

REPLACE HVAC SYSTEM

WAGGONER BUILDING

MISSOURI STATE HIGHWAY PATROL

JEFFERSON CITY, MISSOURI

CASCO

12 SUNNEN DR. SUITE 100
ST. LOUIS, MO 63143
ARCHITECTS / ENGINEERS
314-821-1100

CASCO DIVERSIFIED
CORPORATION
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000613 (ENG),
#000329 (ARCH)

OWNER: STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

DEPARTMENT OF
PUBLIC SAFETY

PROJECT
MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DESIGNER: CASCO

PROJECT NUMBER: R2411-01

SITE NUMBER: 6001
FACILITY NUMBERS: 8136001003
8136001006



NORTH
VICINITY MAP

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SHEET NUMBER:

G-001

06/25/2026
1 OF 45 SHEETS

ABBREVIATIONS					GENERAL NOTES:				
AFF	ABOVE FINISHED FLOOR	FFE	FINISHED FLOOR ELEV.	NIC	NOT IN CONTRACT	1.	THE SOUTH WING WILL BE UNOCCUPIED DURING DEMOLITION AND CONSTRUCTION. THE HIGHWAY PATROL FACILITIES STAFF WILL MOVE MOST STAFF FURNITURE OUT OF THE SPACE BUT THE CONTRACTOR WILL BE RESPONSIBLE FOR MOVING AND PROTECTING ANY REMAINING FURNISHINGS. ALL MAJOR MATERIALS AND EQUIPMENT MUST BE ON-SITE PRIOR TO STARTING ANY WORK WHICH IS TO BEGIN WITHIN TWENTY-FOUR (24) HOURS OF THE STAFF VACATING THE PREMISES. THE CONTRACTOR SHALL PROVIDE TEMPORARY HEATING TO THE SOUTH WING FOR ALL HOURS OF THE DAY. SEQUENCING OF WORK IS TO BEGIN WITH THE GARAGE CEILING REPLACEMENT.	12.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE QUALITY OF WORKMANSHIP & FOR COMPLIANCE WITH THE DESIGN. THE GENERAL CONTRACTOR SHALL CORRECT ALL ERRORS & DEVIATIONS AS REQUESTED BY THE OWNER.
AC	AIR CONDITIONING	FFL	FINISHED FLOOR LINE	NTS	NOT TO SCALE				
ALC	ALTER	FE	FIRE EXTINGUISHER	OC	ON CENTER(S)	2.	THE CONTRACTOR SHALL COMPLY WITH FEDERAL ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION REGULATIONS AND ALL LOCAL AND STATE HEALTH DEPARTMENT REQUIREMENTS AND RECOMMENDATIONS REGARDING MOLD AND MILDEW.	14.	THE CONTRACTOR SHALL VERIFY ALL RELEVANT DIMENSIONS AND EXISTING CONDITIONS BEFORE PROCEEDING WITH THE AFFECTED WORK AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES IMMEDIATELY. ALL DISCREPANCIES SHALL BE RESOLVED PRIOR TO PROCEEDING WITH AFFECTED WORK.
ALUM	ALUMINUM	FEC	FIRE EXTINGUISHER CABINET	OPNG	OPENING				
AB	ANCHOR BOLT	FT	FIRE TREATED	OPH	OPPOSITE HAND	3.	IN THE EVENT THE CONTRACTOR DISCOVERS, AT ANY TIME THE PRESENCE OF MOLD AND / OR MILDEW, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE AND THE ARCHITECT / ENGINEER OF RECORD, IN WRITING, OF THE CONCERNS AND/OR SUSPICIONS.	16.	SHOULD ANY OF THE DETAILED INSTRUCTIONS ON THE DRAWINGS CONFLICT WITH THE NOTES OR SPECIFICATIONS OR WITH EACH OTHER, THE STRICTEST PROVISION SHALL APPLY.
ARCH	ARCHITECT(URAL)	FLG	FLASHING	OSD	OUTSIDE DIAMETER				
BRG	BEARING	FD	FLOOR DRAIN	OC	OUT TO OUT	4.	THE CONTRACTOR SHALL CONTAIN ALL CONSTRUCTION ACTIVITY (WHICH SHALL INCLUDE STORAGE OF MATERIALS AND EQUIPMENT) WITHIN THE LIMITS OF CONSTRUCTION OR WITHIN THE DESIGNATED STAGING AREA TO BE DISCUSSED AND IDENTIFIED DURING PRE-CONSTRUCTION MEETING.	17.	JOB SITE CLEANING: DURING DEMOLITION & CONSTRUCTION, THE JOB SITE SHALL BE CLEANED ON A DAILY BASIS, INCLUDING REMOVAL OF TRASH, RUBBLE, DEBRIS & ORGANIZATION OF MATERIALS & EQUIPMENT. UPON COMPLETION OF THE WORK, THE JOB SITE SHALL BE THOROUGHLY CLEANED, INCLUDING AREAS OF THE BUILDING MADE DIRTY BY CONSTRUCTION WORK. THE G.C. SHALL REMOVE TRASH, RUBBLE, TOOLS, EQUIPMENT & EXCESS MATERIALS FROM THE PREMISES. THE BUILDING IS TO BE LEFT IN A <u>CLEAN CONDITION</u> .
BM	BENCH MARK	FD	FLOOR DRAIN	OA	OVERALL				
BLK	BLOCK	FTG	FOOTING	OH	OVERHEAD	5.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY SURFACES DAMAGED BY CONSTRUCTION ACTIVITY THAT IS UNDER THE CONTROL OF THE GENERAL CONTRACTOR (THIS INCLUDES ALL SUBCONTRACTOR WORK). REPAIRS SHALL MATCH EXISTING MATERIALS AND BE APPROVED BY THE OWNER.	18.	THE CONTRACTOR IS TO PROVIDE SUPERVISION OF ALL TRADES / SUBS, AS WELL AS ON-SITE SUPERVISION.
BLKG	BLOCKING	FDN	FOUNDATION	PTD	PAINT(ED)				
BD	BOARD	FUR	FURRING(ING)	PKG	PARKING	6.	THE CONTRACTOR SHALL REMOVE CONSTRUCTION DEBRIS FROM THE JOBSITE ON A REGULAR BASIS, AS IDENTIFIED IN THE SPECIFICATIONS. KEEP DEBRIS CONTAINED TO THE LIMITS OF CONSTRUCTION.	19.	THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL DUMPSTERS REQUIRED FOR EXECUTION OF THE PROJECT SCOPE INCLUDING DISPOSAL OF ALL NON-REUSED FIXTURES.
BDG	BOTTOM OF	GAGE	GAUGE	PL	PLATE				
BLDG	BUILDING	GA	GALVANIZED	PWD	PLYWOOD	7.	THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO FABRICATION.	20.	AREAS OF WORK INCLUDE THE DEMO OF EXISTING FINISHES INCLUDING SOME ACOUSTICAL CEILING FINISHES, GYPSED CEILINGS, AND GYPSED WALLS. THE CONTRACTOR IS RESPONSIBLE FOR THE REPAIR, PATCHING, AND SMOOTH FINISHING OF ALL AREAS OF DEMO, WALL PAINT AND BASE TO MATCH EXISTING. WHEN PAINTING A PATCHED AREA, PAINT SHALL EXTEND FLOOR TO CEILING, AND TO THE NEAREST CORNERS.
CLG	CEILING	GC	GENERAL CONTRACT(OR)	PVC	POLYVINYL CHLORIDE				
COL	CENTER LINE	GL	GLASS, GLAZING	PSF	POUNDS PER SQUARE FT.	8.	THE CONTRACTOR SHALL ENSURE THAT ALL MOISTURE AND DEBRIS HAVE BEEN ELIMINATED PRIOR TO INSTALLING NEW MATERIALS AND PREPARE SURFACE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. REFERENCE SPECIFICATIONS FOR FURTHER DIRECTION.	21.	IF ROOF PENETRATIONS ARE REQUIRED ON EXISTING ROOF, THEN THE CONTRACTOR SHALL EMPLOY A ROOFING CONTRACTOR TO MAINTAIN EXISTING WARRANTIES.
CO	CENTER OF	GYP	GYPSONUM	PSI	POUNDS PER SQUARE IN.				
C/C	CENTER TO CENTER	HTG	HEATING	PT	PRESSURE TREATED	9.	SHOULD THE CONTRACTOR OBSERVE ANY DETERIORATED MATERIALS OR DAMAGED STRUCTURAL CONDITIONS, THE ARCHITECT AND OWNER SHALL BE NOTIFIED.	22.	CONTRACTOR IS RESPONSIBLE FOR A COMPLETE AND OPERATIONAL CONTROLS SYSTEM AS DESCRIBED WITHIN THE CONTRACT DOCUMENTS. CONTRACTOR SHALL ALSO BE RESPONSIBLE TO ENSURE THAT THE NEW CONTROL SYSTEM IS COMPATIBLE WITH THE REMAINING EXISTING SYSTEMS AND EQUIPMENT.
CLR	CLEAR	HVAC	HEATING/VENTILATION	PL	PROPERTY LINE				
COL	COLUMN	RE	REMOVE	REM	REMOVE	10.	ANY EQUIPMENT NOT IDENTIFIED TO BE REMOVED IS TO REMAIN UNLESS NOTED OTHERWISE.	23.	
CONC	CONCRETE	HT	HEIGHT	RH	RIGHT HAND				
CMU	CONCRETE MASONRY UNIT	HC	HOLLOW CORE	RDR	ROOF DRAIN	11.	THE CONTRACT WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, TOOLS, LABOR & SERVICES NECESSARY FOR COMPLETION OF THE PROJECT.		
CONST	CONSTRUCTION	HM	HOLLOW METAL	RFG	ROOFING				
CONTR	CONTRACTOR	HOK(S)	HOLE(S)	RM	ROOM	12.			
CONT	CONTINUOUS	HOR	HORIZONTAL	RO	ROUGH OPENING				
CNTR	COUNTER	HOSE	HOSE BIBB	SLNT	SEALANT	13.			
CSFL	COUNTER FLASHING	INSUL	INSULATE(D), (ION)	SECT	SECTION				
CT	COUNTERSUNK	INT	INTERIOR	SHTHG	SHEATHING	14.			
CFL	CUBIC FOOT	JST	JOIST	SHT	SHEET				
CF	CUBIC YARD	JOINT	JOINT	SIM	SIMILAR	15.			
DEMO	DEMOLISH, DEMOLITION	LH	LEFT HAND	SC	SOLID CORE				
DTL	DETAIL	LF	LINGAL FOOT	SF	SQUARE FOOT	16.			
DIAG	DIAGONAL	L	LINTEL	SI	SQUARE INCH				
DIAM	DIAMETER	LY	LIVE LOAD	STD	STANDARD	17.			
DIR	DIMENSION	LL	LIVE LOAD	SUSP	SUSPENDED				
DM	DOOR	MACH	MACHINE	TEL	TELEPHONE	18.			
DWS	DOWN SPOUT	MANKOLE	MANHOLE	THICKNESS	THICKNESS				
D	DRAIN	MFR	MANUFACTURER	TPO	THERMOPLASTIC POLYOLEFIN	19.			
DWG	DRAWING	MAS	MASONRY	TS	TOP OF STEEL				
ELEV	ELECTRIC(AL)	MO	MASONRY OPENING	TOS	TOP OF STEEL	20.			
ELEV	ELEVATION	MAX	MAXIMUM	TW	TOP OF WALL				
EMER	EMERGENCY	MECH	MECHANIC(AL)	TOW	TOP OF WALL	21.			
EQ	EQUAL	MTL	METAL	TYT	TYPICAL				
EXIST	EXISTING	M	METER(S)	UNO	UNLESS NOTED OTHERWISE	22.			
EXP	EXPOSED	MWK	MILLWORK	VERT	VERTICAL				
EXT	EXTERIOR	MIN	MINIMUM	VNTL	VINYL TILE	23.			
FOP	FACE OF FINISH	MISC	MISCELLANEOUS	WC	WATER CLOSET				
FO	FACE OF FINISH	MT	MOUNT(ED), (ING)	W/O	WITHOUT	24.			
FIN	FINISH(ED)	NOM	NOMINAL	WO	WOOD				

GENERAL NOTES:

DESIGN:

BUILDING CODE - 2024 INTERNATIONAL BUILDING CODE

1. EXISTING ROOF DEAD LOAD = 18 PSF
MINIMUM ROOF LIVE LOAD = 20 PSF
TRIBUTARY AREA 0 TO 200 SQ. FT. = 20(1.2-0.001A) PSF
TRIBUTARY AREA 201 TO 600 SQ. FT. = 12 PSF
2. SNOW LOADS:
- GROUND SNOW LOAD, Pg = 26 PSF
3. WIND LOADS:
- ULTIMATE WIND SPEED (3 SEC. GUST), VuIt = 108 MPH
- BASIC WIND SPEED, Vasd = 83.7 MPH
- RISK CATEGORY = II
- BUILDING CATEGORY = ENCLOSED SIMPLE DIAPHRAGM
- OVERALL EXPOSURE CATEGORY = C
4. SEISMIC:
- RISK CATEGORY = II
- SEISMIC IMPORTANCE FACTOR, Ie = 1.0
- MAPPED SPECTRAL RESPONSE COEFFICIENTS
Ss = 0.32
S1 = 0.13
- SITE CLASS = D (ASSUMED)
- SPECTRAL RESPONSE COEFFICIENTS
SDS = 0.26
SD1 = 0.18
- SEISMIC DESIGN CATEGORY = C

CONCRETE NOTES

- CONCRETE MIXTURES SHALL STRICTLY COMPLY WITH SECTION 4 OF ACI 301-20 AND CHAPTER 19 OF ACI 318-14.
1. CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR REVIEW A MINIMUM OF ONE WEEK PRIOR TO THE CONCRETE PLACEMENT.
2. ALL CONCRETE SHALL BE NORMAL-WEIGHT (DENSITY=145 PCF).
3. THE COARSE AGGREGATE GRADATION SHALL BE #57 OR LARGER UNLESS RESTRICTED BY ACI 301-20.
4. EXPOSURE CATEGORY - F (FREEZING AND THAWING):
INTERIOR FLOOR SLAB F0 (fc = 3,000 PSI)
ALL EXTERIOR STRUCTURAL CONCRETE F2
FOUNDATIONS (INTERIOR & EXTERIOR) F2
ALL EXTERIOR FLAT WORK (SLABS) F3
5. EXPOSURE CATEGORY - S (SULFATE):
ALL CONCRETE IN CONTACT WITH SOIL S0
6. EXPOSURE CATEGORY - W (IN CONTACT WITH WATER):
ALL EXTERIOR CONCRETE W0
7. EXPOSURE CATEGORY - C (CORROSION PROTECTION OF REINFORCEMENT):
ALL EXTERIOR CONCRETE C1
8. FORMWORK AND FORMWORK ACCESSORIES SHALL STRICTLY COMPLY WITH SECTION 2 OF ACI 301-20.
9. REINFORCEMENT AND REINFORCEMENT SUPPORTS SHALL STRICTLY COMPLY WITH SECTION 3 OF ACI 301-20.
10. HANDLING, PLACING, AND CONSTRUCTING SHALL STRICTLY COMPLY WITH SECTION 5 OF ACI 301-20.
11. CONCRETE REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE.
12. CONCRETE REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A706.
13. THE MINIMUM CONCRETE CLEAR COVER OVER REINFORCING STEEL, UNLESS NOTED OTHERWISE, SHALL BE:
UNFORMED SURFACE IN CONTACT WITH THE GROUND.....3 IN.
FORMED SURFACES EXPOSED TO EARTH OR WEATHER:
#6 BARS AND LARGER.....2 IN.
#5 BARS AND SMALLER.....1 1/2 IN.
FORMED SURFACES NOT EXPOSED TO EARTH OR WEATHER:
BEAMS, GIRDERS, AND COLUMNS.....1 1/2 IN.
SLABS, WALLS, AND JOISTS:
#11 BARS AND SMALLER.....3/4 IN.
#14 AND #18 BARS.....1 1/2 IN.
14. ALL BASE PLATES, ANCHOR BOLTS, SUPPORT ANGLES, ETC., WHICH ARE BELOW GRADE SHALL BE COVERED WITH A MINIMUM OF 3" OF CONCRETE.
15. ALL LAP SPLICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE. WHERE CLASSES ARE NOT CALLED OUT ON DRAWINGS, USE CLASS "B" SPLICES.

CONCRETE REINFORCING LAP SPICE SCHEDULE					
BAR SIZE	TENSION SPLICES (IN.)				COMPRESSION SPLICES (IN.)
	TOP BARS	OTHER BARS	A	B	
#3	22	28	17	22	12
#4	29	37	22	29	15
#5	36	47	28	36	19
#6	43	56	33	43	23
#7	63	81	48	63	27
#8	72	93	55	72	30

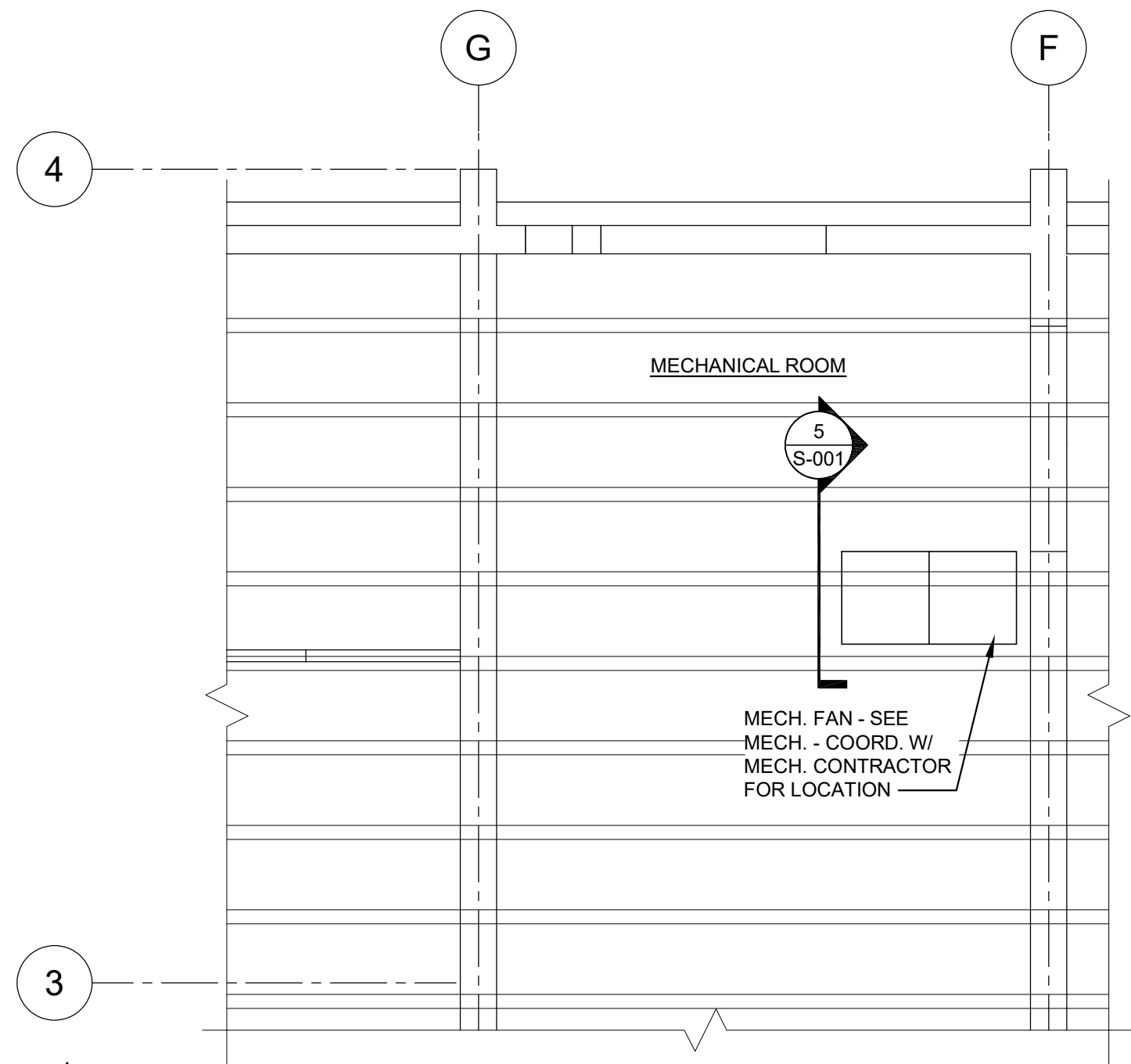
- COMPRESSION DOWEL EMBEDMENT: 22 BAR DIAMETERS LAP
-WELDED WIRE FABRIC: ONE SPACING OF CROSS WIRES PLUS 2" LAP

MISCELLANEOUS:

1. NO CHANGE IN SIZE OR DIMENSION OF STRUCTURAL MEMBERS SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE PROFESSIONAL OF RECORD.
2. STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING SUCH REQUIREMENTS INTO THEIR SHOP DRAWINGS AND WORK.
3. NO OPENINGS SHALL BE MADE IN ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE PROFESSIONAL OF RECORD.
4. DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS.
5. THE CONTRACTOR SHALL INFORM THE PROFESSIONAL OF RECORD IN WRITING OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY OF SUCH DEVIATION BY THE PROFESSIONAL OF RECORD REVIEW OF SHOP DRAWINGS, PRODUCT DATA, ETC., UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE PROFESSIONAL OF RECORD OF SUCH DEVIATION AT THE TIME OF SUBMISSION, AND THE PROFESSIONAL OF RECORD HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION.
6. ANY DETAIL TITLED AS A TYPICAL DETAIL IS APPLICABLE THROUGHOUT THE DESIGN DRAWINGS. THESE DETAILS ARE DEFINED AS GENERAL STANDARDS THAT ARE USUALLY NOT IDENTIFIED BY SPECIFIC REFERENCE WITHIN THE DRAWINGS. THESE DETAILS MAY BE MODIFIED OR SUPERSEDED BY SPECIFIC DETAILS THAT ARE REFERENCED WITHIN THE DRAWINGS.
7. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED UPON THE STRUCTURAL FRAMING. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN CAPACITY OF THE FRAMING AT THE TIME THE LOADS ARE IMPOSED.

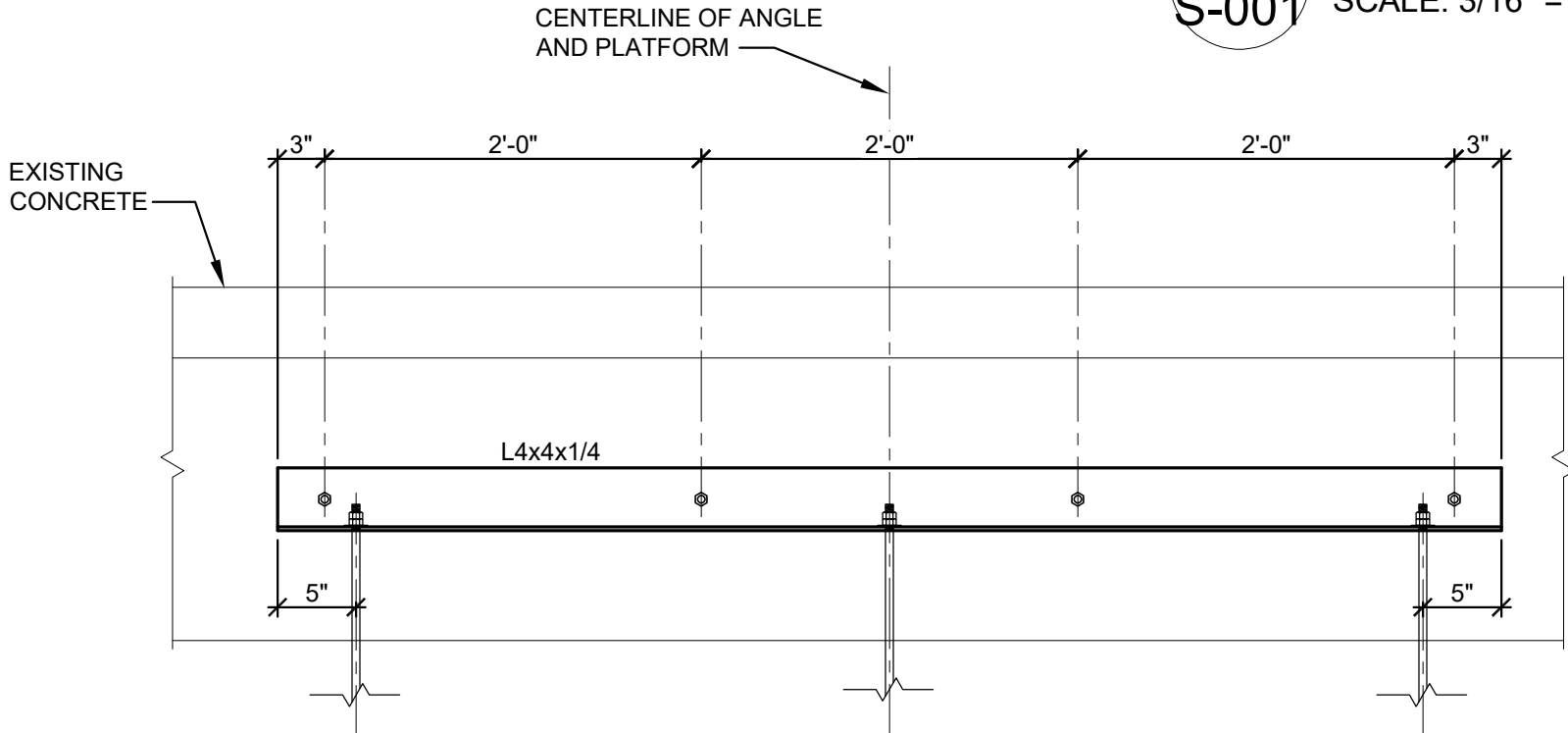
EXISTING CONSTRUCTION:

1. WORK SHOWN IS NEW UNLESS INDICATED AS EXISTING.
2. EXISTING CONSTRUCTION SHOWN IS BASED UPON ASSUMED EXISTING CONDITIONS AND CAN BE USED FOR BIDDING PURPOSES. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING JOB CONDITIONS, REVIEW ALL DRAWINGS AND VERIFY DIMENSIONS, ELEVATIONS, AND MEMBER SIZES PRIOR TO CONSTRUCTION OR MATERIAL PURCHASE. THE CONTRACTOR SHALL NOTIFY THE PROFESSIONAL OF RECORD IN WRITING OF ALL DISCREPANCIES AND EXCEPTIONS BEFORE PROCEEDING WITH THE WORK.
3. THE REMOVAL, CUTTING, DRILLING, ETC. OF EXISTING CONSTRUCTION SHALL BE PERFORMED WITH GREAT CARE IN ORDER NOT TO JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BUILDING. IF STRUCTURAL MEMBERS OR MECHANICAL, ELECTRICAL, OR ARCHITECTURAL FEATURES NOT INDICATED FOR REMOVAL INTERFERE WITH THE NEW WORK, THE PROFESSIONAL OF RECORD SHALL BE IMMEDIATELY NOTIFIED AND PRIOR WRITTEN APPROVAL SHALL BE OBTAINED BEFORE REMOVAL OR MODIFICATION OF MEMBERS.
4. THE CONTRACTOR SHALL RESTORE ALL EXISTING INCIDENTAL CONSTRUCTION REQUIRED TO BE REMOVED TO ACCOMMODATE THE ERECTION OF THE NEW JOIST CONSTRUCTION TO ITS ORIGINAL WORKING CONDITION.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS & METHOD OF ALL DEMOLITION WORK & FOR PROVIDING ALL NECESSARY TEMPORARY SHORING, BRACING & PROTECTION AS NECESSARY FOR SAFETY, STABILITY & PROTECTION OF ALL BUILDING ELEMENTS & STRUCTURE DURING CONSTRUCTION & DEMOLITION.



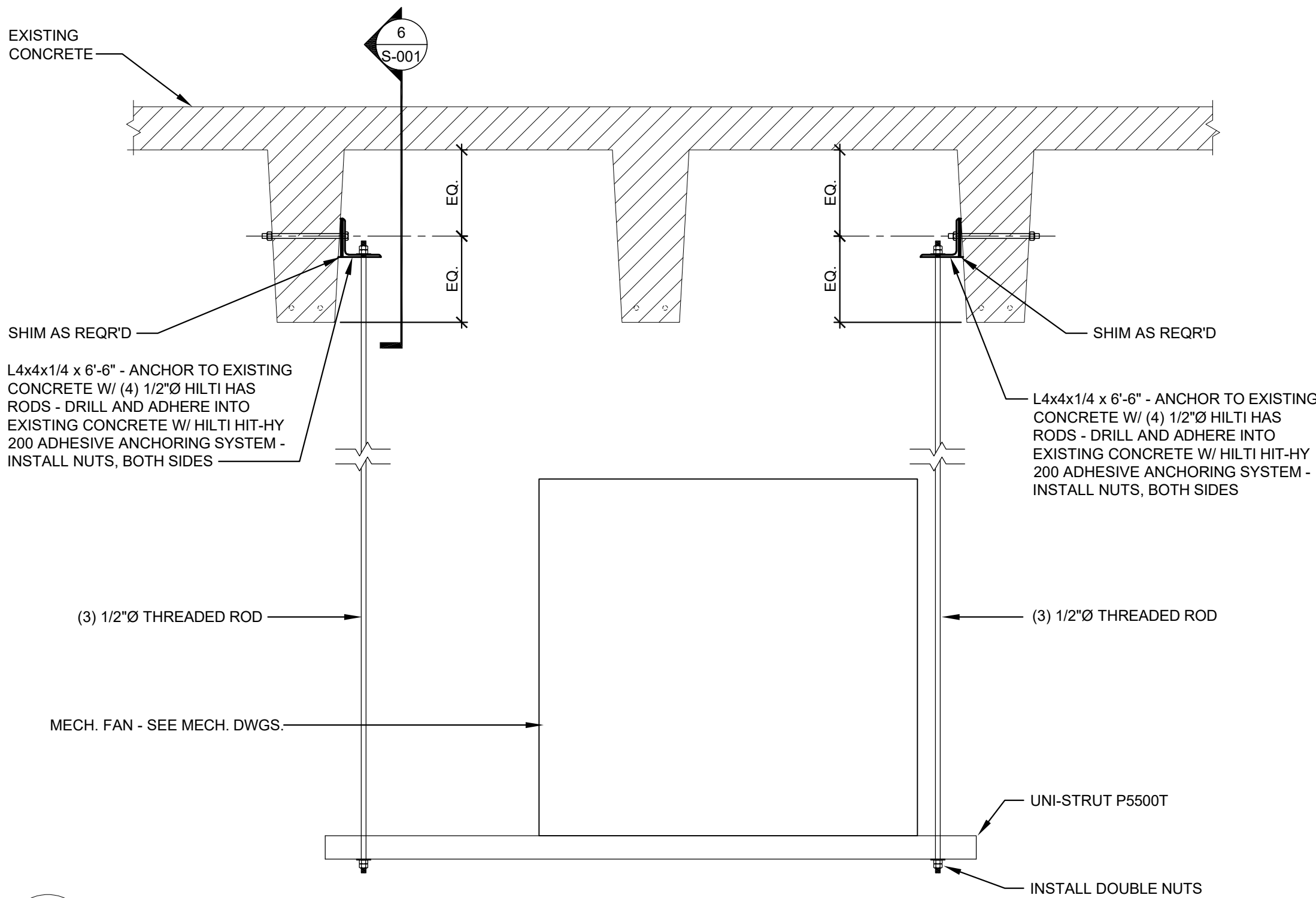
EXISTING PARTIAL FRAMING PLAN AT NEW MECHANICAL EQUIPMENT PAD

SCALE: 3/16" = 1'-0"



SECTION 6

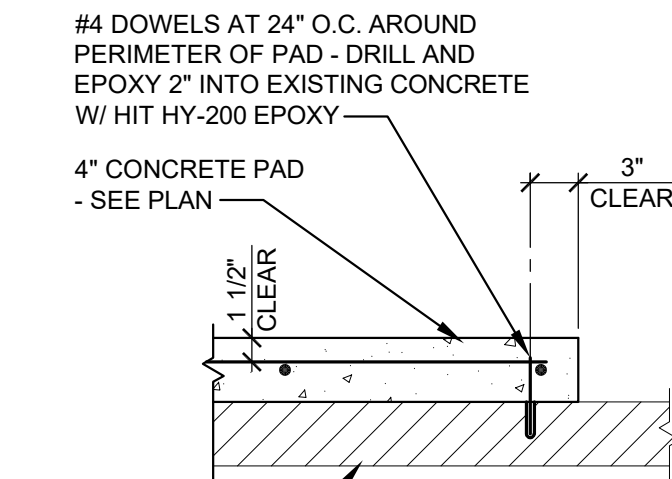
SCALE: 1" = 1'-0"



5 S-001

SECTION 5

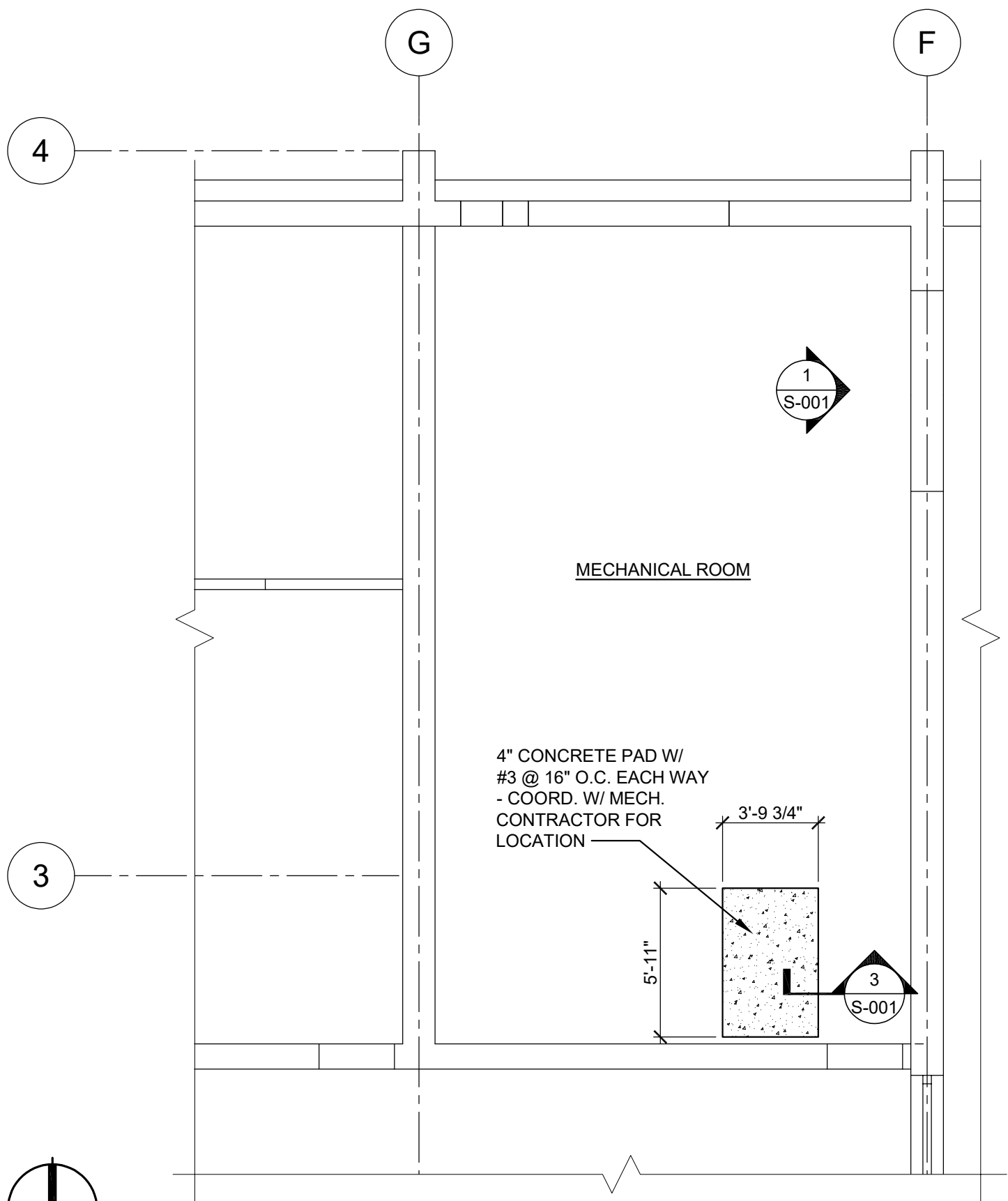
SCALE: 1" = 1'-0"



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SECTION 3

SCALE: 1" = 1'-0"



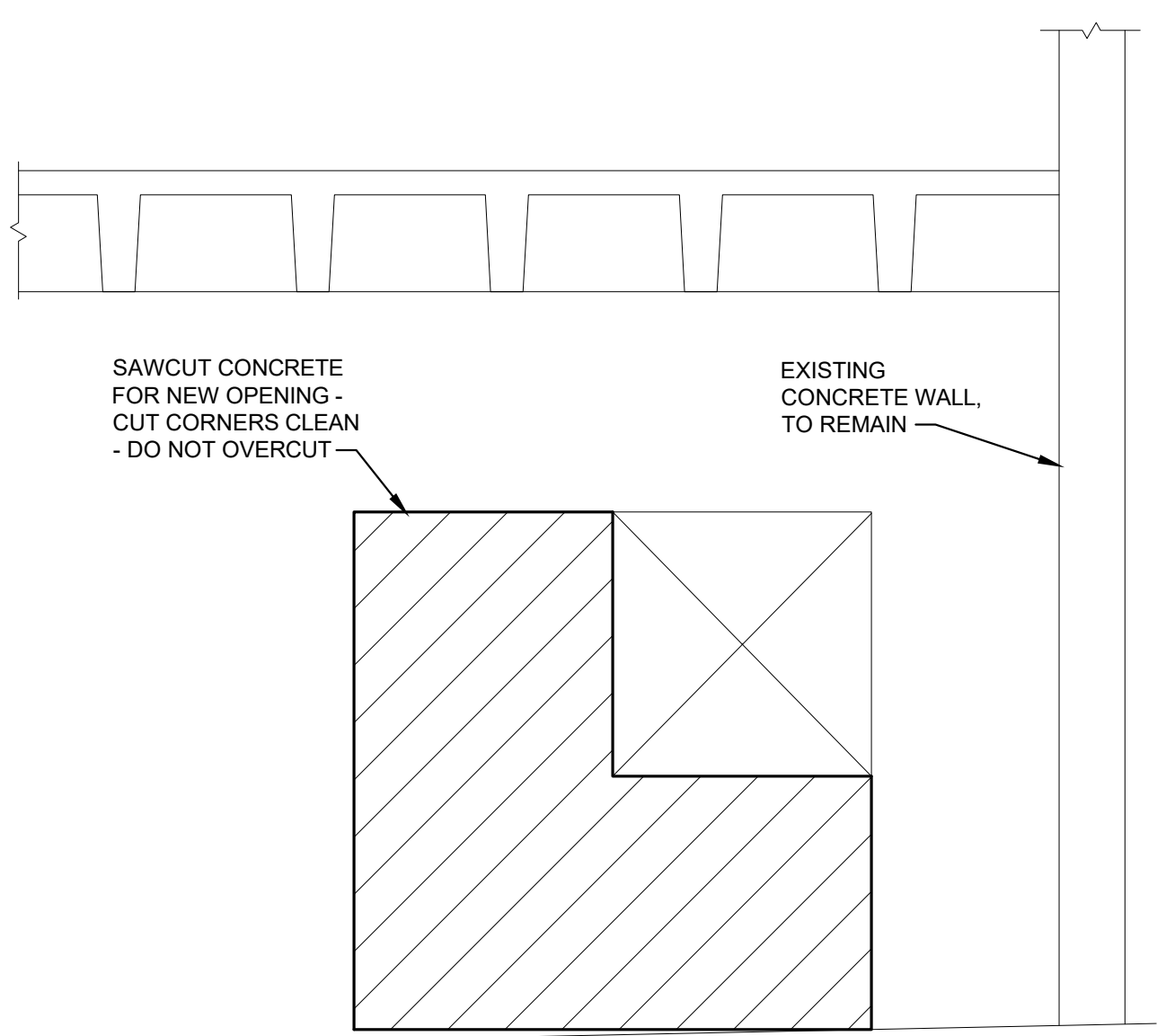
EXISTING PARTIAL FLOOR PLAN AT NEW MECHANICAL EQUIPMENT PAD

SCALE: 3/16" = 1'-0"

2 S-001

SECTION 2

SCALE: 3/16" = 1'-0"



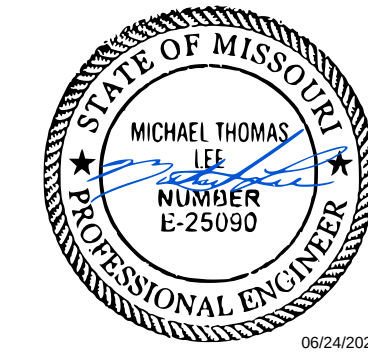
1 S-001

ELEVATION AT NEW DOOR OPENING LOOKING WEST

SCALE: 3/8" = 1'-0"

STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:

MICHAEL T. LEE
License Number: 025060
Expiration Date: 12/31/27
CASCO Diversified Corporation
MO Certificate of Authority #000613 ENG.
MO Certificate of Authority #000329 ARCH.

CASCO
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1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No. Description Date

ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: BWT
CHECKED BY: MTL
DESIGNED BY: JMK

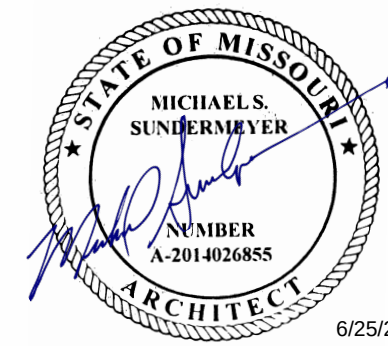
SHEET TITLE:

STRUCTURAL
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AND DETAILS

SHEET NUMBER:

S-001

06/25/2026
3 OF 45 SHEETS



Professional of Record:

MICHAEL S. SUNDERMEYER
License Number: 2014026855
Expiration Date: 12/31/26

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DWG FILE #: 2504992
DRAWN BY: LAA
CHECKED BY: RAR
DESIGNED BY: LAA

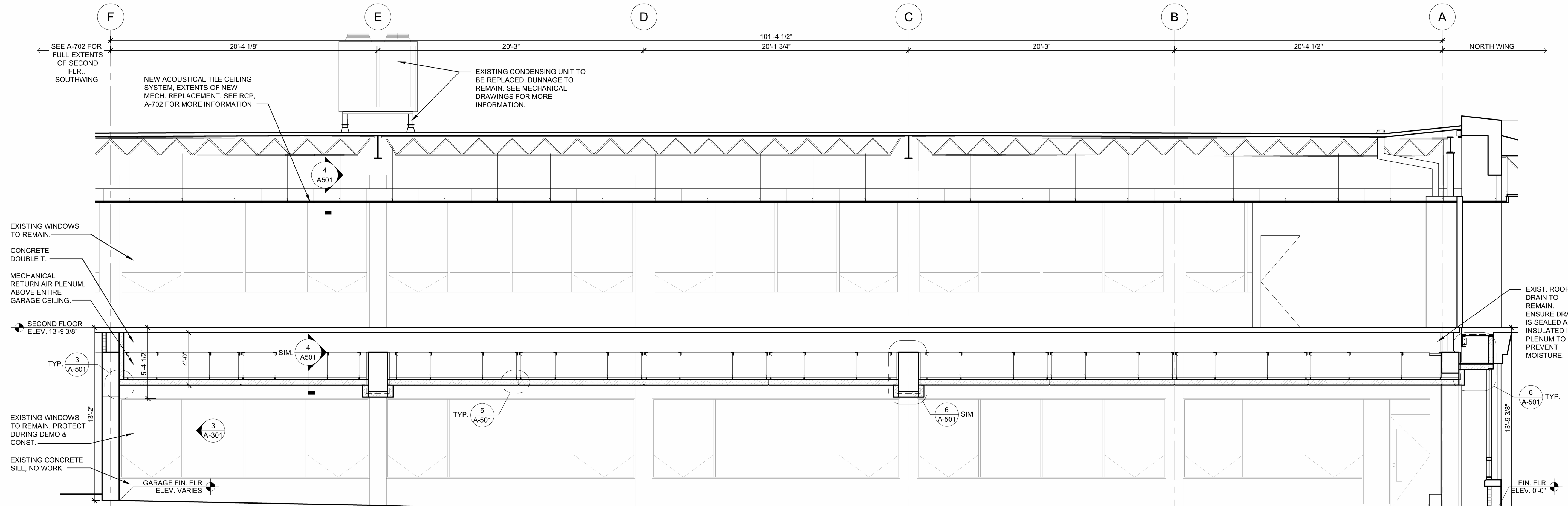
SHEET TITLE:

BUILDING SECTIONS

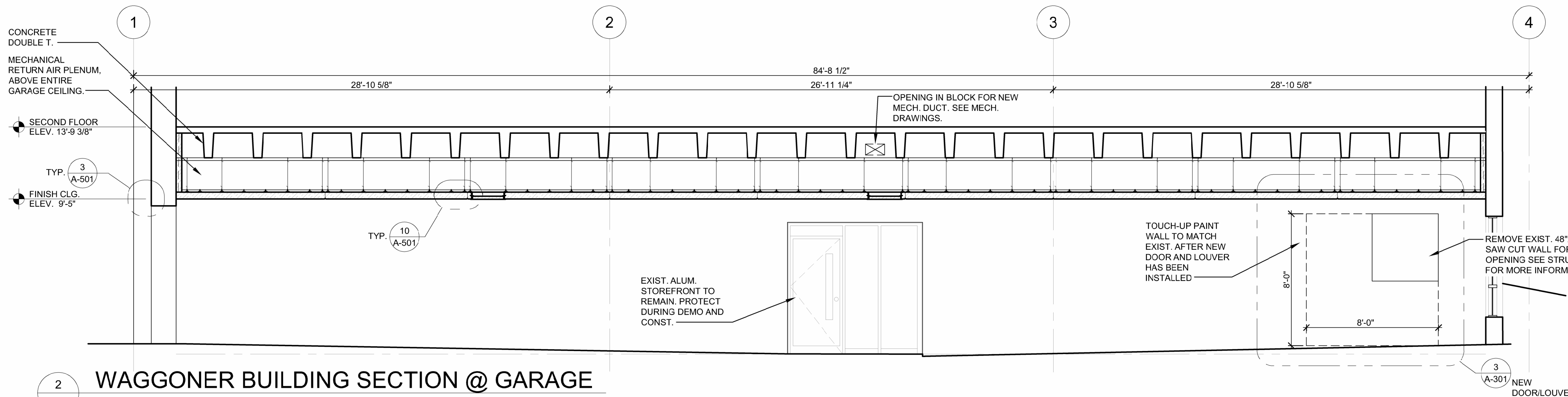
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06/25/2026
4 OF 45 SHEETS

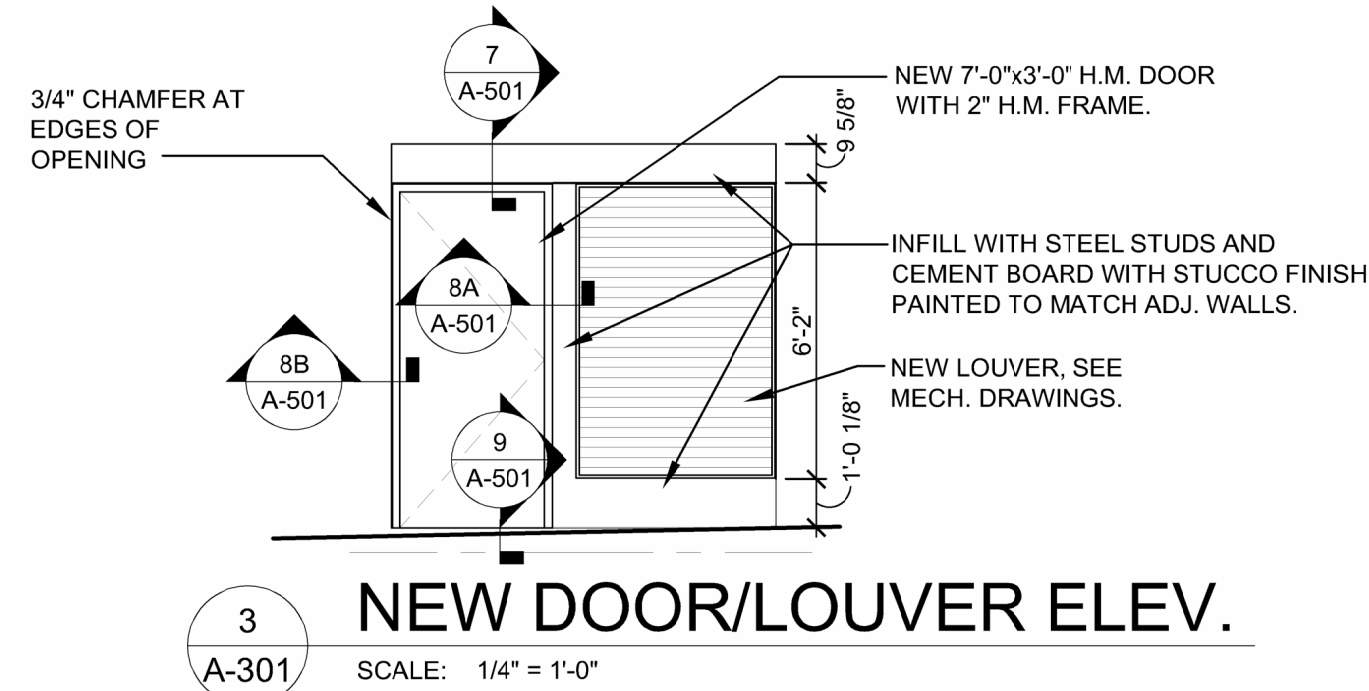


1 PARTIAL WAGGONER BLDG. SECTION, SOUTHWING
A-301 SCALE: 1/4" = 1'-0"



2 WAGGONER BUILDING SECTION @ GARAGE
A-301 SCALE: 1/4" = 1'-0"

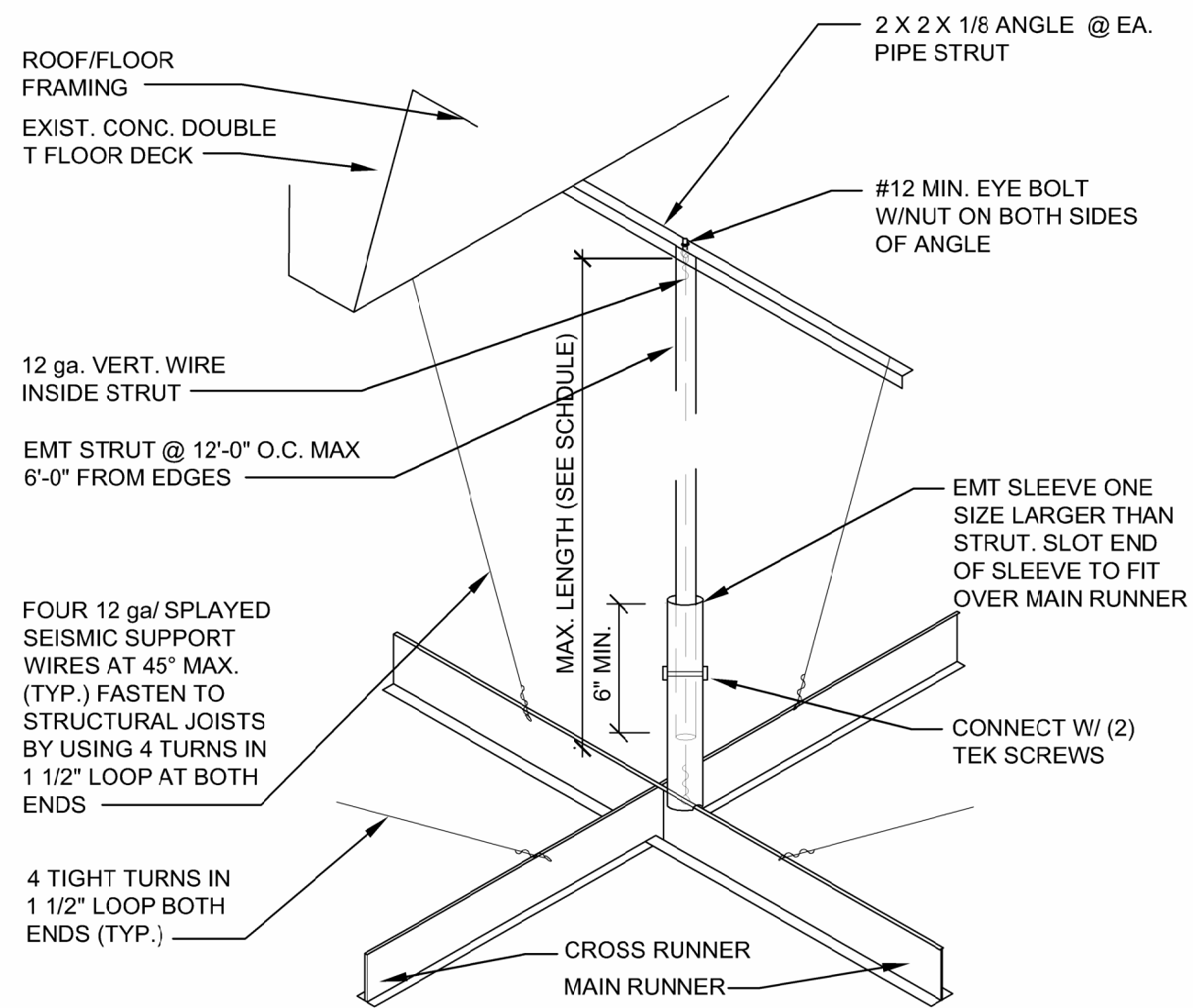
DOOR HARDWARE:					
QTY	DESCRIPTION	CATALOG NUMBER	FINISH	B.O.D.	EQUIVALENTS
3	HINGE (NRP)	5BB1 4.5X4.5	652	IVE	HAGER, MCKINNEY, STANLEY
1	STOREROOM LOCK	T581B DAN	626	FAL	HAGER, SCHLGE, SARGENT
1	SFIC PERMANENT CORE	BY OWNER	626	BEST	BY OWNER
1	SFIC CONST. CORE	7-PIN	---	---	---
1	SURFACE CLOSER	REMOVABLE	---	BEST	NO SUBSTITUTION
1	WEATHER STRIPPING	SC71A SS	689	FAL	HAGER, LCN, SARGENT
1	DOOR SWEEP	BY DOOR/FRAME MFR.	---	---	---
1	THRESHOLD	39A	A	ZER	NATIONAL GUARD, REESE
1	SILENCER HM	655A-223	GRY	IVE	NATIONAL GUARD, REESE
3	CLOSER TEMPLATING, BRACING, SHOES, SPACERS, ETC	SR64	---	---	---
1		AS REQUIRED	---	---	---



3 NEW DOOR/LOUWER ELEV.
A-301 SCALE: 1/4" = 1'-0"

COMPRESSION STRUT SCHEDULE	
NOMINAL SIZE (INCHES)	MAX. LENGTH (FT)
1/2	3
3/4	5

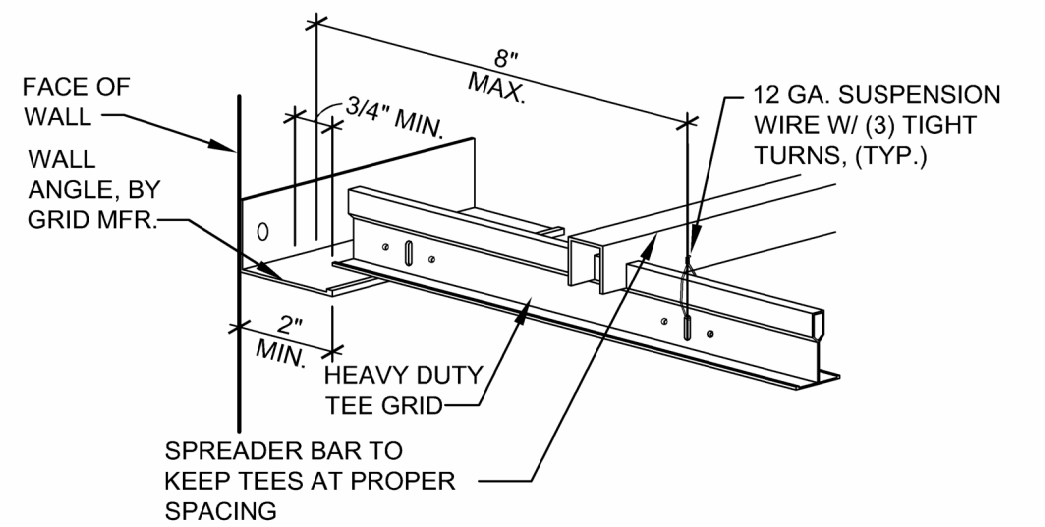
1. MAIN RUNNERS @ 1'-4" O.C. CROSS RUNNERS @ 4'-0" O.C.



