1	AIR HANDLER UNIT	208V 3P 3W		2.6		S-6	15/3	3/4"C,3#12,#12G	NON-FUSED	EC	EC	15	
AHU-2	AIR HANDLER UNIT	208V 3P 3W		2		S-8	15/3	3/4"C,3#12,#12G	NON-FUSED	EC	EC	15	
FCUB2-1	FAN COIL	120V 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:

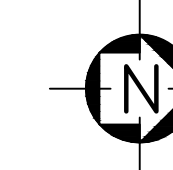
- COORDINATE EXACT LOCATIONS OF DEVICES SHOWN WITH OTHER EQUIPMENT. COORDINATE EXACT LOCATIONS OF CEILING MOUNTED DEVICES WITH LIGHTS, HVAC EQUIPMENT, AND OTHER DEVICES.
- COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE ALL RELAYS, CONNECTIONS, AND ALL DEVICES NECESSARY TO INTERLOCK EXHAUST FANS, DAMPERS, 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.
- 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: ④

- 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"



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

Revisions
Issue Date
03.29.16

Project No.
N16001

Sheet No.
3E3

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