NOTE: THE SEISMIC CEILING GRID COMPONENTS ARE TO BE INSTALLED IN AREAS OF CEILING WORK ON BOTH FIRST AND SECOND FLOOR. AREAS OF NO WORK SHALL REMAIN EXISTING.

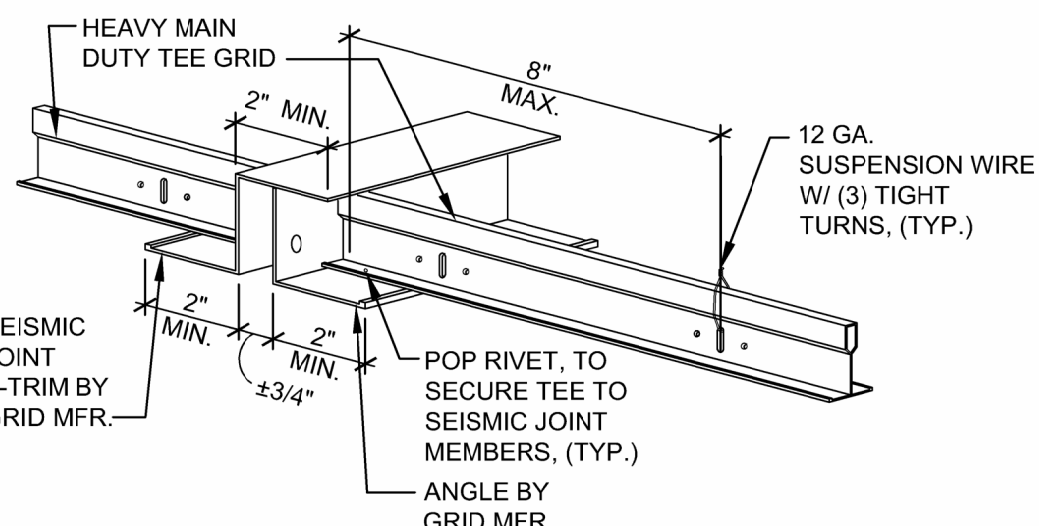
SEISMIC CEILING GRID ISOMETRIC DETAILS

1
A501
SCALE: NOT TO SCALE



- NOTES:
- PERIMETER WALL ANGLE SHALL HAVE A HORIZONTAL LEG OF 2" MINIMUM.
 - ONE END OF THE CEILING GRID SHALL BE ATTACHED TO THE WALL ANGLE.
 - ONE END OF THE CEILING GRID SHALL REMAIN FREE TO SLIDE WITH 3/4" MINIMUM CLEARANCE FROM THE WALL. PROVIDE SPREADER BARS TO MAINTAIN PROPER GRID SPACING

WALL ANGLE AND SPREADER BAR DETAIL



- NOTES:
- CEILINGS EXCEEDING 2500 SQUARE FEET SHALL BE DIVIDED BY SEISMIC SEPARATION JOINTS, FULL HEIGHT PARTITIONS OR SOFFITS.
 - SEISMIC SEPARATION JOINTS SHALL NOT BE PART OF A FIRE RATED CEILING ASSEMBLY.

SEISMIC SEPARATION JOINT DETAIL

GENERAL NOTES:

- A HEAVY DUTY T-BAR GRID SYSTEM SHALL BE USED. ALL CROSS TEES SHALL BE CAPABLE OF CARRYING THE DESIGN LOAD WITHOUT EXCEEDING DEFLECTION EQUAL TO 1/360 OF ITS SPAN.
- ALL WIRE TIES ARE TO BE THREE TIGHT TURNS AROUND ITSELF WITHIN THREE INCHES. TWELVE GAGE HANGER WIRE SPACED 4 FOOT ON CENTER.
- 2 INCH WALL MOLDING IS REQUIRED UNLESS AN APPROVED SEISMIC PERIMETER CLIP IS INSTALLED PER MANUFACTURERS' INSTALLATION REQUIREMENTS. THE APPROVED PLANS MUST INDICATE THE APPROVED SYSTEM AND COMPONENTS.
- GRID MUST BE ATTACHED TO TWO ADJACENT SIDES. OPPOSITE WALLS SHALL PROVIDE 3/4 INCH CLEARANCE.
- PERIMETER WIRES ARE REQUIRED NO MORE THAN 8 INCHES FROM THE WALL OR AREA DIVIDER. WIRES MUST BE INSTALLED A MAXIMUM OF 1 IN 6 VERTICALLY.
- CEILINGS WITHOUT RIGID BRACING SHALL PROVIDE 2 INCH OVERSIZED TRIM RINGS FOR SPRINKLER HEADS (NOT REQUIRED FOR SPRINKLER HEADS ATTACHED TO FLEX-PIPE) AND OTHER PENETRATIONS.
- CEILINGS LESS THAN OR EQUAL TO 144 SQUARE FEET AND SURROUNDED BY WALLS CONNECTED TO THE STRUCTURE ABOVE ARE EXEMPT FROM THESE REQUIREMENTS.
- CEILINGS WITH PLENUMS LESS THAN 12 INCHES TO STRUCTURE ARE NOT REQUIRED TO HAVE LATERAL FORCE BRACING.
- CEILINGS OVER 1,000 SQUARE FEET REQUIRE HORIZONTAL SPLAY BRACING AND COMPRESSION STRUTS, AS DETAILED ON THIS SHEET.

LATERAL FORCE BRACING

- CEILINGS CONSTRUCTED OF GYPSUM BOARD, SCREW OR NAIL ATTACHED TO SUSPENDED MEMBERS THAT SUPPORT A CEILING ON ONE LEVEL EXTENDING FROM WALL TO WALL SHALL BE EXEMPT FROM THE LATERAL FORCE BRACING REQUIREMENTS. SOURCE ASTM E-580-14 SECTION 1.7.
- LATERAL FORCE BRACING IS THE USE OF VERTICAL STRUTS (COMPRESSION POSTS) AND SPLAY WIRES (SEE DETAIL 1/A-501).
- LATERAL FORCE BRACING IS REQUIRED FOR CEILINGS OVER 1,000 SQUARE FEET AND NOT REQUIRED FOR CEILINGS LESS THAN 1,000 SQUARE FEET PROVIDED THEY ARE SURROUNDED BY FOUR WALLS AND BRACED TO STRUCTURE. SOURCE ASTM E-580-14 SECTION 5.2.8.1.
- LATERAL FORCE BRACING SHALL BE 12 FEET ON CENTER (MAXIMUM) AND BEGIN NO FARTHER THAN 6 FEET FROM WALLS. SOURCE ASTM E-580-14 SEC- TION 5.2.8.2.
- SPLAY WIRES ARE TO BE FOUR 12 GAGE WIRES ATTACHED TO THE MAIN BEAM. WIRES ARE ARRAYED 90° FROM EACH OTHER AND AT AN ANGLE NOT EXCEEDING 45° FROM THE PLANE OF THE CEILING. SOURCE ASTM E-580-14 SECTION 5.2.8.2.
- SPLAY WIRES ARE TO BE WITHIN 2 INCHES OF THE CONNECTION OF THE VERTICAL STRUT TO SUSPENDED CEILING. SOURCE ASTM E-580-14 SECTION 5.2.8.2.
- RIGID BRACING MAY BE USED IN LIEU OF SPLAY WIRES. SOURCE ASTM E-580-14 SECTION 5.2.8.4.
- VERTICAL STRUTS MUST BE POSITIVELY ATTACHED TO THE SUSPENSION SYSTEMS AND THE STRUCTURE ABOVE. SOURCE ASTM E-580-14 SECTION 5.2.8.2.
- THE VERTICAL STRUT MAY BE EMT CONDUIT, METAL STUDS OR A PROPRIETARY COMPRESSION POST, REFER TO DETAIL AT LEFT ON THIS SHEET. HEIGHTS EXCEEDING THE TABLE SHALL BE ENGINEERED.

WALL MOLDINGS AND SPREADER BARS

- WALL MOLDINGS (PERIMETER CLOSURE ANGLES) ARE REQUIRED TO HAVE A HORIZONTAL FLANGE 2 INCHES WIDE OR USE AN APPROVED PERIMETER CLIP SYSTEM, OR AN ALTERNATE METHOD APPROVED PRIOR TO INSTALLATION BY THE BUILDING COMMISSIONER. ONE END OF THE CEILING GRID SHALL BE ATTACHED TO THE WALL MOLDING. THE OTHER END SHALL HAVE A 3/4 INCH CLEARANCE FROM THE WALL AND ALLOW MOVEMENT. SOURCE ASCE 7-10 SECTION 13.5.6.2.2.
- THE GRID SHALL BE ATTACHED AT TWO ADJACENT WALLS (POP RIVETS OR APPROVED METHOD). SOURCE ASCE 7-10 SECTION 13.5.6.2.2.

- THERE SHALL BE A MINIMUM 3/4 INCH CLEARANCE FROM THE END OF THE GRID SYSTEM AT UNATTACHED WALLS. SOURCE ASCE 10 SECTION 13.5.6.2.2.
- SPREADER (SPACER) BARS (SEE DETAIL AT LEFT) OR OTHER MEANS APPROVED BY BUILDING COMMISSIONER SHALL BE USED TO PREVENT THE ENDS OF THE MAIN BEAMS AT PERIMETER WALLS FROM SPREADING OPEN DURING A SEISMIC EVENT. PERIMETER WIRES SHALL NOT BE IN LIEU OF SPREADER BARS. SOURCE ASTM E-580-14 SECTION 5.2.5.
- SPREADER BARS ARE NOT REQUIRED IF A 90 DEGREE INTERSECTING CROSS OR MAIN IS WITHIN 24 INCHES OF THE PERIMETER WALL.

HANGER WIRES

- HANGER AND PERIMETER WIRES MUST BE PLUMB WITHIN 1 IN 6 UNLESS (FIGURE 5A) COUNTER SLOPING WIRES ARE PROVIDED (FIGURE 5B). SOURCE ASTM E-580-14 SECTION 5.2.7.3.
- HANGER WIRES SHALL BE 12 GAGE AND SPACED 4 FEET ON CENTER. SOURCE ASTM E-580-14 SECTION 5.2.7.1.
- ANY CONNECTION DEVICE AT THE SUPPORTING CONSTRUCTION SHALL BE CAPABLE OF CARRYING NOT LESS THAN 90 POUNDS. SOURCE ASTM E-580-14 SECTION 5.2.7.2.
- BRACING WIRES SHALL BE ATTACHED TO THE GRID AND TO THE STRUCTURE IN SUCH A MANNER THAT THEY CAN SUPPORT A DESIGN LOAD OF NOT LESS THAN 250 POUNDS OR THE ACTUAL DESIGN LOAD, WITH A SAFETY FACTOR OF 2, WHICHEVER IS GREATER. SOURCE ASTM E-580-14 SECTION 5.2.8.3.
- TERMINAL ENDS OF EACH MAIN BEAM AND CROSS TEE MUST BE SUPPORTED WITHIN 8 INCHES OF EACH WALL WITH A PERIMETER WIRE (SEE FIGURE 4 & 5 B). SOURCE ASTM E-580-14 SECTION 5.2.6.

ELECTRICAL FIXTURES

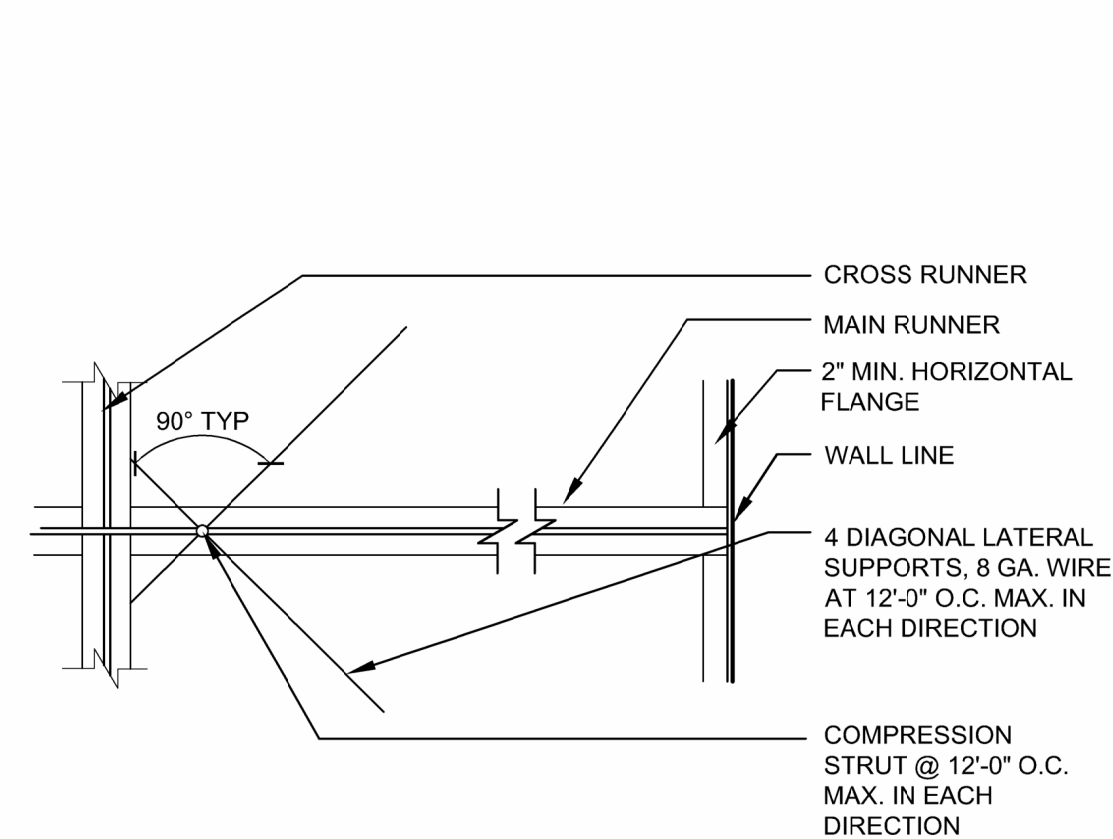
- LIGHT FIXTURES WEIGHING LESS THAN 10 POUNDS SHALL HAVE ONE 12 GAGE HANGER WIRE CONNECTED FROM THE FIXTURE TO THE STRUCTURE ABOVE. THIS WIRE MAY BE SLACK. SOURCE ASTM E-580-14 SECTION 5.3.4.
- LIGHT FIXTURES WEIGHING MORE THAN 10 POUNDS AND LESS THAN 56 LBS. SHALL HAVE TWO 12 GAGE WIRES ATTACHED AT OPPOSING CORNERS OF THE LIGHT FIXTURE TO THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK. SOURCE ASTM E-580-14 SECTION 5.3.5.
- LIGHT FIXTURES WEIGHING MORE THAN 56 LBS. SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE. THESE WIRES MUST BE TAUT. SOURCE ASTM E-580-14 SECTION 5.3.6.
- PENDANT MOUNTED FIXTURES SHALL BE DIRECTLY SUPPORTED FROM THE STRUCTURE ABOVE USING A 9 GAGE WIRE OR AN APPROVED ALTERNATE SUPPORT WITHOUT USING THE CEILING SUSPENSION SYSTEM FOR DIRECT SUPPORT. SOURCE ASTM E-580-14 SECTION 5.3.7.
- TANDEM FIXTURES MAY UTILIZE COMMON WIRES.

MECHANICAL SYSTEMS

- TERMINALS OR SERVICES WEIGHING 20 LBS. BUT NOT MORE THAN 56 LBS. MUST HAVE TWO 12 GAGE WIRES CONNECTING THEM TO THE CEILING SYSTEM HANGERS OR THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK. SOURCE ASTM E-580-14 SECTION 5.4.2.
- TERMINALS OR SERVICES WEIGHING MORE THAN 56 LBS. MUST BE INDEPENDENTLY SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE. THESE WIRES MUST BE TAUT. SOURCE ASTM E-580-14 SECTION 5.4.3.

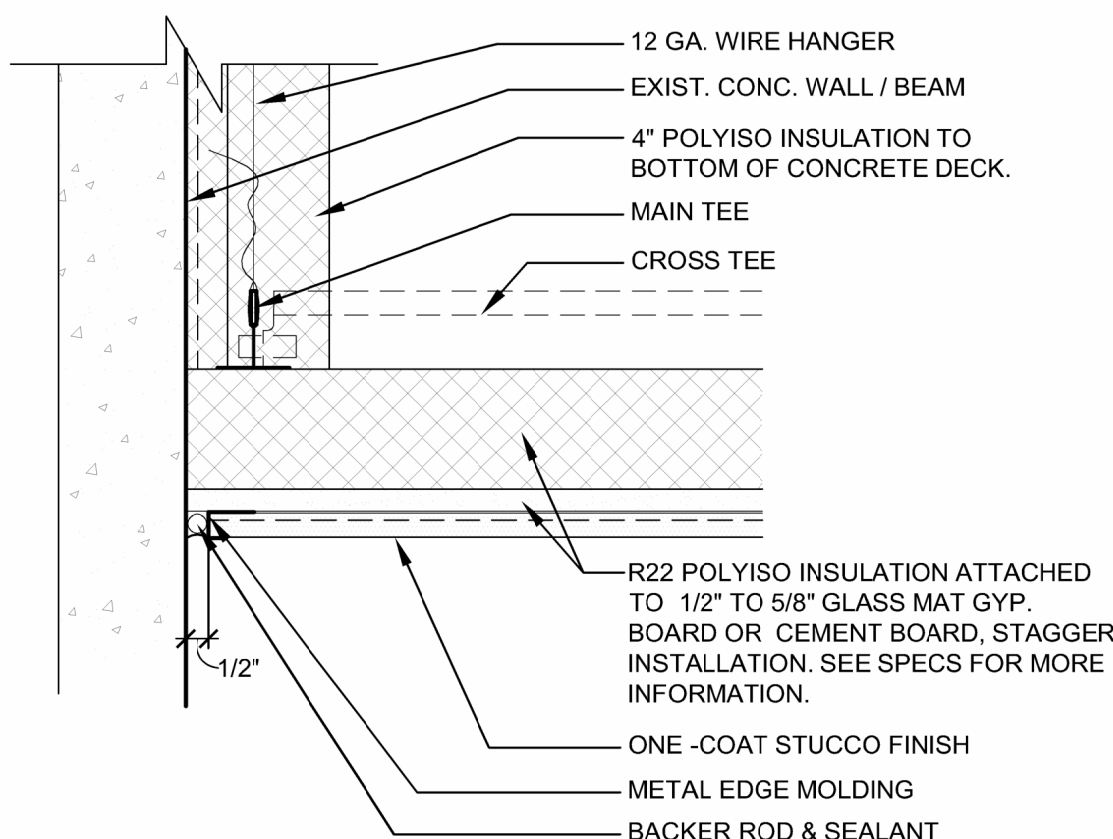
SEISMIC SEPARATION JOINTS

- NO CEILING SYSTEM MAY EXCEED 2500 SQUARE FEET WITHOUT UTILIZING SEISMIC SEPARATION JOINTS, SEE REFLECTED CEILING PLAN FOR LOCATIONS. SOURCE ASTM E-580-14 SECTION 5.2.9.1.
- THE LAYOUT AND LOCATION OF THE SEISMIC SEPARATION JOINT SHALL BE AS INDICATED ON THE REFLECTED CEILING PLAN. THE CONTRACTOR SHALL REFER TO DETAIL ON THIS SHEET OR MAY USE PROPRIETARY JOINT. THE AMOUNT OF FREE MOVEMENT (GAP DESIGN) SHALL BE 2".



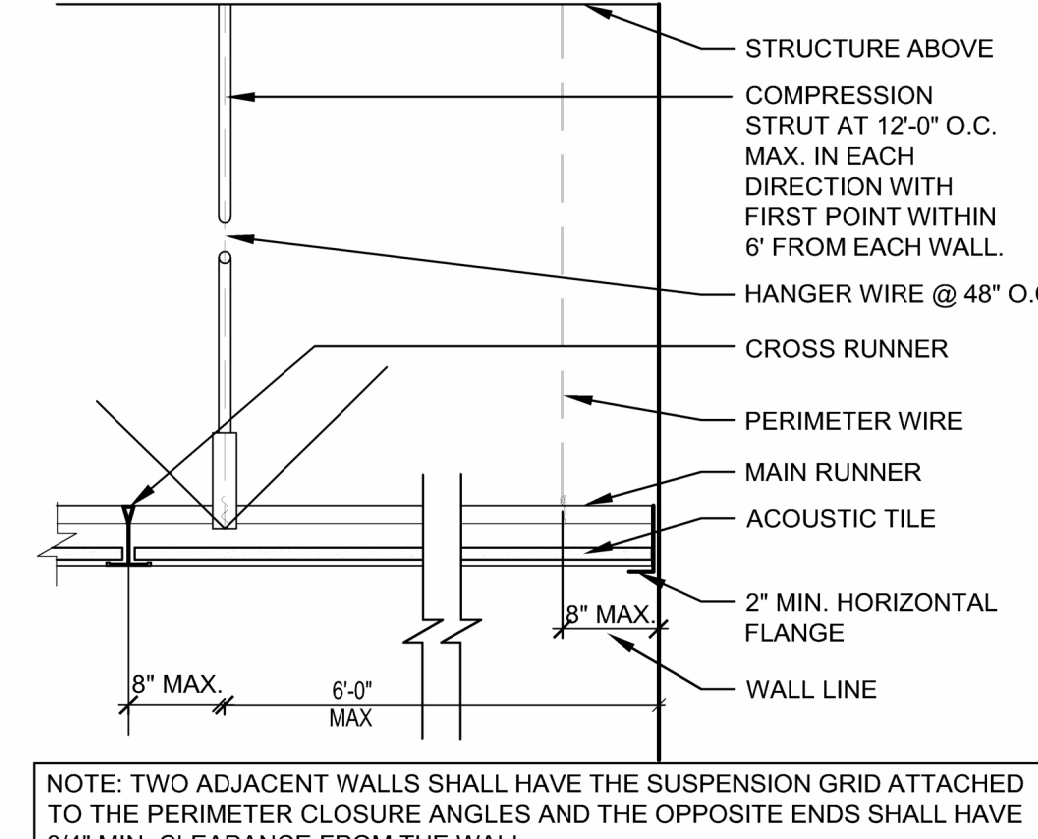
SEISMIC CLG. GRID PLAN DTL.

2
A501
SCALE: 3/4" = 1'-0"



CEILING AT WALL DETAIL

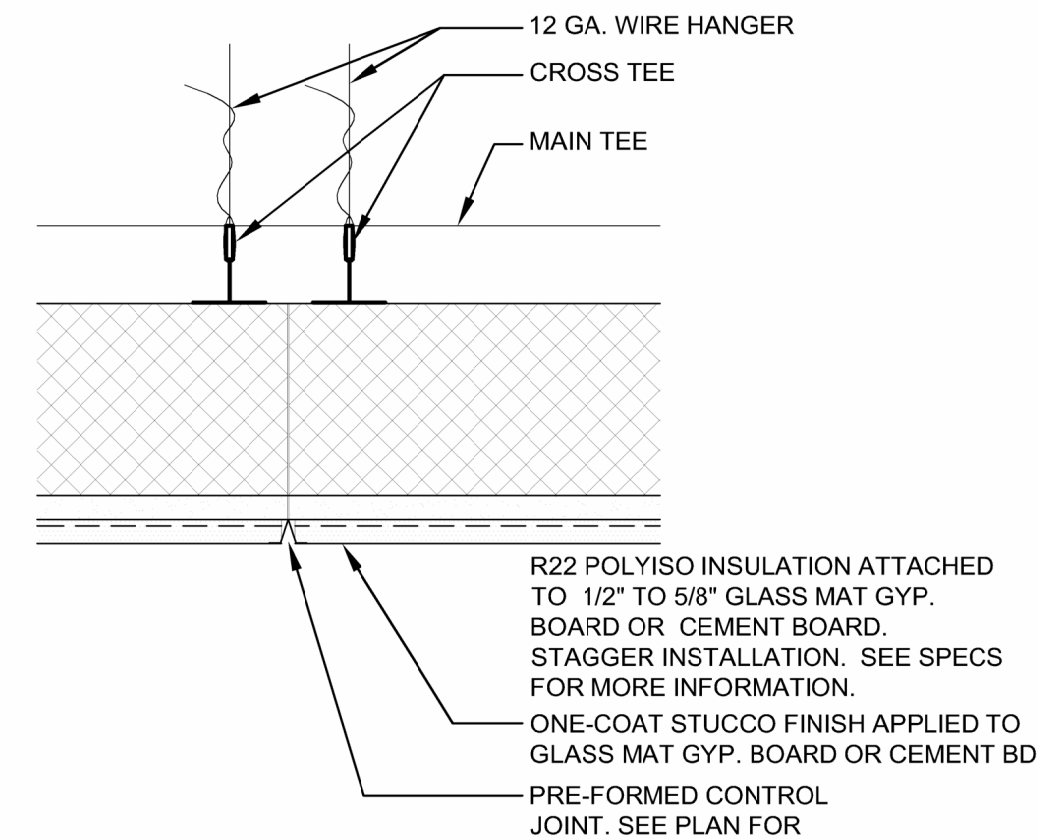
3
A-501
SCALE: 3" = 1'-0"



NOTE: TWO ADJACENT WALLS SHALL HAVE THE SUSPENSION GRID ATTACHED TO THE PERIMETER CLOSURE ANGLES AND THE OPPOSITE ENDS SHALL HAVE 3/4" MIN. CLEARANCE FROM THE WALL.

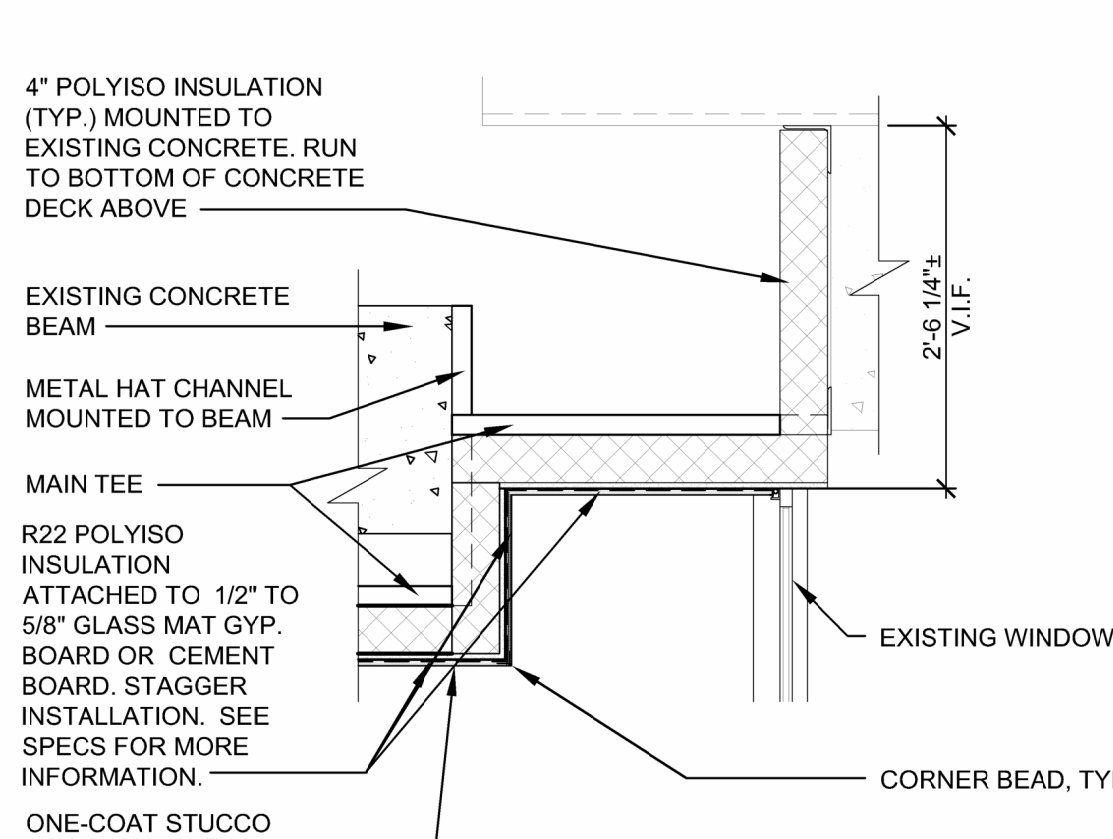
SEISMIC CEILING GRID DETAIL

4
A501
SCALE: 3/4 = 1'-0"



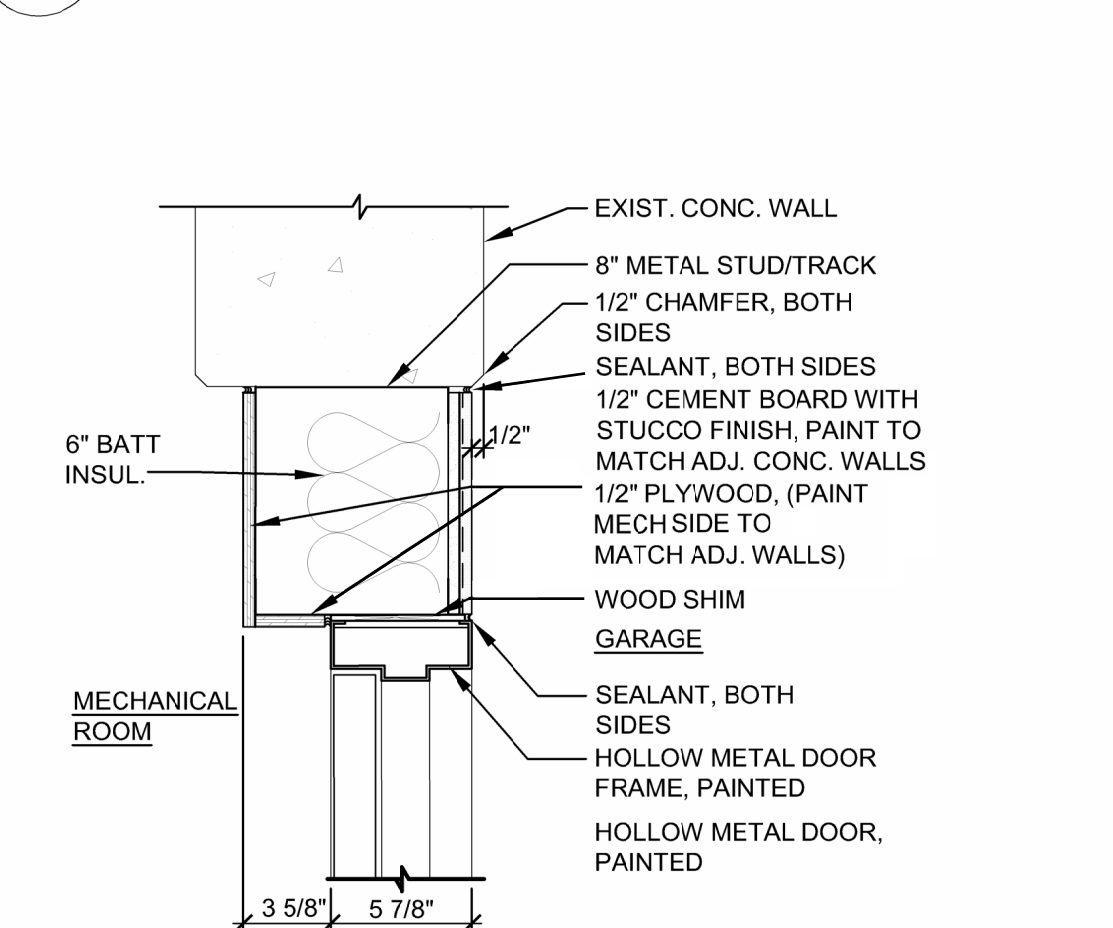
STUCCO CJ DETAIL

5
A-501
SCALE: 3" = 1'-0"



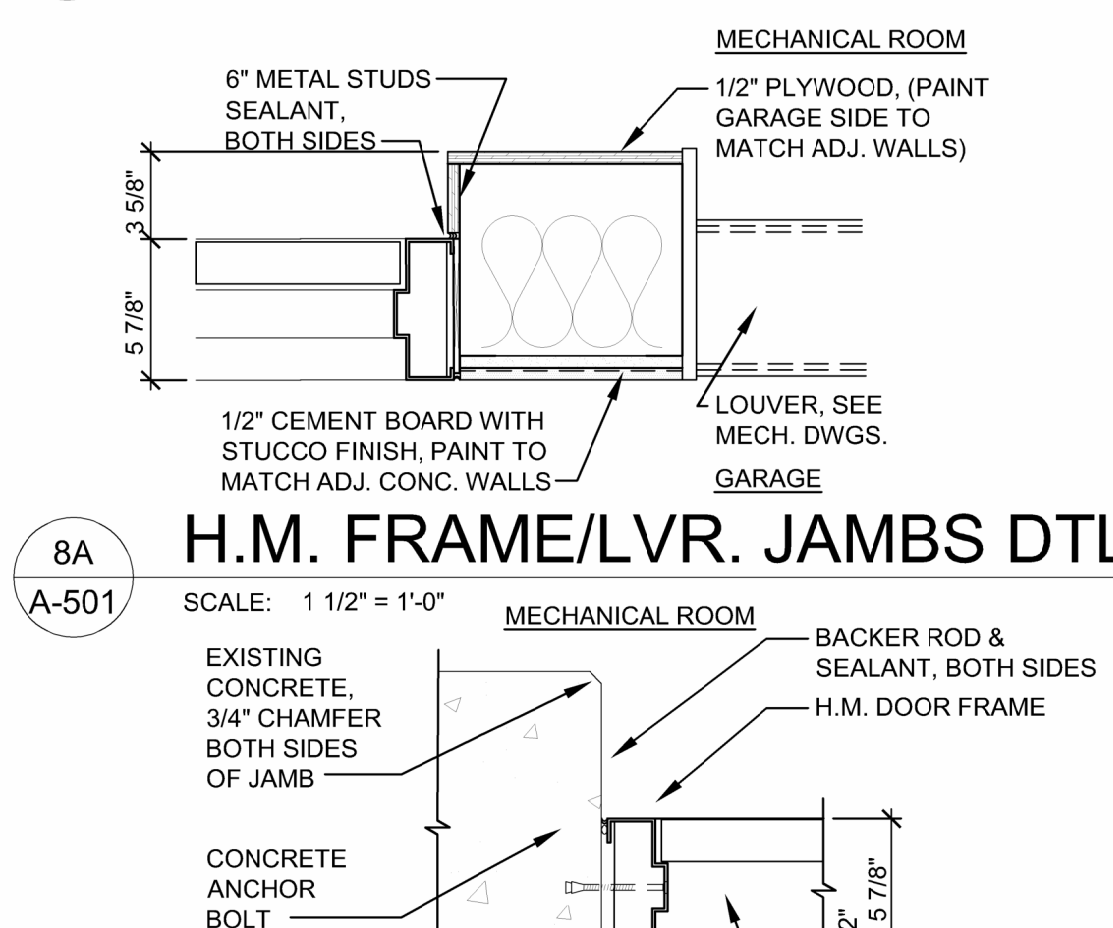
CEILING AT BEAM/ WINDOW

6
A501
SCALE: 3/4" = 1'-0"



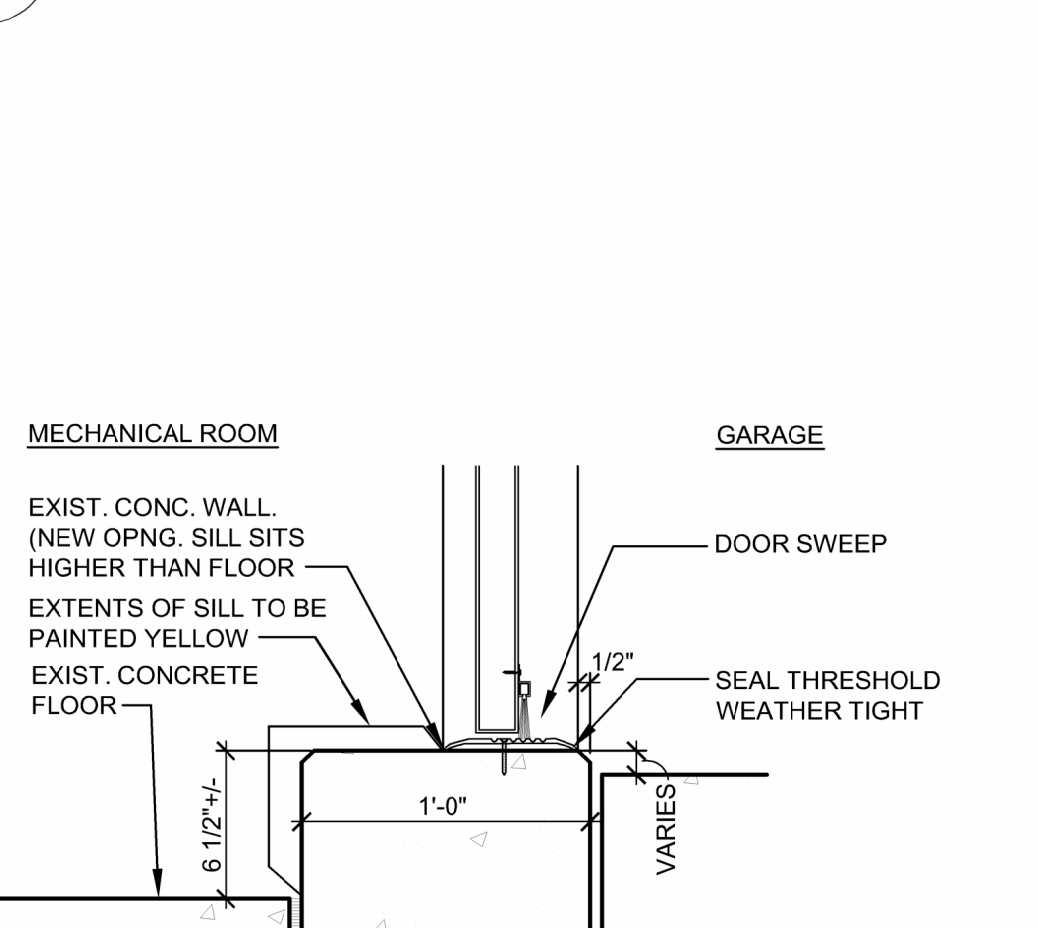
H.M. HEAD DETAIL

7
A-501
SCALE: 1 1/2" = 1'-0"



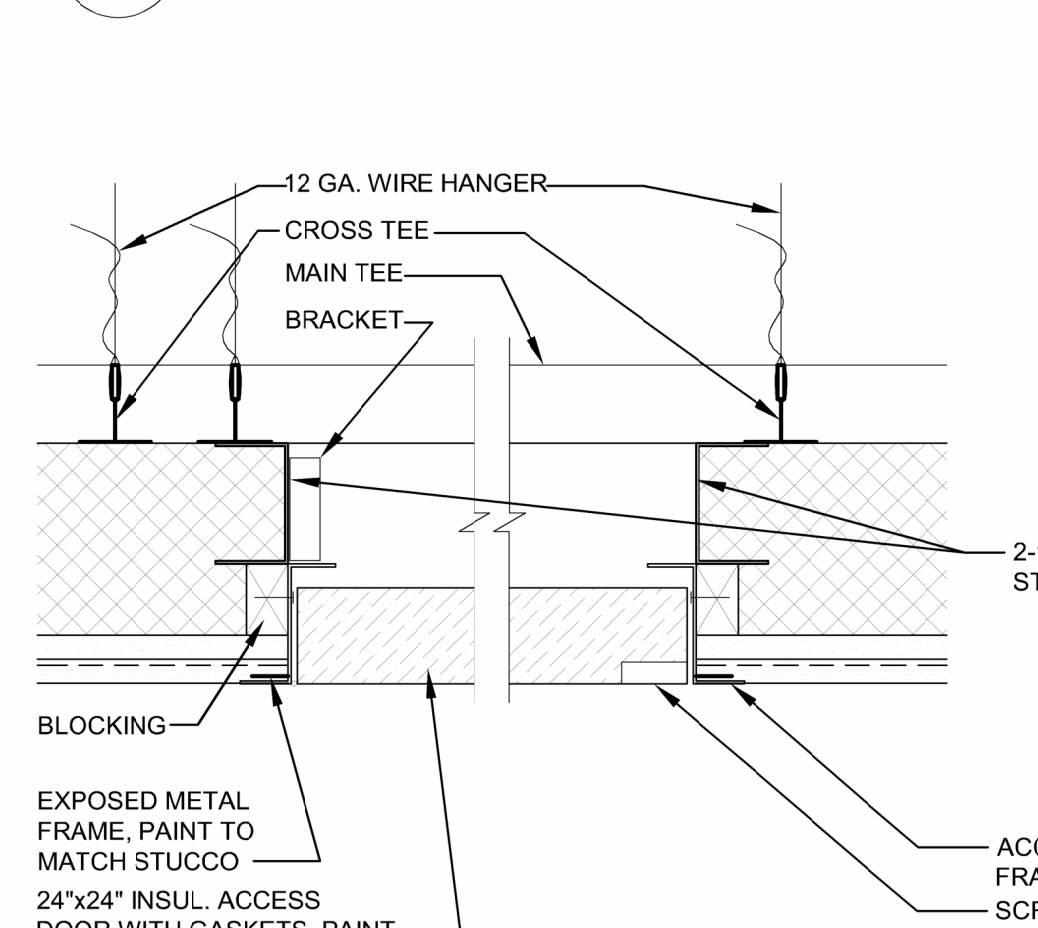
H.M. FRAME/LVR. JAMBS DTL.

8A
A-501
SCALE: 1 1/2" = 1'-0"



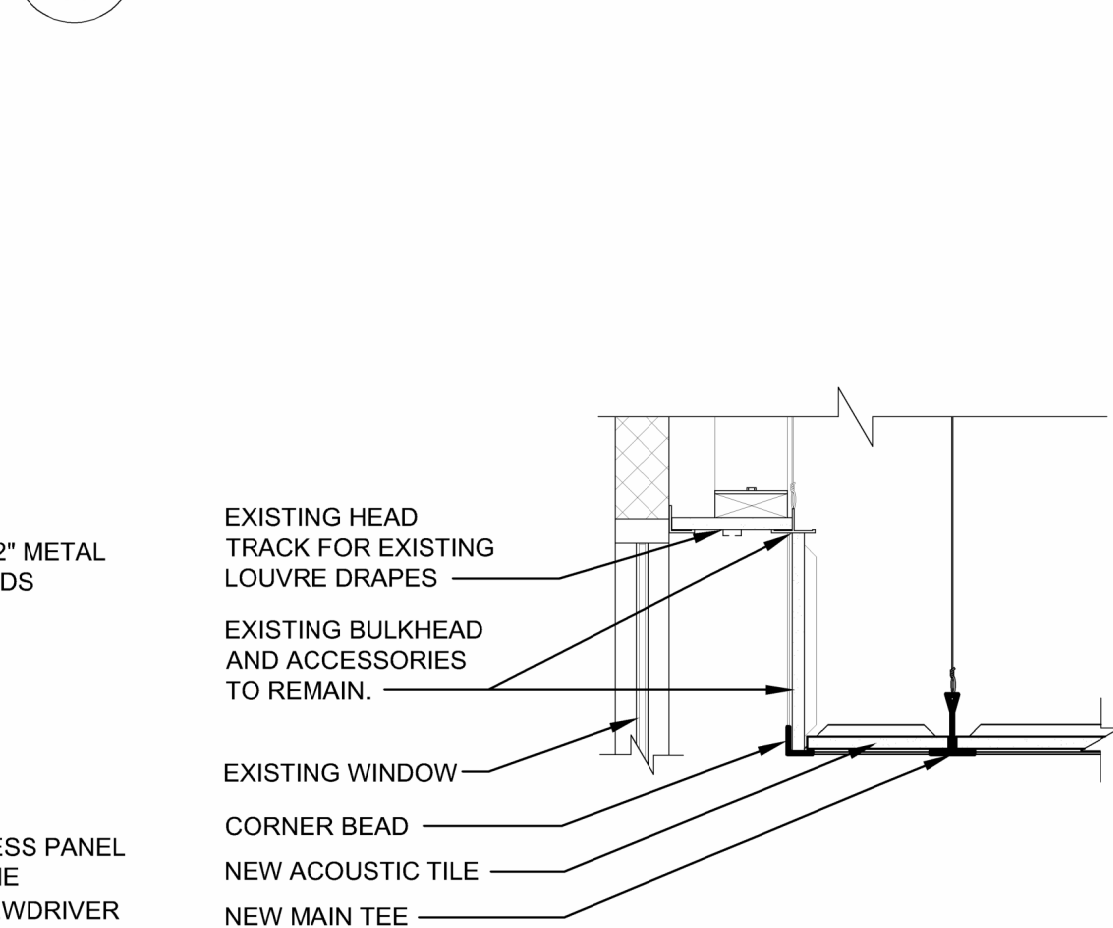
SILL DETAIL

9
A-501
SCALE: 1 1/2" = 1'-0"



ACCESS PANEL DTL.

10
A-501
SCALE: 3" = 1'-0"



ACT AT BULKHEAD

11
A501
SCALE: 3/4" = 1'-0"

STATE OF MISSOURI MIKE KEHOE GOVERNOR

CASCO Diversified Corporation



Professional of Record:

MICHAEL S. SUNDERMEYER
License Number: 2014026855
Expiration Date: 12/31/26

CASCO Diversified Corporation
MO Certificate of Authority #000611 ENG.
IMO Certificate of Authority #000329 ARCH.

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1314-821-1100

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY # 8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: LAA
CHECKED BY: RAR
DESIGNED BY: LAA

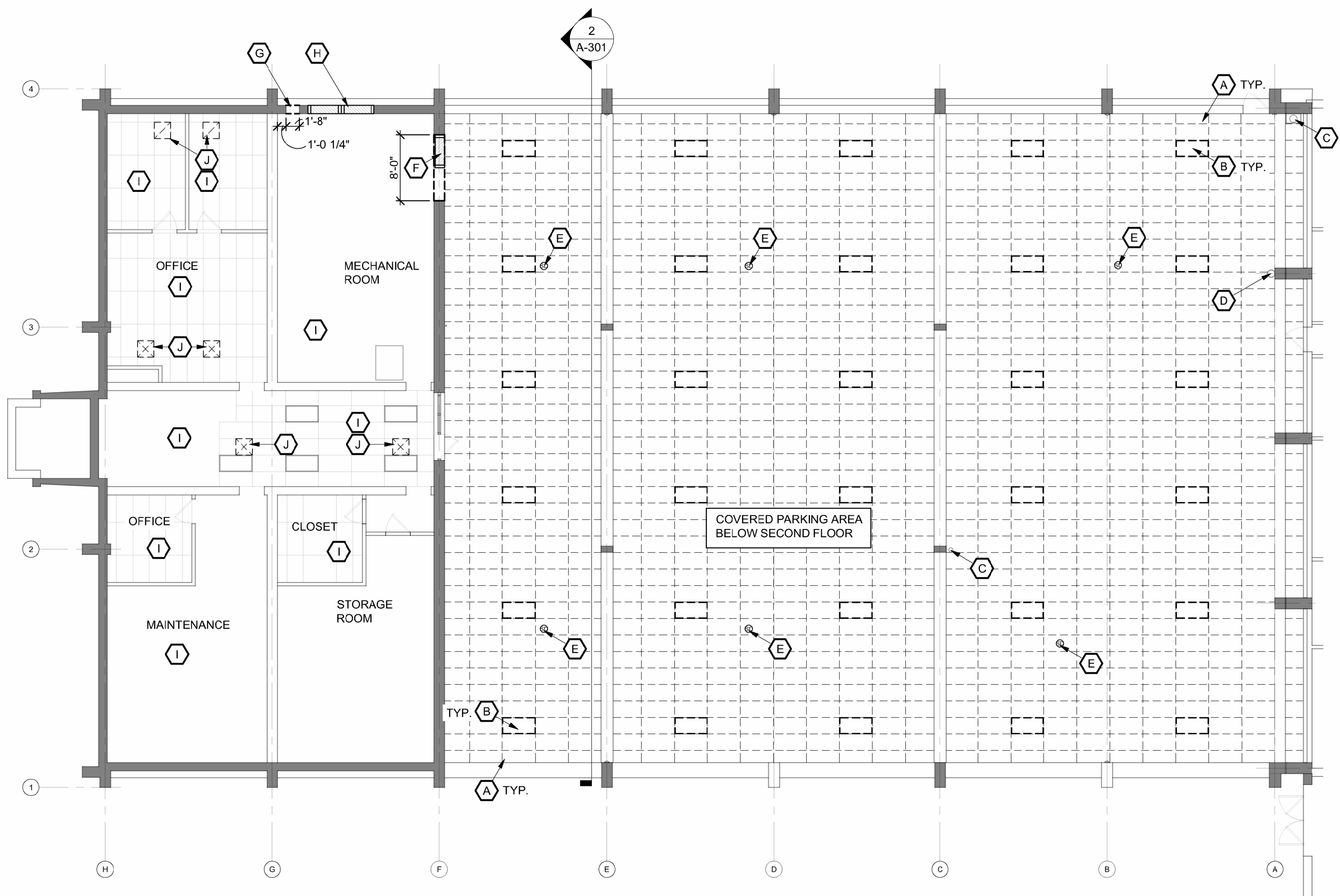
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DETAILS

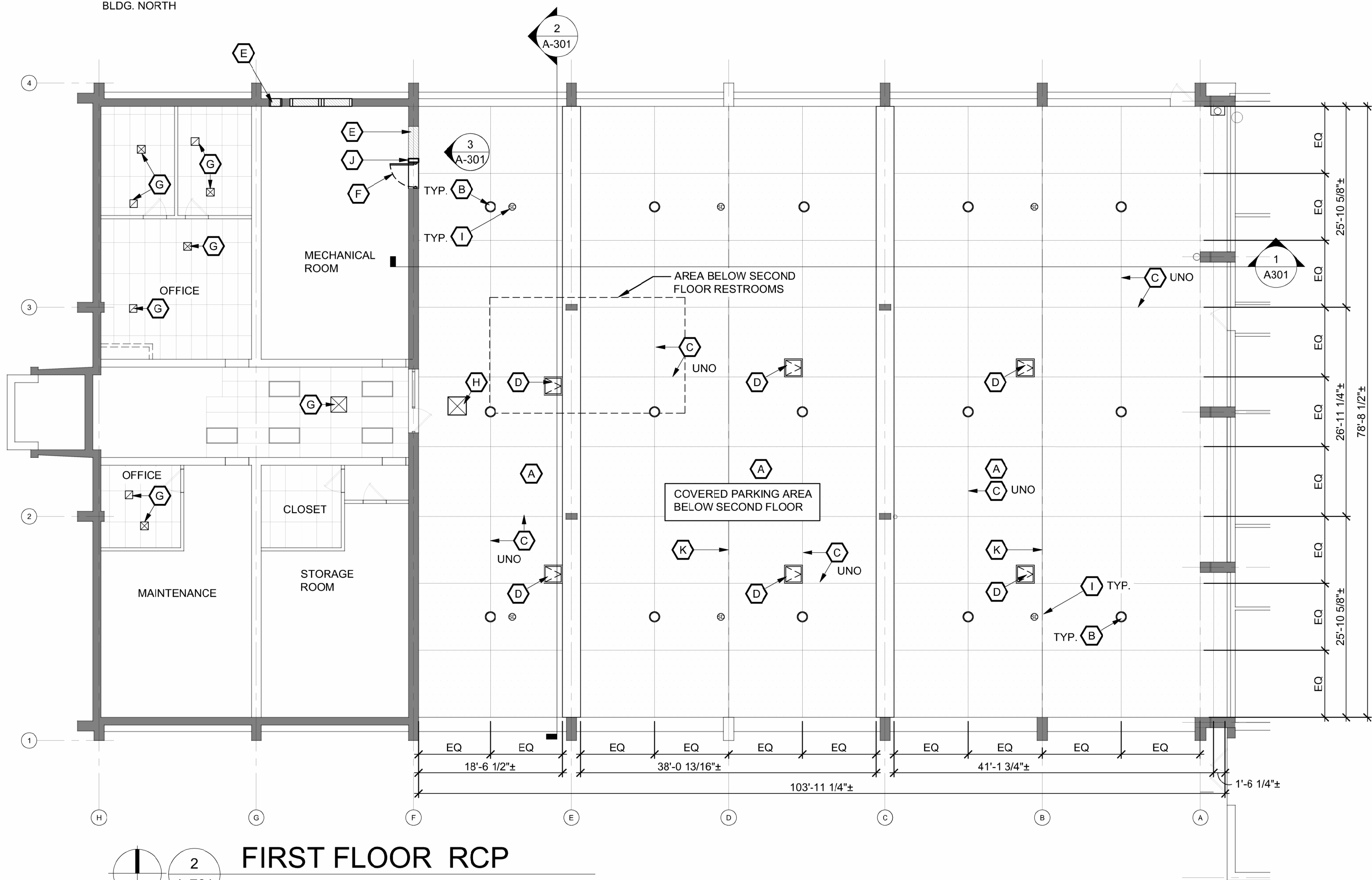
SHEET NUMBER:

A-501

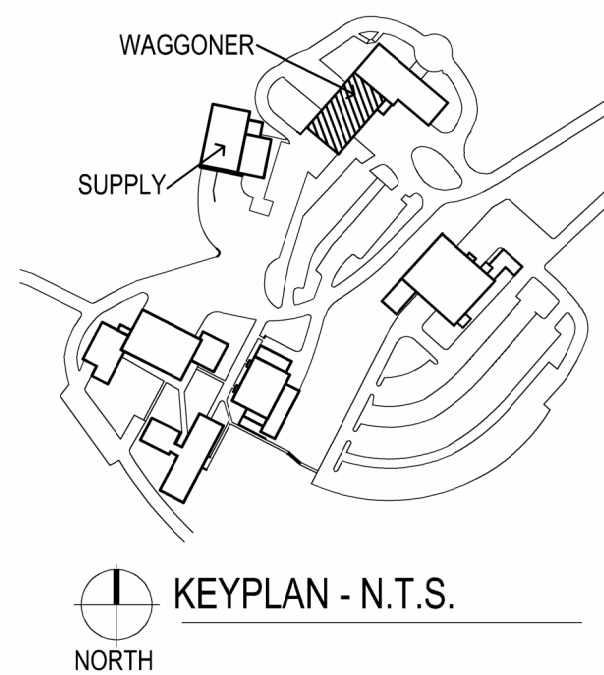
06/25/2026
5 OF 45 SHEETS



FIRST FLOOR DEMO RCP
SCALE: 3/32" = 1'-0"
BLDG. NORTH



FIRST FLOOR RCP
SCALE: 3/32" = 1'-0"
BLDG. NORTH



REFLECTED CEILING PLAN GENERAL NOTES:

- REFER TO SELECTIVE DEMOLITION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- CONTRACTOR IS LIMITED TO 40 WORKING DAYS FROM START OF GARAGE CEILING DEMOLITION THROUGH COMPLETION OF STUCCO WORK. CONTRACTOR MUST STAFF THIS WORK ACCORDINGLY AND COORDINATE WITH FACILITIES PRIOR TO STARTING WORK.
- CONTRACTOR MUST PROVIDE A CONSTRUCTION SCHEDULE FOR ALL CEILING WORK IN THE GARAGE.
- ALL EXISTING ELECTRICAL WIRING IN THE PLENUM SHALL BE REMOVED AND REPLACED WITH PLENUM-RATED WIRING. SEE ELECTRICAL DWGS. AND SPECIFICATIONS FOR MORE INFORMATION.
- REPLACE ALL EXISTING CEILING LIGHTS WITH NEW SURFACE MOUNTED LED LIGHTS. SEE ELECTRICAL DWGS. FOR MORE INFORMATION.
- ALL PENETRATIONS IN THE STUCCO CEILING SHALL BE SEALED AIR-TIGHT.
- NEW POLYISO INSULATION IN PLENUM WALLS SHALL GO TO UNDERSIDE OF EXISTING CONCRETE DECK TO MEET R19 OR GREATER.
- ALL EXISTING CEILING MOUNTED DEVICES SHALL BE REMOVED AND SALVAGED FOR REINSTALLATION.
- CONTRACTOR TO REPLACE CEILING TILES AT LOCATIONS OF REMOVED DIFFUSERS U.N.O. VERIFY IN FIELD ALL LOCATIONS.
- CONTRACTOR TO MODIFY EXISTING CEILING TILES TO ACCOMMODATE NEW DIFFUSERS. SEE MECHANICAL DWGS FOR ADDITIONAL INFORMATION. VERIFY IN FIELD ALL LOCATIONS.

REFLECTED CEILING PLAN DEMO KEYED NOTES:

- A. EXISTING LAY-IN CEILING GRID, CEILING TILES, AND BATT INSULATION TO BE REMOVED IN IT'S ENTIRETY AND PREPARED FOR NEW CEILING SYSTEM.
- B. REMOVE AND DISCARD ALL EXISTING LIGHTING, CONDUIT, AND WIRE IN GARAGE CEILING AREA, UNLESS NOTED OTHERWISE.
- C. EXISTING ELECTRICAL CONDUIT TO REMAIN.
- D. EXISTING ROOF DRAIN TO REMAIN. ENSURE DRAIN IS SEALED AND INSULATED IN PLENUM TO PREVENT MOISTURE.
- E. EXISTING PHOTOELECTRIC SMOKE DETECTOR TO BE REMOVED. SMOKE DETECTOR TO BE SAVED AND PROTECTED FOR REUSE. REPLACE ANY MOUNTING HARDWARE THAT IS DAMAGED.
- F. REMOVE EXISTING LOUVER. MODIFY AND PREPARE EXISTING CONCRETE WALL TO RECEIVE NEW DOOR. COORDINATE WITH CONSTRUCTION PLAN.
- G. CUT OPENING FOR NEW MECHANICAL LOUVER, 20"x20", ALIGN TOP OF OPENING WITH TOP OF EXISTING LOUVER.
- H. EXISTING LOUVER TO REMAIN.
- I. EXISTING CEILING TO REMAIN.
- J. REMOVE EXISTING DIFFUSERS. SEE MECHANICAL FOR ADDITIONAL INFORMATION.

REFLECTED CEILING PLAN KEYED NOTES:

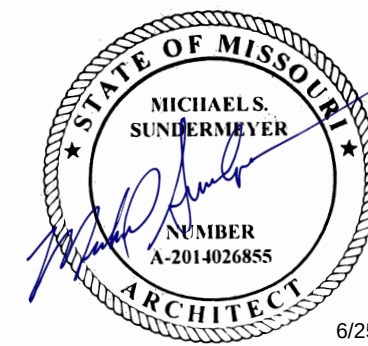
- A. NEW STUCCO CEILING. SEE DETAILS ON SHEET A-501
- B. NEW LIGHT FIXTURE. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- C. CONTROL JOINTS, MAX. 12'-0" ON CENTER.
- D. PREFINISHED ACCESS PANELS, FINAL LOCATIONS DETERMINED BY CONTRACTOR FOR ACCESS TO MEP ITEMS ABOVE GARAGE CEILING. SEE DETAIL 10/A-501 AND SPECIFICATIONS FOR MORE INFORMATION.
- E. NEW LOUVER. SEE MECHANICAL DRAWINGS.
- F. NEW HOLLOW METAL DOOR AND FRAME, SEE SHEETS A-301 & A-501.
- G. NEW MECH. DIFFUSER. SEE MECHANICAL DWGS. FOR MORE INFORMATION.
- H. NEW 24"x24" MECH. DIFFUSER. PROVIDE SEALANT AROUND PERIMETER FOR AIR-TIGHT FIT. SEE MECHANICAL DWGS. FOR MORE INFORMATION.
- I. INSTALL PREVIOUSLY REMOVED AND STORED SMOKE DETECTOR IN SIMILAR LOCATION. G.C. TO ENSURE EXISTING SMOKE DETECTORS ARE PROPERLY SEALED, SECURED, AND FULLY OPERATIONAL.
- J. STEEL STUD INFILL AT DOOR/LOUVER JAMB. SEE DETAILS ON SHEETS A-301 AND A-501.
- K. SEISMIC SEPARATION JOINT, SEE SHEET A-501 FOR DETAIL.

CEILING DEVICE LEGEND

- EXISTING CONSTRUCTION TO REMAIN
- EXISTING CEILING, WALLS, DIFFUSERS, ETC. TO BE REMOVED
- NEW CEILING, WALLS, DIFFUSERS, ETC.
- LIGHT FIXTURE
- SURFACE MOUNTED LED LIGHT FIXTURE, SEE ELECTRICAL DWGS.
- ACT CEILING TILE SYSTEM
- STUCCO CEILING SYSTEM
- MECHANICAL SUPPLY DIFFUSER
- MECHANICAL RETURN DIFFUSER
- 24"x24" INSULATED ACCESS PANEL, SEE SPECIFICATIONS.
- SMOKE DETECTOR

STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:

MICHAEL S. SUNDERMEYER
License Number: 2014026855
Expiration Date: 12/31/26

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REPLACE HVAC SYSTEM
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1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: LAA
CHECKED BY: RAR
DESIGNED BY: LAA

SHEET TITLE:

DEMO AND NEW RCP
AT WAGGONER
BLDG. - 1ST FLOOR

SHEET NUMBER:

A-701

06/25/2026
6 OF 45 SHEETS

GENERAL NOTES

1. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THEY REFLECT ONLY THE AVAILABLE INFORMATION OBTAINED FROM EXISTING PLANS, SPECIFICATIONS, AND FIELD SURVEYS. THE EXACT LOCATION OF EXISTING DUCTWORK, PIPING, AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE PREPARED TO MAKE SOME ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT ACTUAL JOB CONDITIONS.
2. THE SPACE ALLOWED FOR MECHANICAL AND ELECTRICAL WORK ABOVE THE SUSPENDED CEILING IS CRITICAL AND REQUIRES COORDINATION BETWEEN TRADES. CONTRACTORS SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS PRIOR TO FABRICATION OR INSTALLATION OF ANY MATERIALS. DUCTWORK SHALL BE HUNG AS CLOSE AS POSSIBLE TO THE STRUCTURE ABOVE UNLESS INDICATED OTHERWISE. REWORK OF PIPING, DUCTWORK, EQUIPMENT LOCATION, CONDUIT, ETC. AS A RESULT OF POOR PLANNING, COORDINATION, OR SCHEDULING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ANY HOLES LEFT IN EXISTING WALL CONSTRUCTION DUE TO DEMOLITION OR NEW WORK SHALL BE PATCHED TO MATCH EXISTING CONDITIONS.
4. PIPES/DUCTS/ETC. PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE SEALED AND WEATHER PROOFED.
5. THERMOSTATS & ROOM TEMPERATURE SENSORS SHALL BE MOUNTED AT 48" A.F.F. TO THE TOP OF THERMOSTAT UNLESS NOTED OTHERWISE. DO NOT MOUNT IN DIRECT SUNLIGHT OR NEAR HEAT PRODUCING EQUIPMENT.
6. INSTALL H.V.A.C. SYSTEM IN ACCORDANCE WITH ALL STATE AND LOCAL CODES AND ORDINANCES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ANY FRAMING REVISIONS, EQUIPMENT LOCATIONS, ADDITION OF CONTROLS, ELECTRICAL, CIRCUITING REVISIONS, ETC. THAT RESULT FROM USING EQUIPMENT OTHER THAN INDICATED ON THE DRAWINGS. APPROVAL OF THE SHOP DRAWINGS BY THE ENGINEER WILL NOT WAIVE THE CONTRACTOR OF THIS RESPONSIBILITY.
8. THE CONTRACTOR SHALL HAVE THE FINAL RESPONSIBILITY FOR MECHANICAL EQUIPMENT START UP AND TURN OVER TO THE OWNER. MANUFACTURER OF EQUIPMENT SHALL BE ON SITE DURING THE SYSTEM START UP.
9. ALL ITEMS INCLUDED ON THESE DRAWINGS AND THE SPECIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID. IF THE CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS OR IS NOT SURE OF THEIR MEANING, THE CONTRACTOR SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND INTERPRETATION PRIOR TO BID TIME. THE CONTRACTOR WILL BE HELD TO THE INTERPRETATION OF THE ENGINEER.
10. IN THE EVENT THE CONTRACTOR DISCOVERS ANY POTENTIALLY HAZARDOUS MATERIALS (ASBESTOS, MOLD, MILDEW, ETC.), THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE AND THE ARCHITECT/ENGINEER OF RECORD, IN WRITING, OF THE CONCERNS AND/OR SUSPICIONS.
11. CAULK ALL PENETRATIONS THRU WALLS TO MINIMIZE SOUND TRANSMISSION THRU WALLS.
12. ANY DAMAGE TO THE SITE (SIDEWALKS, CURBS, ETC) OR TO THE BUILDING AS A RESULT OF WORK PERFORMED UNDER THIS CONTRACT SHALL BE FIXED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
13. CONTRACTOR WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF ROOFS/WALLS/FLOORS AND CORE DRILLS REQUIRED TO COMPLETE THEIR RESPECTIVE WORK.
14. THE OWNER SHALL HAVE FIRST SALVAGE RIGHTS OF EQUIPMENT AND MATERIALS REMOVED. ALL EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES BY THE CONTRACTORS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY TEMPORARY FENCING AROUND THE LIFT SITE DURING LIFTS.
16. ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, ETC. THAT SERVES SPACES NOT ON PLANS SHALL REMAIN AS IS. DO NOT DISCONNECT OR REMOVE ANY EQUIPMENT NOT SHOWN IN THESE PLANS.
17. ALL CONTROLS CONNECTIONS MUST BE HARD WIRED. COORDINATE WITH OWNER'S I.T. DEPARTMENT TO ENSURE ALL CONNECTIONS ARE UP TO OWNER AND STATE STANDARDS. CONTACT THE HEAD OF FACILITIES AT SITE FOR COORDINATION.
18. CONTRACTOR SHALL COORDINATE WITH OWNER FIVE (5) BUSINESS DAYS PRIOR TO ORDERING A CRANE. CONTRACTOR SHALL COORDINATE LOCATION AND DATE OF CRANE WITH OWNER.
19. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED PER THE LATEST VERSION OF THE S.M.A.C.N.A. H.V.A.C. DUCT CONSTRUCTION STANDARDS, UNLESS SPECIFIED MORE STRINGENTLY IN THESE CONSTRUCTION DOCUMENTS. MINIMUM DUCT GAUGE SHALL BE 24.
20. NOT ALL OF THE ACCESS DOORS IN THE DUCT SYSTEMS OR PLENUMS ARE SHOWN. PROVIDE ACCESS DOORS IN ALL DUCT SYSTEMS OR PLENUMS WHERE REQUIRED TO ACCESS AND MAINTAIN MOTORIZED OR AUTOMATIC DAMPER BLADES AND LINKAGES.
21. FLEXIBLE DUCT RUNOUTS TO AIR DEVICES SHALL NOT EXCEED 5'-0" IN LENGTH. FLEXIBLE RUNOUTS SHALL BE TRIMMED TO THE MINIMUM LENGTH NECESSARY TO MAKE THE CONNECTION.
22. FLEXIBLE DUCTS SHALL BE UL 181 AND BEARING UL LABEL, CLASS 1, HELICALLY WOUND SPRING STEEL WIRE, METALLIZED POLYESTER OUTER JACKET, PRESSURE RATINGS- 10" W.G. POSITIVE / 1.0" NEGATIVE, 4000 FPM MAX. MINUS 10F TO 160F, INSULATION- FIBROUS GLASS- R6 MIN. AND POLYETHYLENE OR ALUMINIZED VAPOR BARRIER.
23. WHERE DAMPER ACTUATORS ARE MOUNTED TO DUCTWORK OR PLENUMS PROVIDE A HEAVY GAGE BASE PLATE, ANGLE STIFFENERS, OR MOUNTING AS REQUIRED TO ELIMINATE DEFLECTION OF DUCTWORK DURING ACTUATOR OPERATION.
24. ALL DAMPER ACTUATORS FOR DUCT SYSTEMS OR EQUIPMENT THAT COMMUNICATES DIRECTLY WITH THE OUTDOORS SHALL BE SPRING RETURN TYPE TO CLOSE IN THE EVENT OF A POWER FAILURE.
25. CONTRACTOR SHALL BALANCE EACH AREA OF COMPLETED WORK. THE CONTRACTOR SHALL BALANCE SUPPLY, RETURN, AND EXHAUST AIR FLOWS AT EACH AIR DEVICE AFFECTED BY RENOVATION TO QUANTITY INDICATED ON THE DRAWINGS.
26. ALL NEW DUCT CONNECTIONS TO EXISTING DUCTWORK SHALL BE SEALED AIRTIGHT.
27. THE CONTRACTOR SHALL COORDINATE SYSTEM SHUT-DOWNS, INCLUDING CHILLED WATER AND HEATING WATER SYSTEM SHUT-DOWNS, WITH THE OWNER. PROVIDE A MINIMUM ONE WEEK NOTICE PRIOR TO ANY SYSTEM SHUT-DOWN.
28. THE WINNING CONTRACTOR SHALL BE RESPONSIBLE FOR HIRING THE FACILITY'S APPROVED WATER TREATMENT CONTRACTOR AND SHALL INCLUDE ALL COSTS ASSOCIATED WITH INSTALLATION, EQUIPMENT, LABOR, AND CHEMICALS ASSOCIATED WITH PROVIDING A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE WITH FACILITY'S MANAGER PRIOR TO BID FOR WATER TREATMENT CONTRACTOR.
29. AFTER COMPLETION OF WORK, CONTRACTOR SHALL CLEAN HOT WATER STRAINER(S) IN MECHANICAL ROOM.
30. OWNER HAS FIRST RIGHT OF REFUSAL FOR ALL EQUIPMENT BEING REMOVED. CONTRACTOR TO DISPOSE OF EQUIPMENT BEING REMOVED BUT NOT RETAINED BY OWNER.
31. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF ONE WEEK PRIOR TO THE BEGINNING OF WORK THAT INVOLVES ACTIVITY ON THE ROOF.
32. TRAFFIC OVER THE EXISTING ROOF SURFACES SHALL BE KEPT TO AN ABSOLUTE MINIMUM.
33. THE CONTRACTOR AND THE OWNER'S REPRESENTATIVE SHALL INSPECT THE EXPOSED ROOFING MEMBRANE SYSTEM PRIOR TO THE START OF CONSTRUCTION. ANY PREVIOUS DAMAGE OR DEFECTS OF THE ROOFING SYSTEM SHALL BE DOCUMENTED BY WRITING AND/OR PHOTOGRAPHS.
34. THE CONTRACTOR SHALL PLACE MINIMUM OF 48" WIDE, 1/2" THICK APPROVED PROTECTION BOARDS (1 LAYER) MADE OF CONSTRUCTION GRADE PLYWOOD (ORIENTED STRAND BOARD WILL BE ACCEPTABLE) OVER ALL MEMBRANE ROOFING THAT WILL HAVE CONSTRUCTION TRAFFIC. THIS ROOF PROTECTION SHALL BE PROVIDED FOR THE ENTIRE AREA WITHIN THE LIMITS OF THE WORK. SUCH PROTECTION SHALL ALSO BE PROVIDED IN THE FORM OF A WALKWAY FROM THE ROOF ACCESS DOOR TO THE PROTECTED CONSTRUCTION AREA.
35. STORAGE OF MATERIALS ON EXISTING ROOF WILL NOT BE ALLOWED.
36. THE CONTRACTOR SHALL REMOVE DAILY ALL PROJECT DEBRIS FROM ALL ROOFING SURFACES.
37. THE CONTRACTOR SHALL ADVISE THE OWNER WHEN WORK ON THE ROOF IS COMPLETE AND THE PROTECTION BOARDS HAVE BEEN REMOVED. THE CONTRACTOR AND THE OWNER SHALL EXAMINE ALL ROOF SURFACES WHERE WORK HAS OCCURRED AND WILL REPAIR ALL DEFECTS NOT PREVIOUSLY DOCUMENTED.
38. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE BUILDING, ROOF, STRUCTURAL FRAMING, ETC. INCURRED DURING CONSTRUCTION.
39. THE CONTRACTOR SHALL VERIFY WARRANTY OF THE EXISTING MEMBRANE ROOFING SYSTEM. THE CONTRACTOR SHALL UTILIZE A LICENSED APPLICATOR OF THE EXISTING ROOFING SYSTEM TO PERFORM ALL ROOFING WORK AND TO REPAIR ANY AND ALL DAMAGE. UPON COMPLETION, THE CONTRACTOR SHALL OBTAIN A LETTER FROM THE ROOF MANUFACTURER STATING THAT THE EXISTING WARRANTY REMAINS IN FULL FORCE AND EFFECT. REFERENCE SPECIFICATIONS FOR EXISTING ROOF WARRANTY.

HVAC WATER TREATMENT

1. WATER TREATMENT CHEMICALS:

1.1. THE CONTRACTOR SHALL WORK WITH THE STATE'S CURRENT WATER TREATMENT SERVICE CONTRACTOR TO DEVELOP THE PLANS AND SPECIFICATIONS FOR THE PROJECT. THE SPECIFICATION SHALL DEFINE ALL REQUIRED CHEMICALS ALONG WITH APPLICATION METHODS FOR FLUSHING, STARTUP, AND WARRANTY. THE CONTRACTOR SHALL COORDINATE WITH THE STATE'S WATER TREATMENT SERVICE CONTRACTOR THAT THE WATER TREATMENT SYSTEM IS COMPATIBLE WITH NEW SCHEDULED EQUIPMENT.

1.2. THE COST OF ALL CHEMICALS REQUIRED FOR THE FLUSHING, STARTUP, AND WARRANTY OF NEW AND EXISTING EQUIPMENT SHALL BE INCLUDED IN THE BID BY THE CONTRACTOR. AFTER SUBSTANTIAL COMPLETION OF THE PROJECT ANNUAL WATER TREATMENT WILL BE THE RESPONSIBILITY OF FACILITY AND HANDLED THROUGH THE STATEWIDE SERVICE CONTRACT FOR WATER TREATMENT.
2. WATER TREATMENT EQUIPMENT:

2.1. THE CONTRACTOR SHALL WORK WITH THE STATE'S CURRENT WATER TREATMENT SERVICE CONTRACTOR TO SPECIFY THE NECESSARY INJECTION AND FILTRATION EQUIPMENT AND INCLUDE THESE IN THE PLANS AND SPECIFICATIONS.

2.2. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED EQUIPMENT AS SPECIFIED BY THE CONSULTANT IN THE PLANS AND SPECIFICATIONS.

2.3. THE STATE'S CURRENT WATER TREATMENT SERVICE CONTRACTOR SHALL ASSIST THE CONTRACTOR WITH THE INJECTIONS OF THE PROVIDED CHEMICALS.

2.4. ALL CONTROLS AND DEVICES REQUIRED BY CHEMICAL FEED SYSTEM THAT REQUIRE SERVICING SHALL BE INSTALLED IN LOCATION EASILY ACCESSIBLE BY MAINTENANCE AND VENDER STAFF.

2.5. DEMONSTRATION AND TRAINING SHALL BE INCLUDED AS PART OF THE PROJECT.
3. TESTS AND INSPECTIONS:

3.1. WATER ANALYSIS - BY STATE'S CURRENT WATER TREATMENT SERVICE CONTRACTOR.

3.2. ANALYSIS OF WATER SUPPLY TO BE PERFORMED TO DETERMINE THE QUALITY OF WATER AVAILABLE AT PROJECT SITE.

3.3. TEST REPORTS AFTER INSTALL SHALL BE SHARED WITH THE CONTRACTOR TO ENSURE PROPER CHEMICAL LEVELS/TREATMENT ARE ACHIEVED.
4. THE CURRENT WATER TREATMENT SERVICE CONTRACT IS WITH THE FOLLOWING:

4.1. WALTER LOUIS FLUID TECHNOLOGIES:
530 S. 5TH STREET QUINCY, ILLINOIS 62301
TEL: (217)223-2017 TOLL-FREE: (800)-747-2019, FAX: (217)-223-7734
SALES@WALTERLOUIS.COM
5. OTHER CONSIDERATIONS:

5.1. FOR SYSTEMS THAT REQUIRE A ONETIME FILL, SUCH AS WITH GLYCOL, THE DESIGNER SHALL CALCULATE A BASE BID VOLUME THAT SHOULD BE INCLUDED IN THE CONTRACTORS BID AND A UNIT PRICE SHALL BE INCLUDED AS PART OF THE BID DOCUMENTS.

5.2. WHEN CONNECTING NEW EQUIPMENT TO EXISTING PIPING WITHIN A BUILDING, THE PLANS AND SPECIFICATIONS SHALL DEFINE THE FLUSHING AND FILTRATION REQUIREMENTS REQUIRED TO PROTECT THE NEW EQUIPMENT.

5.3. CONTRACTOR SHALL PERFORM A PRE-CLEAN AND FLUSHING PROCEDURE.

5.3.1. INSPECT THE WATER IN THE CLOSED LOOP. IF THIS WATER HAS HEAVY FOULING OR A DARK COLOR, FLUSH IT FROM A VALVE AT A LOW POINT IN THE SYSTEM. START FLUSHING IT AT A RATE OF 1-2 GALLONS PER MINUTE. IT IS IMPORTANT TO MONITOR THE PRESSURE ON THE CIRCULATING PUMP DURING THIS STAGE. IF THE FLUSHING RATE EXCEEDS THE MAKE-UP RATE, THE SYSTEM VOLUME WILL DROP, AND THE PUMP WILL HAVE CAVITATION. THIS COULD CAUSE EXPENSIVE DAMAGE TO THE PUMP BEARINGS AND IMPELLER. BY MAKING SURE THE PRESSURE IS MAINTAINED IN THE SYSTEM, YOU ENSURE THAT THE PUMP WILL NOT RUN DRY. CONTINUE FLUSHING UNTIL THE WATER CONSISTENTLY RUNS CLEAR, DEPENDING ON THE VOLUME IN THE LOOP, THIS MAY TAKE AS LONG AS 5-7 DAYS. COUNT ON APPROXIMATELY 12 HOURS OF FLUSHING FOR EVERY 1,000 GALLONS IN THE LOOP.

5.3.2. ONCE THE WATER IS CLEAR, ADD THE PROPER DILUTIONS OF THE CLEANING PRODUCTS TO THE SYSTEM.

5.3.3. CIRCULATE THIS CLEANING SOLUTION FOR AT LEAST 48 HOURS. CIRCULATE FOR 96 HOURS IN HEAVILY FOULED SYSTEMS.

5.3.4. REPEAT STEP ONE. CONTINUE THIS FLUSHING UNTIL THE CONDUCTIVITY OF THE WATER IN THE LOOP EQUALS THAT OF THE MAKE-UP WATER.

5.3.5. RETREAT WITH THE APPROPRIATE CLOSED LOOP CORROSION INHIBITOR AND BACTERIOSTAT.

5.3.6. WALTER LOUIS SHALL TEST AND VERIFY SYSTEM CLEANLINESS PRIOR TO ADDING WATER TREATMENT CHEMICALS. WALTER LOUIS SHALL PROVIDE A CLEANLINESS TESTING REPORT TO OWNER/ENGINEER.

5.4. MONITORING OF CHEMICAL LEVELS AND DISSOLVED SOLIDS MAY BE CONSIDERED THROUGH AN ONLINE OR CELLULAR MONITORING DEVICE. ALARMS MAY ALSO BE ADDED TO THE BUILDING AUTOMATION SYSTEM (BAS).

5.5. WALTER LOUIS SHALL PROVIDE ALL WATER TREATMENT TESTING, ADJUSTING, CHEMICALS, ETC. FOR THIS FACILITY FOR 12 MONTHS AFTER OWNER ACCEPTANCE. COSTS FOR THIS 12 MONTH SERVICE SHALL BE INCLUDED IN THE PROJECT'S BID.

HEATING AND VENTILATION SYMBOLS

VD

MANUAL VOLUME DAMPER

BD

GRAVITY BACKDRAFT DAMPER

MD

MOTORIZED VOLUME DAMPER

SD

SMOKE DETECTOR

RETURN/TRANSFER/COMBUSTION AIR DISCHARGE DUCT UP

RETURN/TRANSFER/COMBUSTION AIR DISCHARGE DUCT DOWN

SUPPLY AIR/COMBUSTION AIR INTAKE UP

SUPPLY AIR/COMBUSTION AIR INTAKE DOWN

EXHAUST AIR DUCT UP

EXHAUST AIR DUCT DOWN

ROUND DUCT DOWN

ROUND DUCT UP

INCLINED DROP IN THE DIRECTION OF AIR FLOW

INCLINED RISE IN THE DIRECTION OF AIR FLOW

ECCENTRIC DUCT TRANSITION

CONCENTRIC DUCT TRANSITION

S

SUPPLY DIFFUSER

R

RETURN GRILLE

E

EXHAUST GRILLE

T

TRANSFER GRILLE

SA

SUPPLY AIR

RA

RETURN AIR

EA

EXHAUST AIR

TA

TRANSFER AIR

OA

OUTDOOR AIR

MD

COLD/HOT MIXED DUCT

CD

COLD DUCT

HD

HOT DUCT

CWS

CHILLED WATER SUPPLY

CWR

CHILLED WATER RETURN

HWS

HEATING WATER SUPPLY

HWR

HEATING WATER RETURN

HXS

HYDRONIC WATER SUPPLY

HXR

HYDRONIC WATER RETURN

T

THERMOSTAT / TEMPERATURE SENSOR

H

HUMIDISTAT / HUMIDITY SENSOR

EQUIPMENT OR PLUMBING FIXTURE DESIGNATION

(DETAIL NUMBER)

DETAIL DESIGNATION

(SHEET NUMBER WHERE DETAIL IS FOUND)

KEYED NOTES

REVISIONS

NEW CONNECTION

S-1

(AIR DEVICE TYPE) - (SCHEDULE NUMBER)

1000

(AIR FLOW IN CFM)

NOTE: NOT ALL SYMBOLS OR ABBREVIATIONS MAY BE USED.

PIPING SPECIALTIES

GV

GATE VALVE

BV

BALANCING VALVE

CV

CHECK VALVE

QLV

GLOBE VALVE

BLV

BALL VALVE

STR

STRAINER

U

UNION

SOC

SHUT-OFF COCK

SLV

SOLENOID VALVE

BFV

BUTTERFLY VALVE

FS

FLOW SWITCH

FCV

VALVE W/ SUPERVISORY SWITCH

FLOW CONTROL VALVE (GPM INDICATED)

T&PR

TEMPERATURE AND PRESSURE RELIEF VALVE

PG

PRESSURE GAUGE

TH

THERMOMETER (TUBE OR DIAL AS INDICATED)

MV

MOTORIZED VALVE

DV

DIAPHRAGM VALVE

ABBREVIATIONS

FFE	FINISH FLOOR ELEVATION
AFF	ABOVE FINISH FLOOR
TE	TOP ELEVATION
BE	BOTTOM ELEVATION
FL	FLOW LINE
INV	INVERT ELEVATION
CL	CENTER LINE
GC	GENERAL CONSTRUCTION CONTRACTOR
HAC	HEATING & AIR CONDITIONING CONTRACTOR
PC	PLUMBING CONTRACTOR
EC	ELECTRICAL CONTRACTOR
ACS	AUTOMATIC CONTROL SUB-CONTRACTOR
FPC	FIRE PROTECTION CONTRACTOR
HSC	HALON SUB-CONTRACTOR
KEC	KITCHEN EQUIPMENT CONTRACTOR
MC	MECHANICAL CONTRACTOR
TCC	TEMPERATURE CONTROL CONTRACTOR

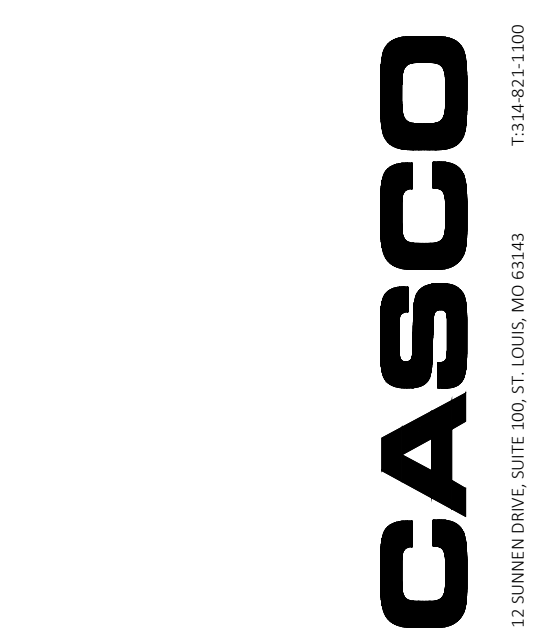
STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:
SCOTT A. MOSELEY
License Number: 2003015013
Expiration Date: 12/31/27

CASCO Diversified Corporation
MO Certificate of Authority #000613 ENG.
MO Certificate of Authority #000329 ARCH.



OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 65150

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: BBH
CHECKED BY: SAM
DESIGNED BY:

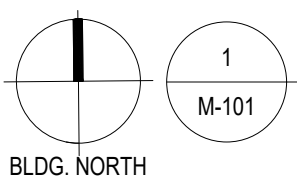
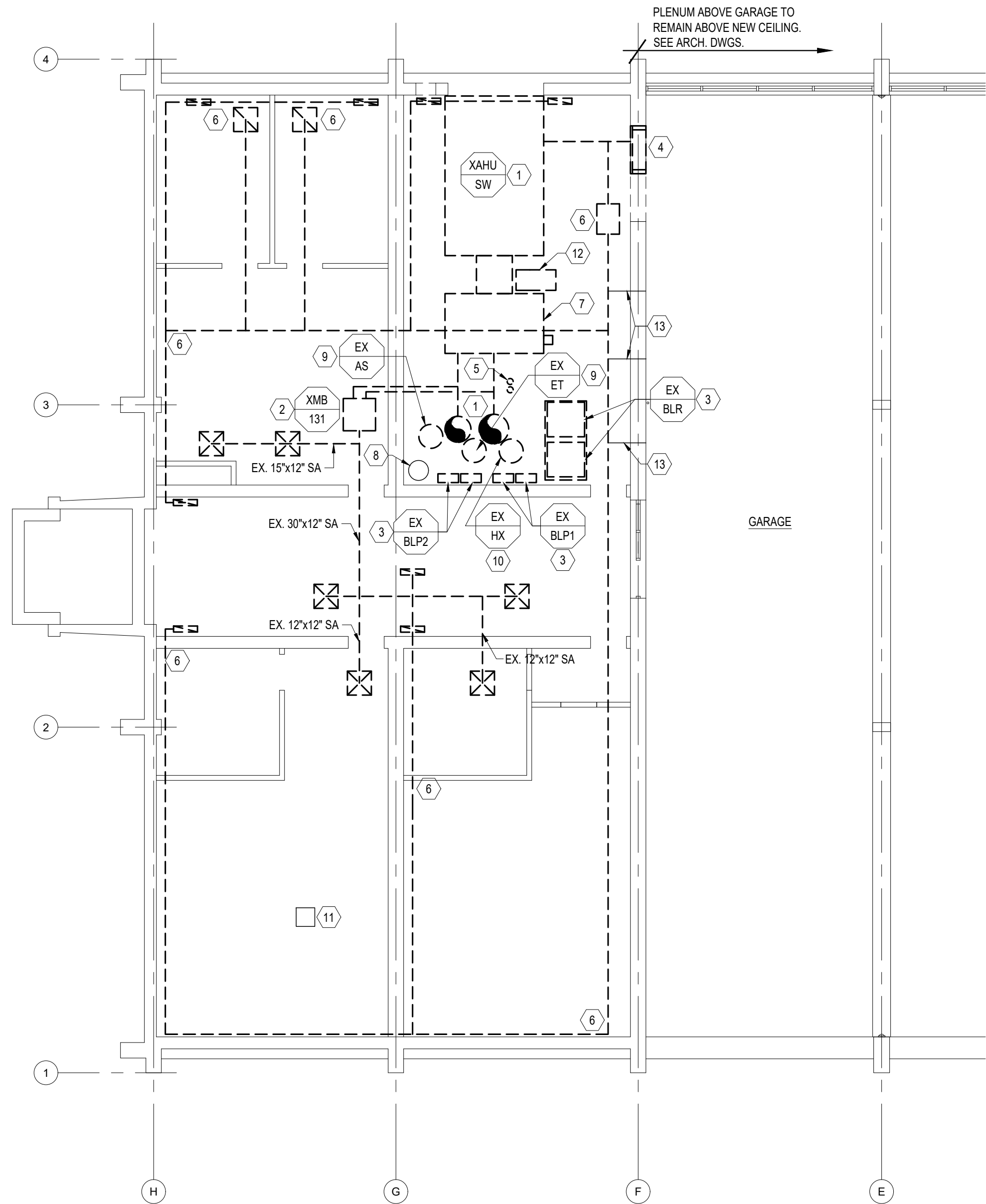
SHEET TITLE:

MECHANICAL SYMBOLS
AND NOTES

SHEET NUMBER:

M-001

06/25/2026
8 OF 45 SHEETS



MECHANICAL SOUTHWING FIRST FLOOR PLAN - DEMOLITION

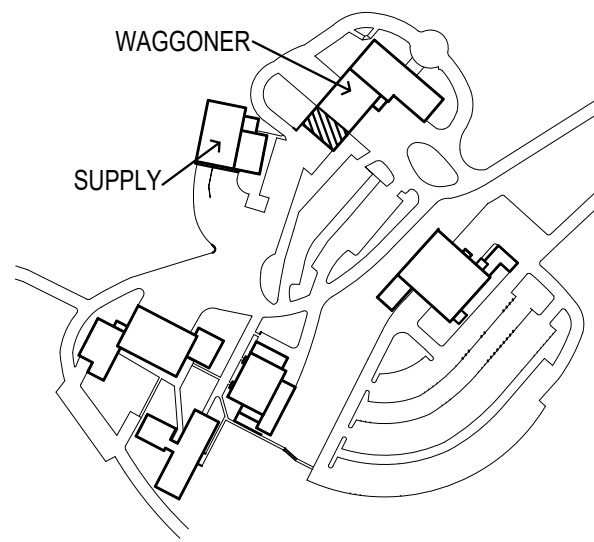
SCALE: 1/8" = 1'-0"

MECHANICAL GENERAL DEMOLITION NOTES

- THESE DRAWINGS MAY NOT FULLY DEPICT ALL AS-BUILT CONDITIONS. NOTIFY THE ENGINEER AT ONCE SHOULD A DISCREPANCY OR OMISSION BE FOUND THAT WILL IMPACT THE WORK THAT IS TO BE COMPLETED.
- PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- ANY PENETRATIONS THROUGH WALLS THAT ARE EXPOSED TO OCCUPANTS AND NOT USED DURING RENOVATION WORK SHALL BE PATCHED AND PAINTED TO MATCH THE EXISTING WALL.
- ALL REFRIGERANT OF DEMOLISHED SYSTEM SHALL BE RECLAIMED AS REQUIRED BY FEDERAL, STATE, AND LOCAL CODES.
- CONTRACTOR SHALL COORDINATE DELIVERY OF NEW EQUIPMENT AND DEMOLITION OF EXISTING WORK TO ENSURE MINIMIZED DOWN TIME. THIS APPLIES ESPECIALLY TO HEATING SYSTEMS.

MECHANICAL KEYED NOTES

- DEMOLISH EXISTING AHU-SW AND ALL ASSOCIATED PIPING, CONTROLS, METAL STRUCTURAL SUPPORTS, AND SUPPLY AIR DUCTWORK WITHIN MECHANICAL ROOM SPACE AND UP TO FLOOR ABOVE COMPLETELY. EXISTING AHU SHALL BE BROKEN DOWN INTO SEPARATE PIECES AS REQUIRED TO FIT THROUGH DOORWAYS OF MECHANICAL ROOM. SEE SHEET M-102 FOR INFORMATION REGARDING THE DEMOLITION OF DUCTWORK ON THE SECOND FLOOR.
- DEMOLISH EXISTING MIXING BOX-131 AND ALL ASSOCIATED DUCTWORK. CONTRACTOR SHALL LOCATE AND DEMOLISH EXISTING THERMOSTAT AND ALL ASSOCIATED CONTROL WIRING.
- DEMOLISH EXISTING BOILERS, ASSOCIATED PUMPS, FLUES, AND ALL ASSOCIATED PIPING AND CONTROLS. DEMOLISH EXISTING BOILER CONCRETE PAD. CUT AND CAP GAS PIPING BACK TO MAIN. GAS PIPING SHALL BE CONNECTED TO NEW BOILER. SEE RENOVATION DRAWINGS.
- EXISTING RELIEF AIR LOUVER FACING GARAGE SHALL BE DEMOLISHED COMPLETELY.
- DEMOLISH ALL REFRIGERANT PIPING LOCATED WITHIN MECHANICAL ROOM AND UP TO CONDENSING UNIT ON ROOF COMPLETELY.
- DEMOLISH EXISTING RETURN FAN AND ALL ASSOCIATED RETURN DUCTWORK, AIR DEVICES, CONTROLS, ETC. COMPLETELY.
- DEMOLISH EXISTING CONCRETE PAD SUPPORTING THE COIL SECTION OF EXISTING AHU-SW COMPLETELY.
- EXISTING WATER HEATER AND ASSOCIATED PIPING SHALL REMAIN.
- DEMOLISH EXISTING AIR SEPARATOR, EXPANSION TANK, AND ALL ASSOCIATED PIPING COMPLETELY.
- DEMOLISH EXISTING SHELL AND TUBE HEAT EXCHANGER AND ALL ASSOCIATED PIPING COMPLETELY.
- EXISTING UNIT HEATER IN MAINTENANCE ROOM SHALL REMAIN.
- DEMOLISH EXISTING DX COOLING COIL COMPRESSOR AND ASSOCIATED PIPING COMPLETELY.
- EXISTING RETURN AIR DUCTWORK OUT TO GARAGE PLENUM TO REMAIN. CONTRACTOR SHALL CLEAN DUCTWORK PRIOR TO CONNECTION IN NEW WORK. DUCTWORK SHALL BE CONNECTED TO NEW RETURN DUCTWORK, SEE RENOVATION DRAWINGS.



STATE OF MISSOURI MIKE KEHOE GOVERNOR

CASCO Diversified Corporation



Professional of Record:
SCOTT A. MOSBLEY
License Number: 2003015013
Expiration Date: 12/31/27

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CASCO

12 SUMNER DRIVE, SUITE 100, ST. LOUIS, MO 63143
T 314.821.1100

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF PUBLIC SAFETY

MISSOURI STATE HIGHWAY PATROL

REPLACE HVAC SYSTEM WAGGONER BUILDING MISSOURI STATE HIGHWAY PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 65101

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
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CHECKED BY:	SAM
DESIGNED BY:	

SHEET TITLE:

MECHANICAL SOUTHWING
FIRST FLOOR PLAN -
DEMOLITION

SHEET NUMBER:

M-101

06/25/2026
9 OF 45 SHEETS



Professional of Record:
SCOTT A. MOSELEY
License Number: 2003015013
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CASCO
1314821.1100

OFFICE OF ADMINISTRATION
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MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: BBH
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DESIGNED BY:

SHEET TITLE:

MECHANICAL SOUTHWING
SECOND FLOOR PLAN -
DEMOLITION

SHEET NUMBER:

M-102

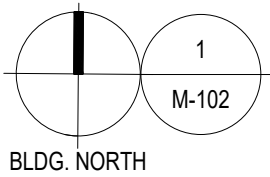
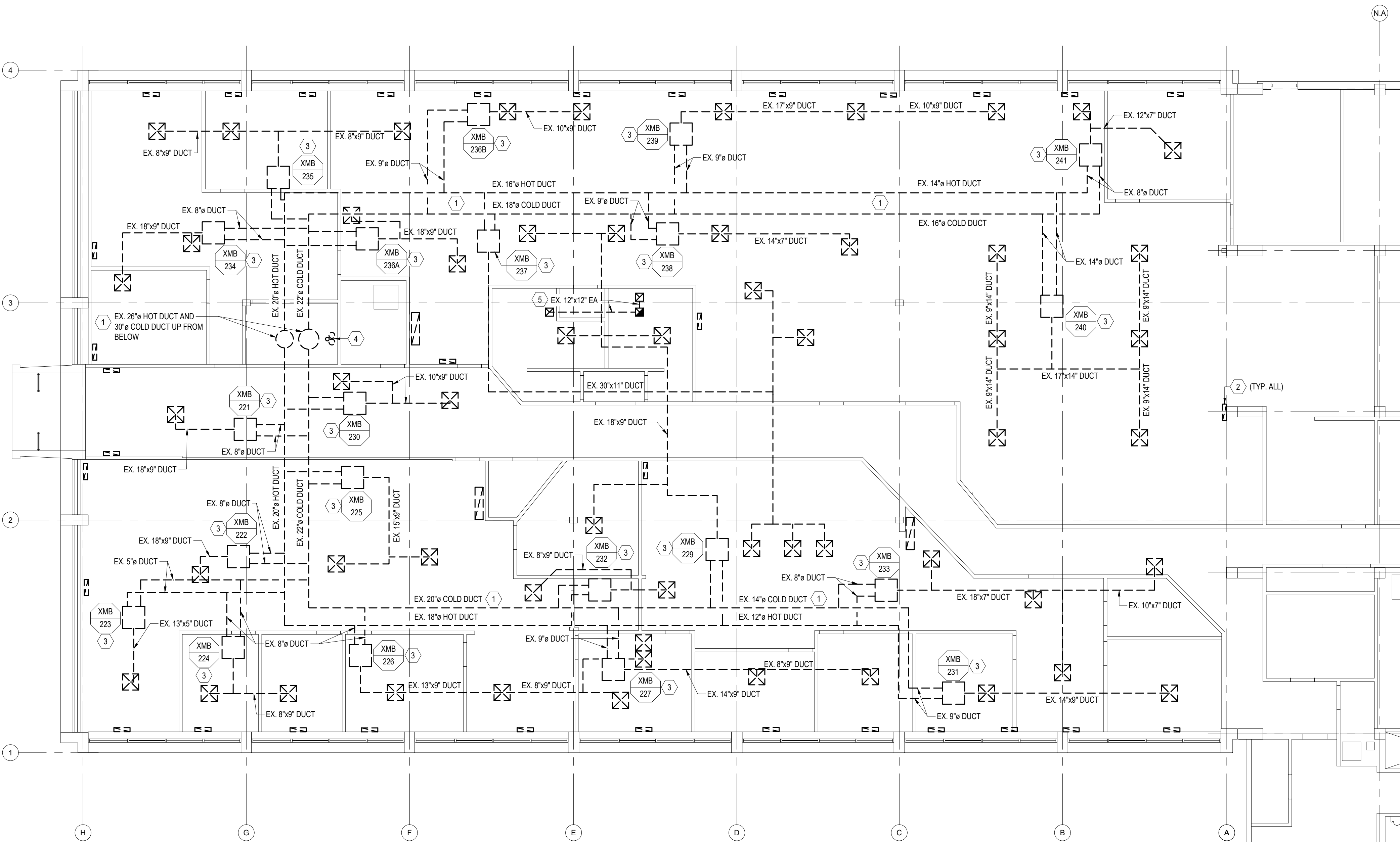
06/25/2026
10 OF 45 SHEETS

MECHANICAL GENERAL DEMOLITION NOTES

- A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- B. ANY PENETRATIONS THROUGH WALLS THAT ARE EXPOSED TO OCCUPANTS AND NOT USED DURING RENOVATION WORK SHALL BE PATCHED AND PAINTED TO MATCH THE EXISTING WALL.
- C. CONTRACTOR SHALL COORDINATE DELIVERY OF NEW EQUIPMENT AND DEMOLITION OF EXISTING WORK TO ENSURE MINIMIZED DOWN TIME. THIS APPLIES ESPECIALLY TO HEATING SYSTEMS.

MECHANICAL KEYED NOTES

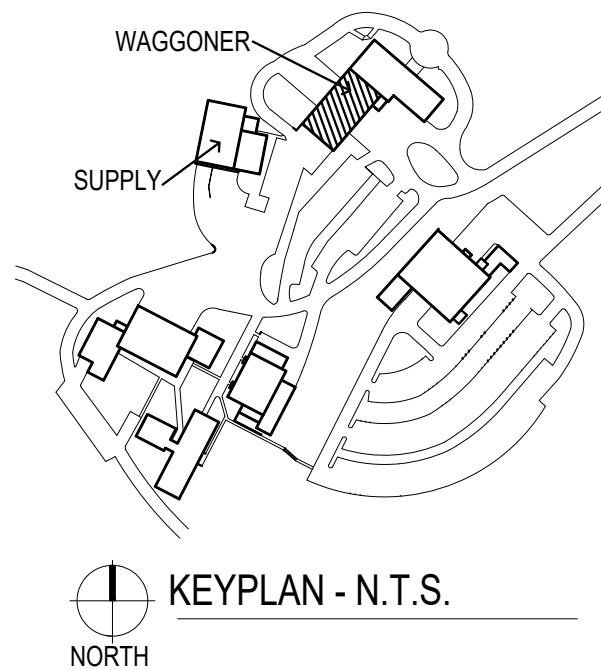
1. DEMOLISH ALL EXISTING HOT AND COLD SUPPLY DUCTWORK, MIXING BOXES, ALL ASSOCIATED DUCTWORK AND AIR DEVICES DOWNSTREAM OF MIXING BOXES, AND ALL ASSOCIATED CONTROLS COMPLETELY. DUCTWORK THROUGH FLOOR SHALL BE DEMOLISHED COMPLETELY BACK TO EXISTING AHU-SW.
2. DEMOLISH ALL FLOOR MOUNTED RETURN PLENUM GRILLES. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING RETURN FLOOR GRILLES PRIOR TO DEMOLITION. EXISTING FLOOR GRILLE SLEEVE SHALL REMAIN FOR USE IN NEW WORK, SEE RENOVATION DRAWINGS. (TYPICAL).
3. DEMOLISH EXISTING MIXING BOX, THERMOSTAT, DOWNSTREAM DUCTWORK, AND ALL ASSOCIATED CONTROLS COMPLETELY. CONTRACTOR SHALL LOCATE AND DEMOLISH EXISTING THERMOSTAT AND ALL ASSOCIATED CONTROL WIRING.
4. DEMOLISH BOILER FLUES AND REFRIGERANT PIPING COMPLETELY. DOMESTIC WATER HEATER FLUE AND DOMESTIC WATER PIPING SHALL REMAIN.
5. DEMOLISH EXISTING EXHAUST DUCTWORK AND ASSOCIATED AIR DEVICES IN BATHROOM.

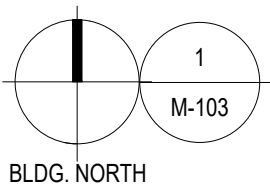
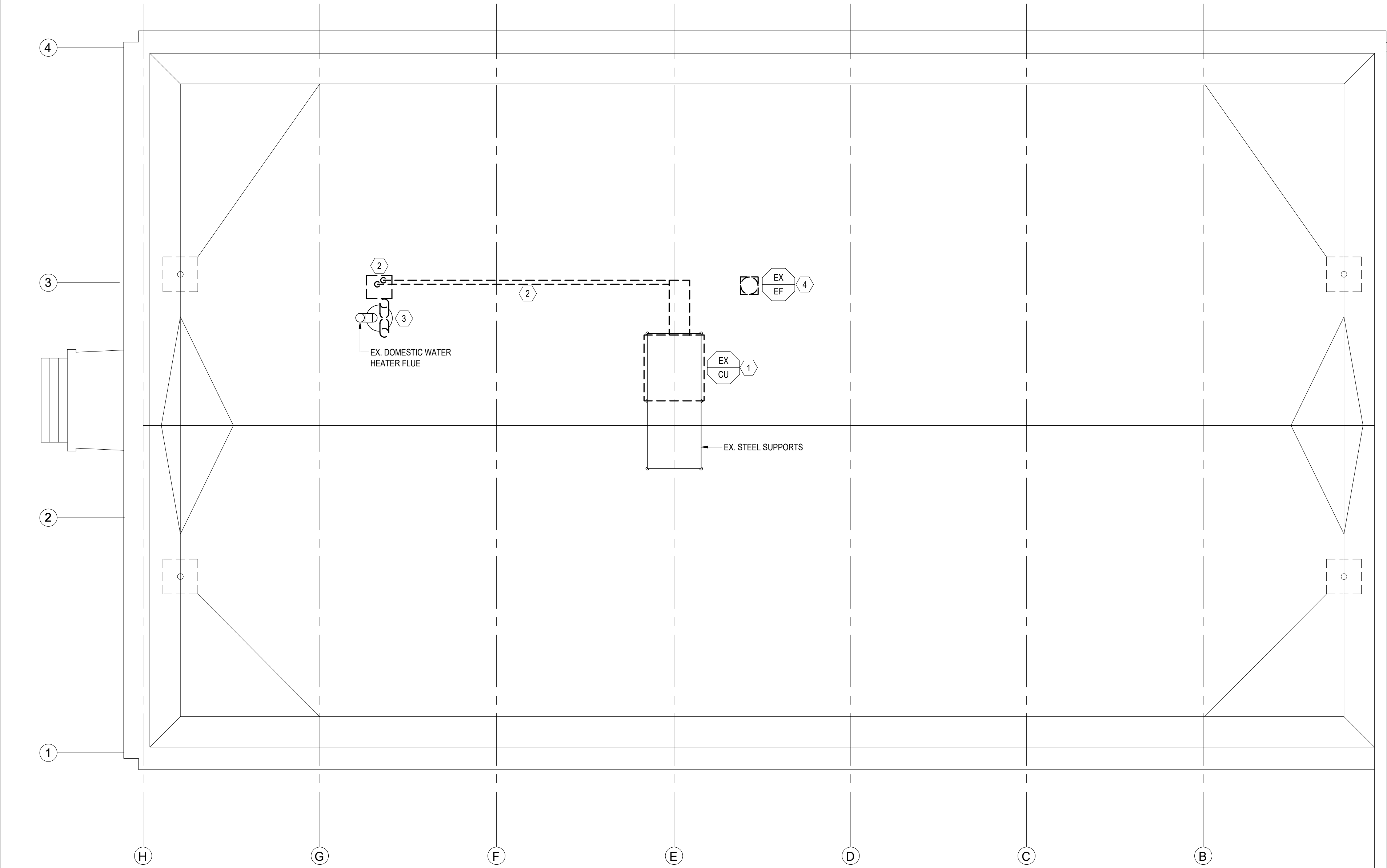


MECHANICAL SOUTHWING SECOND FLOOR PLAN - DEMOLITION

SCALE: 1/8" = 1'-0"

BLDG. NORTH





MECHANICAL SOUTHWING ROOF PLAN - DEMOLITION

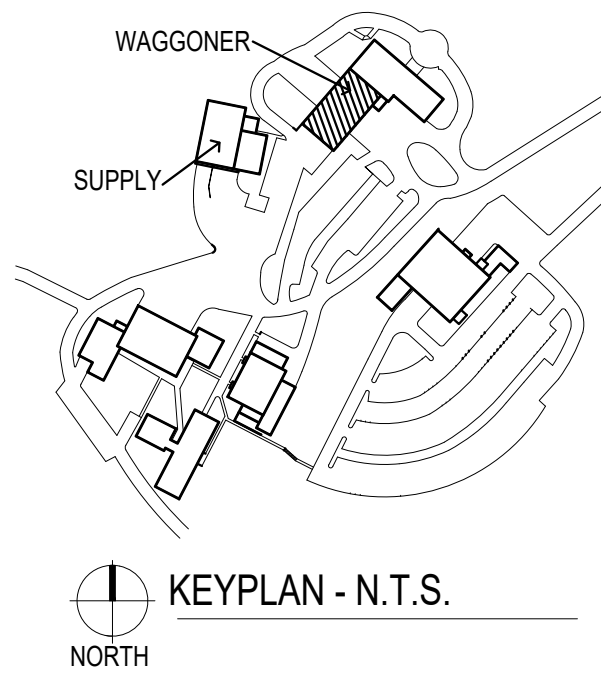
SCALE: 1/8" = 1'-0"

MECHANICAL GENERAL DEMOLITION NOTES

- A. THESE DRAWINGS MAY NOT FULLY DEPICT ALL AS-BUILT CONDITIONS. NOTIFY THE ENGINEER AT ONCE SHOULD A DISCREPANCY OR OMISSION BE FOUND THAT WILL IMPACT THE WORK THAT IS TO BE COMPLETED.
- B. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- C. CONTRACTOR SHALL COORDINATE DELIVERY OF NEW EQUIPMENT AND DEMOLITION OF EXISTING WORK TO ENSURE MINIMIZED DOWN TIME. THIS APPLIES ESPECIALLY TO HEATING SYSTEMS.
- D. ALL REFRIGERANT OF DEMOLISHED SYSTEM SHALL BE RECLAIMED AS REQUIRED BY FEDERAL, STATE, AND LOCAL CODES.

MECHANICAL KEYED NOTES

1. DEMOLISH EXISTING 60-TON AIR COOLED CONDENSER ON ROOF, AND ALL ASSOCIATED PIPING AND CONTROLS COMPLETELY. EXISTING STEEL STRUCTURE ON ROOF SHALL REMAIN.
2. DEMOLISH ALL REFRIGERANT PIPING ON ROOF COMPLETELY. EXISTING PITCH POCKET ON ROOF TO REMAIN FOR NEW WORK. CONTRACTOR SHALL CAPTURE ALL REFRIGERANT OF DEMOLISHED SYSTEM.
3. DEMOLISH EXISTING FLUE SERVING DEMOLISHED SOUTHWEST BOILERS COMPLETELY UP THROUGH ROOF. EXISTING PENETRATIONS IN PIPE PORTAL SERVING DEMOLISHED PIPING SHALL BE REUSED BY NEW BOILER FLUES. SEE RENOVATION PLANS. DOMESTIC WATER FLUE PIPING SHALL REMAIN.
4. DEMOLISH EXISTING EXHAUST FAN AND ALL ASSOCIATED DUCTWORK, AIR DEVICES, AND CONTROLS. CONTRACTOR SHALL UTILIZE EXISTING PENETRATION FOR NEW EXHAUST FAN AND ASSOCIATED DUCTWORK, SEE RENOVATION DRAWINGS.



STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



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SCOTT A. MOSELEY
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Expiration Date: 12/31/27

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MO Certificate of Authority #000329 ARCH.

CASCO
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MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

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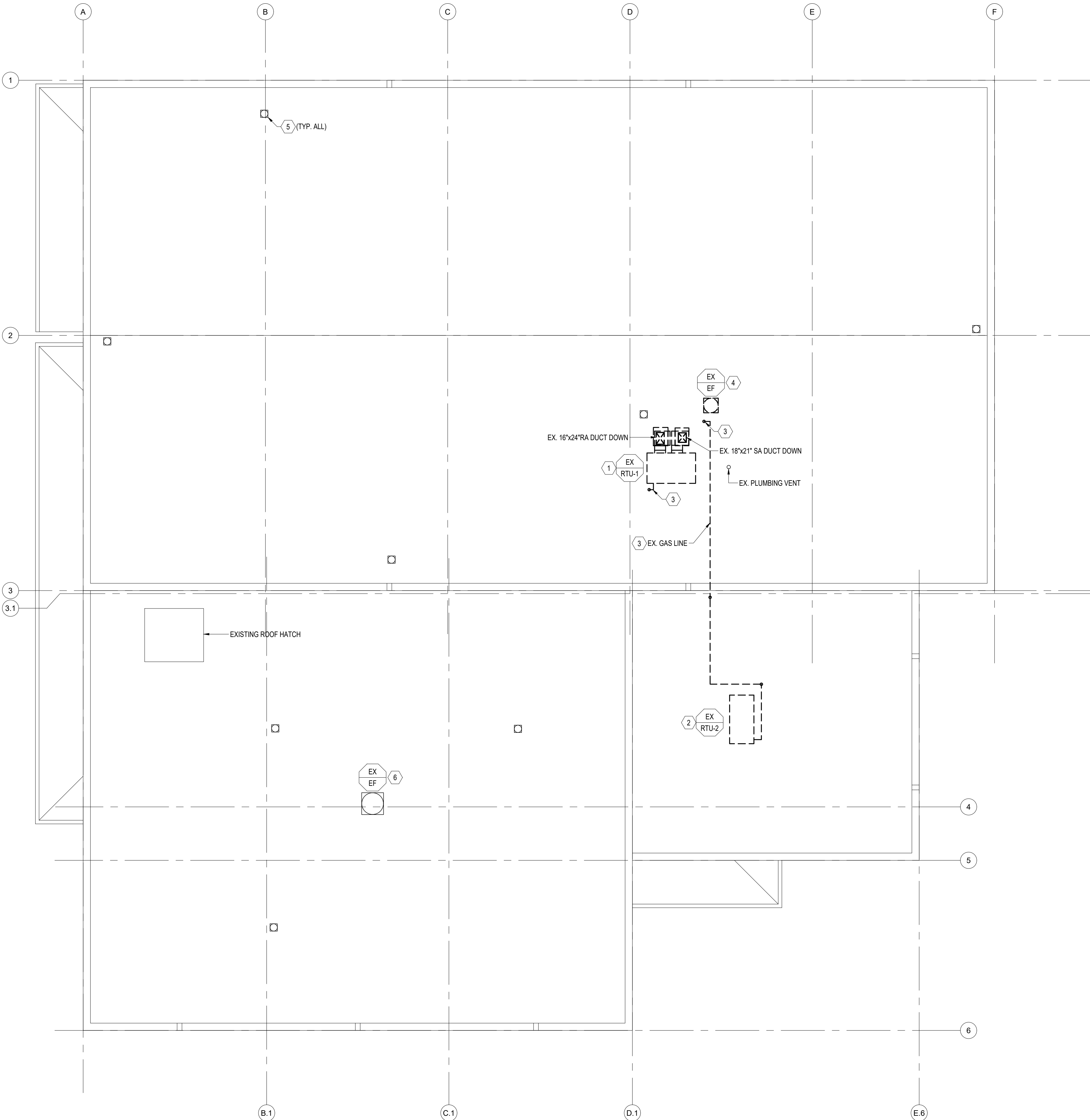
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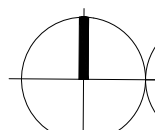
MECHANICAL SOUTHWING
ROOF PLAN - DEMOLITION

SHEET NUMBER:

M-103

06/25/2026
11 OF 45 SHEETS



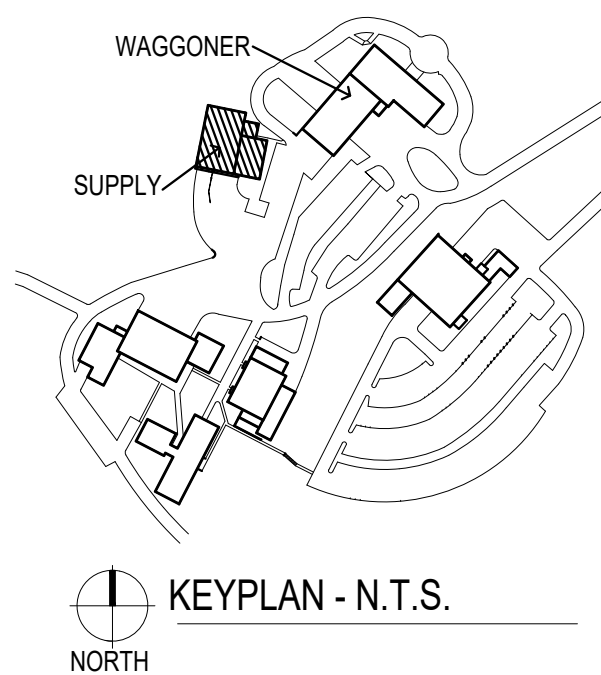
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M-104
SCALE: 1/8" = 1'-0"
MECHANICAL SUPPLY BUILDING ROOF PLAN - DEMOLITION BID ALTERNATE #1

MECHANICAL GENERAL DEMOLITION NOTES

- A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- B. CONTRACTOR SHALL COORDINATE DELIVERY OF NEW EQUIPMENT AND DEMOLITION OF EXISTING WORK TO ENSURE MINIMIZED DOWN TIME. THIS APPLIES ESPECIALLY TO HEATING SYSTEMS.

MECHANICAL KEYED NOTES

- DEMOLISH EXISTING RTU, ALL ASSOCIATED PIPING, CONTROLS, AND ROOF-MOUNTED DUCTWORK COMPLETELY. EXISTING DUCTWORK DOWN THROUGH ROOF SHALL REMAIN FOR RECONNECTION TO NEW ROOFTOP UNIT. SEE RENOVATION DRAWINGS. DEMOLISH EXISTING EQUIPMENT RAILS COMPLETELY. CONTRACTOR SHALL PROVIDE NEW EQUIPMENT RAILS IN SIMILAR LOCATION TO EXISTING. SEE RENOVATION DRAWINGS.
- DEMOLISH EXISTING ROOF TOP UNIT, ALL ASSOCIATED PIPING, CONTROLS, AND EXISTING CURB ADAPTER. EXISTING ROOF CURB SHALL REMAIN.
- DEMOLISH EXISTING NATURAL GAS PIPING BACK TO ROOF PENETRATION. INSTALL ISOLATION VALVE ABOVE ROOF LEVEL AND CAP OPEN END. GAS PIPING SHALL BE EXTENDED TO SERVE NEW EQUIPMENT. SEE RENOVATION PLANS.
- EXISTING EXHAUST FAN AND ASSOCIATED CURB TO BE DEMOLISHED COMPLETELY. ASSOCIATED DUCTWORK SHALL BE DEMOLISHED TO 4 FEET BELOW ROOF DECK TO ALLOW FOR NEW IN-LINE EXHAUST FAN TO BE INSTALLED BELOW ROOF. EXISTING ROOF PENETRATION SHALL BE USED FOR ROUTING OF NEW DUCTWORK. SEE RENOVATION PLANS.
- EXISTING INFRARED HEATER FLUE VENT TO REMAIN.
- EXISTING ROOFTOP MECHANICAL EQUIPMENT TO REMAIN.



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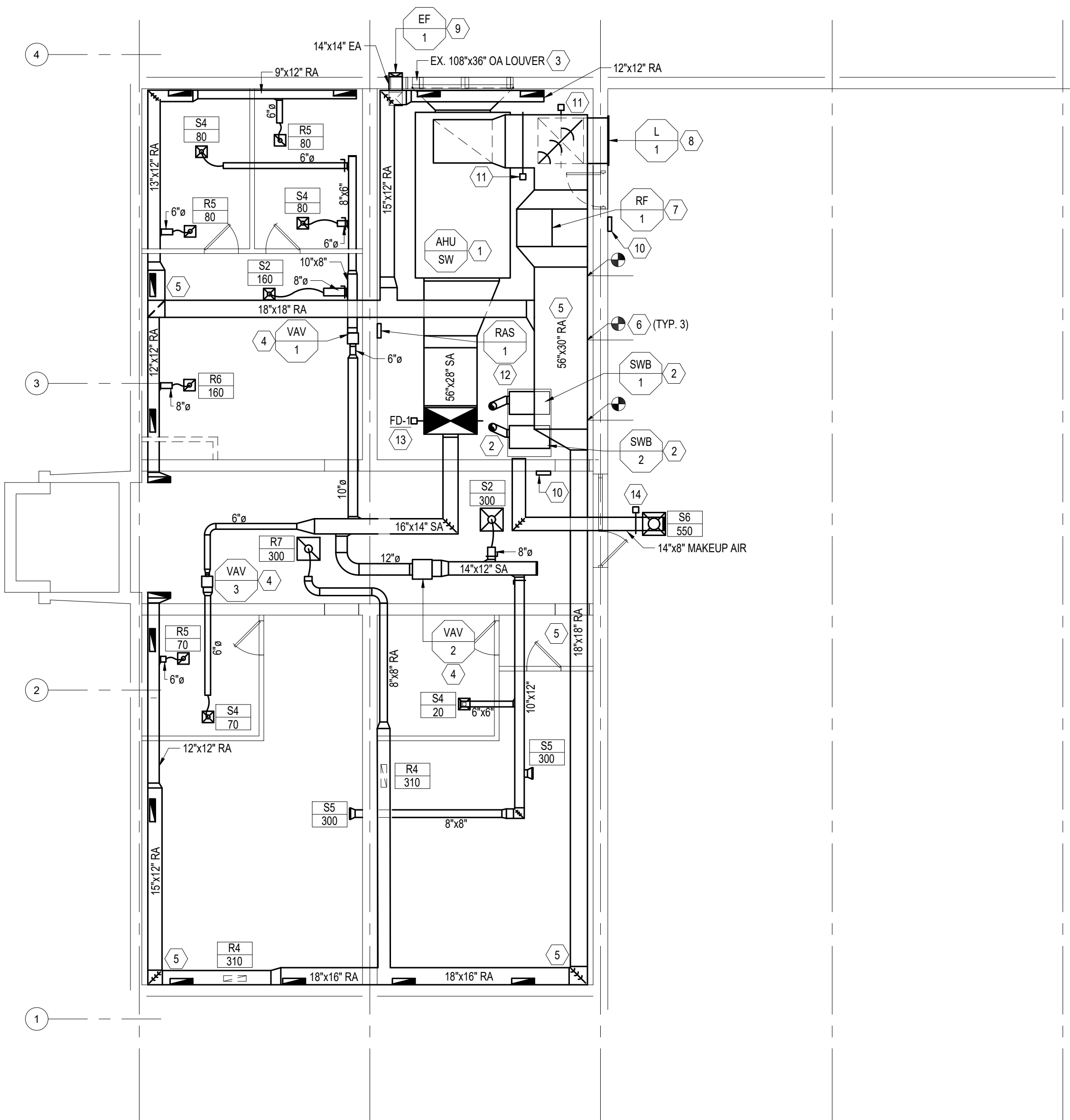
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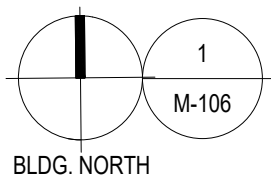
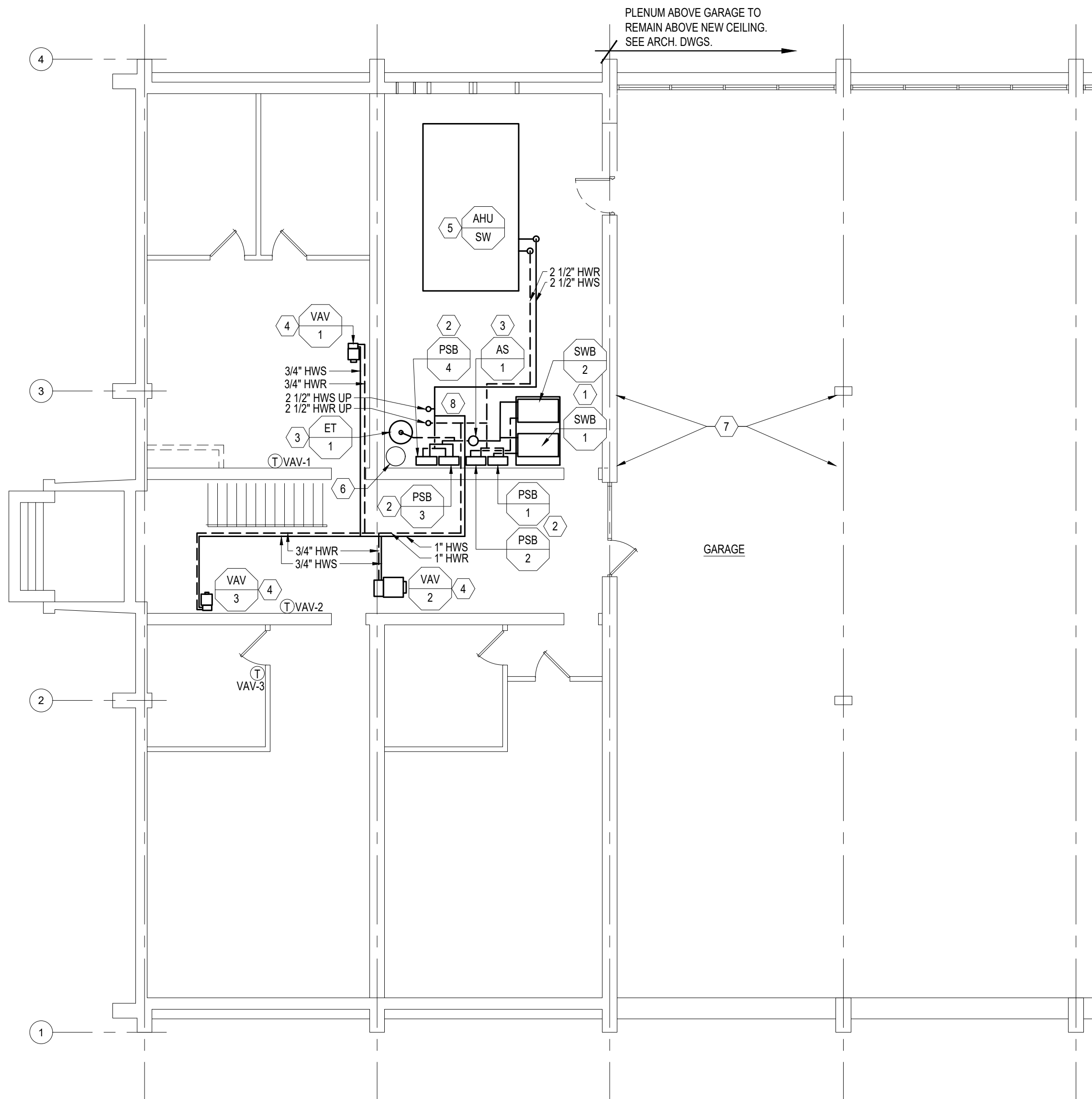
MECHANICAL SUPPLY
BUILDING ROOF PLAN -
DEMOLITION ALTERNATE #1

SHEET NUMBER:

M-104

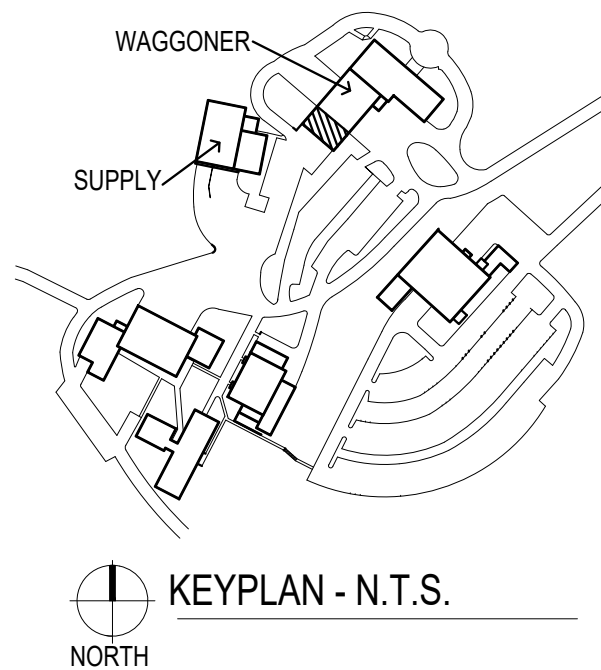
06/25/2026
12 OF 45 SHEETS





MECHANICAL SOUTHWING FIRST FLOOR PLAN - RENOVATION PIPING

SCALE: 1/8" = 1'-0"



- MECHANICAL GENERAL RENOVATION NOTES
- A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL REPAIR ANY DAMAGE RESULTING FROM CONSTRUCTION AT NO EXPENSE TO OWNER.
- B. ROOM HAS BEEN DEEMED TO BE LESS THAN 500 SQUARE FEET. NEW EMERGENCY STOP SHALL BE INSTALLED ON INTERIOR SIDE OF EXTERIOR DOOR. E-STOP SHALL BE TIED INTO ALL NEW BOILERS.
- C. NEW AHU AND HEATING WATER SYSTEM SHALL BE BALANCED AS DESCRIBED IN SPECIFICATIONS.

- # MECHANICAL KEYED NOTES
1. PROVIDE NEW BOILERS ON EXISTING CONCRETE PAD. EXTEND CONCRETE PAD TO MEET THE NECESSARY CLEARANCES OF BOILERS. CONNECT BOILERS INTO HOT WATER SYSTEM. SEE DETAIL #7 ON M-501 FOR PIPE SIZING AND CONNECTIONS.
2. PROVIDE NEW INLINE PRIMARY AND SECONDARY BOILER PUMPS.
3. PROVIDE NEW EXPANSION TANK AND AIR SEPARATOR. CONNECT INTO HOT WATER SYSTEM.
4. PROVIDE NEW HOT WATER SUPPLY AND RETURN PIPING TO SERVE NEW VAV.
5. CONTRACTOR SHALL PROVIDE NEW AHU-SW IN SIMILAR LOCATION TO DEMOLISHED UNIT. NEW AHU-SW SHALL BE CONNECTED TO NEW HOT WATER SYSTEM. INSTALL TWO WAY CONTROL VALVE ON THE HOT WATER COIL CONNECTION.
6. EXISTING WATER HEATER TO REMAIN.
7. EXISTING SANITARY PIPING WITHIN GARAGE CEILING PLENUM SHALL BE INSULATED. ELECTRICAL CONTRACTOR TO VERIFY CONDITION OF EXISTING HEAT TRACE AROUND SANITARY.
8. SEE DETAIL ON M-501 FOR INFORMATION REGARDING HOT WATER PIPE SIZING IN MECHANICAL ROOM.

STATE OF MISSOURI
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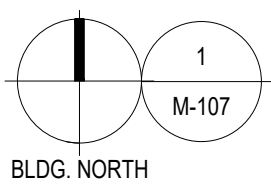
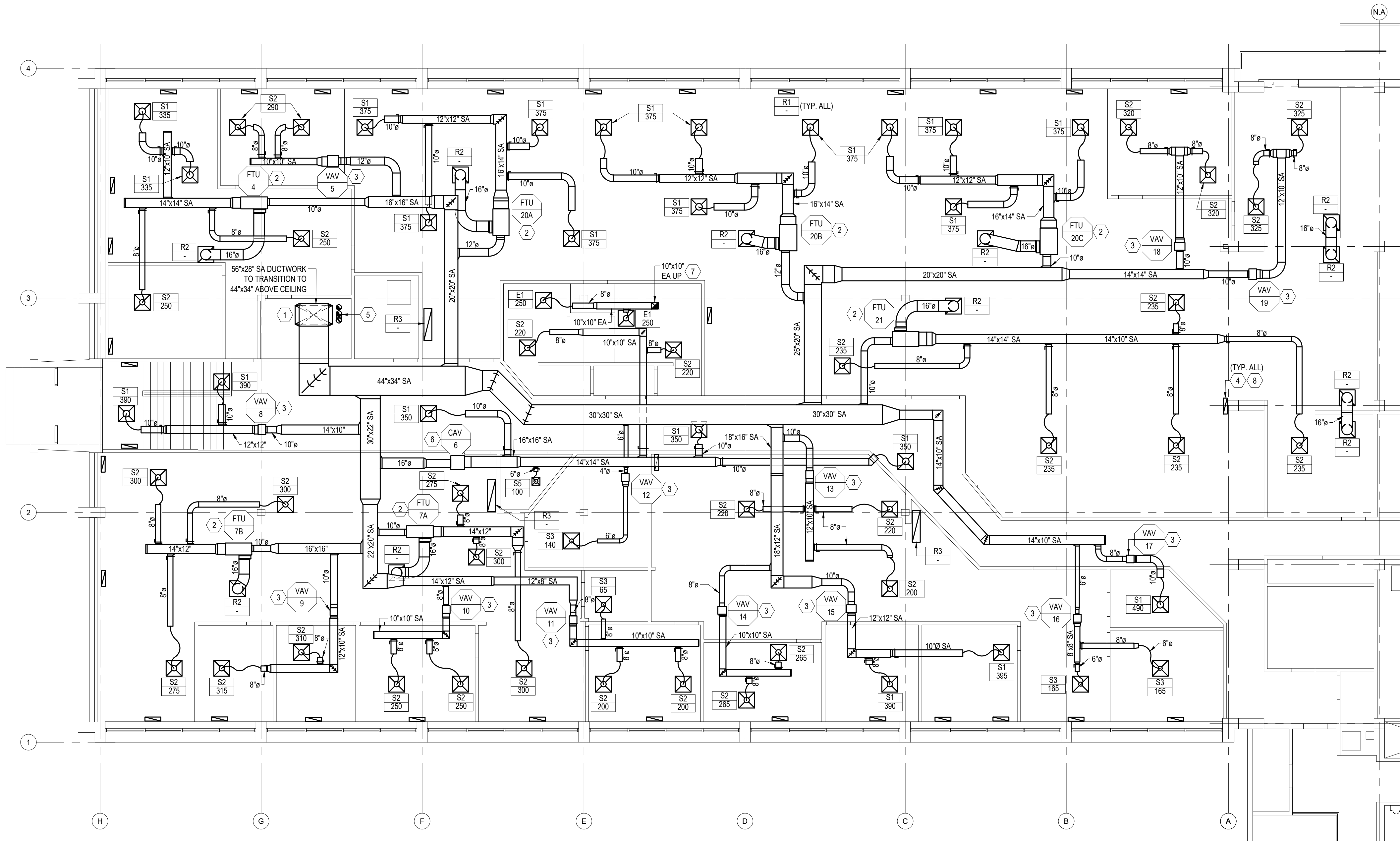
SHEET TITLE:

MECHANICAL SOUTHWING
FIRST FLOOR PLAN -
RENOVATION PIPING

SHEET NUMBER:

M-106

06/25/2026
14 OF 45 SHEETS



MECHANICAL SOUTHWING SECOND FLOOR PLAN - RENOVATION DUCTWORK

SCALE: 1/8" = 1'-0"

BLDG. NORTH

MECHANICAL GENERAL RENOVATION NOTES

A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.

MECHANICAL KEYED NOTES

1. PROVIDE NEW SUPPLY DUCTWORK UP FROM MECHANICAL ROOM THROUGH FLOOR PENETRATION. SEE STRUCTURAL FOR INFORMATION REGARDING THE ENLARGEMENT OF EXISTING FLOOR PENETRATION. CONTRACTOR SHALL SEAL PENETRATION BETWEEN FLOORS.

2. PROVIDE NEW FAN TERMINAL UNITS AND ALL ASSOCIATED PIPING, DUCTWORK, AND CONTROLS. SEE SHEET M-108 FOR HYDRONIC PIPING LAYOUT.

3. PROVIDE NEW VAV UNIT AND ALL ASSOCIATED PIPING, DUCTWORK, AND CONTROLS. SEE SHEET M-108 FOR HYDRONIC PIPING LAYOUT.

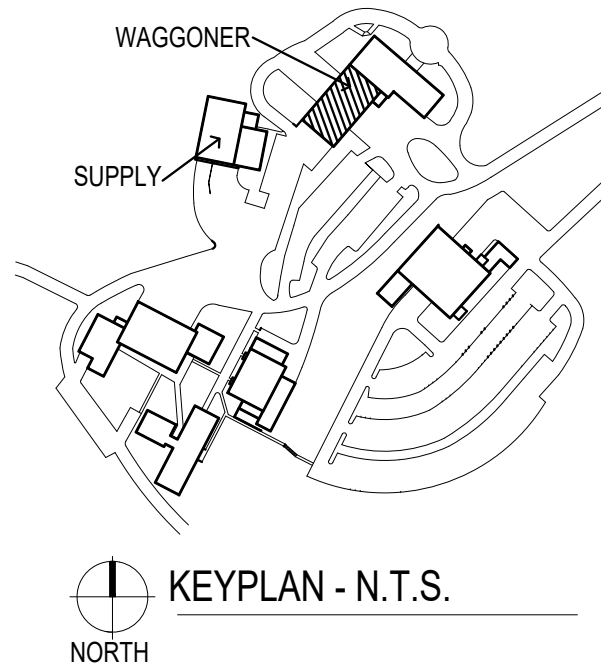
4. PROVIDE NEW FLOOR MOUNTED RETURN AIR DEVICES WITH LOAD BEARING, HEAVY DUTY MOUNTING FRAME IN SAME LOCATION AS DEMOLISHED. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING RETURN AIR GRILLE LOCATIONS, SIZES, PENETRATION CONDITIONS, AND FLOOR GRILLE SLEEVES PRIOR TO ORDERING AND INSTALLATION OF NEW AIR DEVICES. CONTRACTOR SHALL ENSURE NO FURNITURE IS PLACED ON TOP OF NEW FLOOR GRILLES. ADDITIONALLY, CONTRACTOR SHALL CLEAN ALL RETURN AIR BOOTS WHERE APPLICABLE.

5. ROUTE NEW FLUE VENTING THROUGH EXISTING PENETRATION UP TO ROOF.

6. PROVIDE NEW CAV UNIT AND ALL ASSOCIATED PIPING, DUCTWORK, AND CONTROLS. SEE SHEET M-108 FOR HYDRONIC PIPING LAYOUT.

7. PROVIDE NEW EXHAUST DUCTWORK AND ASSOCIATED AIR DEVICES SERVING BATHROOMS. CONNECT DUCTWORK UP INTO NEW EXHAUST FAN ON ROOF USING EXISTING PENETRATION.

8. RETURN FLOOR PLENUM IS SERVED BY MULTIPLE FLOOR GRILLES, SOME OF WHICH ARE BLOCKED BY FURNITURE OR FIXTURES. CONTRACTOR SHALL REBALANCE THE TOTAL AIRFLOW INTO THE PLENUM TO MEET THE DESIGN RETURN AIRFLOW TO THE AIR HANDLER. VERIFY THAT ALL SPACES MAINTAIN PROPER AIRFLOW PER DESIGN INTENT.



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MISSOURI STATE
HIGHWAY PATROL

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PATROL

1510 E. ELM STREET
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SITE # 6001
FACILITY #8136001001
8136001007

REVISIONS

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ISSUE DATE: 06/25/2026

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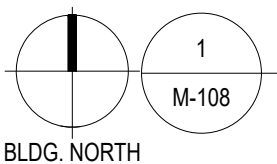
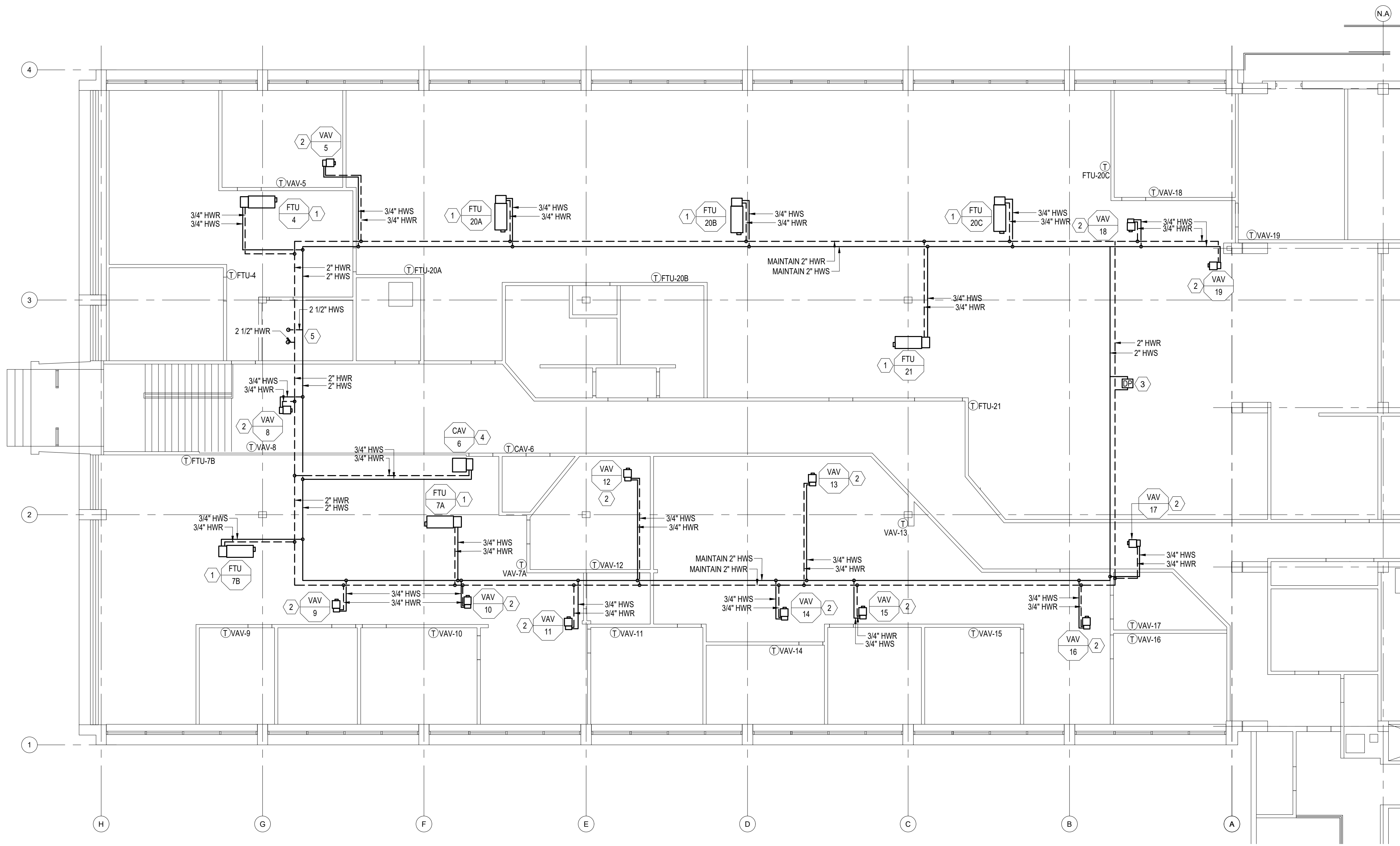
SHEET TITLE:

MECHANICAL SOUTHWING
SECOND FLOOR PLAN -
RENOVATION DUCTWORK

SHEET NUMBER:

M-107

06/25/2026
15 OF 45 SHEETS



MECHANICAL SOUTHWING SECOND FLOOR PLAN - RENOVATION PIPING

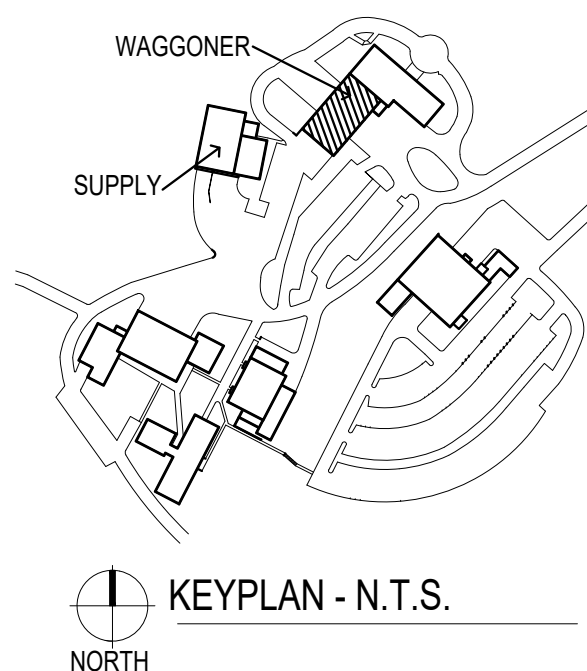
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MECHANICAL GENERAL RENOVATION NOTES

A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.

MECHANICAL KEYED NOTES

1. PROVIDE FAN TERMINAL UNIT AND ASSOCIATED PIPING AS SHOWN.
2. PROVIDE VAV UNIT AND ASSOCIATED PIPING AS SHOWN.
3. PROVIDE DIFFERENTIAL PRESSURE SENSOR TO SERVE SECONDARY HOT WATER LOOP PUMPS.
4. PROVIDE CAV UNIT AND ASSOCIATED PIPING AS SHOWN.
5. PROVIDE HIGH POINT VENT AT THE HIGHEST POINT WITHIN THE SYSTEM LOOP AND LOW POINT DRAIN AT THE LOWEST POINT WITHIN THE SYSTEM LOOP.



STATE OF MISSOURI
MIKE KEHOE
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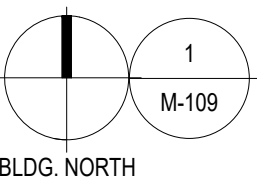
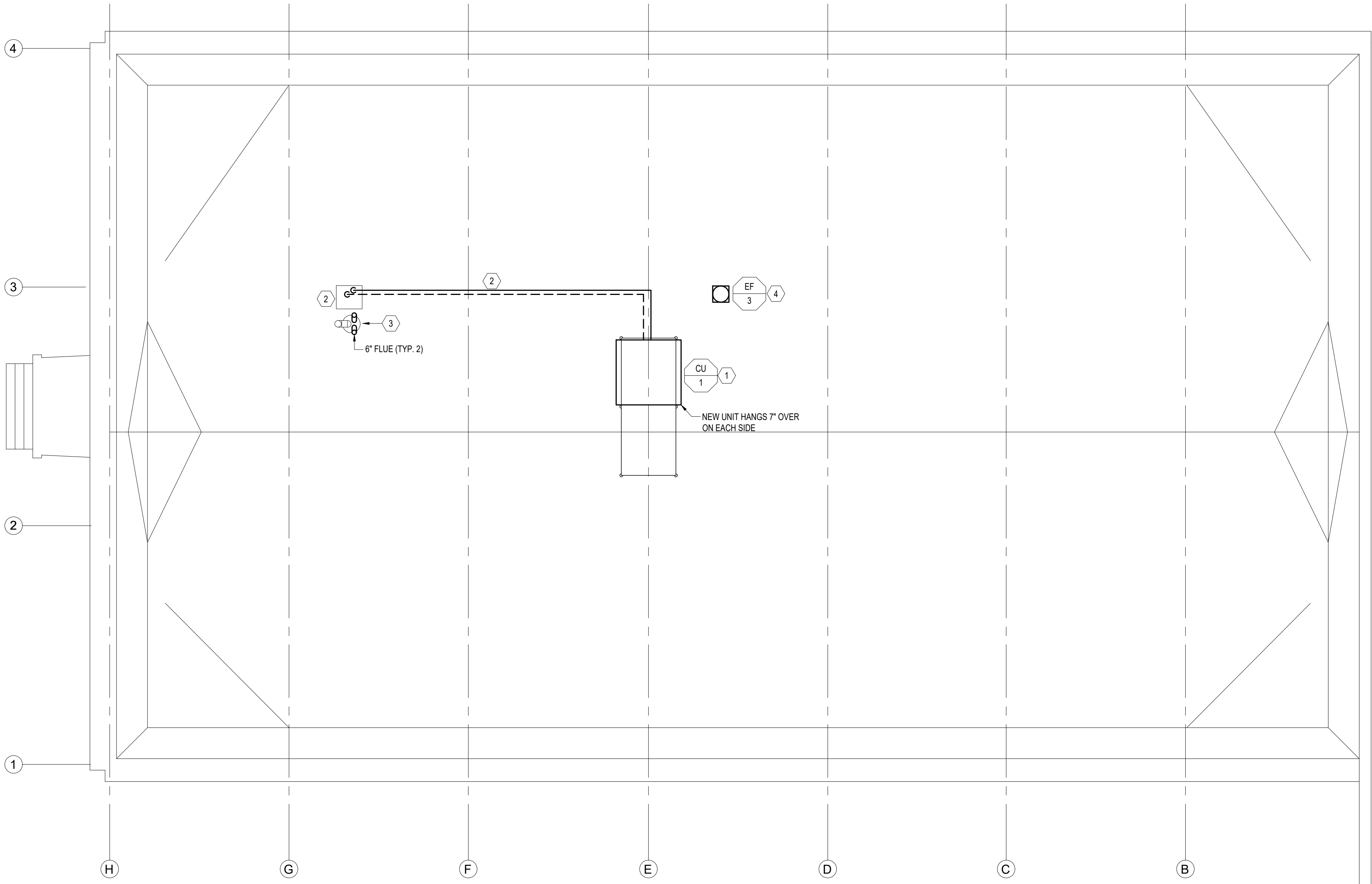
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MECHANICAL SOUTHWING
SECOND FLOOR PLAN -
RENOVATION PIPING

SHEET NUMBER:

M-108

06/25/2026
16 OF 45 SHEETS



MECHANICAL SOUTHWING FIRST ROOF PLAN - RENOVATION

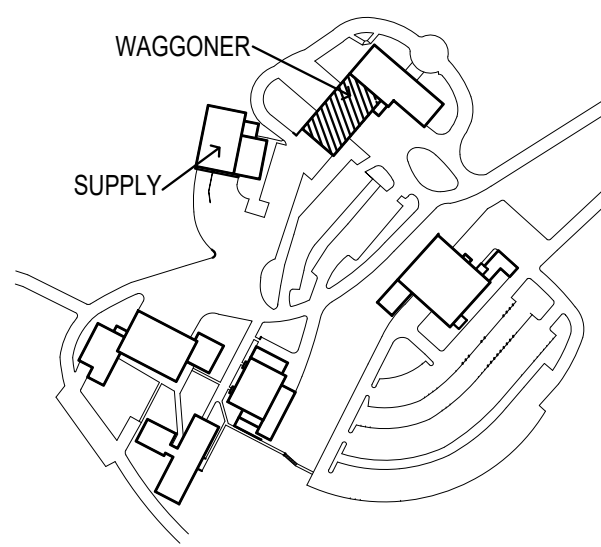
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MECHANICAL GENERAL DEMOLITION NOTES

- A. THESE DRAWINGS MAY NOT FULLY DEPICT ALL AS-BUILT CONDITIONS. NOTIFY THE ENGINEER AT ONCE SHOULD A DISCREPANCY OR OMISSION BE FOUND THAT WILL IMPACT THE WORK THAT IS TO BE COMPLETED.
- B. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- C. CONTRACTOR SHALL COORDINATE DELIVERY OF NEW EQUIPMENT AND DEMOLITION OF EXISTING WORK TO ENSURE MINIMIZED DOWN TIME. THIS APPLIES ESPECIALLY TO HEATING SYSTEMS.

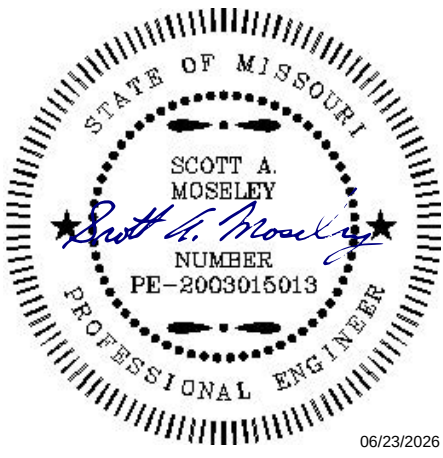
MECHANICAL KEYED NOTES

1. PROVIDE NEW CONDENSING UNIT ON ROOF IN LOCATION OF DEMOLISHED UNIT. PROVIDE ALL ASSOCIATED PIPING AND CONTROLS. FOLLOW THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS REGARDING REFRIGERANT PIPE SIZING. PROVIDE NEW STRUCTURAL FRAMING AS REQUIRED TO EXTEND EXISTING FRAMING TO PICKUP FOOTPRINT OF NEW EQUIPMENT. ANCHOR UNIT TO EXISTING STEEL FRAMING WITH MECHANICAL FASTENERS. CONTRACTOR SHALL PROVIDE A DETAILED SUBMITTAL TO BE REVIEWED BY STRUCTURAL ENGINEER PRIOR TO ORDERING UNIT. CROSS-BRACING DETAILS SHALL BE PROVIDED AT THAT TIME.
2. ROUTE REFRIGERANT LINES BACK THROUGH EXISTING REFRIGERANT ROOF PENETRATION AND DOWN TO MECHANICAL ROOM. JACKET EXPOSED REFRIGERANT PIPING WITH ALUMINUM JACKETING, SEAL PENETRATION WEATHERTIGHT.
3. UTILIZE EXISTING FLUE ROUTE UP THROUGH ROOF FOR NEW BOILER MANUFACTURER'S VENTING REQUIREMENTS. CONTRACTOR TO VERIFY REQUIRED SIZE OF FLUE STACK PRIOR TO INSTALLATION OF FLUES.
4. PROVIDE NEW EXHAUST FAN AND ASSOCIATED CONTROLS IN SIMILAR LOCATION TO EXISTING DEMOLISHED EXHAUST FAN. ROUTE DUCTWORK DOWN THROUGH EXISTING PENETRATION.



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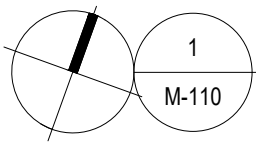
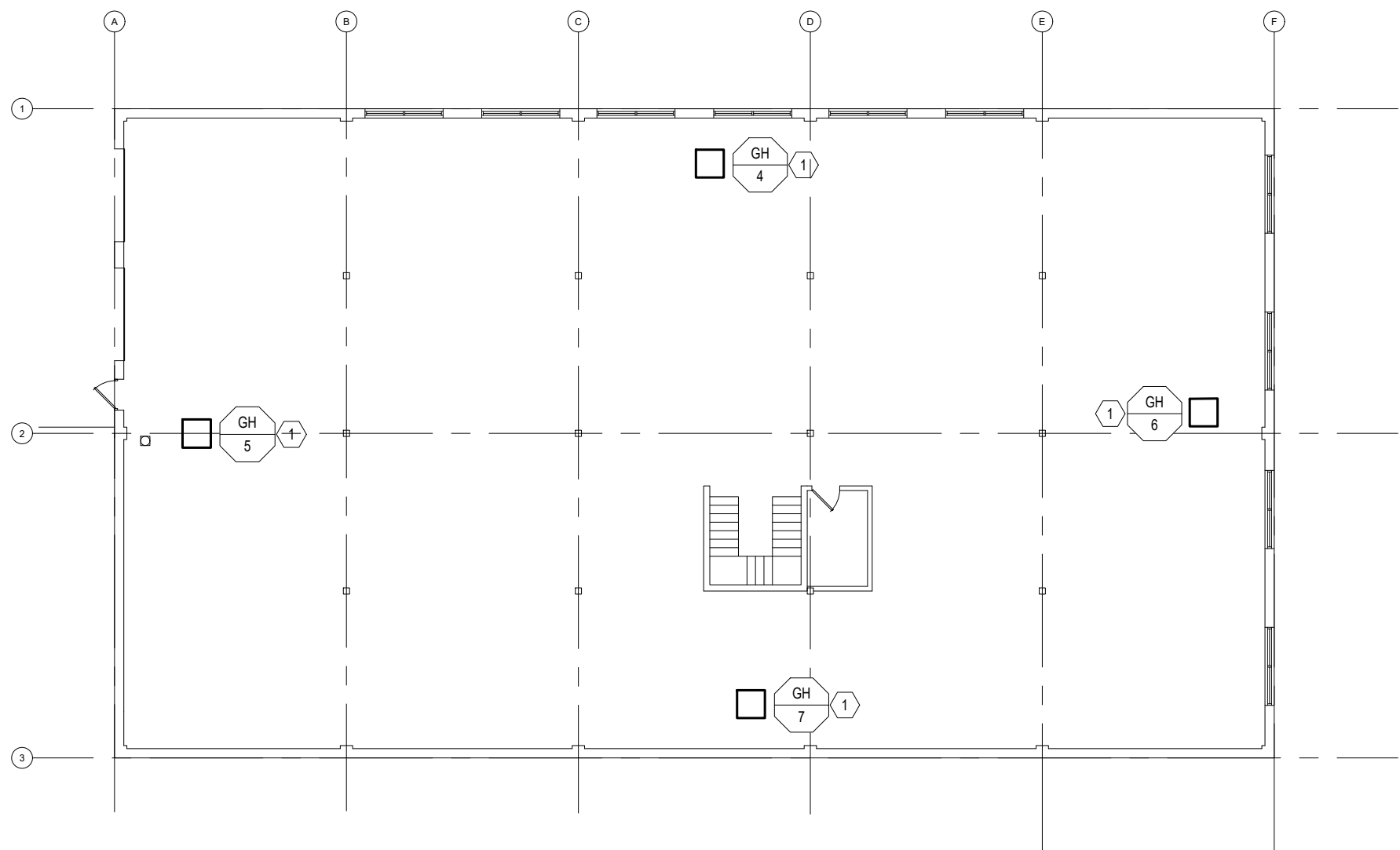
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MECHANICAL SOUTHWING
ROOF PLAN - RENOVATION

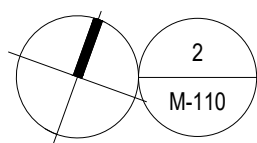
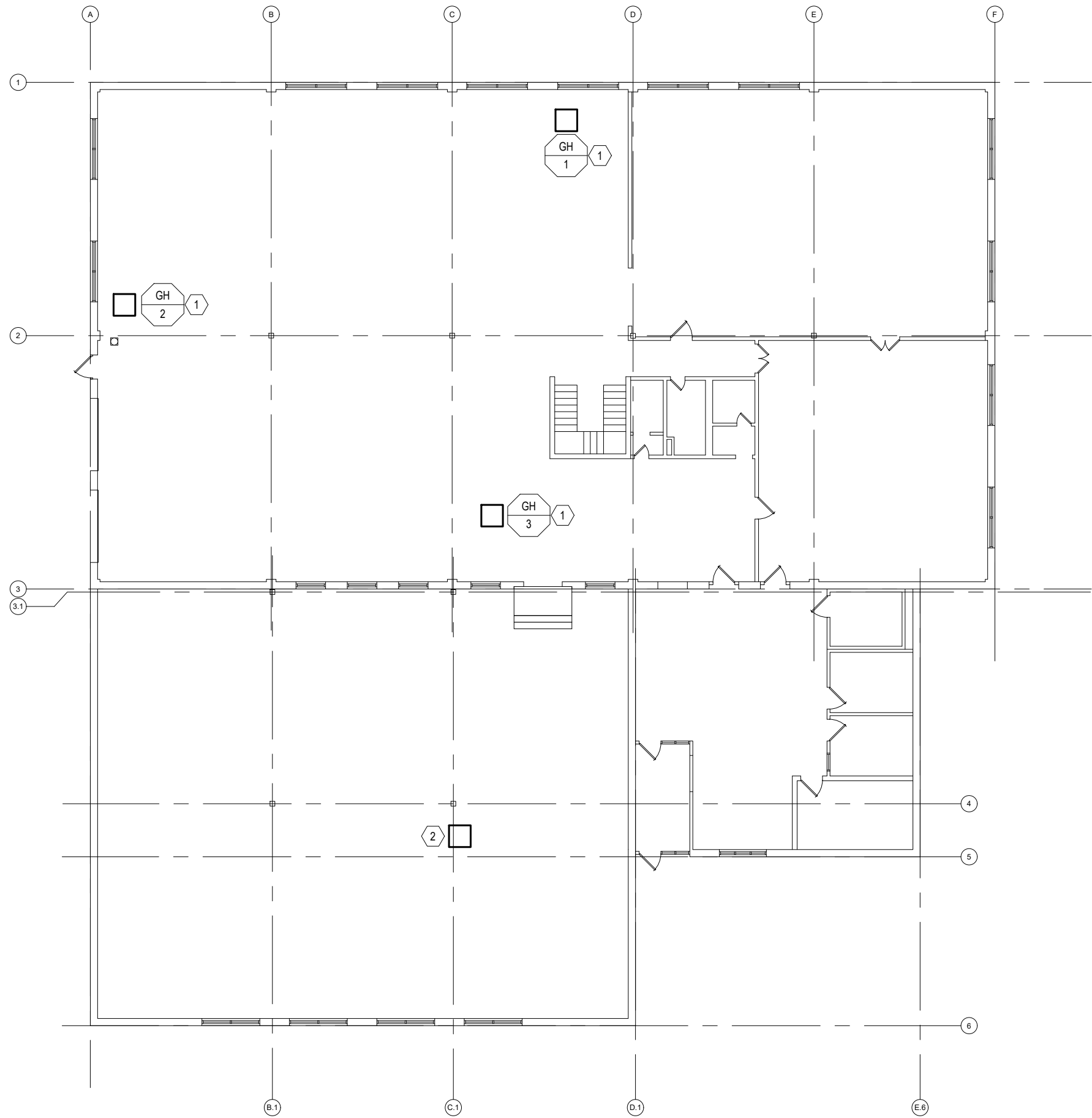
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M-109

06/25/2026
17 OF 45 SHEETS



MECHANICAL SUPPLY BUILDING BASEMENT FLOOR PLAN - BID ALTERNATE #1
SCALE: 1/16" = 1'-0"



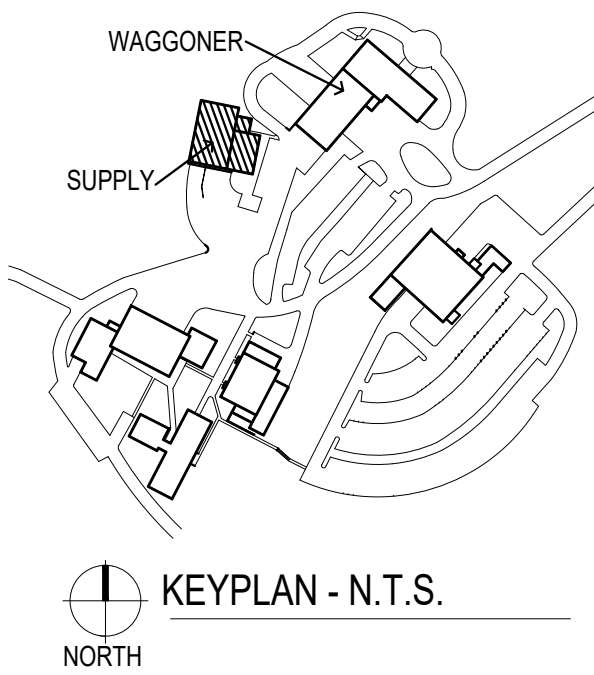
MECHANICAL SUPPLY BUILDING FIRST FLOOR PLAN - BID ALTERNATE #1
SCALE: 1/16" = 1'-0"

MECHANICAL BASEMENT GENERAL NOTES
A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.

MECHANICAL KEYED NOTES
1. CONTRACTOR SHALL DEMOLISH EXISTING GAS UNIT HEATER AND PROVIDE NEW GAS UNIT HEATER IN THE SAME LOCATION. CONNECT NEW UNIT TO ALL EXISTING UTILITIES (GAS, VENT, CONDENSATE, POWER, CONTROLS, ETC) UNLESS OTHERWISE NOTED. VERIFY COMPATIBILITY OF NEW EQUIPMENT WITH EXISTING UTILITIES PRIOR TO INSTALLATION.

MECHANICAL FIRST FLOOR GENERAL NOTES
A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.

MECHANICAL KEYED NOTES
1. CONTRACTOR SHALL DEMOLISH EXISTING GAS UNIT HEATER AND PROVIDE NEW GAS UNIT HEATER IN THE SAME LOCATION. CONNECT NEW UNIT TO ALL EXISTING UTILITIES (GAS, VENT, CONDENSATE, POWER, CONTROLS, ETC) UNLESS OTHERWISE NOTED. VERIFY COMPATIBILITY OF NEW EQUIPMENT WITH EXISTING UTILITIES PRIOR TO INSTALLATION.
2. EXISTING GAS UNIT HEATER TO REMAIN.



STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



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SCOTT A. MOSELEY
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MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01
SITE # 6001
FACILITY #8136001001
8136001007

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SHEET TITLE:

MECHANICAL SUPPLY
BUILDING FLOOR PLANS -
RENOVATION ALTERNATE #1

SHEET NUMBER:

M-110

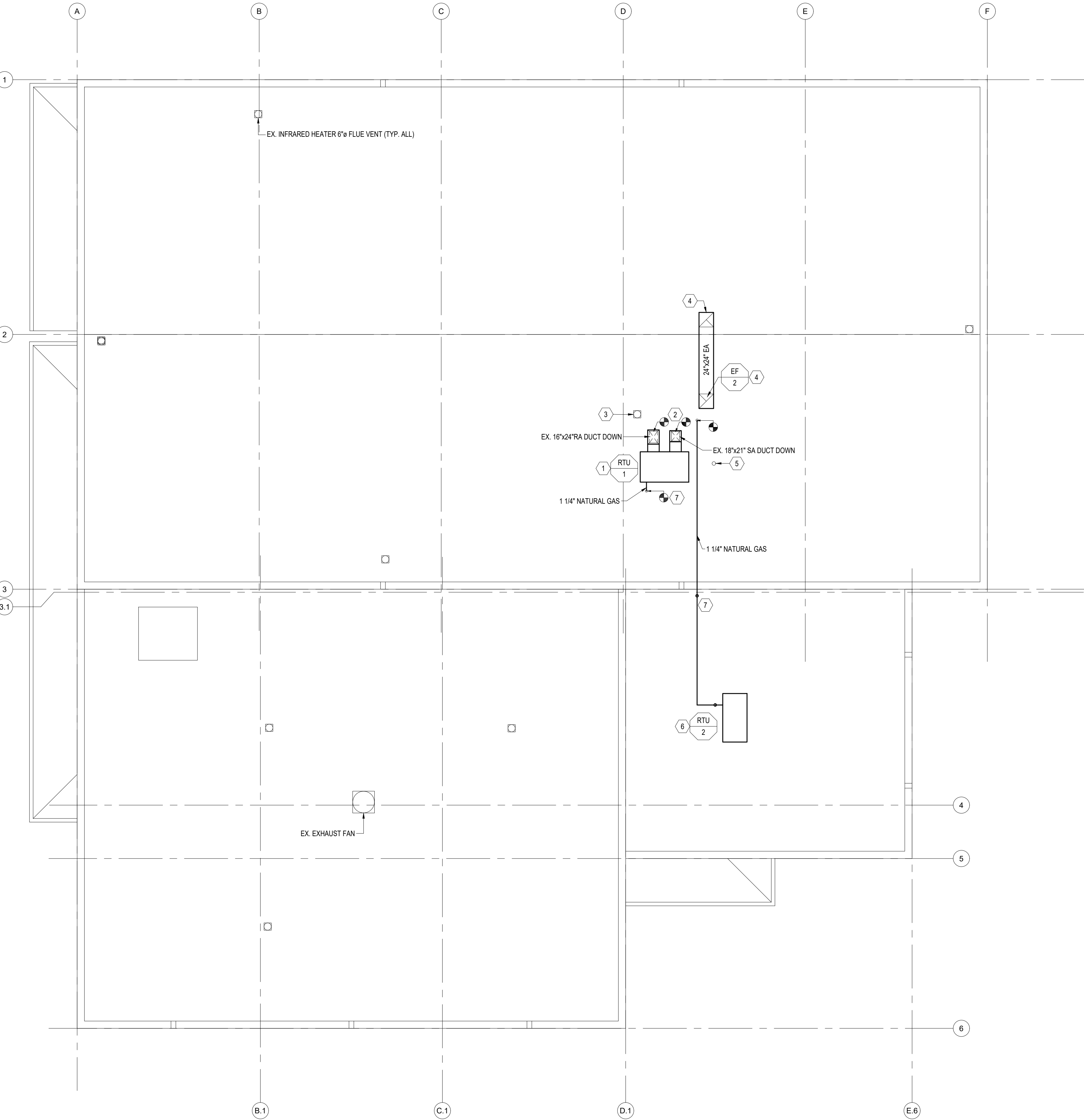
06/25/2026
18 OF 45 SHEETS

MECHANICAL GENERAL RENOVATION NOTES

A. CONTRACTOR TO VERIFY EXISTING ROOF CURB AND RAIL DIMENSIONS PRIOR TO ORDERING NEW CURB ADAPTERS AND INSTALLATION OF NEW ROOF TOP UNITS.

B. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.

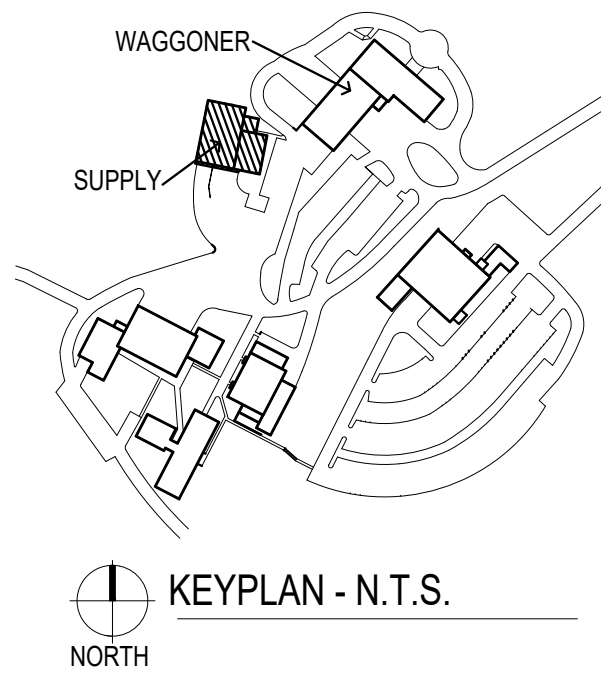
- # MECHANICAL KEYED NOTES
1. PROVIDE NEW ROOF TOP UNIT AND ALL ASSOCIATED CONTROLS, PIPING, AND NEW MECHANICAL EQUIPMENT RAILS.
 2. CONNECT NEW RTU-1 MOUNTED DUCTWORK INTO EXISTING SUPPLY AIR DUCTWORK DOWN. CONNECT NEW RETURN AIR DUCTWORK INTO EXISTING RETURN DUCTWORK DOWN.
 3. EXISTING FLUE PIPING UP THROUGH ROOF STRUCTURE TO BE EXTENDED 3 FEET ABOVE RTU-1.
 4. PROVIDE NEW IN-LINE EXHAUST FAN TO BE INSTALLED BELOW ROOF STRUCTURE. DUCTWORK TO GO UP THROUGH ROOF STRUCTURE AT EXISTING ROOF PENETRATION. ROUTE DISCHARGED EXHAUST AIR 10' AWAY FROM OUTSIDE AIR INTAKE OF RTU-1. DIRECT EXHAUST DUCTWORK 90° DOWNWARD AND PROVIDE WIRE MESH SCREEN PRIOR TO DUCT TERMINATION TO PREVENT WATER AND FOREIGN OBJECTS FROM ENTERING. PROVIDE NEW DUCT SUPPORT RAILS. SEE DETAIL ON M-501.
 5. EXISTING PLUMBING VENTS UP THROUGH ROOF STRUCTURE TO BE EXTENDED 3' ABOVE RTU-1.
 6. PROVIDE NEW ROOF TOP UNIT AND ALL ASSOCIATED CONTROLS, PIPING, AND NEW ROOF CURB ADAPTER. CONNECT NEW ROOF TOP UNIT MOUNTED DUCTWORK INTO EXISTING SUPPLY AND RETURN DUCTWORK DOWN.
 7. PROVIDE NEW NATURAL GAS PIPING TO NEW RTU'S. SIZE ROOF TOP UNIT'S NATURAL GAS INLET CONNECTION PER MANUFACTURER'S RECOMMENDATION.



MECHANICAL SUPPLY BUILDING ROOF PLAN - RENOVATION BID ALTERNATE #1

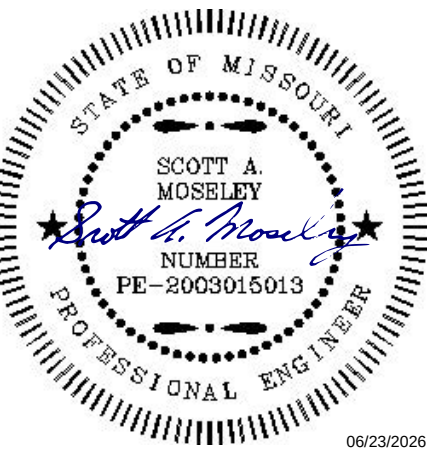
SCALE: 1/8" = 1'-0"

BLDG. NORTH



STATE OF MISSOURI
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GOVERNOR

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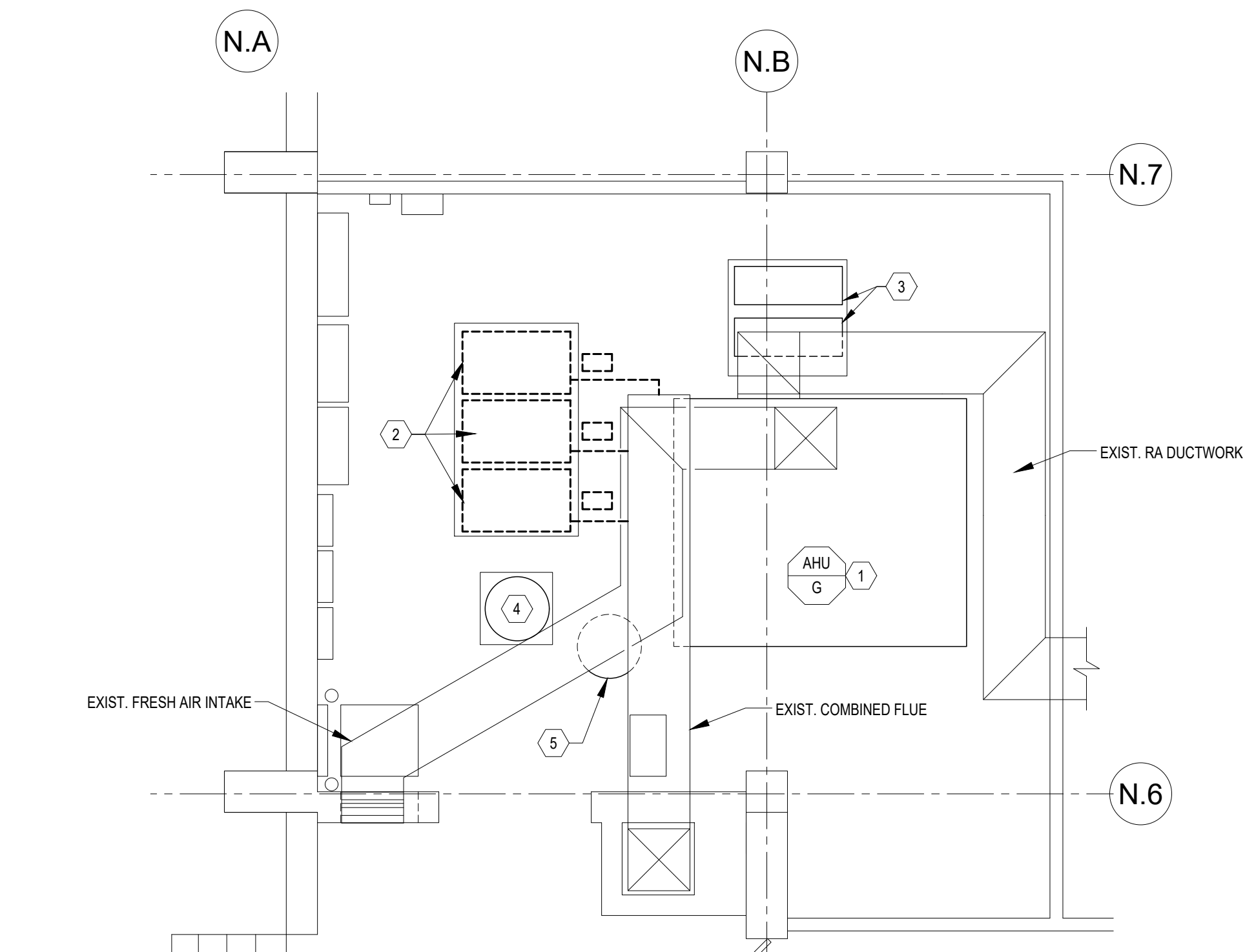
SHEET TITLE:

MECHANICAL SUPPLY
BUILDING ROOF PLAN -
RENOVATION ALTERNATE #1

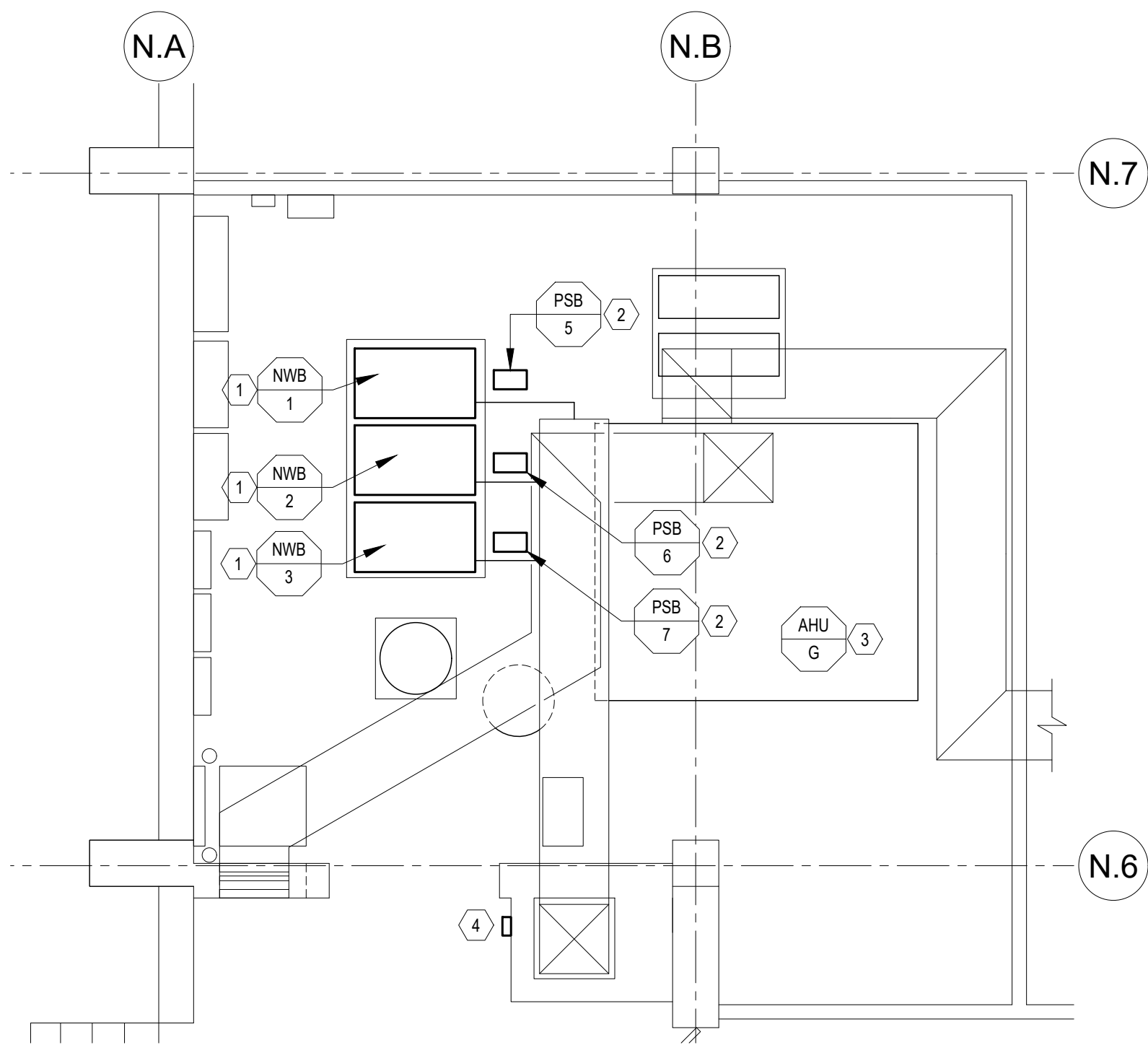
SHEET NUMBER:

M-111

06/25/2026
19 OF 45 SHEETS



1
M-112
MECHANICAL NORTHWING BASEMENT FLOOR PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"



2
M-112
MECHANICAL NORTHWING BASEMENT FLOOR PLAN - RENOVATION
SCALE: 1/4" = 1'-0"

MECHANICAL GENERAL DEMOLITION NOTES

- A. THESE DRAWINGS MAY NOT FULLY DEPICT ALL AS-BUILT CONDITIONS. NOTIFY THE ENGINEER AT ONCE SHOULD A DISCREPANCY OR OMISSION BE FOUND THAT WILL IMPACT THE WORK THAT IS TO BE COMPLETED.
- B. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- C. CONTRACTOR SHALL COORDINATE DELIVERY OF NEW EQUIPMENT AND DEMOLITION OF EXISTING WORK TO ENSURE MINIMIZED DOWN TIME. THIS APPLIES ESPECIALLY TO HEATING SYSTEMS.

MECHANICAL DEMOLITION KEYED NOTES

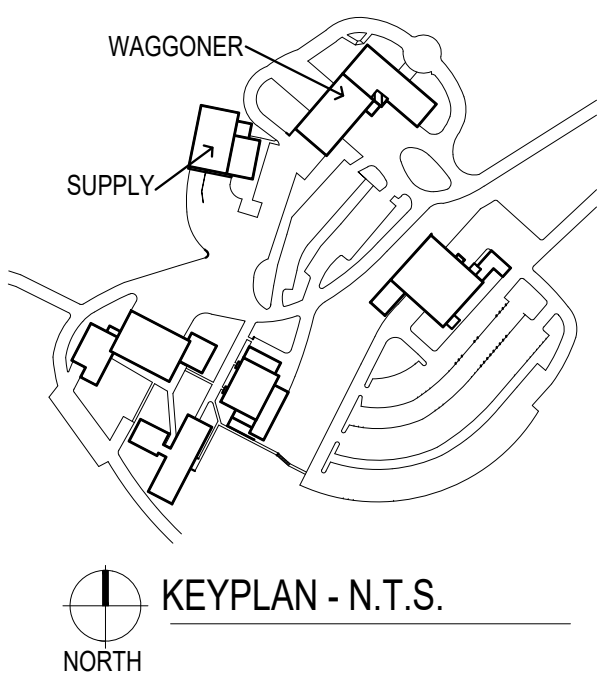
- EXISTING AHU-G AND ALL ASSOCIATED PIPING, DUCTWORK, ETC TO REMAIN. SEE ELECTRICAL PLANS FOR INFORMATION REGARDING VARIABLE FREQUENCY DRIVE DEMOLITION.
- DEMOLISH EXISTING BOILER AND ASSOCIATED EXISTING IN-LINE BOILER PUMP COMPLETELY. DEMOLISH EXISTING PIPING BETWEEN BOILER AND NEAREST ISOLATION VALVE ON HOT WATER SUPPLY AND RETURN LINE. DEMOLISH ASSOCIATED BOILER FLUE BACK TO COMBINED MAIN FLUE VENTING. DISCONNECT EXISTING AIR INTAKE AND GAS PIPING FROM DEMOLISHED BOILER AND CAP OPEN ENDS.
- EXISTING PUMP TO REMAIN.
- EXISTING DOMESTIC WATER HEATER TO REMAIN.
- EXISTING GLYCOL MAKE-UP UNIT AND WATER TREATMENT SYSTEM TO REMAIN.

MECHANICAL GENERAL RENOVATION NOTES

- B. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
- C. ROOM HAS BEEN DEEMED TO BE LESS THAN 500 SQUARE FEET. NEW EMERGENCY STOP SHALL BE INSTALLED ON INTERIOR SIDE OF EXTERIOR DOOR. E-STOP SHALL BE TIED INTO ALL NEW BOILERS.

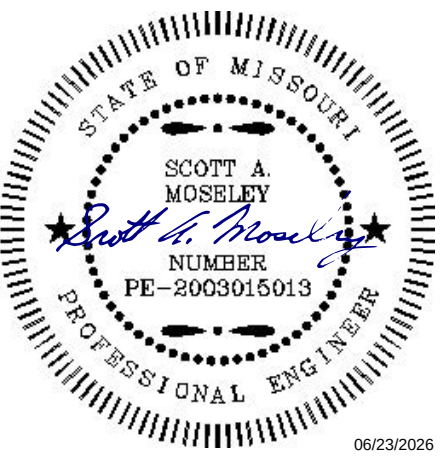
MECHANICAL RENOVATION KEYED NOTES

- PROVIDE NEW BOILER ON EXISTING EQUIPMENT PAD. RECONNECT BOILER TO COMBUSTION AIR INTAKES, AND GAS PIPING. PROVIDE NEW FLUE VENTING FROM BOILER TO COMBINED FLUE MAIN. FOLLOW MANUFACTURER'S INSTRUCTIONS REGARDING COMBINED FLUE REQUIREMENTS. BOILERS SHALL COMMUNICATE WITH EACH OTHER AND THEIR RESPECTIVE BOILER PUMP. HEATING WATER SYSTEM SHALL BE REBALANCED TO SAME CONDITIONS PRIOR TO CONSTRUCTION.
- PROVIDE NEW IN-LINE BOILER PUMPS IN SAME LOCATION OF DEMOLISHED PUMPS. PROVIDE NEW HOT WATER SUPPLY AND RETURN PIPING BACK TO NEW BOILERS. SIZE PIPING TO MATCH BOILER MANUFACTURER'S RECOMMENDATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RE-BALANCING EXISTING AIR HANDLER SUPPLY FAN. VERIFY EXISTING AHU-G PRIOR TO BEGINNING OF CONSTRUCTION.
- PROVIDE NEW E-STOP FOR NEW BOILERS INSTALLED IN MECHANICAL ROOM. E-STOPS SHALL BE TIED INTO ALL NEW BOILERS, COORDINATE WITH ELECTRICAL CONTRACTOR.



STATE OF MISSOURI
MIKE KEHOE
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MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
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8136001007

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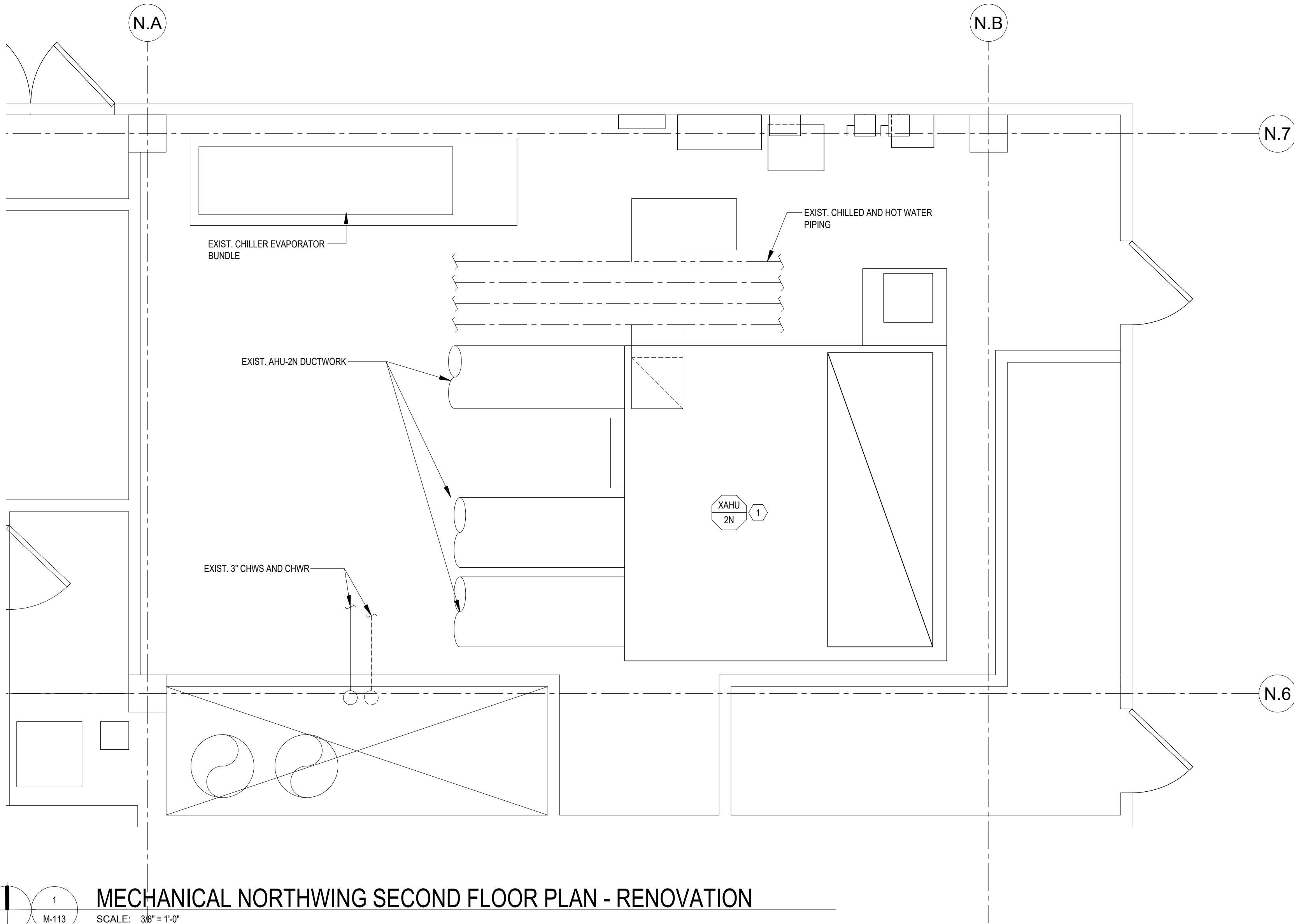
MECHANICAL NORTHWING
BASEMENT FLOOR PLANS-
DEMOLITION &
RENOVATION

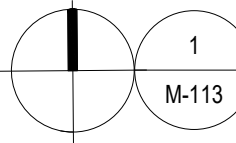
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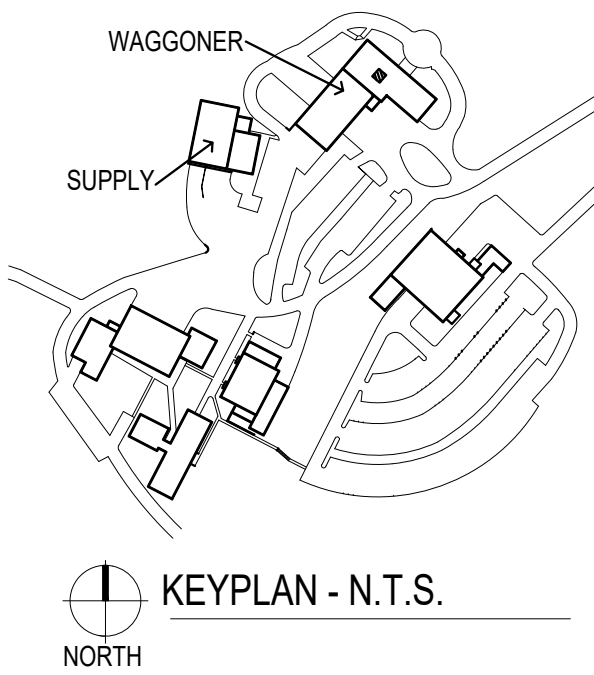
M-112

06/25/2026
20 OF 45 SHEETS

MECHANICAL GENERAL RENOVATION NOTES
A. PROTECT EXISTING SYSTEMS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR SHALL USE CAUTION WHEN REMOVING EQUIPMENT, DUCTWORK, ETC TO ENSURE THAT DAMAGE IS NOT DONE TO OTHER TRADES THAT ARE TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ITEMS OUTSIDE THE SCOPE OF WORK AND SHALL REPAIR/REPLACE AT NO COST TO THE OWNER.
MECHANICAL KEYED NOTES
1. CONTRACTOR SHALL BE RESPONSIBLE FOR RE-BALANCING EXISTING AIR HANDLER SUPPLY FAN. VERIFY EXISTING AHU-ZN CFM PRIOR TO BEGINNING OF CONSTRUCTION. SEE ELECTRICAL PLANS FOR INFORMATION REGARDING THE DEMOLITION OF EXISTING VFD.



 1
M-113
MECHANICAL NORTHWING SECOND FLOOR PLAN - RENOVATION
SCALE: 3/8" = 1'-0"



STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

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SHEET TITLE:

MECHANICAL NORTHWING
SECOND FLOOR PLAN -
RENOVATION

SHEET NUMBER:

M-113

06/25/2026
21 OF 45 SHEETS



Professional of Record:

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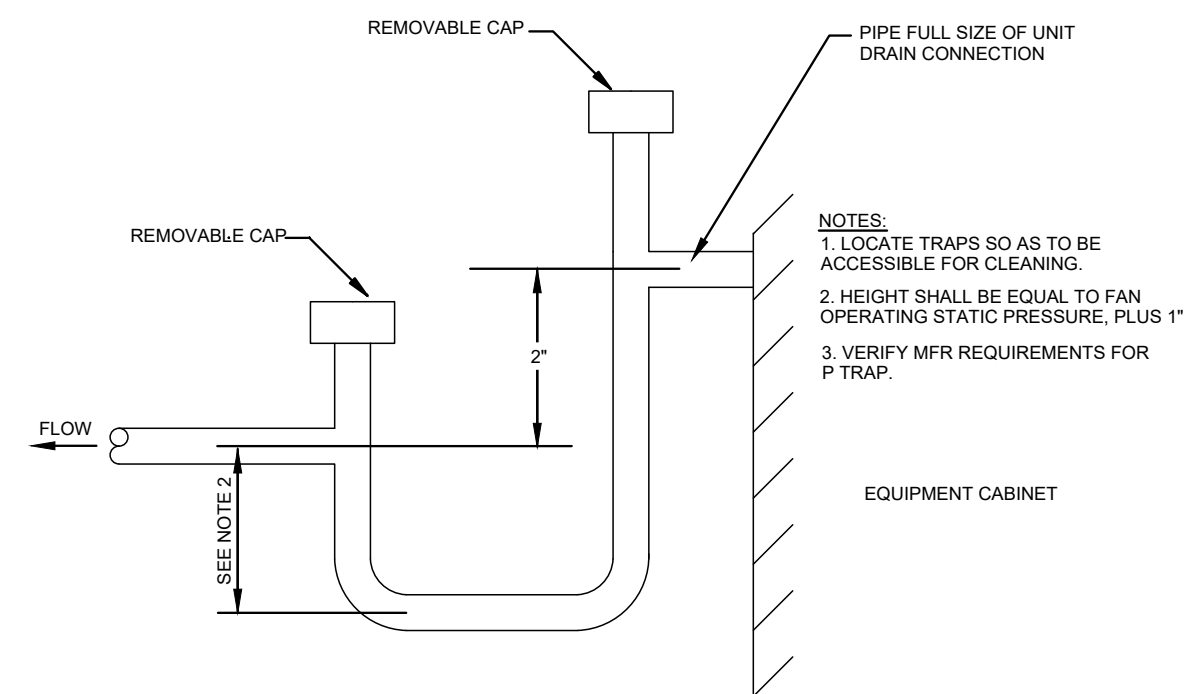
SHEET TITLE:

MECHANICAL DETAILS

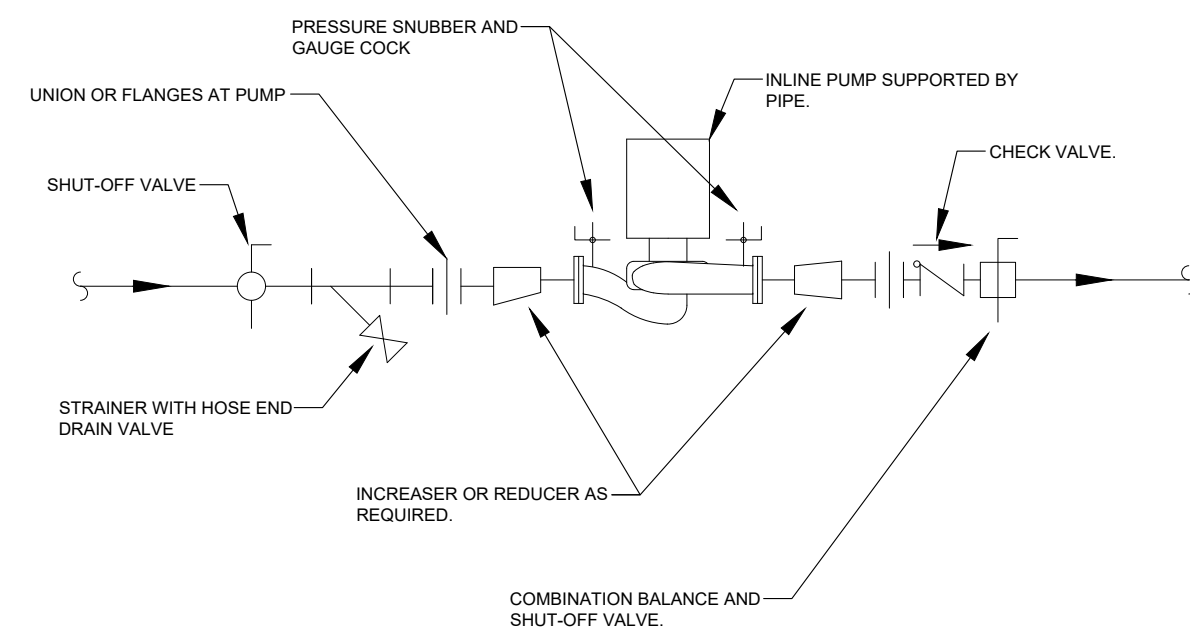
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M-501

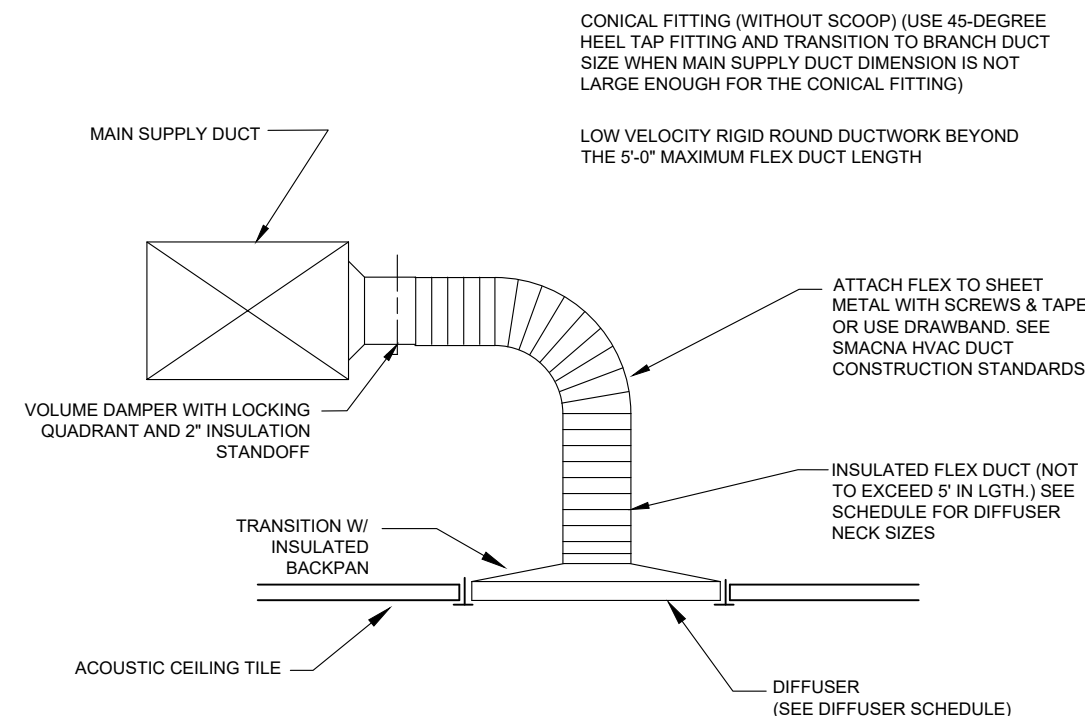
06/25/2026
22 OF 45 SHEETS



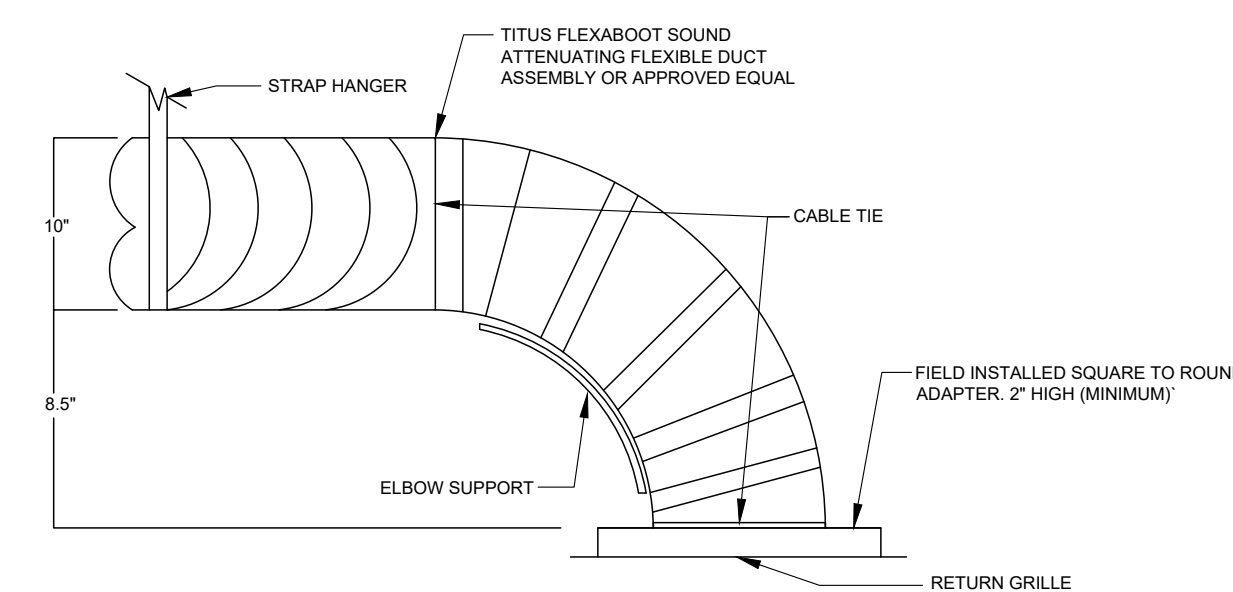
9 CONDENSATE DRAIN DETAIL
SCALE: NONE



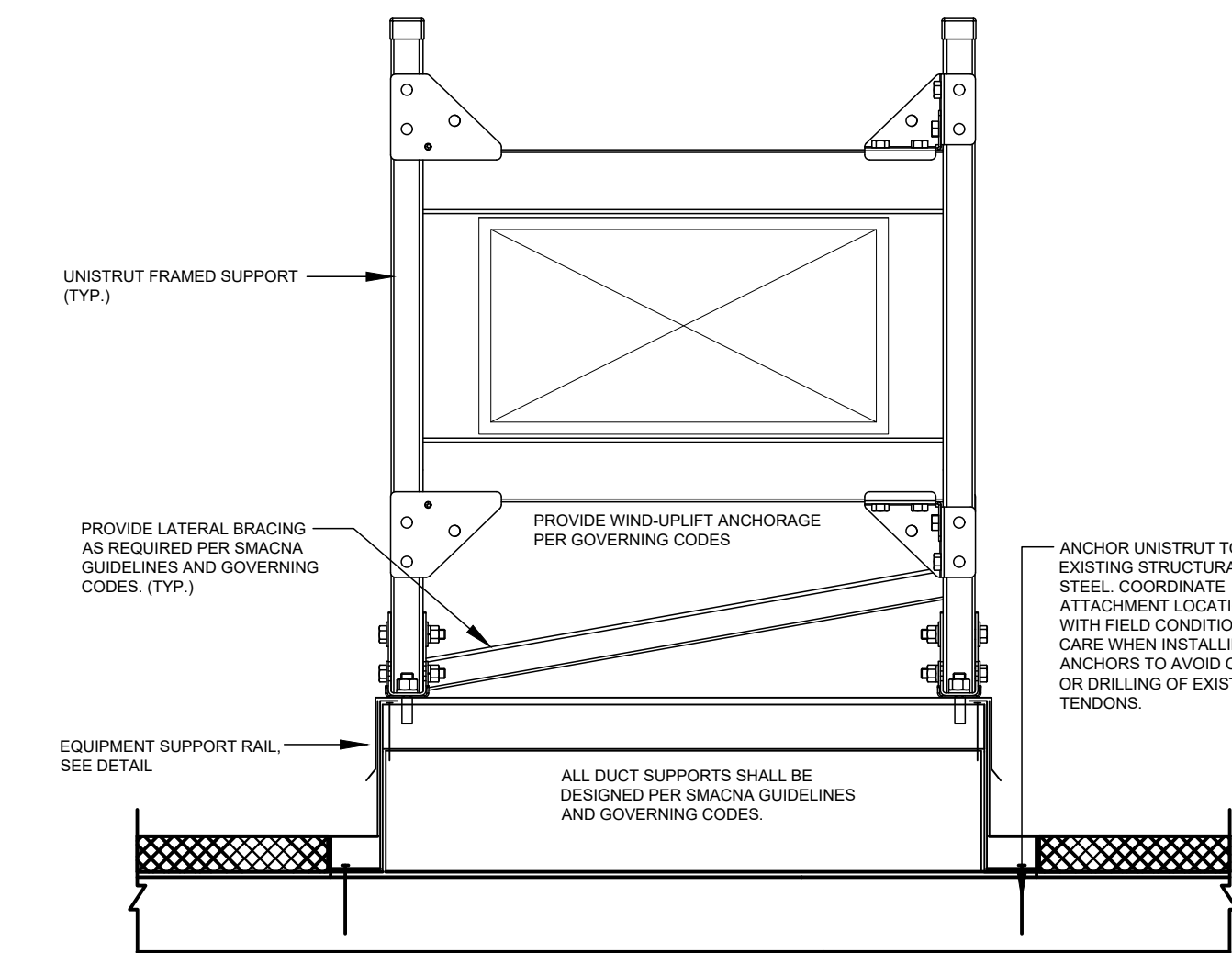
8 INLINE CIRCULATING PUMP
SCALE: NONE



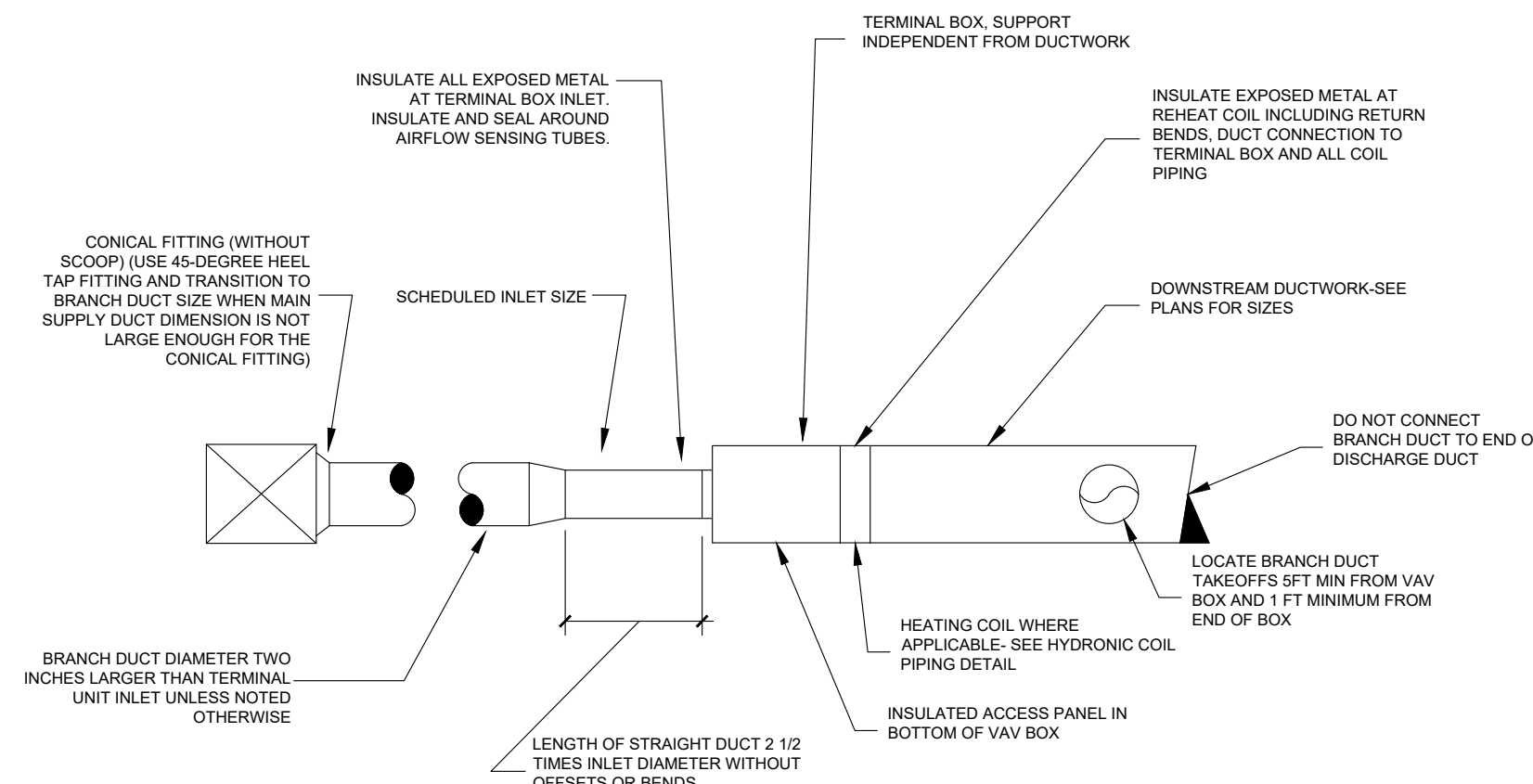
7 DIFFUSER TAP DETAIL
SCALE: NONE



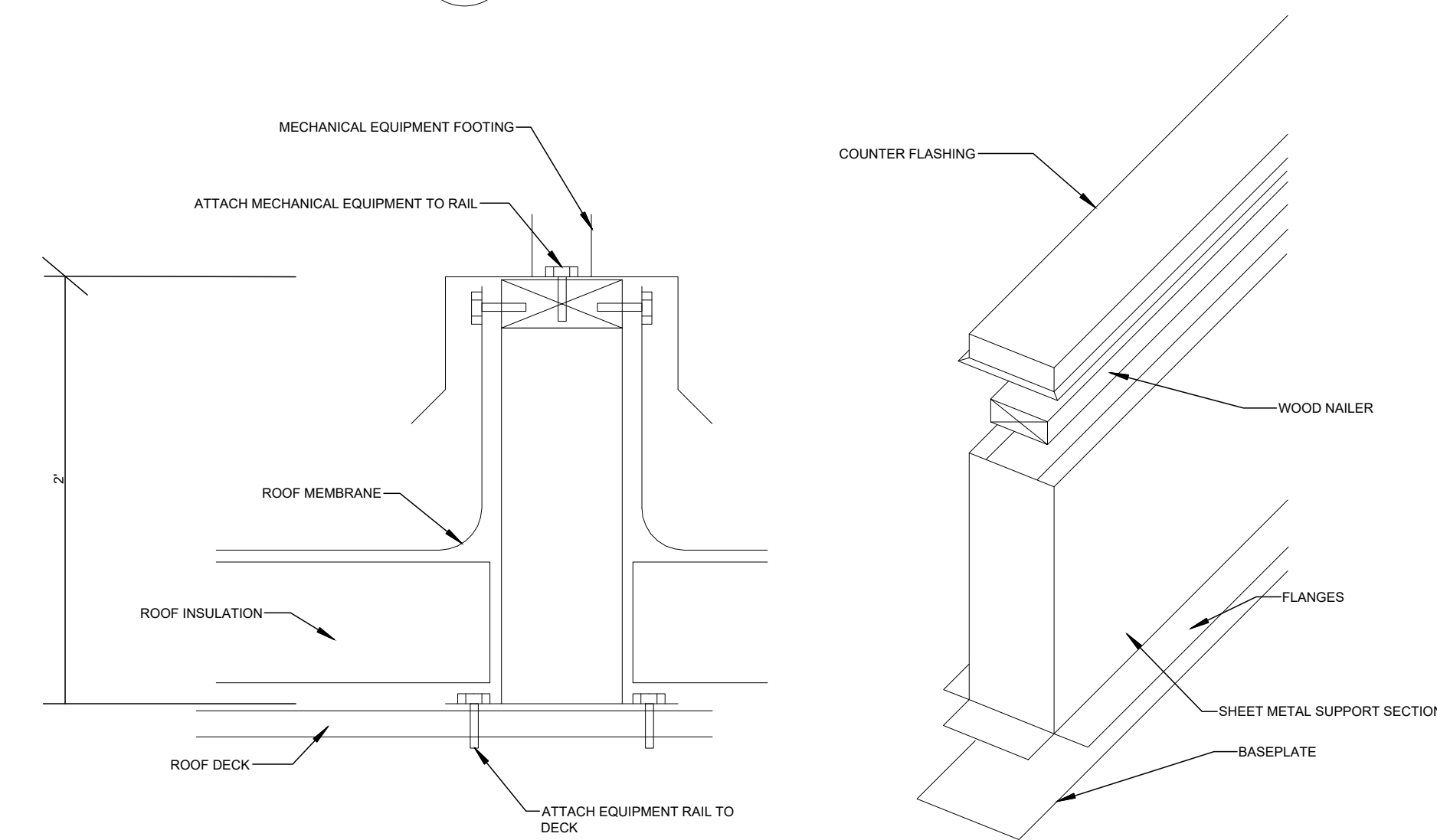
6 DUCTED RETURN AIR BOOT
SCALE: NONE



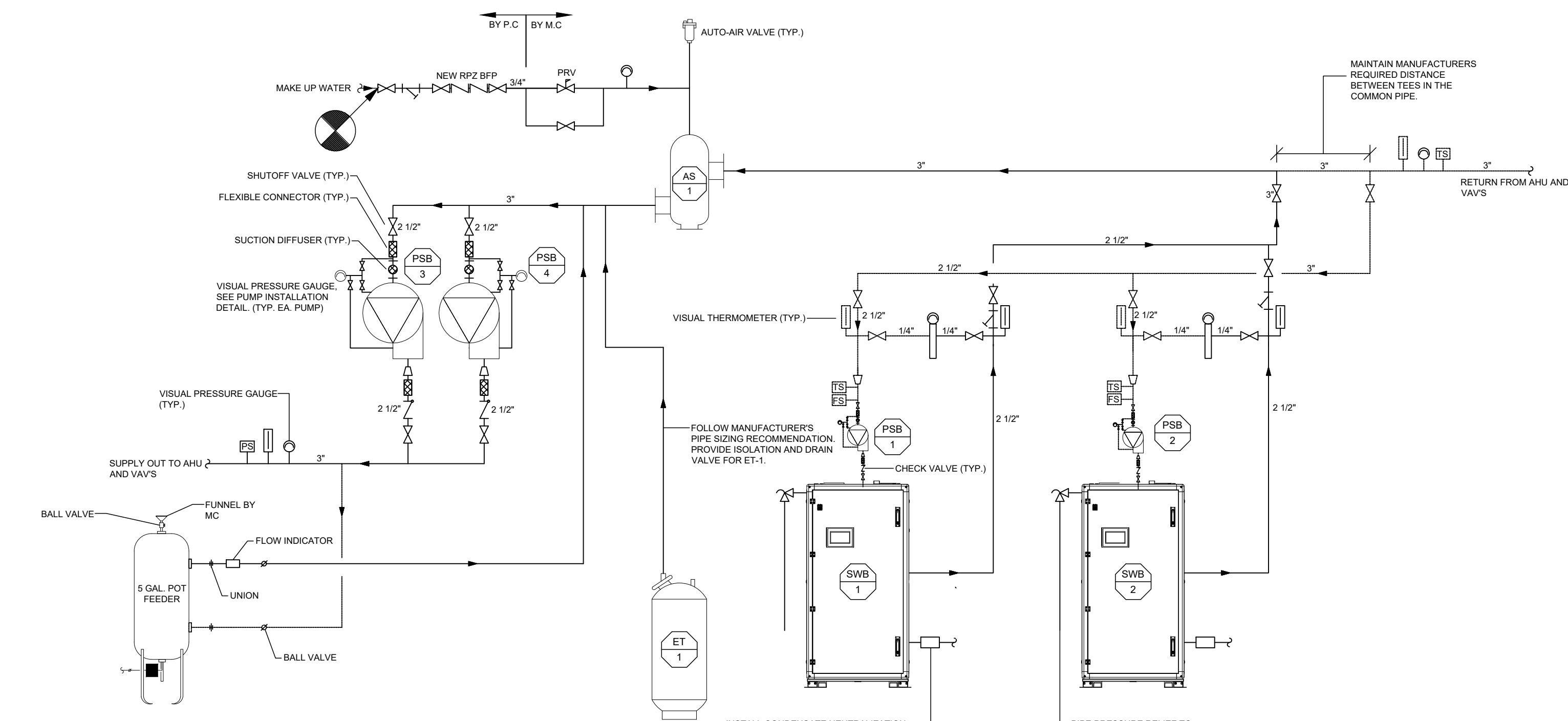
5 DUCTWORK SUPPORT ON ROOF
SCALE: NONE



4 TYPICAL VAV RUNOUT DETAILS
SCALE: NONE



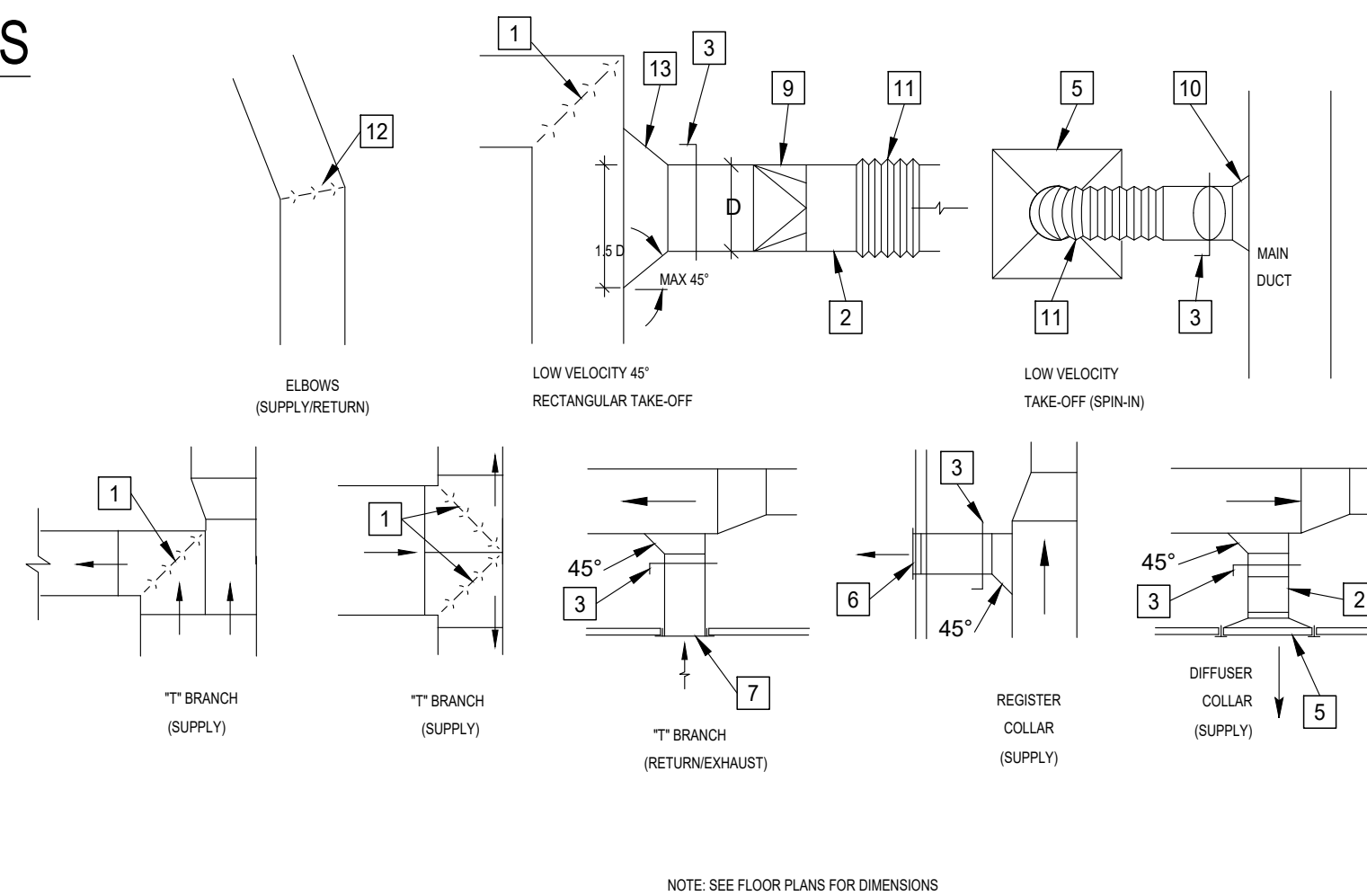
3 MECHANICAL EQUIPMENT RAIL DETAIL
SCALE: NONE



2 HEATING WATER FLOW DIAGRAM
SCALE: NONE

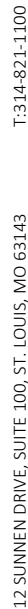
KEYED NOTES

- SINGLE THICKNESS TURNING VANES IN 90° ELBOW.
- RIGID OR FLEX COLLAR CONNECTION TO DIFFUSER.
- VOLUME DAMPER (WHERE SHOWN) WITH INSULATION STANDOFF AND LOOKING QUADRANT (DURD DYNE BRST SERIES).
- ADJUSTABLE SPLITTER DAMPER.
- SUPPLY AIR LAY-IN TYPE CEILING DIFFUSER.
- EXHAUST RETURN AIR FLUSH MOUNT SIDEWALL GRILLE.
- EXHAUST RETURN AIR FLUSH MOUNT CEILING GRILLE.
- CONT. WELD FOR SHOP MADE FITTINGS.
- RECTANGULAR TO ROUND TRANSITION.
- CONICAL BELLMOUTH SPIN-IN FITTING WITHOUT SCOOP.
- FLEX DUCT 2' MAXIMUM LENGTH.
- SINGLE THICKNESS TURNING VANES IN ALL ELBOWS 30° AND GREATER.
- PROVIDE 45° TAKEOFF ON BOTH ENDS FOR SUPPLY BRANCH CONNECTION TO MAIN SUPPLY DUCT TO ALLOW AIR FLOW FROM EITHER DIRECTION.



1 DUCT FITTINGS DETAIL
SCALE: NONE

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PROJECT # R2411-01

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RETURN FAN ARRAY SCHEDULE											
MARK	CFM	TSP (IN. H2O)	DRIVE	ELECTRICAL						WEIGHT	REMARKS
				FANS (#)	HP (PER FAN)	VOLTAGE	PHASE	MCA	MOCP		
RF - 1	18,000	1.5	DIRECT	2	7.5	208	3	-	-	910 LBS	ALL

NOTES:

1. DISCONNECT SWITCH
2. DIRECT MOUNT ISOLATORS, ISOLATOR-RUBBER MOUNT
3. ELECTRICAL CONTRACTOR SHALL PROVIDE VFD
4. 2" SOUND ABSORBING INSULATION
5. PROVIDE RATED SPRING VIBRATION ISOLATION HANGERS



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HIGHWAY PATROL

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SHEET TITLE:

MECHANICAL
SCHEDULES 2

SHEET NUMBER:

M-602

06/25/2026
24 OF 45 SHEETS

TERMINAL UNIT SCHEDULE																										
MARK	UNIT SIZE	COOLING CFM				HEATING CFM				COOLING AIRFLOW APD	HOT WATER HEATING COIL								FAN / ELECTRICAL							REMARKS
		OCCUPIED		UNOCCUPIED		OCCUPIED		UNOCCUPIED			CAPACITY (MBH)	ROWS	WPD	GPM	EAT	LAT	EWT	HEATING WATER DELTA-T	TSP	HP	VOLTS	PHASE	MOTOR TYPE	MCA	MOCP	
		MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN																	
VAV-1	6	320	130	320	130	130	80	130	80	0.40 IN. H2O	6.91	3 HW	0.27 FT. H2O	0.5	55°F	95°F	130°F	27.72°F	-	-	-	-	-	-	-	1-8
VAV-2	12	920	460	920	460	850	500	850	500	0.41 IN. H2O	42.16	4 HW	0.72 FT. H2O	2.82	55°F	93.9°F	130°F	30°F	-	-	-	-	-	-	-	1-8
VAV-3	4	70	40	70	40	50	30	50	30	0.02 IN. H2O	2.62	1 HW	0.53 FT H2O	0.5	55°F	95.28°F	130°F	10.51°F	-	-	-	-	-	-	-	1-8
FTU-4	10	1,170	585	1,170	585	1,170	585	1,170	585	-	22.84	1 STD	0.78 FT. H2O	1.55	62.5°F	80.50°F	130°F	22.84°F	0.305 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL
VAV-5	10	580	290	580	290	420	210	420	210	0.26 IN. H2O	19.51	3 HW	0.43 FT. H2O	1.30	55°F	97.84°F	130°F	30°F	-	-	-	-	-	-	-	1-8
CAV-6	12	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	0.28 IN. H2O	36.3	3 HW	0.58 FT. H2O	2.22	55°F	97°F	130°F	30°F	-	-	-	-	-	-	-	1-8
FTU-7A	10	875	300	875	300	875	200	875	200	-	17.28	1 STD	0.46 FT. H2O	1.17	64.86°F	92.2°F	130°F	30°F	0.284 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL
FTU-7B	10	875	300	875	300	875	200	875	200	-	17.28	1 STD	0.46 FT. H2O	1.17	64.86°F	92.2°F	130°F	30°F	0.284 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL
VAV-8	10	780	390	780	390	650	325	650	325	0.55 IN. H2O	32.98	4 HW	1.51 FT. H2O	2.20	55°F	101.79°F	130°F	30°F	-	-	-	-	-	-	-	1-8
VAV-9	10	625	320	625	320	550	275	550	275	0.29 IN. H2O	23.86	3 HW	0.63 FT. H2O	1.61	55°F	95°F	130°F	29.67°F	-	-	-	-	-	-	-	1-8
VAV-10	8	500	250	500	250	450	225	450	225	0.55 IN. H2O	19.68	4 HW	0.26 FT. H2O	1.41	55°F	95.32°F	130°F	28°F	-	-	-	-	-	-	-	1-8
VAV-11	8	465	230	465	230	430	210	430	210	0.49 IN. H2O	19.04	4 HW	0.24 FT. H2O	1.36	55°F	95.83°F	130°F	28°F	-	-	-	-	-	-	-	1-8
VAV-12	4	140	70	140	70	90	45	90	45	0.04 IN. H2O	3.90	1 HW	2.46 FT. H2O	1.21	55°F	95°F	130°F	6.45°F	-	-	-	-	-	-	-	1-8
VAV-13	10	640	320	640	320	445	220	445	220	0.30 IN. H2O	20.37	3 HW	0.46 FT. H2O	1.36	55°F	97.21°F	130°F	30°F	-	-	-	-	-	-	-	1-8
VAV-14	8	530	265	530	265	445	220	445	220	0.60 IN. H2O	19.52	4 HW	0.26 FT. H2O	1.4	55°F	95.45°F	130°F	28°F	-	-	-	-	-	-	-	1-8
VAV-15	10	785	390	785	390	740	400	740	400	0.55 IN. H2O	36.09	4 HW	1.78 FT. H2O	2.41	55°F	96.6°F	130°F	30°F	-	-	-	-	-	-	-	1-8
VAV-16	5	330	160	330	160	300	175	300	175	0.34 IN. H2O	14.46	3 HW	1.74 FT. H2O	1.45	55°F	93.1°F	130°F	20°F	-	-	-	-	-	-	-	1-8
VAV-17	8	490	245	490	245	375	225	375	225	0.27 IN. H2O	21.67	2 HW	0.17 FT. H2O	1.44	55°F	96.4°F	130°F	30°F	-	-	-	-	-	-	-	1-8
VAV-18	10	640	320	640	320	490	245	490	245	0.30 IN. H2O	22.70	3 HW	0.64 FT. H2O	1.63	55°F	97.72°F	130°F	28°F	-	-	-	-	-	-	-	1-8
VAV-19	10	650	325	650	325	530	265	530	265	0.31 IN. H2O	23.10	3 HW	0.58 FT. H2O	1.54	55°F	95.19°F	130°F	30°F	-	-	-	-	-	-	-	1-8
FTU-20A	12	1,500	500	1,500	500	1,500	300	1,500	300	-	24.77	1 STD	0.91 FT. H2O	1.68	65°F	90.37°F	130°F	30°F	0.333 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL
FTU-20B	12	1,500	500	1,500	500	1,500	300	1,500	300	-	24.77	1 STD	0.91 FT. H2O	1.68	65°F	90.37°F	130°F	30°F	0.333 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL
FTU-20C	12	1,500	500	1,500	500	1,500	300	1,500	300	-	24.77	1 STD	0.91 FT. H2O	1.68	65°F	90.37°F	130°F	30°F	0.333 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL
FTU-21	10	1,175	500	1,175	500	1,175	275	1,175	275	-	22.20	1 STD	0.74 FT. H2O	1.5	63.62°F	95.27°F	130°F	30°F	0.305 FT. H2O	1	208	1	PSC	8.25 A	15 A	ALL

NOTES:

- FOIL FACED LINER.
 - DISCHARGE AIR TEMPERATURE SENSOR.
 - DDC CONTROLLER SUPPLIED BY CONTROLS CONTRACTOR AND FIELD INSTALLED.
 - COORDINATE LH OR RH CONTROLS PANEL LOCATION WITH FIELD CONTROLS PRIOR TO ORDERING.
 - INSULATED ACCESS PANEL ON BOTTOM IN FRONT OF REHEAT COIL.
 - PRESSURE INDEPENDENT CONTROL VALVES.
 - 2-WAY CONTROL VALVE.
8. SERIES FAN POWERED FAN TERMINAL UNITS

AIR DEVICE SCHEDULE							
MARK	MATERIAL	TYPE	NECK SIZE	PANEL SIZE	FRAME TYPE	FINISH	REMARKS
S - 1	ALUM.	SQUARE PLAQUE	10"Ø	24"X24"	LAY-IN	B12 WHITE	1,2
S - 2	ALUM.	SQUARE PLAQUE	8"Ø	24"X24"	LAY-IN	B12 WHITE	1,2
S - 3	ALUM.	SQUARE PLAQUE	6"Ø	24"X24"	LAY-IN	B12 WHITE	1,2
S - 4	ALUM.	SQUARE PLAQUE	6"Ø	12"X12"	LAY-IN	B12 WHITE	1,2
S - 5	ALUM.	EGGCRATE	-	12"X12"	DUCT-MOUNTED	MILL	1,2
S - 6	ALUM.	SQUARE PLAQUE	12"Ø	24"X24"	LAY-IN	B12 WHITE	1,2
R - 1	ALUM.	LINEAR BAR	-	24"X6"	SURFACE-MOUNTED	MILL	3,4
R - 2	ALUM.	PERFORATED	16"Ø	24"X24"	LAY-IN	B12 WHITE	1,2
R - 3	ALUM.	LINEAR BAR	-	48"X24"	SURFACE-MOUNTED	MILL	3,4
R - 4	ALUM.	LOUVERED	-	24"X6"	DUCT-MOUNTED	MILL	1,2
R - 5	ALUM.	PERFORATED	6"Ø	12"X12"	LAY-IN	B12 WHITE	1,2
R - 6	ALUM.	PERFORATED	8"Ø	12"X12"	LAY-IN	B12 WHITE	1,2
R - 7	ALUM.	PERFORATED	8"Ø	24"X24"	LAY-IN	B12 WHITE	1,2
E - 1	ALUM.	EGGCRATE	8"Ø	24"X24"	LAY-IN	B12 WHITE	1,2

NOTES:
1. FOIL FACED INSULATED DIFFUSER BACKPAN WITH 1" FIBERGLASS INSULATION
2. INTEGRAL OPPOSED BLADE DAMPER
3. CONTRACTOR SHALL FIELD VERIFY EXISTING DIFFUSER LOCATIONS AND SIZES
4. CONTRACTOR SHALL PROVIDE LOAD BEARING, HEAVY DUTY FRAME

HVAC MATERIALS & INSULATION SCHEDULE										
PIPING / DUCTWORK								INSULATION		
SYSTEM	SIZE RANGE	MATERIAL	WEIGHT	STD	FITTINGS	JOINTS	NOTES	TYPE	THICKNESS	NOTES
COOLING COIL CONDENSATE (ON ROOF)	1/2" THRU 12"	COPPER	DWV	ASTM B306	WROUGHT COPPER	MECHANICAL	-	-	-	-
NATURAL GAS	1/2" THRU 2" 2-1/2" AND OVER	BLACK CARBON STEEL	SCH 40	ASTM A53ERW	150#	150# THREADED BUTTWELD	ALL FITTINGS MUST BE LABELED "WOG".	NONE	-	-
DUCTWORK	ALL	G90 GALVANIZED	DESIGN PER SMACNA STANDARDS	SMACNA	-	MECHANICAL	SEAL CLASS A, 4" PRESSURE	MINERAL FIBER BLANKET	2"	-
REFRIGERANT PIPING (INSTALLED INDOORS)	1-1/2" OR SMALLER 2" THRU 4"	COPPER	ACR - ANNEALED ACR - DRAWN TEMPER	ASME B16.22	WROUGHT COPPER	BRAZED OR SOLDERED	-	FLEXIBLE ELASTOMERIC	1" 1-1/2"	-
REFRIGERANT PIPING (INSTALLED OUTDOORS)	1-1/2" OR SMALLER 2" THRU 4"	COPPER	ACR - ANNEALED ACR - DRAWN TEMPER	ASME B16.22	WROUGHT COPPER	BRAZED OR SOLDERED	-	FLEXIBLE ELASTOMERIC	1" 1-1/2"	JACKET - 0.05" ALUMINUM
HEATING HOT WATER (HWS & HWR)	1/2" THRU 2" 2-1/2" AND OVER	CARBON STEEL COPPER	SCH 40	A53B ERW/CW ASTM B88 TYPE L	MALLEABLE IRON WROUGHT COPPER	150# THREADED MALLEABLE IRON MECHANICAL	-	PRE-FORMED MINERAL FIBER	1-1/2"	1,2
AIR SEPARATOR	ALL	-	-	-	-	-	-	ELASTOMERIC	2" 1-1/2"	-
EXPANSION TANK	ALL	-	-	-	-	-	-	ELASTOMERIC	1/2"	-
EXISTING SANITARY PIPING	ALL	-	-	-	-	-	-	FIBERGLASS	1"	-

NOTES:

- FACTORY APPLIED ASJ JACKETING.
- LABEL ALL PIPING PER ANSI A13.1 STANDARDS WITH PERMANENT ADHESIVE LABELS INDICATING SERVICE AND FLOW DIRECTION. MATERIAL SHALL BE SUITABLE TO WITHSTAND OPERATING CONDITIONS FOR INSTALLED LOCATION.
- PROVIDE ALUMINUM JACKETING ON PIPING INSTALLED OUTDOORS .
- SHALL BE OWENS CORNING FOAMGLASS WITH VAPOR RETARDER.
- PROVIDE PVC JACKETING ON GLYCOL WATER PIPING IN MECHANICAL PENTHOUSE.

EXHAUST FAN SCHEDULE											
MARK	BID	CFM	ESP (IN. H2O)	DRIVE	ELECTRICAL					WEIGHT	REMARKS
					HP	VOLTAGE	PHASE	MCA	MOCP		
EF - 1	BASE BID	550	0.5	DIRECT	1/4	115	1	4.8	15	50 LBS	1-4
EF - 2	ALTERNATE #1	195	0.25	DIRECT	1/20	115	1	-	-	35 LBS	2-4
EF - 3	BASE BID	500	0.5	DIRECT	1/10	115	1	1.9	15	41 LBS	2-4

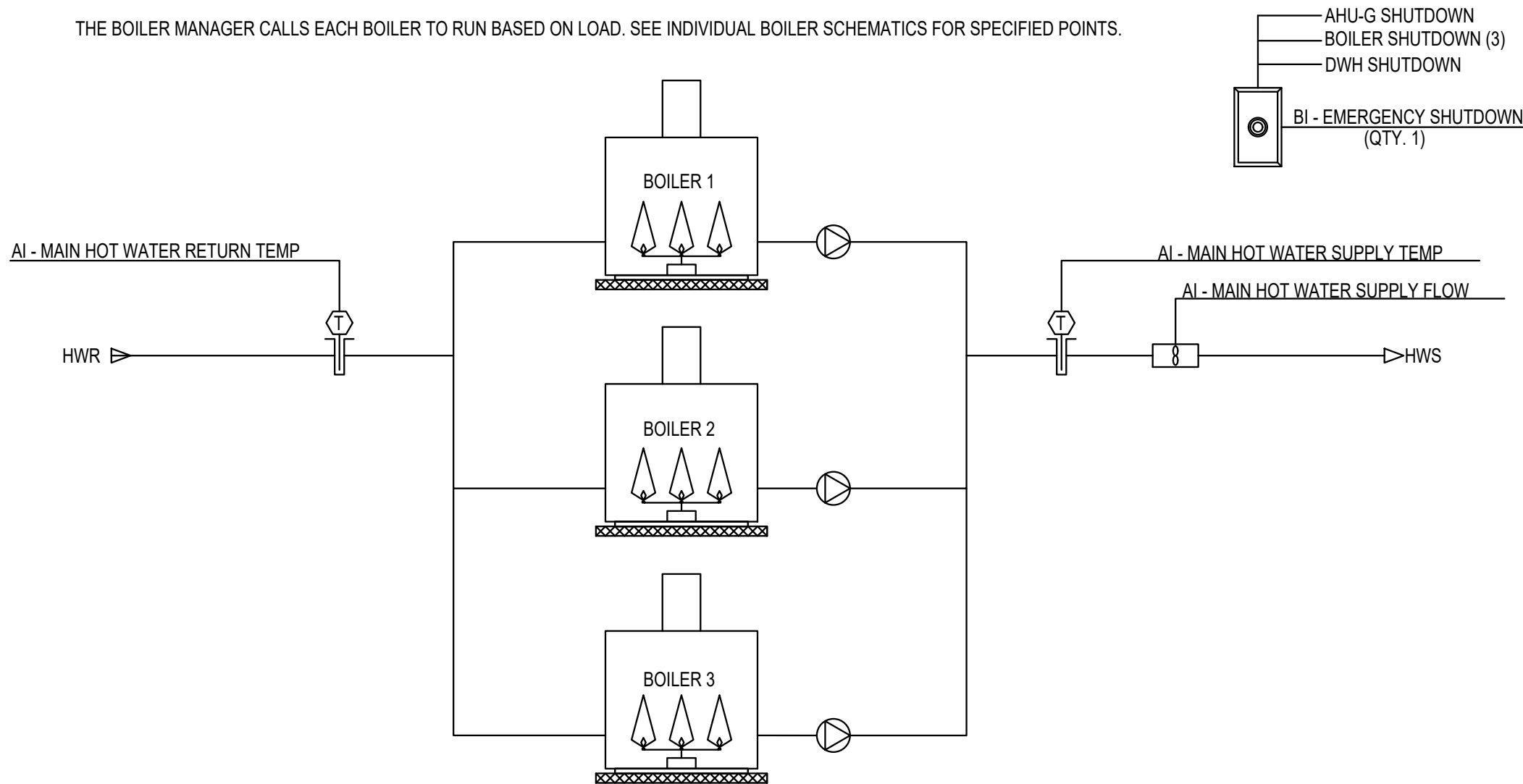
NOTES:

- HOODED WALL CAP
- BIRDSCREEN
- DISCONNECT SWITCH
- 24V MOTORIZED BACKDRAFT DAMPER.

GAS-FIRED UNIT HEATERS SCHEDULE - BID ALTERNATE #1											
MARK	TOT. MAX INPUT (MBH)	TOT. MAX OUTPUT (MBH)	OPERATING CFM	MAX. ALLOWABLE TEMP. RISE (°F)	FUEL	ELECTRICAL DATA					NOTES
						HP	VOLTS	PHASE	MOTOR AMPS	TOTAL AMPS	
GH-1	150,000	124,500	2,180	51	NATURAL GAS	1/8	115	1	2.3 A	4.05 A	ALL
GH-2	150,000	124,500	2,180	51	NATURAL GAS	1/8	115	1	2.3 A	4.05 A	ALL
GH-3	150,000	124,500	2,180	51	NATURAL GAS	1/8	115	1	2.3 A	4.05 A	ALL
GH-4	100,000	83,000	1,490	50	NATURAL GAS	1/6	120	1	2.5 A	5.05 A	ALL
GH-5	100,000	83,000	1,490	50	NATURAL GAS	1/6	120	1	2.5 A	5.05 A	ALL
GH-6	100,000	83,000	1,490	50	NATURAL GAS	1/6	120	1	2.5 A	5.05 A	ALL
GH-7	100,000	83,000	1,490	50	NATURAL GAS	1/6	120	1	2.5 A	5.05 A	ALL
NOTES: 1. HORIZONTAL VENTING 2. 100% SHUT-OFF WITH CONTINUOUS RETRY											

THIS SCHEMATIC IS A GENERAL REPRESENTATION OF A BOILER PLANT WITH EQUAL SIZE BOILERS OPERATING IN PARALLEL.

THE BOILER MANAGER CALLS EACH BOILER TO RUN BASED ON LOAD. SEE INDIVIDUAL BOILER SCHEMATICS FOR SPECIFIED POINTS.



POINTS LIST: THREE BOILER SYSTEM (TYP. OF 1)

SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS					
	GRAPHIC	AI	AO	BI	BO	AV	BV	LOOP	SCHEDULE	TREND
MAIN HOT WATER RETURN TEMPERATURE	X	X								X
MAIN HOT WATER SUPPLY FLOW	X	X								X
MAIN HOT WATER SUPPLY TEMPERATURE	X	X								X
OUTSIDE AIR TEMPERATURE	X					X				
BOILER 1 FAILURE	X									X
BOILER 2 FAILURE	X									X
BOILER 3 FAILURE	X									X
HIGH MAIN HOT WATER RETURN TEMPERATURE										X
HIGH MAIN HOT WATER SUPPLY TEMPERATURE										X
LOW MAIN HOT WATER RETURN TEMPERATURE										X
LOW MAIN HOT WATER SUPPLY TEMPERATURE										X
EMERGENCY SHUTDOWN (E-STOP)	X			X						X

SEQUENCE OF OPERATION: THREE BOILER SYSTEM (TYP. OF 1)

BOILER MANAGER SYSTEM:

BOILER MANAGER (TYPICAL OF 1)

HOT 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 54°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.

BOILER STAGING - THREE EQUAL SIZED HOT WATER BOILERS RUNNING IN PARALLEL:
THIS SECTION REFERS TO THE STAGING AND SEQUENCING OF EACH BOILER "TRAIN". THE SEQUENCE OF OPERATION FOR EACH INDIVIDUAL BOILER AND ITS ASSOCIATED SUPPORT EQUIPMENT (SUCH AS PUMPS) ARE NOT INCLUDED IN THIS SECTION.

THE CONTROLLER SHALL DETERMINE THE FACILITY HEATING LOAD AND SHALL STAGE THE BOILERS ON IN SEQUENCE TO MEET RISING HEATING DEMAND AND DROPPING MAIN HOT WATER SUPPLY TEMPERATURE WHERE:

- LOAD (MBTU/H) = [HWS TEMP (DEGREES F) - HWR TEMP (DEGREES F)] X FLOW (GPM) X 0.5
- UNITS SHALL BE CONVERTED AS REQUIRED TO REFLECT ACTUAL SYSTEM OF UNITS USED (METRIC OR ENGLISH)
- MAIN HOT WATER SUPPLY TEMPERATURE IS MEASURED AT A POINT LEAVING THE BOILER PLANT AND ENTERING THE FACILITY. THIS POINT SHALL BE DOWNSTREAM AND COMMON TO ALL BOILERS.

THE CONTROLLER SHALL DETERMINE THE FACILITY HEATING LOAD FROM:

- HWS FLOW (MAIN HWS LEAVING BOILER PLANT)
- HWS TEMPERATURE (MAIN HWS LEAVING BOILER PLANT)
- HWR TEMPERATURE (MAIN HWR RETURNING TO BOILER PLANT)

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 LEAD BOILER TRAIN SHALL RUN ANYTIME THE BOILER MANAGER IS ENABLED. ADDITIONAL BOILERS SHALL STAGE ON AS FOLLOWS. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

- SECOND BOILER:
STAGE ON IF LOAD RISES ABOVE SETPOINT* OF 475MBH
OR HOT WATER SUPPLY TEMPERATURE DROPS BELOW SETPOINT OF 125°F
STAGE OFF IF LOAD DROPS BELOW SETPOINT* BY 450MBH
AND HOT WATER SUPPLY TEMPERATURE RISES ABOVE SETPOINT BY 40°F
- THIRD BOILER:
STAGE ON IF LOAD RISES ABOVE SETPOINT* OF 1225MBH
OR HOT WATER SUPPLY TEMPERATURE DROPS BELOW SETPOINT OF 120°F
STAGE OFF IF LOAD DROPS BELOW SETPOINT* BY 1225MBH
AND HOT WATER SUPPLY TEMPERATURE RISES ABOVE SETPOINT BY 40°F

*BASED ON A PERCENTAGE OF THE RUNNING BOILER(S) COMBINED CAPACITY (ADJ. SETPOINTS) WHERE 33.47 MBTU/H = 1BHP (BOILER HORSEPOWER). IF USING METRICS, 1 KW = 3.517 MBTU/H.

THE BOILER STAGING ORDER SHALL BE USER DEFINABLE. THE DESIGNATED LEAD BOILER (USER DEFINABLE) SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):

- MANUALLY THROUGH A SOFTWARE SWITCH
- IF BOILER RUNTIME (ADJ.) IS EXCEEDED
- DAILY
- WEEKLY
- MONTHLY

EACH BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS. ON FAILURE OF ANY BOILER, THE FAILED BOILER SHALL BE "REMOVED" FROM OPERATION AND THE NEXT AVAILABLE PIECE OF EQUIPMENT AS DEFINED BY THE USER SHALL BE STAGED ON IN ITS PLACE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- BOILER1 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- BOILER2 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- BOILER3 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.

STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:
SCOTT A. MOSELEY
License Number: 2003015013
Expiration Date: 12/31/27

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DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01
SITE # 6001
FACILITY #8136001001
8136001007

REVISIONS

No. Description Date

ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: BBH
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:

MECHANICAL CONTROLS

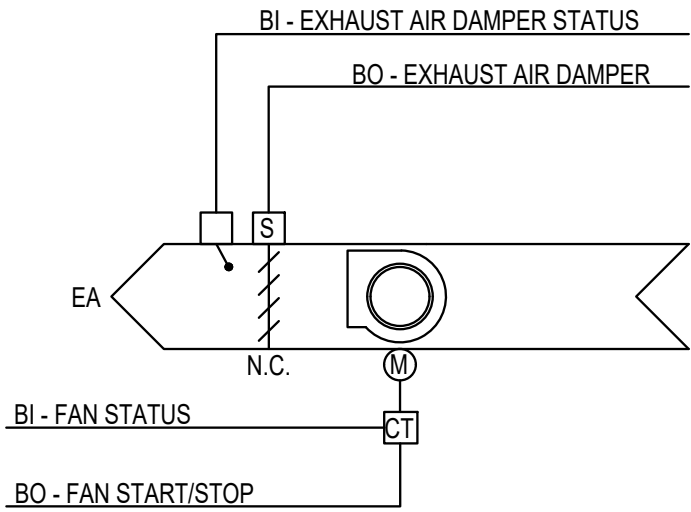
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M-603

06/25/2026
25 OF 45 SHEETS

POINTS LIST: EXHAUST FAN - ON/OFF (TYP. OF 2)

SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS						
	GRAPHIC	AI	AO	BI	BO	AV	BV	LOOP	SCHEDULE	TREND	ALARM
EXHAUST AIR DAMPER STATUS	X			X						X	
FAN STATUS	X			X						X	
EXHAUST AIR DAMPER	X			X						X	
FAN START/STOP	X				X					X	
EXHAUST AIR DAMPER FAILURE											X
EXHAUST AIR DAMPER IN HAND											X
FAN FAILURE											X
FAN IN HAND											X
FAN RUNTIME EXCEEDED											X



EXHAUST FAN - ON/OFF (TYPICAL OF 2)

RUN CONDITIONS - INTERLOCKED:
THE FAN(S) EF --- SHALL BE INTERLOCKED TO RUN WHENEVER AIR HANDLING UNIT ---- RUNS
UNLESS SHUTDOWN ON SAFETIES.

FAN:
THE FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

EXHAUST AIR DAMPER:
THE EXHAUST AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME
THE UNIT STOPS. THE EXHAUST AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN
STOPS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

DAMPER STATUS:
THE FAN SHALL BE ENABLED AFTER THE DAMPER STATUS HAS PROVEN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

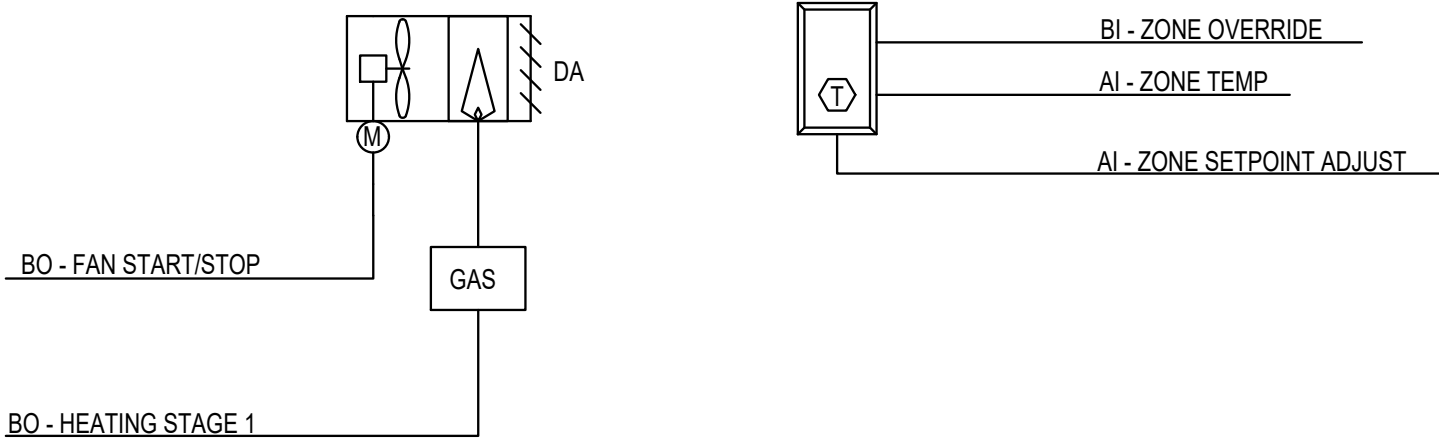
FAN STATUS:
THE CONTROLLER SHALL MONITOR THE FAN STATUS.

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.).

POINTS LIST: UNIT HEATER (TYP. OF 7)

SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS						
	GRAPHIC	AI	AO	BI	BO	AV	BV	LOOP	SCHEDULE	TREND	ALARM
ZONE SETPOINT ADJUST	X	X									
ZONE TEMP	X	X								X	
ZONE OVERRIDE	X		X							X	
FAN START/STOP	X			X						X	
HEATING STAGE 1	X			X						X	X
HEATING SETPOINT	X			X						X	X
SCHEDULE									X		X
LOW ZONE TEMP											X



UNIT HEATER (TYPICAL OF 7)

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 HEATING SETPOINT OF 70°F (ADJ.).
- UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 65°F (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- 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 ZONE TEMPERATURE DROPS BELOW HEATING SETPOINT,
UNLESS SHUTDOWN ON SAFETIES.

GAS HEATING STAGE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE HEATING TO
MAINTAIN ITS HEATING SETPOINT. TO PREVENT SHORT CYCLING, THE STAGE SHALL HAVE A
USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

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.

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SHEET TITLE:

MECHANICAL CONTROLS 3

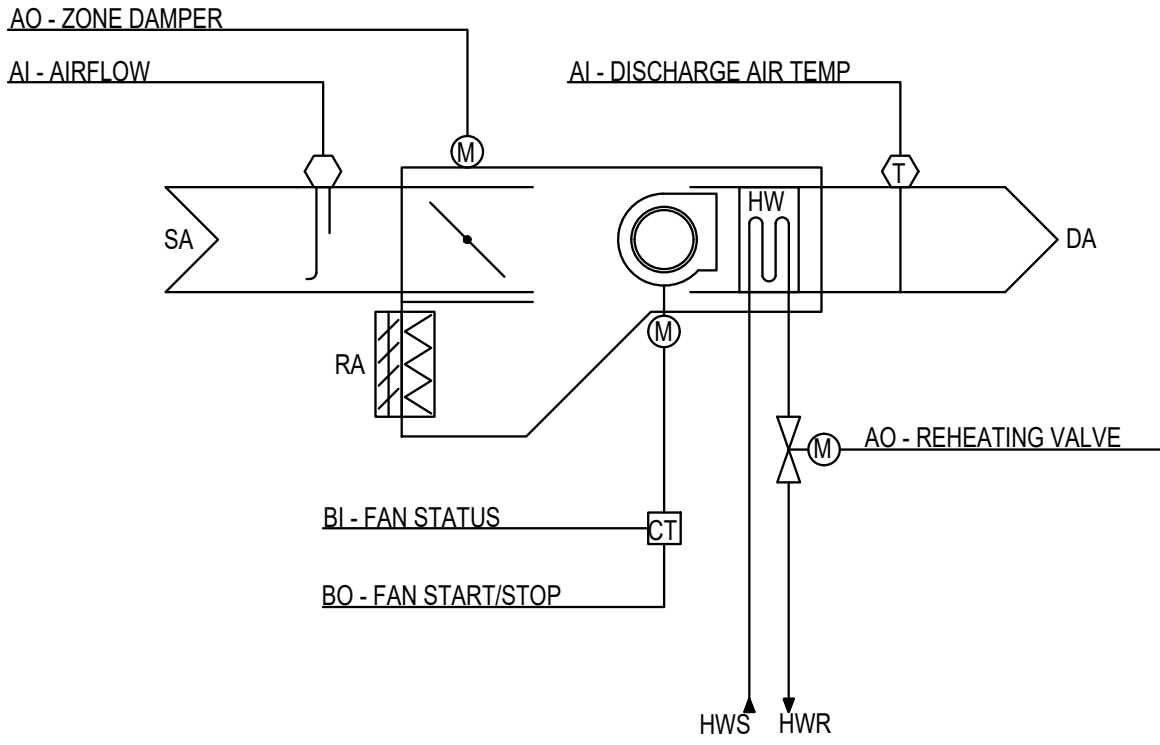
SHEET NUMBER:

M-605

06/25/2026
27 OF 45 SHEETS

POINTS LIST: VARIABLE AIR VOLUME - TERMINAL UNIT (TYP. OF 24)

SYSTEM POINT DESCRIPTION	HARDWARE POINTS						SOFTWARE POINTS				
	GRAPHIC	AI	AO	BI	BO	AV	BV	LOOP	SCHEDULE	TREND	ALARM
AIRFLOW	X	X								X	
DISCHARGE AIR TEMP	X	X								X	
ZONE SETPOINT ADJUST	X	X									
ZONE TEMP	X	X								X	
REHEATING VALVE	X		X							X	
ZONE DAMPER	X		X								X
FAN STATUS	X			X						X	
ZONE OVERRIDE	X			X						X	
FAN START/STOP	X				X						
AIRFLOW SETPOINT	X					X				X	
COOLING SETPOINT	X					X				X	
DAT HEATING LIMIT						X					
HEATING SETPOINT						X				X	
HEATING MODE							X			X	
SCHEDULE									X		
FAN FAILURE											X
FAN IN HAND										X	
FAN RUNTIME EXCEEDED										X	
HIGH DISCHARGE AIR TEMP										X	
HIGH ZONE TEMP										X	
LOW DISCHARGE AIR TEMP										X	
LOW ZONE TEMP											X



VARIABLE AIR VOLUME - FAN TERMINAL UNIT (TYPICAL OF 24)

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 75°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.).

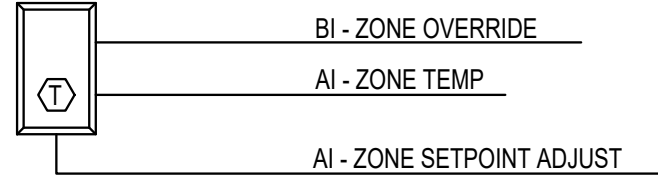
ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

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.

REVERSING VARIABLE VOLUME TERMINAL UNIT - FLOW CONTROL:
THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING:

- OCCUPIED:
- WHEN ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.
 - WHEN THE ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT AND THE HEATING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION (ADJ.).
 - WHEN ZONE TEMPERATURE IS LESS THAN ITS HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SETPOINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE AHU, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM HEATING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.



UNOCCUPIED:

- WHEN THE ZONE IS UNOCCUPIED THE ZONE DAMPER SHALL CONTROL TO ITS MINIMUM UNOCCUPIED AIRFLOW (ADJ.).
- WHEN THE ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.
- WHEN ZONE TEMPERATURE IS LESS THAN ITS UNOCCUPIED HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT THE SETPOINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE AHU, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE AUXILIARY HEATING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.

FAN CONTROL - SERIES:
THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN. THE FAN SHALL RUN FOR A MINIMUM USER DEFINABLE TIME (ADJ.). THE ZONE DAMPER WILL CLOSE COMPLETELY BEFORE THE FAN STARTS TO PREVENT AIR FROM THE AHU FROM CAUSING THE FAN TO SPIN BACKWARD. THE ZONE DAMPER WILL RETURN TO AUTOMATIC CONTROL AFTER THE FAN STARTS.

REHEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE REHEATING COIL VALVE OPEN ON DROPPING TEMPERATURE TO MAINTAIN ITS HEATING SETPOINT.

WHEN COLD AIR IS AVAILABLE FROM THE AHU AND THERE IS NO FAN PRESENT IN THE BOX, THE ZONE DAMPER SHALL MODULATE TO THE MINIMUM OCCUPIED AIRFLOW (ADJ.). IF MORE HEAT IS REQUIRED, THE ZONE DAMPER SHALL MODULATE TO THE AUXILIARY HEATING AIRFLOW (ADJ.).

REHEATING - HIGH DISCHARGE AIR TEMPERATURE LIMIT:
THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE AND LIMIT REHEATING IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 95°F (ADJ.).

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

- ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
 - LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

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.).

STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:

SCOTT A. MOSELEY
License Number: 2003015013
Expiration Date: 12/31/27

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01
SITE # 6001
FACILITY #8136001001
8136001007

REVISIONS

No. Description Date

ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: BBH
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:

MECHANICAL CONTROLS 4

SHEET NUMBER:

M-606

06/25/2026
28 OF 45 SHEETS

POINTS LIST: VARIABLE AIR VOLUME - AHU (TYP. OF 1)

SYSTEM POINT DESCRIPTION	HARDWARE POINTS					SOFTWARE POINTS				
	GRAPHIC	AI	AO	BI	BO	AV	BV	LOOP	SCHEDULE	TREND
BUILDING STATIC PRESSURE	X	X								X
MIXED AIR TEMP	X	X								X
PREFILTER DIFFERENTIAL PRESSURE		X								X
RETURN AIR TEMP	X	X								X
SUPPLY AIR STATIC PRESSURE	X	X								X
SUPPLY AIR TEMP	X	X								X
EXHAUST AIR DAMPER	X		X							
HEATING VALVE	X		X							X
MIXED AIR DAMPERS	X		X							X
SUPPLY FAN VFD SPEED	X		X							X
EXHAUST AIR DAMPER STATUS	X		X							X
FREEZESTAT		X		X						X
HIGH STATIC SHUTDOWN	X		X							X
SUPPLY AIR SMOKE DETECTOR	X		X							X
SUPPLY FAN STATUS	X		X							X
SUPPLY FAN VFD FAULT	X		X							X
COOLING STAGE 1	X				X					X
COOLING STAGE 2	X				X					X
COOLING STAGE 3	X				X					X
COOLING STAGE 4	X				X					X
SUPPLY FAN START/STOP	X			X						X
BUILDING STATIC PRESSURE SETPOINT	X				X					
ECONOMIZER MIXED AIR TEMP SETPOINT	X				X					X
SUPPLY AIR STATIC PRESSURE SETPOINT	X				X					X
SUPPLY AIR TEMP SETPOINT	X				X					X
COMPRESSOR RUNTIME EXCEEDED										X
EXHAUST AIR DAMPER FAILURE										X
EXHAUST FAIR DAMPER IN HAND										X
HIGH MIXED AIR TEMP										X
HIGH RETURN AIR TEMP										X
HIGH SUPPLY AIR STATIC PRESSURE										X
HIGH SUPPLY AIR TEMP										X
LOW MIXED AIR TEMP										X
LOW RETURN AIR TEMP										X
LOW SUPPLY AIR STATIC PRESSURE										X
LOW SUPPLY AIR TEMP										X
PREFILTER CHANGE REQUIRED										X
SUPPLY FAN FAILURE										X
SUPPLY FAN IN HAND										X
SUPPLY FAN RUNTIME EXCEEDED										X

VARIABLE AIR VOLUME - AHU (TYPICAL OF 1)

RUN CONDITIONS - REQUESTED:

THE UNIT SHALL RUN WHENEVER:

- ANY ZONE IS OCCUPIED.
- OR A DEFINABLE NUMBER OF UNOCCUPIED ZONES NEED HEATING OR COOLING.

FREEZE PROTECTION:

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

HIGH STATIC SHUTDOWN:

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN HIGH STATIC SHUTDOWN SIGNAL.

SUPPLY AIR SMOKE DETECTION:

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

SUPPLY FAN:

THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SUPPLY AIR DUCT STATIC PRESSURE CONTROL:

THE CONTROLLER SHALL MEASURE DUCT STATIC PRESSURE AND SHALL MODULATE THE SUPPLY FAN VFD SPEED TO MAINTAIN A DUCT STATIC PRESSURE SETPOINT OF 1.5IN H2O (ADJ.). THE SUPPLY FAN VFD SPEED SHALL NOT DROP BELOW 30% (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR STATIC PRESSURE: IF THE SUPPLY AIR STATIC PRESSURE IS 25% (ADJ.) GREATER THAN SETPOINT.
- LOW SUPPLY AIR STATIC PRESSURE: IF THE SUPPLY AIR STATIC PRESSURE IS 25% (ADJ.) LESS THAN SETPOINT.
- SUPPLY FAN VFD FAULT.

SUPPLY AIR TEMPERATURE SETPOINT - OPTIMIZED:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL MAINTAIN A SUPPLY AIR TEMPERATURE SETPOINT RESET BASED ON ZONE COOLING AND HEATING REQUIREMENTS

THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR COOLING BASED ON ZONE COOLING REQUIREMENTS AS FOLLOWS:

- THE INITIAL SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 55°F (ADJ.).
- AS COOLING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 53°F (ADJ.).
- AS COOLING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 72°F (ADJ.).

IF MORE ZONES NEED HEATING THAN COOLING, THEN THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR HEATING AS FOLLOWS:

- THE INITIAL SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 58°F (ADJ.).
- AS HEATING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 60°F (ADJ.).
- AS HEATING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 55°F (ADJ.).

COOLING STAGES:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE ECONOMIZER (IF PRESENT) IS DISABLED OR FULLY OPEN.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE HEATING (IF PRESENT) IS NOT ACTIVE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) GREATER THAN SETPOINT.

HEATING COIL VALVE:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR 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 SUPPLY FAN STATUS IS ON.
- AND THE COOLING (IF PRESENT) IS NOT ACTIVE.

THE HEATING COIL VALVE SHALL OPEN WHENEVER:

- SUPPLY AIR TEMPERATURE DROPS FROM 40°F TO 35°F (ADJ.).
- OR THE FREEZESTAT (IF PRESENT) IS ON.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) LESS THAN SETPOINT.

BUILDING STATIC PRESSURE CONTROL:

THE CONTROLLER SHALL MEASURE THE BUILDING STATIC PRESSURE AND MODULATE THE EXHAUST AIR DAMPER TO MAINTAIN BUILDING STATIC PRESSURE SETPOINT OF 0.05IN H2O (ADJ.).

EXHAUST AIR DAMPER SHALL BE ENABLED WHEN THE SUPPLY FAN STATUS IS PROVEN AND CLOSE WHEN THE UNIT IS OFF.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

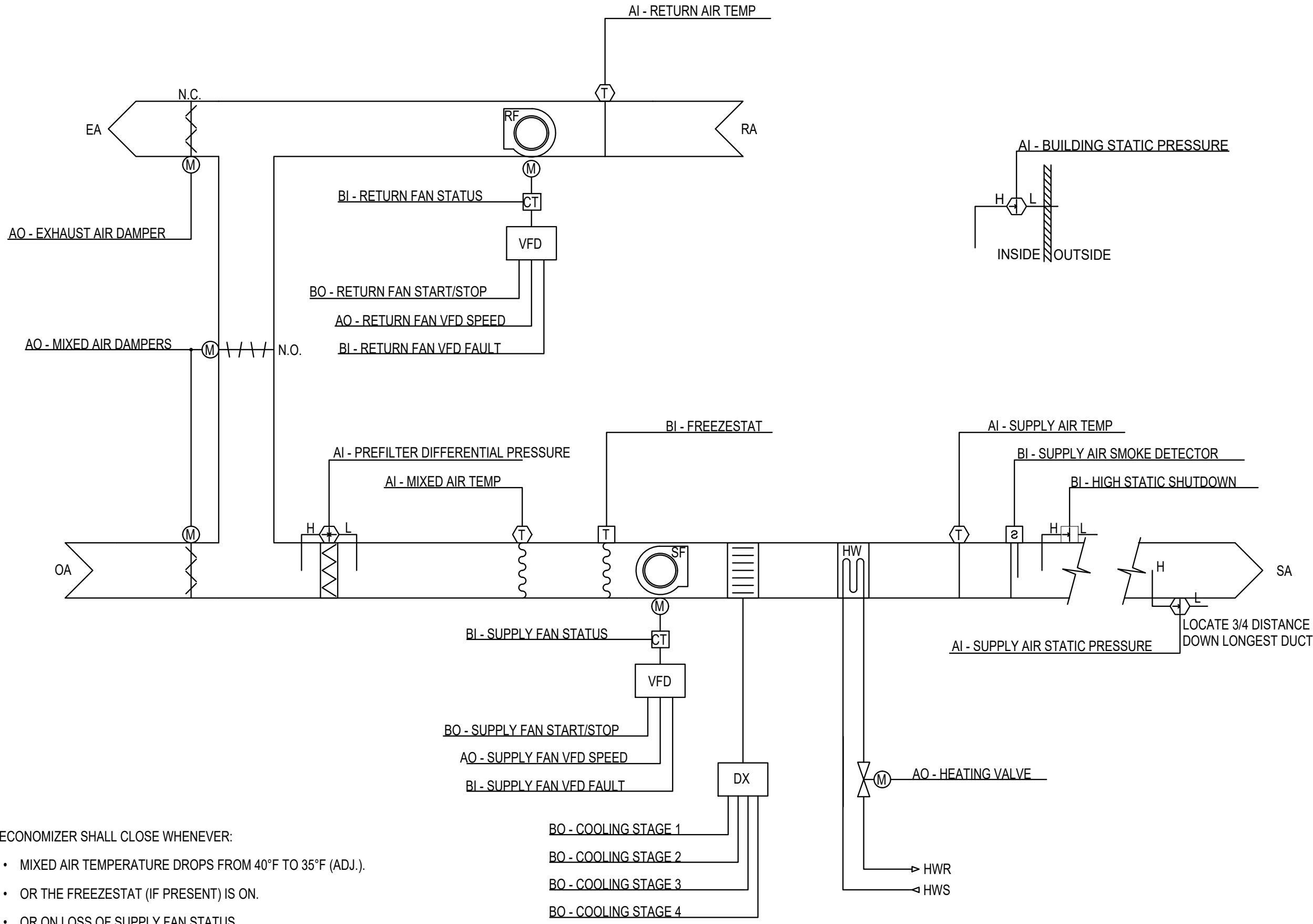
- HIGH BUILDING STATIC PRESSURE: IF THE BUILDING STATIC PRESSURE IS 25% (ADJ.) GREATER THAN SETPOINT.
- LOW BUILDING STATIC PRESSURE: IF THE BUILDING STATIC PRESSORE IS 25% (ADJ.) LESS THAN SETPOINT.

ECONOMIZER:

THE CONTROLLER SHALL MEASURE THE MIXED AIR TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F (ADJ.) LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20% (ADJ.) OPEN WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE SUPPLY FAN STATUS IS ON.



THE ECONOMIZER SHALL CLOSE WHENEVER:

- MIXED AIR TEMPERATURE DROPS FROM 40°F TO 35°F (ADJ.).
- OR THE FREEZESTAT (IF PRESENT) IS ON.
- OR ON LOSS OF SUPPLY FAN STATUS.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS AVAILABLE THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED.

MINIMUM OUTSIDE AIR VENTILATION - FIXED PERCENTAGE:

THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

PREFILTER DIFFERENTIAL PRESSURE MONITOR:

THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

MIXED AIR TEMPERATURE:

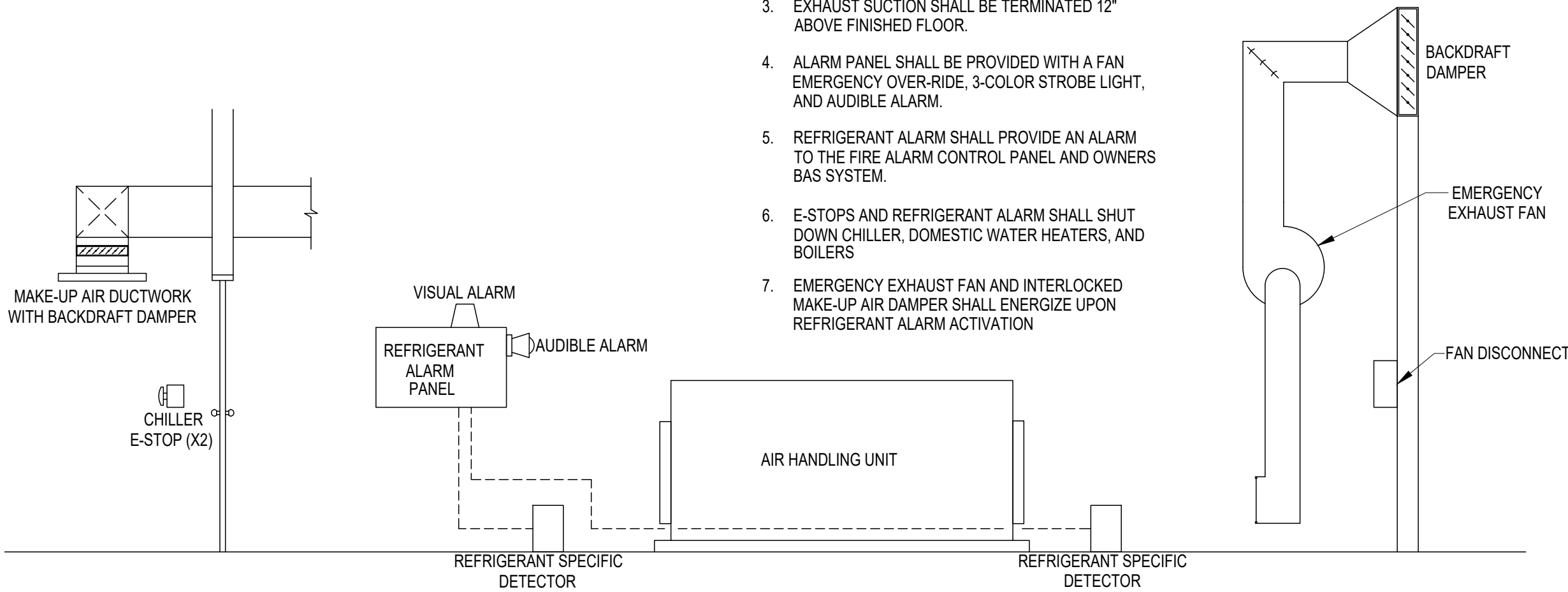
THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
- LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

NOTES

- E-STOP SHALL BE LOCATED NEAR EACH DOOR (2 TOTAL) AS REQUIRED BY CODE.
- REFRIGERANT DETECTORS SHALL BE SPECIFIC FOR REFRIGERANT PRESENT.
- EXHAUST SUCTION SHALL BE TERMINATED 12" ABOVE FINISHED FLOOR.
- ALARM PANEL SHALL BE PROVIDED WITH A FAN EMERGENCY OVER-RIDE, 3-COLOR STROBE LIGHT, AND AUDIBLE ALARM.
- REFRIGERANT ALARM SHALL PROVIDE AN ALARM TO THE FIRE ALARM CONTROL PANEL AND OWNERS BAS SYSTEM.
- E-STOPS AND REFRIGERANT ALARM SHALL SHUT DOWN CHILLER, DOMESTIC WATER HEATERS, AND BOILERS
- EMERGENCY EXHAUST FAN AND INTERLOCKED MAKE-UP AIR DAMPER SHALL ENERGIZE UPON REFRIGERANT ALARM ACTIVATION



HP-0805
PG. HP-08-2



Professional of Record:
SCOTT A. MOSELEY
License Number: 2003015013
Expiration Date: 12/31/27

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MO Certificate of Authority #000329 ARCH.

POINTS LIST: ROOF TOP UNITS (TYP. OF 2)

SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				
	GRAPHIC	AI	AO	BI	BO	AV	BV	LOOP	SCHEDULE
									TREND
									ALARM
MIXED AIR TEMP	X	X							X
PREFILTER DIFFERENTIAL PRESSURE	X	X							X
RETURN AIR TEMP		X							X
SUPPLY AIR TEMP	X	X							X
ZONE SETPOINT ADJUST	X	X							X
ZONE TEMP	X	X							X
MIXED AIR DAMPERS	X	X							
SUPPLY FAN SPEED	X	X							X
FREEZESTAT	X	X							X
SUPPLY AIR SMOKE DETECTOR	X	X							X
SUPPLY FAN STATUS	X			X					X
COOLING STAGE 1	X			X					X
COOLING STAGE 2	X			X					X
HEATING STAGE 1	X			X					X
HEATING STAGE 2	X			X					X
SUPPLY FAN START/STOP	X			X					X
COOLING SETPOINT	X			X					X
ECONOMIZER ZONE AIR TEMP	X			X					X
HEATING SETPOINT	X			X					X
SCHEDULE	X			X					X
COMPRESSOR RUNTIME EXCEEDED	X			X					X
HIGH MIXED AIR TEMP	X				X				
HIGH RETURN AIR TEMP	X				X				X
HIGH SUPPLY AIR TEMP	X				X				X
HIGH ZONE TEMP	X				X				X
LOW MIXED AIR TEMP									X
LOW RETURN AIR TEMP									X
LOW SUPPLY AIR TEMP									X
LOW ZONE TEMP									X
PREFILTER CHANGES REQUIRED									X
SUPPLY FAN FAILURE									X

ROOFTOP UNITS (TYPICAL OF 2)

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 75°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.

FREEZE PROTECTION:

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

SUPPLY AIR SMOKE DETECTION:

THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

SUPPLY FAN:

THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

COOLING STAGES / ZONE TEMPERATURE CONTROL:

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE ECONOMIZER (IF PRESENT) IS DISABLED OR FULLY OPEN.
- AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE HEATING IS NOT ACTIVE.

GAS HEATING STAGES:

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE HEATING TO MAINTAIN ITS HEATING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE HEATING SHALL BE ENABLED WHENEVER:

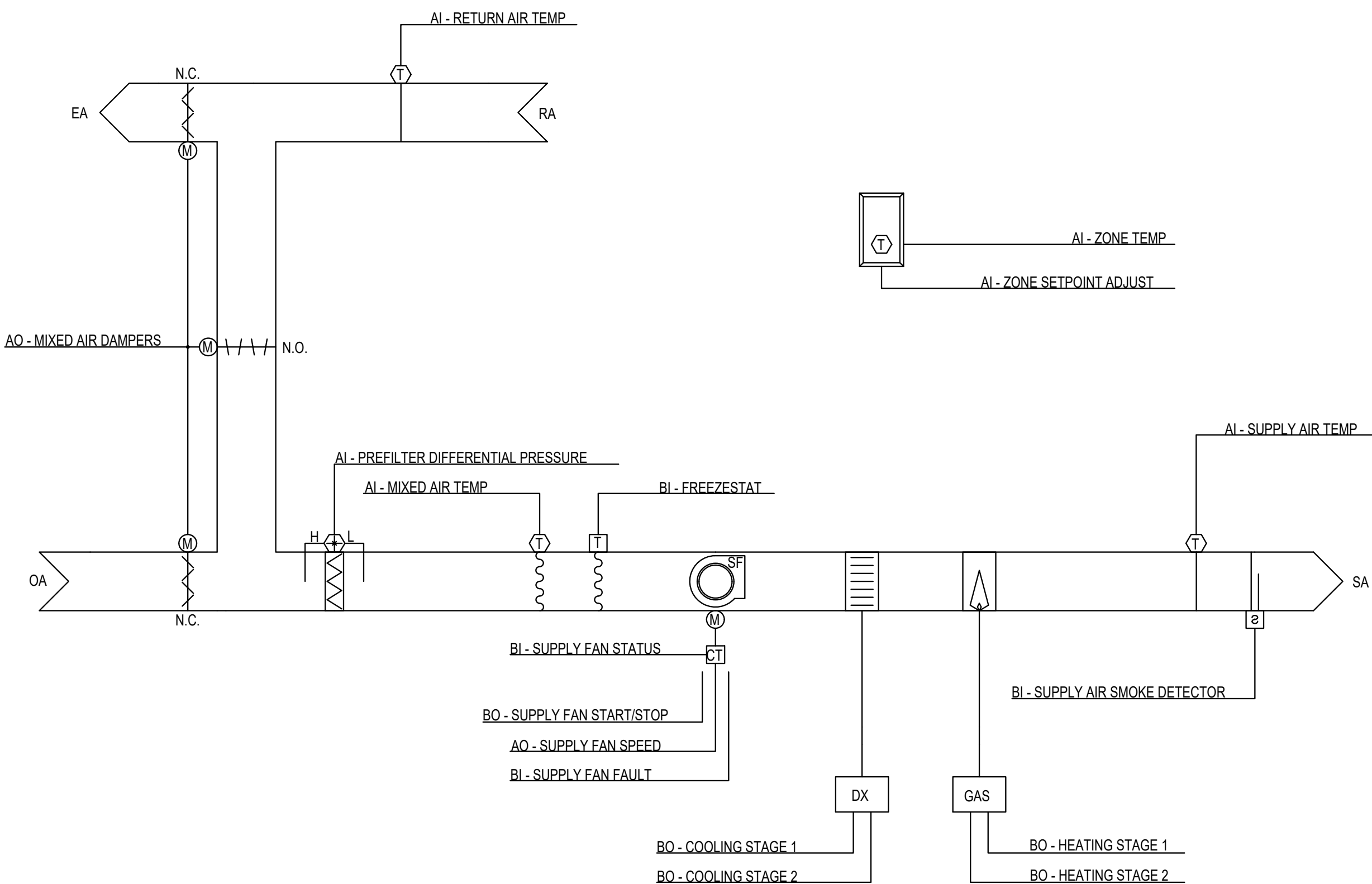
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE COOLING IS NOT ACTIVE.

ECONOMIZER:

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F LESS THAN THE ZONE COOLING SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20% (ADJ.) OPEN WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE SUPPLY FAN STATUS IS ON.



THE ECONOMIZER SHALL CLOSE WHENEVER:

- MIXED AIR TEMPERATURE DROPS FROM 45°F TO 40°F (ADJ.).
- OR ON LOSS OF SUPPLY FAN STATUS.
- OR THE FREEZESTAT (IF PRESENT) IS ON.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS AVAILABLE, THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED.

MINIMUM OUTSIDE AIR VENTILATION - FIXED PERCENTAGE:

THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM POSITION (ADJ.) DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

PREFILTER DIFFERENTIAL PRESSURE MONITOR:

THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

MIXED AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
- LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

RETURN AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
- LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

SUPPLY AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:
SCOTT A. MOSELEY
License Number: 2003015013
Expiration Date: 12/31/27

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OFFICE OF ADMINISTRATION
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DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: BBH
CHECKED BY: SAM
DESIGNED BY:

SHEET TITLE:

MECHANICAL CONTROLS 6

SHEET NUMBER:

M-608

06/25/2026
30 OF 45 SHEETS



06/22/2026

Professional of Record:

MARK KUHEMAN
License Number: PE2017000321
Expiration Date: 12/31/27

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PROJECT # R2411-01
SITE # 6001
FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL SYMBOLS &
NOTES

SHEET NUMBER:

E-001

07/01/26
31 OF 45 SHEETS

ELECTRICAL SYMBOLS (NOT ALL SYMBOLS ARE USED)		
LIGHTING	CONDUIT	SWITCHES
QTY. CKT. (1) 2 LP-1a FIXT. TYPE SWITCH 2' x 4' LIGHT FIXTURE 1' x 4' LIGHT FIXTURE DOWN LIGHT PENDANT LIGHT 90 MIN BATTERY BACK-UP EMERGENCY SIGN WITH LIGHT HEADS 90 MIN BATTERY BACK-UP EXIT SIGN 90 MIN BATTERY BACK-UP EXIT LIGHT WITH HEADS EXTERIOR 90 MIN BATTERY BACK-UP EMERGENCY HEADS FED FROM INTERIOR EXIT LIGHT NEUTRAL HOT # PER CKT LP-1,3 PANEL AND CKTS GROUND #1/0 CU. PANELBOARD TRANSFORMER DISCONNECT SWITCH MOTOR STARTER	\$ a SINGLE POLE SWITCH, 48" AFF TO CENTER UNO, LOWER CASE LETTERING INDICATES SWITCH LEG OS a OCCUPANCY SENSOR HUBBELL # OMNI-US SERIES WITH UV-PP POWER PACK, CEILING MOUNTED. LOWER CASE LETTERING INDICATES SWITCH LEG. WHEN PROVIDED IN COMBINATION WITH WALL SWITCHES, OCCUPANCY SENSOR SHALL BE CIRCUITED ON LINE-SIDE \$ OS a OCCUPANCY SENSOR WALL MOUNTED HUBBELL # LHDT SERIES, LOWER CASE LETTERING INDICATES SWITCH LEG. \$ OS 3 a OCCUPANCY SENSOR 3 WAY WALL MOUNTED # WS2000W LOWER CASE LETTERING INDICATES SWITCH LEG V VOLUME CONTROL MOUNTED ON WALL AT 48" AFF	RECEPTACLES DUPLEX RECEPTACLE 18" AFF TO CENTER, UNO. QUAD RECEPTACLE 18" AFF TO CENTER, UNO. GFIC DUPLEX RECEPTACLE 18" AFF TO CENTER, UNO GFIC QUAD RECEPTACLE 18" AFF TO CENTER, UNO. FLUSH FLOOR MOUNTED RECEPTACLE SINGLE RECEPTACLE 18" AFF TO CENTER, (CLOCK) UNO. SPECIAL RECEPTACLE GENERAL RTU 1 EQUIPMENT CALL OUT ## ELECT KEYED NOTE DESIGNATION 1 REVISION SYMBOL
MISCELLANEOUS	RECEPTACLES	
JUNCTION BOX MOUNT ON WALL AT 18" AFF UNO TELEPHONE WALL BOX 18" AFF UNO STUB 3/4" CONDUIT UP INTO ACCESSIBLE CEILING AREA WITH INSULATED BUSHING, PROVIDE PULL WIRE PHONE/DATA WALL BOX 18" AFF UNO STUB 3/4" CONDUIT UP INTO ACCESSIBLE CEILING AREA WITH INSULATED BUSHING, PROVIDE PULL WIRE DATA WALL BOX 18" AFF UNO STUB 3/4" CONDUIT UP INTO ACCESSIBLE CEILING AREA WITH INSULATED BUSHING, PROVIDE PULL WIRE FLOOR MOUNTED PHONE BOX MOTOR PUSH BUTTON MOUNTED ON WALL AT 48" AFF DOOR BUZZER OR BELL PHOTOCELL		

ABBREVIATIONS (NOTE: NOT ALL ABBREVIATIONS ARE USED)			
AFF	ABOVE FINISHED FLOOR	EW	ELECTRIC WATER COOLER
AL	ALUMINUM	EXIST'G	EXISTING
AMP	AMPERE	GFIC OR GFI	GROUND FAULT CURRENT INTERRUPTER
ATS	AUTO-TRANSFER-SWITCH	GRS	GALVANIZED RIGID STEEL CONDUIT
BFG	BELOW FINISHED GRADE	FL	FLOOR
BLDG	BUILDING	FLUOR	FLUORESCENT
CB	CIRCUIT BREAKER	GND OR (G)	GROUND
CKT	CIRCUIT	IG	ISOLATED GROUND
CLG	CEILING	JB	JUNCTION BOX
COND OR "C"	CONDUIT	MCB	MAIN CIRCUIT BREAKER
CONN	CONNECT	MDP	MAIN DISTRIBUTION PANEL
CONT	CONTRACTOR	MLO	MAIN LUG ONLY
CU	COPPER	MTD HT	MOUNTING HEIGHT
C/T	CURRENT TRANSFORMER	NF	NON FUSED
DIM	DIMMER	NIC	NOT IN CONTRACT
DISC SW	DISCONNECT SWITCH	RTU	ROOF TOP UNIT
DP	DOUBLE POLE	SW	SWITCH
DT	DOUBLE THROW	UG	UNDER GROUND
DPP	DISTRIBUTION POWER PANEL	UNO	UNLESS NOTED OTHERWISE
EC	ELECTRICAL CONTRACTOR	VIF	VERIFY IN FIELD
EF	EXHAUST FAN	WP	WEATHER-PROOF
EM	EMERGENCY	XFMR	TRANSFORMER
FWU	FURNISHED WITH UNIT		

GENERAL NOTES	
A.	CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES AND VERIFY REQUIREMENTS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND SHALL PROVIDE ALL ITEMS REQUIRED BY THESE TRADES FOR A COMPLETE INSTALLATION. IF CONFLICT OCCURS DUE TO THIS CONTRACTORS LACK OF COORDINATION WITH OTHER TRADES, ALL WORK INVOLVED IN RESOLVING THE CONFLICT WILL BE AT THE EXPENSE OF THIS CONTRACTOR.
B.	OVER-CURRENT PROTECTION AND DISCONNECT MEANS SHALL BE INSTALLED ON ALL MOTORS TO COMPLY WITH CODE.
C.	ALL DISCONNECT SWITCHES SHALL BE HORSEPOWER RATED FOR THE MOTOR CONNECTED.
D.	FLUORESCENT AND HID BALLASTS, AND LED DRIVERS SHALL COMPLY WITH ALL APPLICABLE STANDARDS AND CODES.
E.	ELECTRICAL WORK AND MATERIALS SHALL COMPLY WITH LATEST NEC AND ALL LOCAL CODES AND ORDINANCES. IN CASE OF CONFLICT AMONG REQUIREMENTS, THE MORE RESTRICTIVE SHALL APPLY.
F.	LIGHTING FIXTURES AND ELECTRICAL DEVICES FOR USE OUTSIDE THE BUILDING SHALL BE WEATHERPROOF.
G.	GROUND ELECTRICAL EQUIPMENT PER NEC AND LOCAL CODE REQUIREMENTS.
H.	ALL CONDUCTORS SHALL BE # 12 AWG MINIMUM. EXCEPT AS OTHERWISE NOTED OR AS REQUIRED FOR VOLTAGE DROP. ALL CONDUIT TO BE ONE-HALF INCH (1/2") MINIMUM EXCEPT AS OTHERWISE NOTED.
I.	MEMBRANE PENETRATIONS OF ONE (1) HOUR FIRE BARRIER WALL BY STEEL ELECTRICAL BOXES ARE NOT TO EXCEED SIXTEEN (16) SQUARE INCHES IN AREA, PROVIDED THE AGGREGATE AREA OF THE OPENING THROUGH THE MEMBRANE DOES NOT EXCEED ONE-HUNDRED (100) SQUARE FEET OF WALL AREA. THE ANNULAR SPACE BETWEEN THE WALL MEMBRANE AND THE BOX SHALL NOT EXCEED ONE-EIGHTH (1/8") OF AN INCH. BOXES ON OPPOSING SIDES OF A PARTITION SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN TWENTY-FOUR (24") INCHES.
J.	CONTRACTOR TO PROVIDE WARNING LABEL ON ALL ELECTRICAL EQUIPMENT (SWITCH BOARDS, PANEL BOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS) TO NOTIFY QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS PER NEC 110.16.
K.	ALL CIRCUITRY IN EXPOSED OPEN CEILING SHALL BE IN METAL CONDUIT PAINTED TO MATCH CEILING, ABSOLUTELY NO ROMEX OR FLEX CONDUIT ALLOWED.



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
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SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL SOUTHWING
FIRST FLOOR PLAN -
DEMOLITION

SHEET NUMBER:

E-101

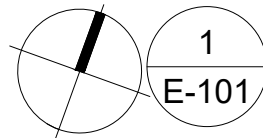
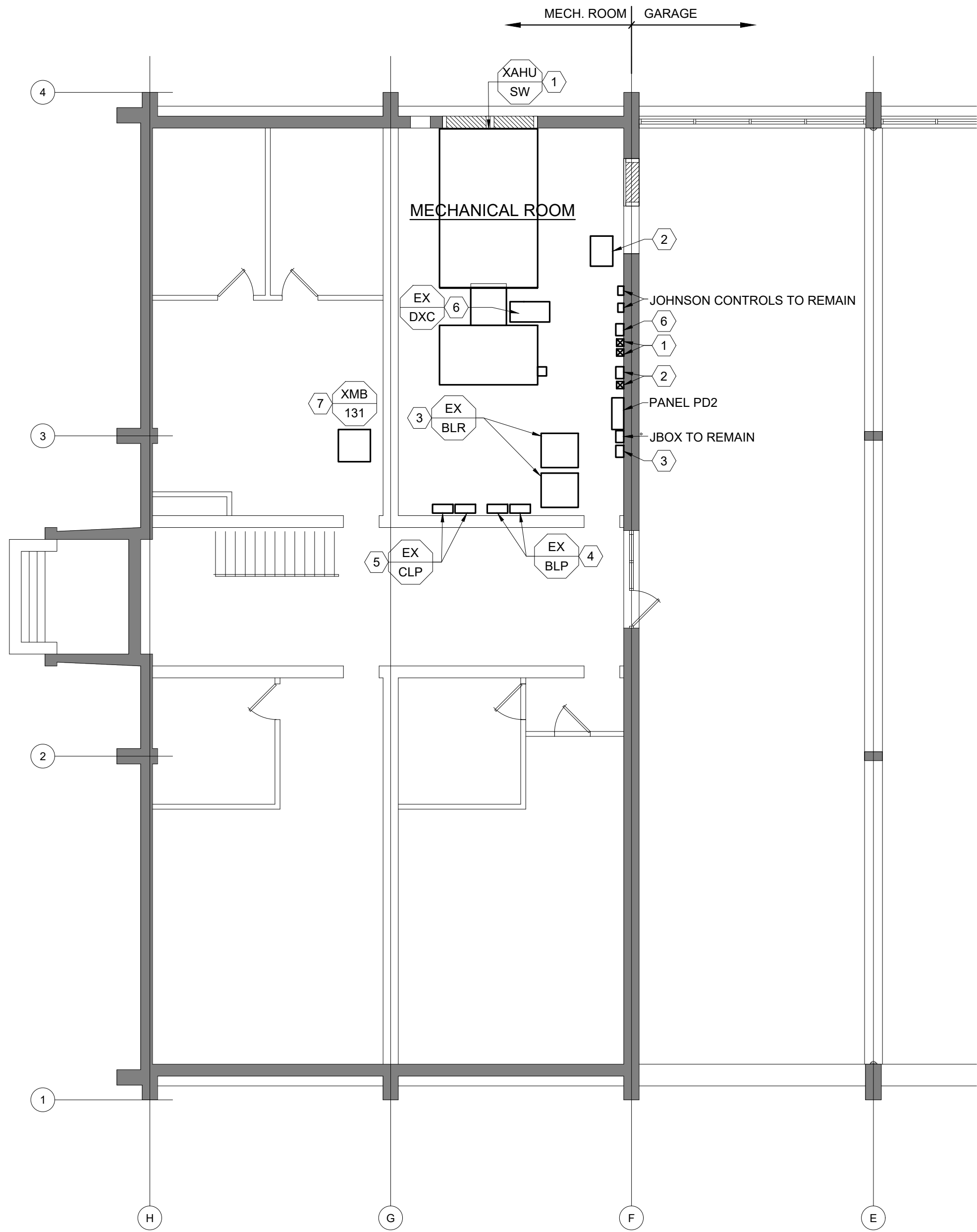
07/01/26
32 OF 45 SHEETS

ELECTRICAL KEYED NOTES

- EXISTING AHU SHALL BE REPLACED. EC SHALL DISCONNECT EXISTING SUPPLY FAN CIRCUITING AND MAINTAIN FOR RECONNECTION WITH NEW AIR HANDLING UNIT SUPPLY FAN. DEMOLISH EXISTING SUPPLY FAN STARTER AND VFD CONTROLS. FIELD VERIFY EXISTING SUPPLY FAN CONTROLS LOCATION.
- EXISTING AHU REMOTE RETURN FAN AND STARTER SHALL BE DEMOLISHED. EC SHALL DISCONNECT EXISTING RETURN FAN CIRCUITING AND DEMOLISH BACK TO SOURCE PANEL PD2. ADDITIONALLY, DEMOLISH THE EXISTING ANTIQUATED EXPANSION VALVE CONTROLS ADJACENT TO THE RETURN FAN STARTER.
- (2) EXISTING BOILERS AND BOILER CONTROLS SHALL BE DEMOLISHED. EC SHALL DISCONNECT EXISTING 120V CIRCUIT(S) AND MAINTAIN FOR CONNECTION TO NEW BOILERS IN THE SAME LOCATION.
- (2) EXISTING HOT WATER PUMPS SHALL BE REPLACED. EC SHALL DEMOLISH EXISTING CIRCUITING BACK TO NEAREST JUNCTION BOX AND MAINTAIN FOR CONNECTION TO NEW HOT WATER PUMPS.
- (2) EXISTING CHILLED WATER PUMPS SHALL BE REPLACED. EC SHALL DEMOLISH EXISTING CIRCUITING BACK TO NEAREST JUNCTION BOX AND MAINTAIN FOR CONNECTION TO NEW CHILLED WATER PUMPS.
- EXISTING DX COOLING COIL, COMPRESSOR AND ASSOCIATED STARTER SHALL BE DEMOLISHED. EC SHALL DEMOLISH EXISTING CIRCUIT BACK TO SOURCE PANEL PD2.
- EXISTING MIXING BOX SHALL BE DEMOLISHED. EC SHALL DISCONNECT EXISTING CIRCUITING BACK TO NEAREST UNDISTURBED DEVICE OR BACK TO SOURCE PANEL.

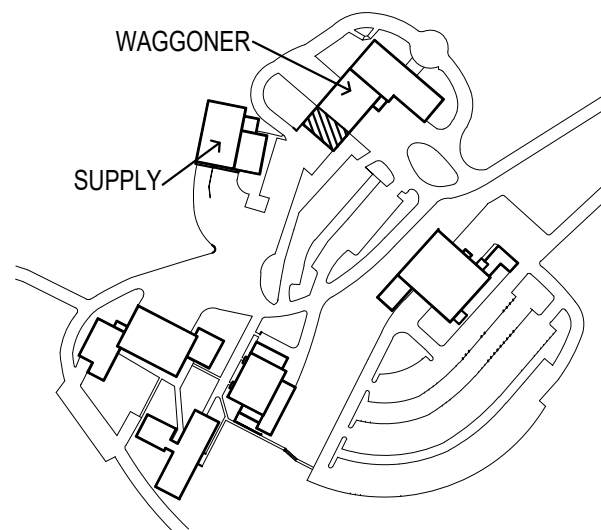
GENERAL DEMOLITION NOTES

- VERIFY EXISTING CONDITIONS - CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT, WIRING, AND DEVICE LOCATIONS PRIOR TO THE START OF DEMOLITION. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND FIELD CONDITIONS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- SHUTDOWN COORDINATION - COORDINATE ALL ELECTRICAL SHUTDOWNS WITH OWNER. A MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS AFFECTING OCCUPIED SPACES SHALL OCCUR OUTSIDE OF OCCUPIED HOURS UNLESS OTHERWISE APPROVED.
- PROTECTION OF ACTIVE SYSTEMS - MAINTAIN OPERATION OF EXISTING CIRCUITS SERVING OCCUPIED OR UNAFFECTED AREAS OF THE BUILDING. PROVIDE TEMPORARY SUPPORTS FOR CONDUITS, CABLE TRAYS, AND EQUIPMENT THAT REMAIN IN SERVICE DURING DEMOLITION. PROTECT EXISTING FIRE ALARM, SECURITY, IT, AND EMERGENCY/EGRESS LIGHTING CIRCUITS UNLESS SPECIFICALLY NOTED FOR REMOVAL.
- SELECTIVE DEMOLITION - REMOVE ONLY WIRING, DEVICES, RACEWAYS, AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED. WIRING THAT IS DE-ENERGIZED AND ABANDONED SHALL BE FULLY REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX OR PANEL. DO NOT LEAVE ABANDONED WIRING IN CEILINGS OR WALLS. WHERE DEMOLITION RESULTS IN EXPOSED JUNCTION BOXES THAT REMAIN, INSTALL BLANK, CODE-APPROVED BOXES.
- DE-ENERGIZATION & SAFETY - LOCKOUT/TAGOUT PROCEDURES ARE MANDATORY FOR ALL CIRCUIT REMOVAL WORK. VERIFY CIRCUITS ARE FULLY DE-ENERGIZED BEFORE REMOVAL. CONFIRM PRESENCE OF SHARED NEUTRALS, MULTI-WIRE BRANCH CIRCUITS, AND EMERGENCY CIRCUITS BEFORE DISCONNECTING.
- REUSE / SALVAGE - SALVAGE AND TURN OVER TO OWNER ANY FIXTURES, DEVICES, PANELS, AND EQUIPMENT IDENTIFIED AS "TO BE SALVAGED" ON DRAWINGS. EQUIPMENT NOT DESIGNATED FOR SALVAGE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH LOCAL CODES AND RECYCLING REQUIREMENTS.
- LIGHTING AND EMERGENCY SYSTEMS - MAINTAIN EMERGENCY LIGHTING AND EGRESS LIGHTING AT ALL TIMES DURING DEMOLITION. ANY TEMPORARY LIGHTING REQUIRED FOR SAFE WORKING CONDITIONS SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR.
- FIRE/ALARM / SECURITY / LOW VOLTAGE - COORDINATE DEMOLITION OF FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND OTHER LOW VOLTAGE SYSTEMS WITH THE RESPECTIVE SYSTEM VENDORS AND SECURITY PERSONNEL. DO NOT DISTURB FIRE ALARM SYSTEM WIRING WITHOUT APPROVAL. ACCIDENTAL DISCONNECTION WILL REQUIRE FULL TESTING AND RE-CERTIFICATION AT THE CONTRACTORS EXPENSE.
- PENETRATIONS AND FIRESTOPPING - ANY DEMOLISHED CONDUIT, SLEEVING, OR CABLE PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES SHALL BE REPAIRED AND FIRESTOPPED TO MATCH THE ORIGINAL RATING.
- DEMOLITION DOCUMENTATION - IDENTIFY AND MARK ALL CIRCUITS AND PANELBOARD DIRECTORIES AFFECTED BY DEMOLITION. UPDATE PANEL SCHEDULES TO REMOVE REFERENCES TO CIRCUITS AND EQUIPMENT NO LONGER IN USE.



ELECTRICAL SOUTHWING FIRST FLOOR - DEMOLITION

SCALE: 1/8" = 1'-0"



KEYPLAN - N.T.S.
NORTH



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
Expiration Date: 12/31/27

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PROJECT # R2411-01

SITE # 6001

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8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL SOUTHWING
SECOND FLOOR PLAN -
DEMOLITION

SHEET NUMBER:

E-102

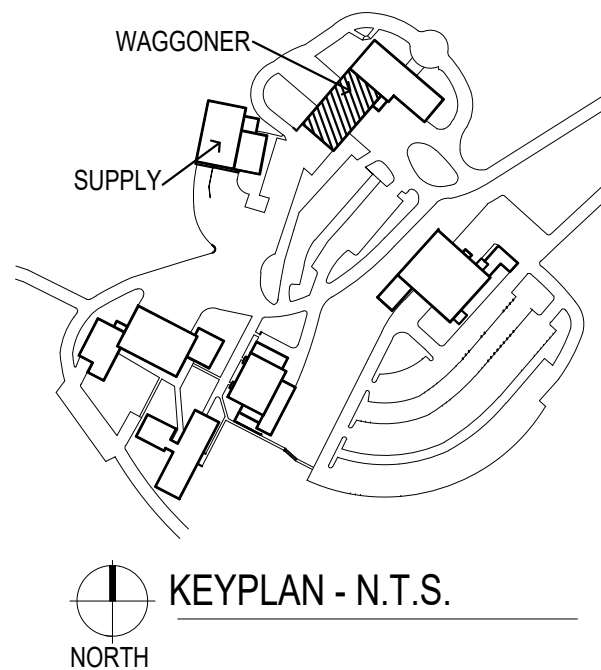
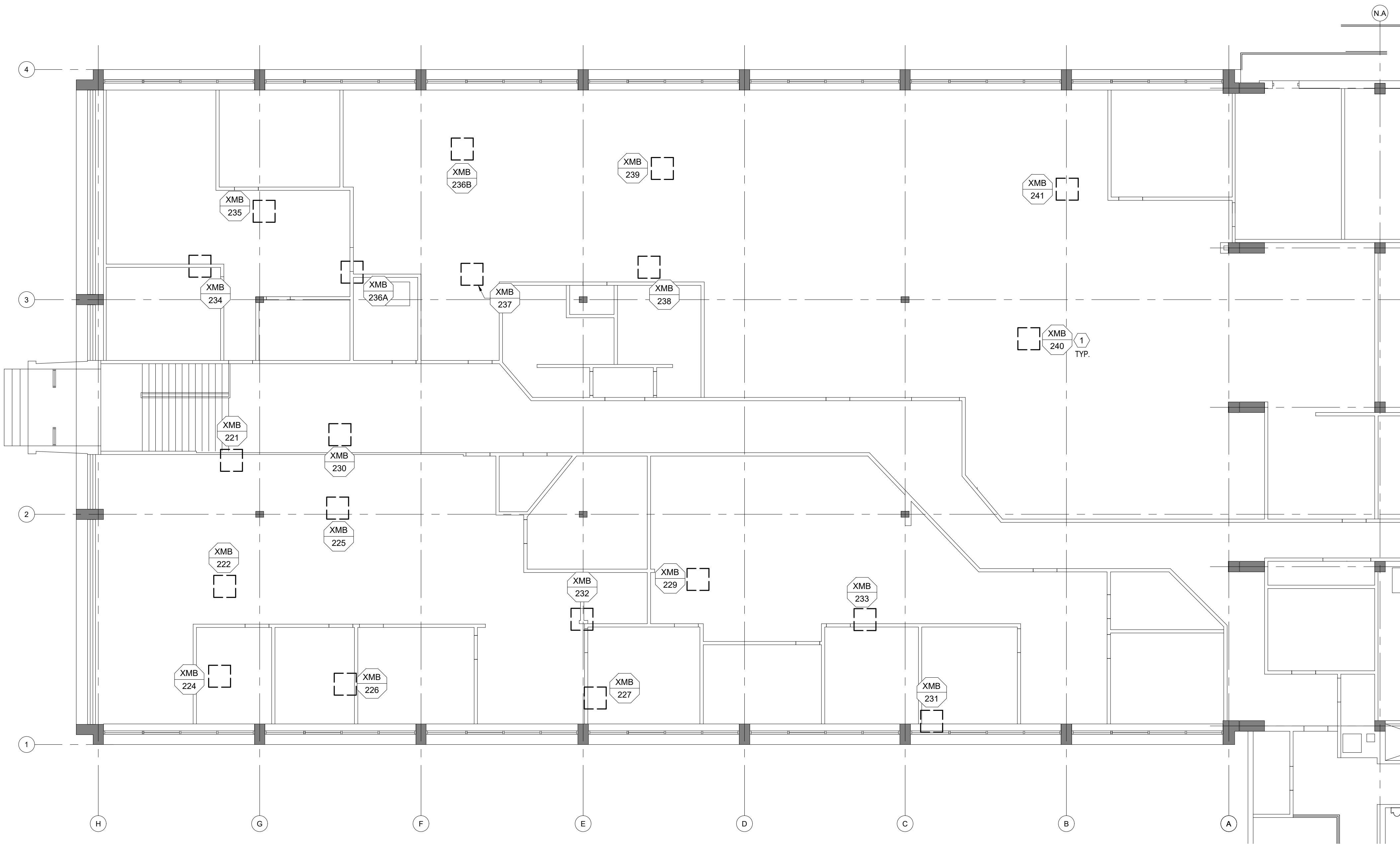
07/01/26
33 OF 45 SHEETS

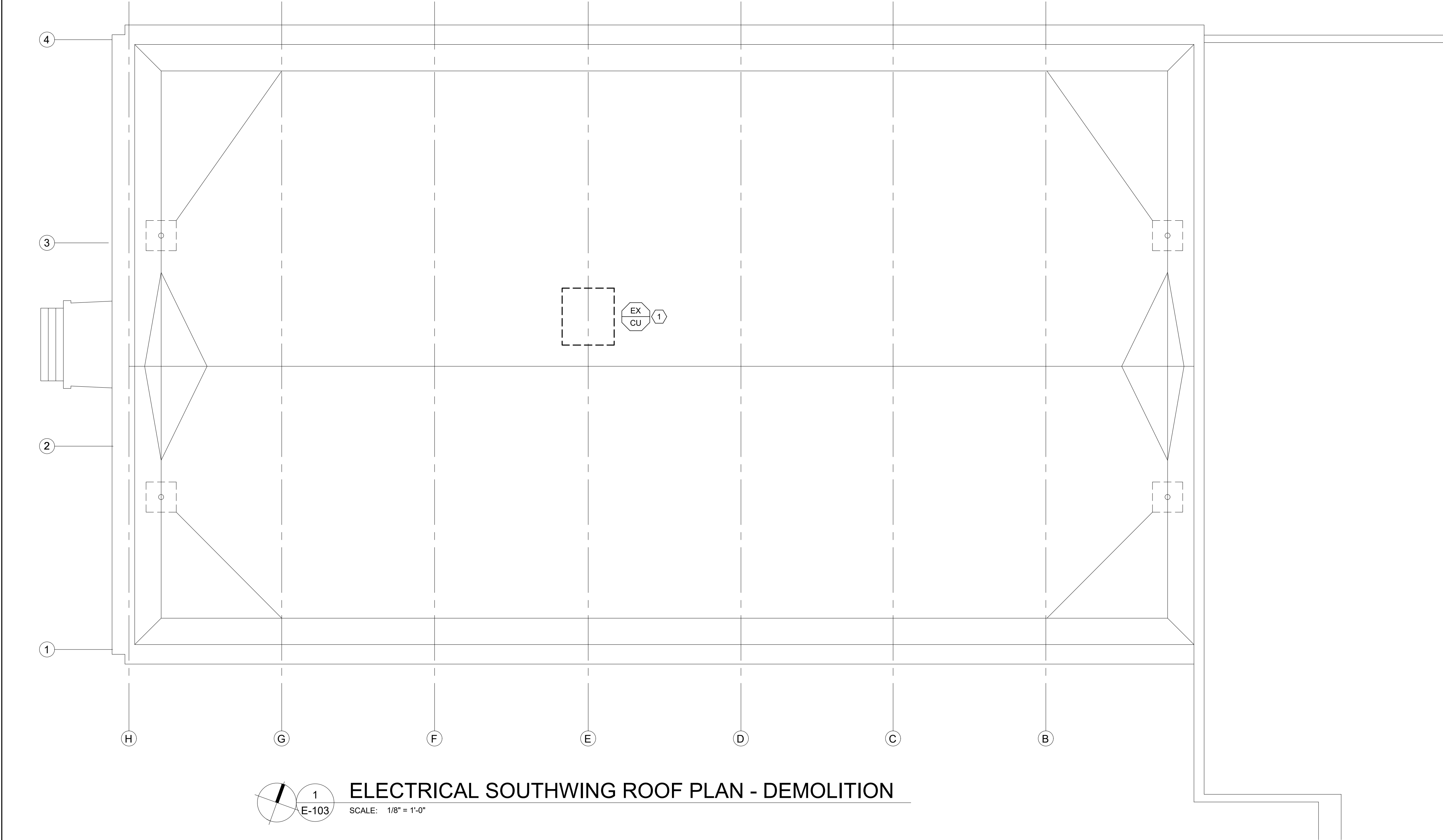
ELECTRICAL KEYED NOTES

1. EC SHALL DISCONNECT AND DEMOLISH ASSOCIATED 120V CIRCUITS FOR EXISTING MIXING BOXES TO BE DEMOLISHED. COORDINATE WITH MECHANICAL CONTRACTOR.

GENERAL DEMOLITION NOTES

- VERIFICATION OF EXISTING CONDITIONS - CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT, WIRING, AND DEVICE LOCATIONS PRIOR TO THE START OF DEMOLITION. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND FIELD CONDITIONS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- SHUTDOWN COORDINATION - COORDINATE ALL ELECTRICAL SHUTDOWNS WITH OWNER A MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS AFFECTING OCCUPIED SPACES SHALL OCCUR OUTSIDE OF OCCUPIED HOURS UNLESS OTHERWISE APPROVED.
- PROTECTION OF ACTIVE SYSTEMS - MAINTAIN OPERATION OF EXISTING CIRCUITS SERVING OCCUPIED OR UNAFFECTED AREAS OF THE BUILDING. PROVIDE TEMPORARY SUPPORTS FOR CONDUITS, CABLE TRAYS, AND EQUIPMENT THAT REMAIN IN SERVICE DURING DEMOLITION. PROTECT EXISTING FIRE ALARM, SECURITY, IT, AND EMERGENCY/EGRESS LIGHTING CIRCUITS UNLESS SPECIFICALLY NOTED FOR REMOVAL.
- SELECTIVE DEMOLITION - REMOVE ONLY WIRING, DEVICES, RACEWAYS, AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED. WIRING THAT IS DE-ENERGIZED AND ABANDONED SHALL BE FULLY REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX OR PANEL. DO NOT LEAVE ABANDONED WIRING IN CEILINGS OR WALLS. WHERE DEMOLITION RESULTS IN EXPOSED JUNCTION BOXES THAT REMAIN, INSTALL BLANK, CODE-APPROVED BOXES.
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- PENETRATIONS AND FIRESTOPPING - ANY DEMOLISHED CONDUIT, SLEEVING, OR CABLE PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES SHALL BE REPAIRED AND FIRESTOPPED TO MATCH THE ORIGINAL RATING.
- DEMOLITION DOCUMENTATION - IDENTIFY AND MARK ALL CIRCUITS AND PANELBOARD DIRECTORIES AFFECTED BY DEMOLITION. UPDATE PANEL SCHEDULES TO REMOVE REFERENCES TO CIRCUITS AND EQUIPMENT NO LONGER IN USE.



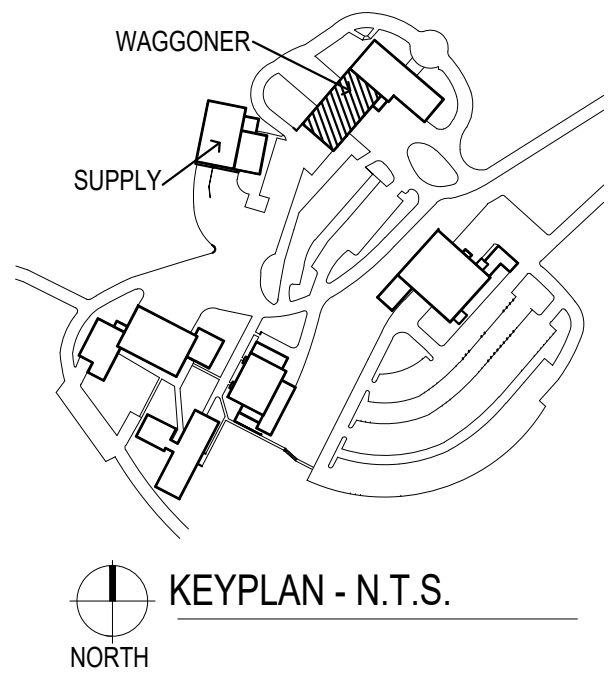


ELECTRICAL KEYED NOTES

1. EXISTING CONDENSING UNIT FED FROM PANEL PD2 SHALL BE REPLACED. EC SHALL DISCONNECT CIRCUITING AND MAINTAIN FOR CONNECTION TO NEW CONDENSING UNIT. REFER TO DRAWING E-113 FOR NEW SYSTEM.

GENERAL DEMOLITION NOTES

- A. VERIFY EXISTING CONDITIONS - CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT, WIRING, AND DEVICE LOCATIONS PRIOR TO THE START OF DEMOLITION. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND FIELD CONDITIONS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- B. SHUTDOWN COORDINATION - COORDINATE ALL ELECTRICAL SHUTDOWNS WITH OWNER A MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS AFFECTING OCCUPIED SPACES SHALL OCCUR OUTSIDE OF OCCUPIED HOURS UNLESS OTHERWISE APPROVED.
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- D. SELECTIVE DEMOLITION - REMOVE ONLY WIRING, DEVICES, RACEWAYS, AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED. WIRING THAT IS DE-ENERGIZED AND ABANDONED SHALL BE FULLY REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX OR PANEL. DO NOT LEAVE ABANDONED WIRING IN CEILINGS OR WALLS. WHERE DEMOLITION RESULTS IN EXPOSED JUNCTION BOXES THAT REMAIN, INSTALL BLANK, CODE-APPROVED BOXES.
- E. DE-ENERGIZATION & SAFETY - LOCKOUT/TAGOUT PROCEDURES ARE MANDATORY FOR ALL CIRCUIT REMOVAL WORK. VERIFY CIRCUITS ARE FULLY DE-ENERGIZED BEFORE REMOVAL. CONFIRM PRESENCE OF SHARED NEUTRALS, MULTI-WIRE BRANCH CIRCUITS, AND EMERGENCY CIRCUITS BEFORE DISCONNECTING.
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- G. LIGHTING AND EMERGENCY SYSTEMS - MAINTAIN EMERGENCY LIGHTING AND EGRESS LIGHTING AT ALL TIMES DURING DEMOLITION. ANY TEMPORARY LIGHTING REQUIRED FOR SAFE WORKING CONDITIONS SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR.
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- I. PENETRATIONS AND FIRESTOPPING - ANY DEMOLISHED CONDUIT, SLEEVING, OR CABLE PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES SHALL BE REPAIRED AND FIRESTOPPED TO MATCH THE ORIGINAL RATING.
- J. DEMOLITION DOCUMENTATION - IDENTIFY AND MARK ALL CIRCUITS AND PANELBOARD DIRECTORIES AFFECTED BY DEMOLITION. UPDATE PANEL SCHEDULES TO REMOVE REFERENCES TO CIRCUITS AND EQUIPMENT NO LONGER IN USE.



STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
Expiration Date: 12/31/27

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MO Certificate of Authority #000613 ENG.
MO Certificate of Authority #000329 ARCH.

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
PUBLIC SAFETY

MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL SOUTHWING
ROOF PLAN - DEMOLITION

SHEET NUMBER:

E-103

07/01/26
34 OF 45 SHEETS



Professional of Record:

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DESIGNED BY:	RCB

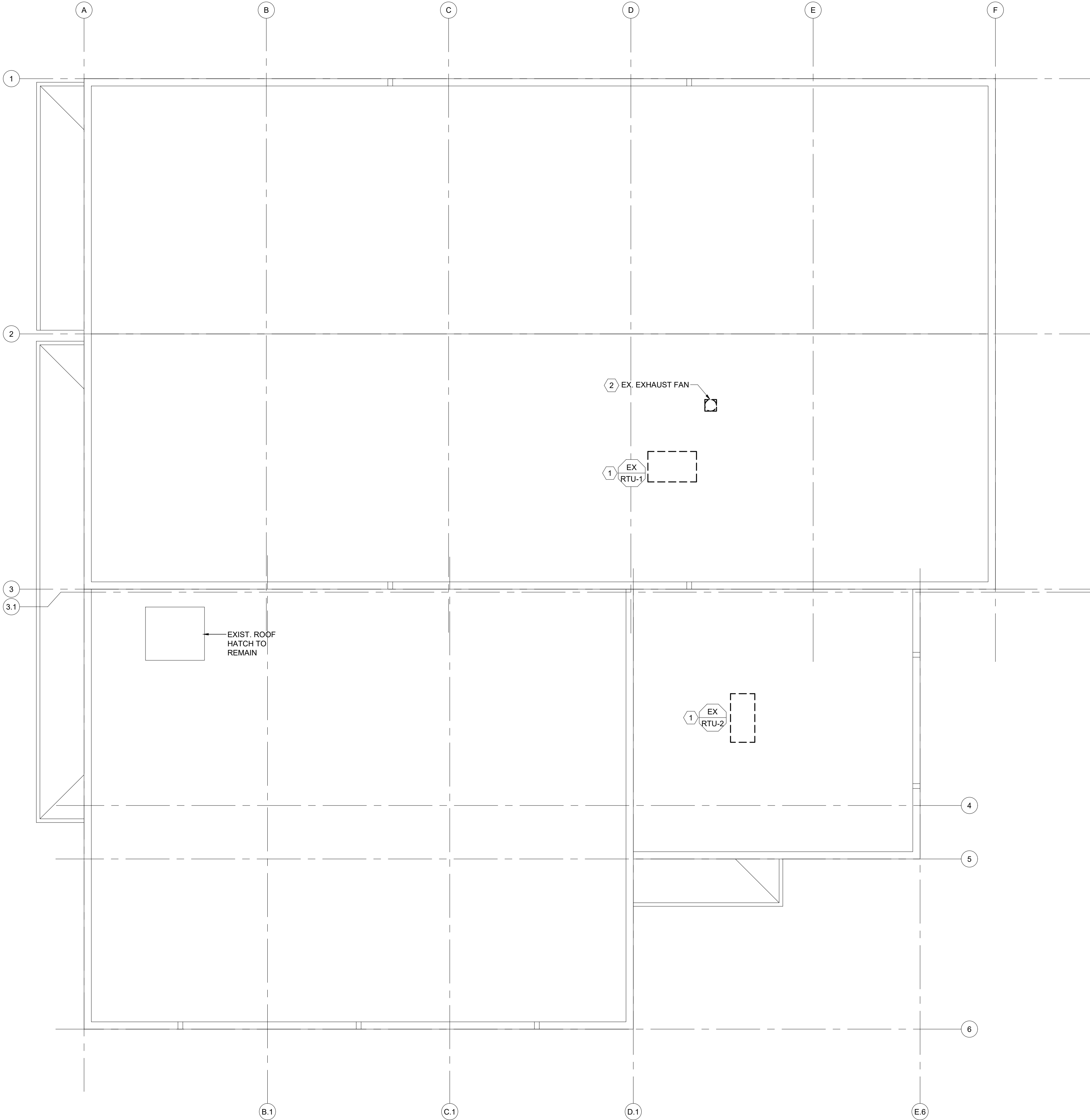
SHEET TITLE:

ELECTRICAL SUPPLY
BUILDING ROOF PLAN -
DEMOLITION ALTERNATE #1

SHEET NUMBER:

E-104

07/01/26
35 OF 45 SHEETS

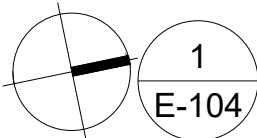
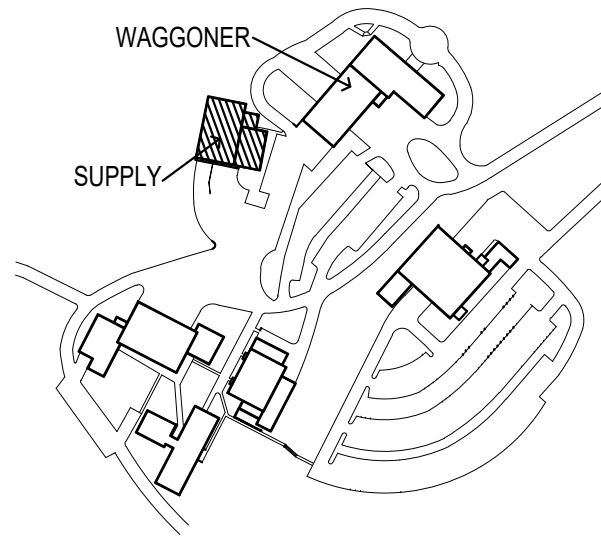


ELECTRICAL KEYED NOTES

1. EXISTING RTU SHALL BE REPLACED. EC SHALL DISCONNECT AND REMOVE EXISTING WIRING BACK TO SOURCE PANEL. EC SHALL VISIT THE SITE AND FIELD VERIFY THE EXISTING SOURCE PANEL LOCATION. MAINTAIN CONDUIT FOR USE WITH NEW UNIT.
2. EXISTING EXHAUST FAN SHALL BE DEMOLISHED. EC SHALL DEMOLISH EXISTING CIRCUITING BACK TO NEAREST JUNCTION BOX AND MAINTAIN FOR RECONNECTION WITH NEW IN-LINE FAN BELOW ROOF.

GENERAL DEMOLITION NOTES

- A. VERIFY EXISTING CONDITIONS - CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT, WIRING, AND DEVICE LOCATIONS PRIOR TO THE START OF DEMOLITION. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND FIELD CONDITIONS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- B. SHUTDOWN COORDINATION - COORDINATE ALL ELECTRICAL SHUTDOWNS WITH OWNER A MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS AFFECTING OCCUPIED SPACES SHALL OCCUR OUTSIDE OF OCCUPIED HOURS UNLESS OTHERWISE APPROVED.
- C. PROTECTION OF ACTIVE SYSTEMS - MAINTAIN OPERATION OF EXISTING CIRCUITS SERVING OCCUPIED OR UNAFFECTED AREAS OF THE BUILDING. PROVIDE TEMPORARY SUPPORTS FOR CONDUITS, CABLE TRAYS, AND EQUIPMENT THAT REMAIN IN SERVICE DURING DEMOLITION. PROTECT EXISTING FIRE ALARM, SECURITY, IT, AND EMERGENCY/EGRESS LIGHTING CIRCUITS UNLESS SPECIFICALLY NOTED FOR REMOVAL.
- D. SELECTIVE DEMOLITION - REMOVE ONLY WIRING, DEVICES, RACEWAYS, AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED. WIRING THAT IS DE-ENERGIZED AND ABANDONED SHALL BE FULLY REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX OR PANEL. DO NOT LEAVE ABANDONED WIRING IN CEILINGS OR WALLS. WHERE DEMOLITION RESULTS IN EXPOSED JUNCTION BOXES THAT REMAIN, INSTALL BLANK, CODE-APPROVED BOXES.
- E. DE-ENERGIZATION & SAFETY - LOCKOUT/TAGOUT PROCEDURES ARE MANDATORY FOR ALL CIRCUIT REMOVAL WORK. VERIFY CIRCUITS ARE FULLY DE-ENERGIZED BEFORE REMOVAL. CONFIRM PRESENCE OF SHARED NEUTRALS, MULTI-WIRE BRANCH CIRCUITS, AND EMERGENCY CIRCUITS BEFORE DISCONNECTING.
- F. REUSE / SALVAGE - SALVAGE AND TURN OVER TO OWNER ANY FIXTURES, DEVICES, PANELS, AND EQUIPMENT IDENTIFIED AS "TO BE SALVAGED" ON DRAWINGS. EQUIPMENT NOT DESIGNATED FOR SALVAGE SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH LOCAL CODES AND RECYCLING REQUIREMENTS.
- G. LIGHTING AND EMERGENCY SYSTEMS - MAINTAIN EMERGENCY LIGHTING AND EGRESS LIGHTING AT ALL TIMES DURING DEMOLITION. ANY TEMPORARY LIGHTING REQUIRED FOR SAFE WORKING CONDITIONS SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR.
- H. FIRE/ALARM / SECURITY / LOW VOLTAGE - COORDINATE DEMOLITION OF FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND OTHER LOW VOLTAGE SYSTEMS WITH THE RESPECTIVE SYSTEM VENDORS AND SECURITY PERSONNEL. DO NOT DISTURB FIRE ALARM SYSTEM WIRING WITHOUT APPROVAL. ACCIDENTAL DISCONNECTION WILL REQUIRE FULL TESTING AND RE-CERTIFICATION AT THE CONTRACTORS EXPENSE.
- I. PENETRATIONS AND FIRESTOPPING - ANY DEMOLISHED CONDUIT, SLEEVING, OR CABLE PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES SHALL BE REPAIRED AND FIRESTOPPED TO MATCH THE ORIGINAL RATING.
- J. DEMOLITION DOCUMENTATION - IDENTIFY AND MARK ALL CIRCUITS AND PANELBOARD DIRECTORIES AFFECTED BY DEMOLITION. UPDATE PANEL SCHEDULES TO REMOVE REFERENCES TO CIRCUITS AND EQUIPMENT NO LONGER IN USE.



ELECTRICAL SUPPLY BUILDING ROOF PLAN - DEMOLITION BID ALTERNATE #1

SCALE: 1/8" = 1'-0"



06/23/2026

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SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: AJS
CHECKED BY: DAT
DESIGNED BY: KJC

SHEET TITLE:

ELECTRICAL SOUTHWING
FIRST FLOOR PLAN -
RENOVATION

SHEET NUMBER:

E-106

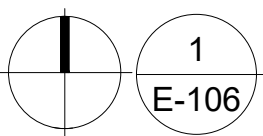
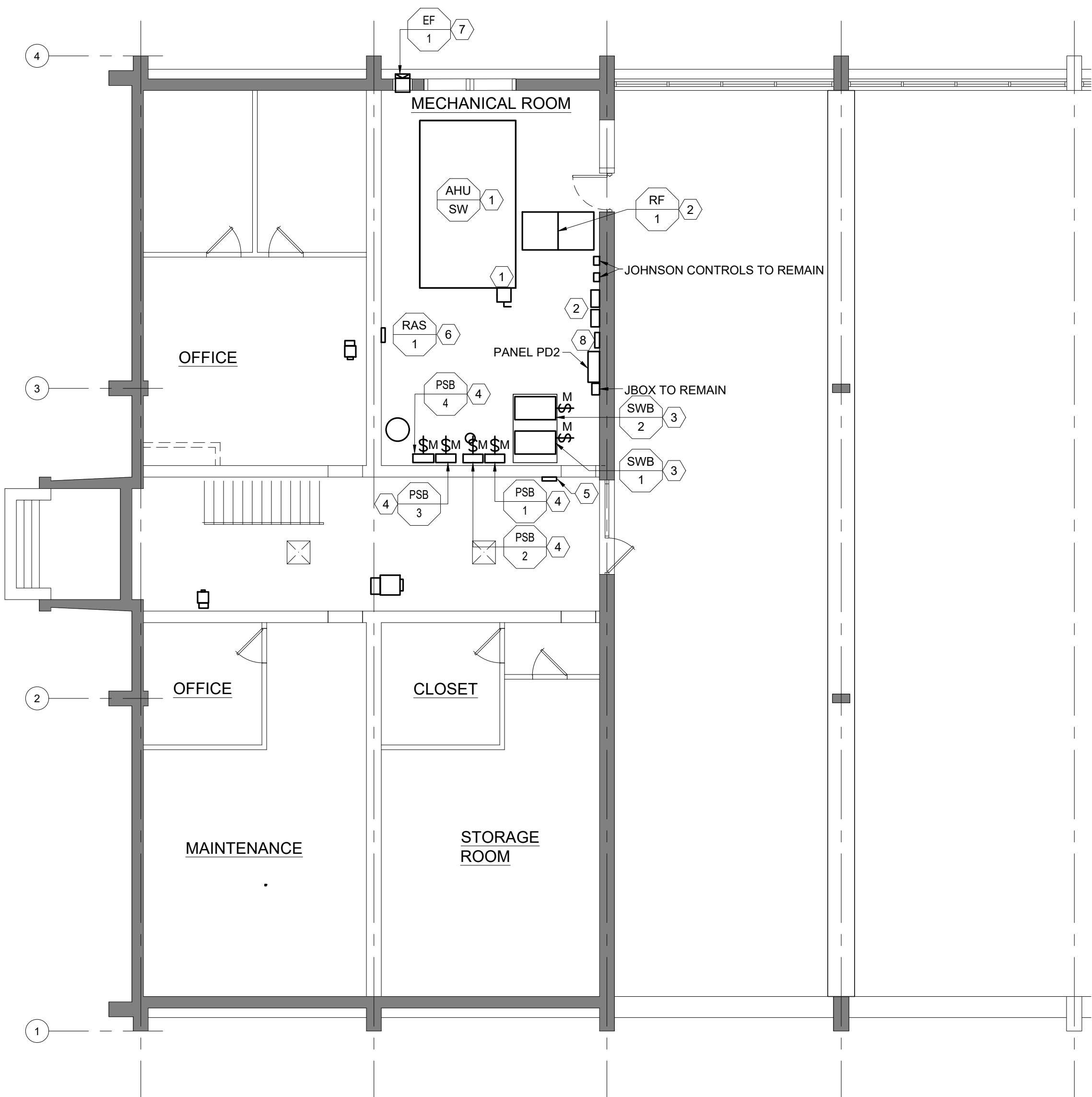
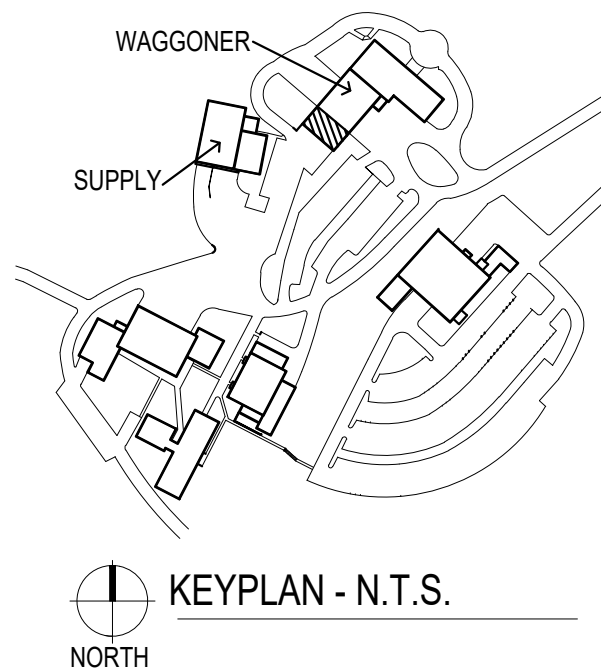
07/01/26
36 OF 45 SHEETS

ELECTRICAL KEYED NOTES

- EC SHALL RECONNECT EXISTING AHU SUPPLY FAN CIRCUITING FROM PANEL PD2 TO NEW AHU SUPPLY FAN DISCONNECT SWITCH FURNISHED WITH UNIT. COORDINATE EXACT LOCATION OF DISCONNECT SWITCH WITH MC. MAINTAIN EXISTING 100A/3P CIRCUIT BREAKER.
- EC SHALL PROVIDE NEW CIRCUITING TO NEW RETURN FAN ARRAY. PROVIDE NEW CIRCUIT BREAKER. PROVIDE AND INSTALL NEW VFDs MOUNTED ON WALL ADJACENT TO RETURN FAN. SEE EQUIPMENT AND VFD SCHEDULES ON SHEET E-601 FOR DETAILS.
- EC SHALL RECONNECT EXISTING 120V CIRCUIT(S) FOR NEW BOILERS. TIE INTO THE NEW E-STOP BUTTON LOCATED AT ROOM'S EXTERIOR.
- EC SHALL RECONNECT EXISTING 120V CIRCUITING TO NEW INLINE PRIMARY AND SECONDARY BOILER PUMPS TO PANEL PD2.
- EC SHALL PROVIDE A NEW DEDICATED 120V CIRCUIT FOR E-STOP BUTTON SERVING THE EMERGENCY SHUTDOWN OF THE BOILERS AND CONNECT THE E-STOP BUTTON TO THE EMERGENCY STOPPING CONTROLS OF THE BOILERS.
- EC SHALL PROVIDE 120V TO NEW REFRIGERANT ALARM SYSTEM. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT REQUIREMENTS.
- EC SHALL PROVIDE NEW 120V CIRCUIT FROM PANEL PD2 FOR REFRIGERANT EXHAUST FAN. EXHAUST FAN SHALL BE INTERLOCKED WITH REFRIGERANT MONITOR ALARM SYSTEM TO ENERGIZE UPON ACTIVATION OF ALARM. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT REQUIREMENTS.
- EC SHALL PROVIDE A 6-CIRCUIT, 60A/2P, 120/240V, LOAD CENTER FED FROM PANEL PD2 SHOULD THERE NOT BE SUFFICIENT SPACE IN PANEL PD2 FOR NEW CIRCUITS. EC SHALL FIELD VERIFY EXISTING SPARES AND SPACES IN PANEL PD2 DURING DEMOLITION.

GENERAL ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE 2023 NEC, 2024 IBC, NFPA 101, AND NFPA 72. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL OTHER APPLICABLE STATE AND LOCAL CODES AS WELL AS ALL MISSOURI STATE HIGHWAY PATROL GUIDELINES.
- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
- WHERE EXISTING CONDITIONS DIFFER FROM DRAWINGS OR CREATIVE CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- THE CONTRACTOR SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
- PROVIDE NEW CIRCUITS, BREAKERS, SPACES, AND PANELBOARDS AS REQUIRED TO SUPPORT NEW WORK. UPDATE ALL PANEL SCHEDULES, DIRECTORIES, AND LABELING TO REFLECT FINAL CONDITIONS.
- ALL WIRING SHALL BE IN RIGID CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. ALL ABANDONED WIRING SHALL BE REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX, PANELBOARD, OR SOURCE.
- MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
- MAINTAIN FIRE ALARM, EMERGENCY LIGHTING, EGRESS LIGHTING, AND LIFE SAFETY SYSTEMS ACTIVE AT ALL TIMES DURING CONSTRUCTION. ANY INTERRUPTIONS TO FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH THE OWNER AND MONITORING SERVICE.
- COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL O&M MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.



ELECTRICAL SOUTHWING FIRST FLOOR PLAN - RENOVATION

SCALE: 1/8" = 1'-0"



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
Expiration Date: 12/31/27

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PROJECT # R2411-01
SITE # 6001
FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL SOUTHWING
SECOND FLOOR PLAN -
RENOVATION

SHEET NUMBER:

E-108

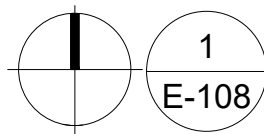
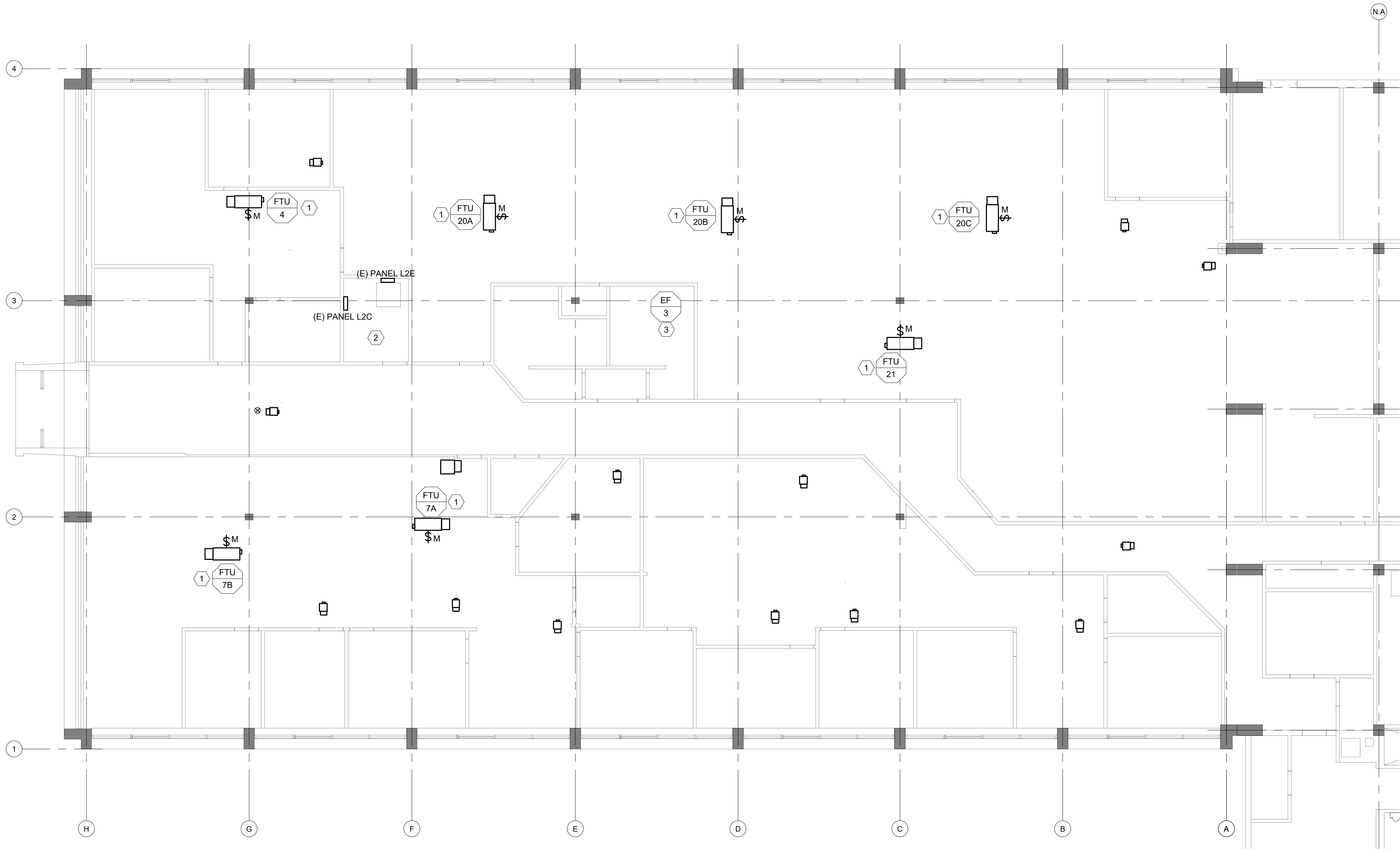
07/01/26
37 OF 45 SHEETS

ELECTRICAL KEYED NOTES

1. EC SHALL PROVIDE 208V, 15A/2P CIRCUIT FOR NEW FAN TERMINAL UNIT. EC SHALL PROVIDE A DOUBLE POLE, SINGLE THROW DISCONNECT SWITCH AT EACH UNIT FOR DISCONNECTING MEANS. SEE ELECTRICAL EQUIPMENT SCHEDULE ON SHEET E-601 FOR ELECTRICAL REQUIREMENTS.
2. EC SHALL UTILIZE EXISTING PANELBOARDS "L2C" AND "L2E" IN THIS ROOM FOR NEW 15A/2P CIRCUITS TO FAN TERMINAL UNITS. PROVIDE NEW 15A/2P CIRCUIT BREAKERS IN THE EXISTING PANELS AVAILABLE SPACE. PROVIDE NEW CIRCUIT BREAKERS MATCHING THE EXISTING CIRCUIT BREAKERS MAKE, MODEL AND AIC RATINGS.
3. NEW RESTROOM EXHAUST FAN TO REPLACE EXISTING RESTROOM EXHAUST FAN. CONNECT NEW EXHAUST FAN TO PREVIOUS 120V CIRCUIT SERVING THE EXHAUST FAN BEING REMOVED. PROVIDE NEW CONTROLS SWITCH AND CONTROLS WIRING MATCHING THE PREVIOUS CONTROLS ARRANGEMENT. FIELD VERIFY EXISTING CONTROLS ARRANGEMENT.

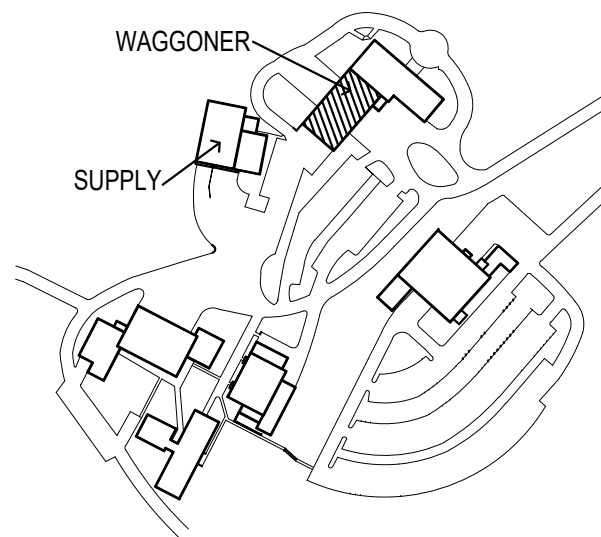
GENERAL ELECTRICAL NOTES

- A. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE 2023 NEC, 2024 IBC, NFPA 101, AND NFPA 72. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL OTHER APPLICABLE STATE AND LOCAL CODES AS WELL AS ALL MISSOURI STATE HIGHWAY PATROL GUIDELINES.
- B. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
- C. WHERE EXISTING CONDITIONS DIFFER FROM DRAWINGS OR CREATIVE CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- D. THE CONTRACTOR SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- E. COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- F. COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- G. VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- H. COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
- I. PROVIDE NEW CIRCUITS, BREAKERS, SPACES, AND PANELBOARDS AS REQUIRED TO SUPPORT NEW WORK. UPDATE ALL PANEL SCHEDULES, DIRECTORIES, AND LABELING TO REFLECT FINAL CONDITIONS.
- J. ALL WIRING SHALL BE IN RIGID CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. ALL ABANDONED WIRING SHALL BE REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX, PANELBOARD, OR SOURCE.
- K. MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
- L. MAINTAIN FIRE ALARM, EMERGENCY LIGHTING, EGRESS LIGHTING, AND LIFE SAFETY SYSTEMS ACTIVE AT ALL TIMES DURING CONSTRUCTION. ANY INTERRUPTIONS TO FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH THE OWNER AND MONITORING SERVICE.
- M. COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- N. LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- O. PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL o&m MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.



ELECTRICAL SOUTHWING SECOND FLOOR PLAN - RENOVATION

SCALE: 1/8" = 1'-0"



KEYPLAN - N.T.S.

NORTH



Professional of Record:

MARK KUHLMAN
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Expiration Date: 12/31/27

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PROJECT # R2411-01
SITE # 6001
FACILITY #8136001001
8136001007

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No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL SUPPLY
BUILDING FLOOR PLANS -
RENOVATION ALTERNATE #1

SHEET NUMBER:

E-109

07/01/26
38 OF 45 SHEETS

GENERAL DEMOLITION NOTES

- VERIFY EXISTING CONDITIONS - CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT, WIRING, AND DEVICE LOCATIONS PRIOR TO THE START OF DEMOLITION. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND FIELD CONDITIONS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- SHUTDOWN COORDINATION - COORDINATE ALL ELECTRICAL SHUTDOWNS WITH OWNER A MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS AFFECTING OCCUPIED SPACES SHALL OCCUR OUTSIDE OF OCCUPIED HOURS UNLESS OTHERWISE APPROVED.
- PROTECTION OF ACTIVE SYSTEMS - MAINTAIN OPERATION OF EXISTING CIRCUITS SERVING OCCUPIED OR UNAFFECTED AREAS OF THE BUILDING. PROVIDE TEMPORARY SUPPORTS FOR CONDUITS, CABLE TRAYS, AND EQUIPMENT THAT REMAIN IN SERVICE DURING DEMOLITION. PROTECT EXISTING FIRE ALARM, SECURITY, IT, AND EMERGENCY/EGRESS LIGHTING CIRCUITS UNLESS SPECIFICALLY NOTED FOR REMOVAL.
- SELECTIVE DEMOLITION - REMOVE ONLY WIRING, DEVICES, RACEWAYS, AND EQUIPMENT INDICATED ON PLANS TO BE REMOVED. WIRING THAT IS DE-ENERGIZED AND ABANDONED SHALL BE FULLY REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX OR PANEL. DO NOT LEAVE ABANDONED WIRING IN CEILINGS OR WALLS. WHERE DEMOLITION RESULTS IN EXPOSED JUNCTION BOXES THAT REMAIN, INSTALL BLANK, CODE-APPROVED BOXES.
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- DEMOLITION DOCUMENTATION - IDENTIFY AND MARK ALL CIRCUITS AND PANELBOARD DIRECTORIES AFFECTED BY DEMOLITION. UPDATE PANEL SCHEDULES TO REMOVE REFERENCES TO CIRCUITS AND EQUIPMENT NO LONGER IN USE.

GENERAL ELECTRICAL NOTES

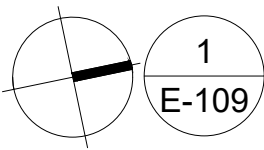
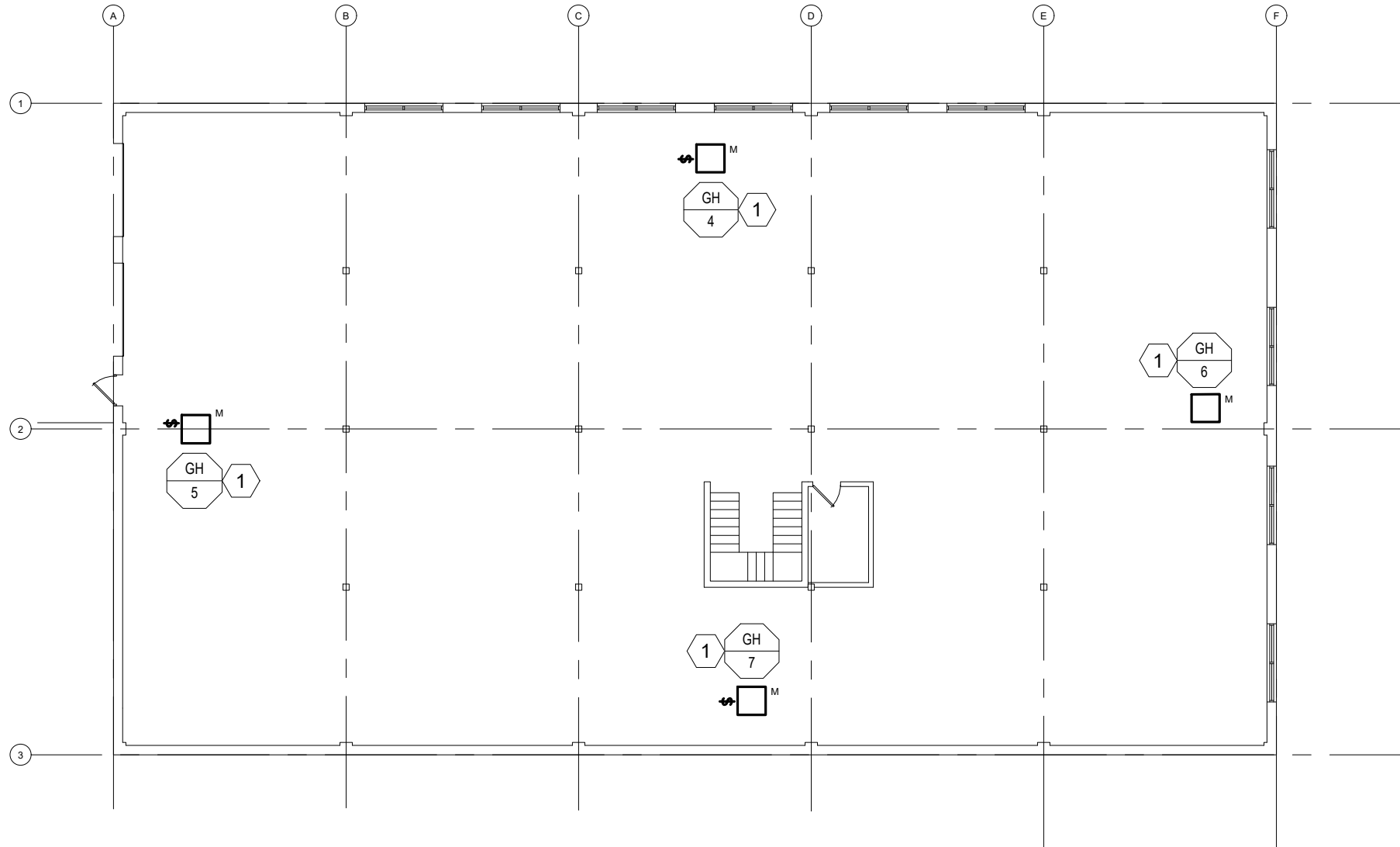
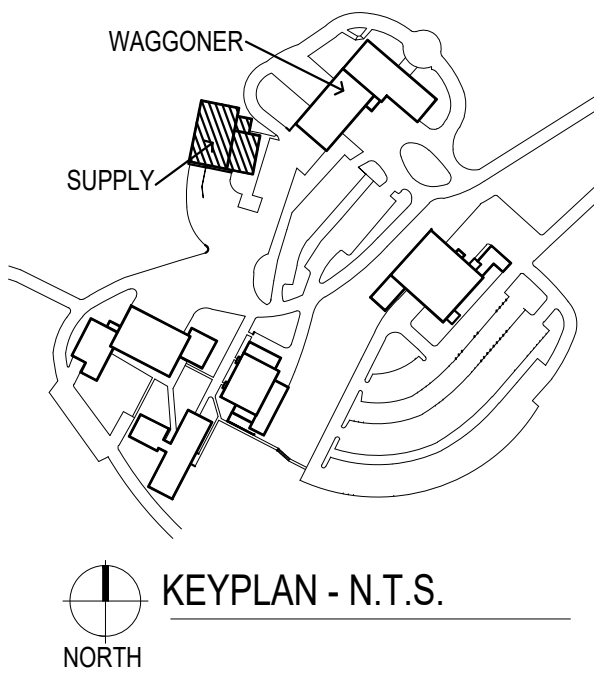
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- COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
- PROVIDE NEW CIRCUITS, BREAKERS, SPACES, AND PANELBOARDS AS REQUIRED TO SUPPORT NEW WORK. UPDATE ALL PANEL SCHEDULES, DIRECTORIES, AND LABELING TO REFLECT FINAL CONDITIONS.
- ALL WIRING SHALL BE IN RIGID CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. ALL ABANDONED WIRING SHALL BE REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX, PANELBOARD, OR SOURCE.
- MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
- MAINTAIN FIRE ALARM, EMERGENCY LIGHTING, EGRESS LIGHTING, AND LIFE SAFETY SYSTEMS ACTIVE AT ALL TIMES DURING CONSTRUCTION. ANY INTERRUPTIONS TO FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH THE OWNER AND MONITORING SERVICE.
- COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL o&m MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.

ELECTRICAL KEYED NOTES

- EXISTING GAS HEATERS SHALL BE REPLACED. EC SHALL DISCONNECT EXISTING UNIT CIRCUITING AND MAINTAIN FOR RECONNECTION WITH NEW UNIT.

ELECTRICAL KEYED NOTES

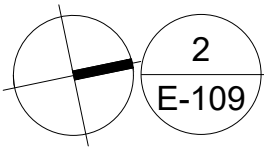
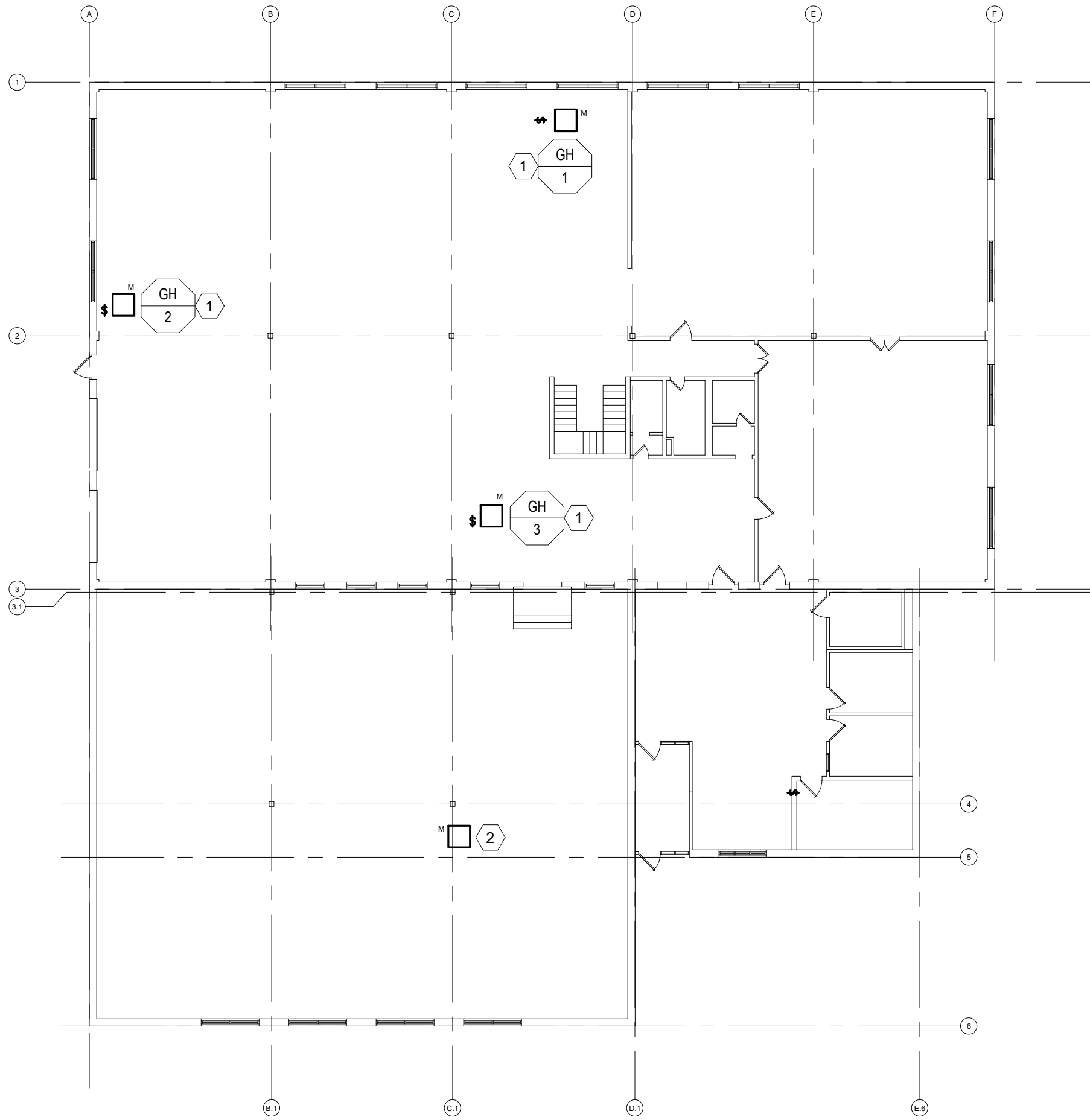
- EXISTING GAS HEATERS SHALL BE REPLACED. EC SHALL DISCONNECT EXISTING UNIT CIRCUITING AND MAINTAIN FOR RECONNECTION WITH NEW UNIT.
- EXISTING GAS UNIT HEATER TO REMAIN.



1
E-109

ELEC. SUPPLY BLDG. BASEMENT FLOOR PLAN - BID ALTERNATE #1

SCALE: 1/16" = 1'-0"



2
E-109

ELEC. SUPPLY BLDG. FIRST FLOOR PLAN - BID ALTERNATE #1

SCALE: 1/168" = 1'-0"



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
Expiration Date: 12/31/27

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MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
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PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

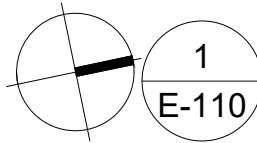
SHEET TITLE:

ELECTRICAL SUPPLY BUILDING
ROOF PLAN - RENOVATION
ALTERNATE #1

SHEET NUMBER:

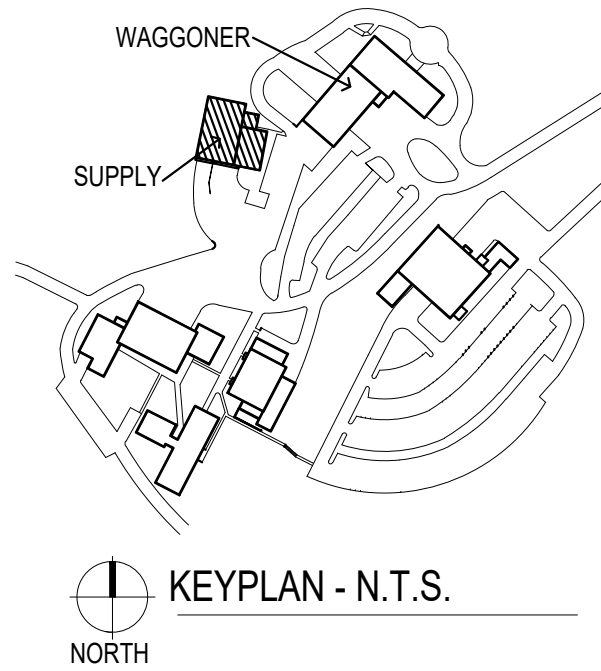
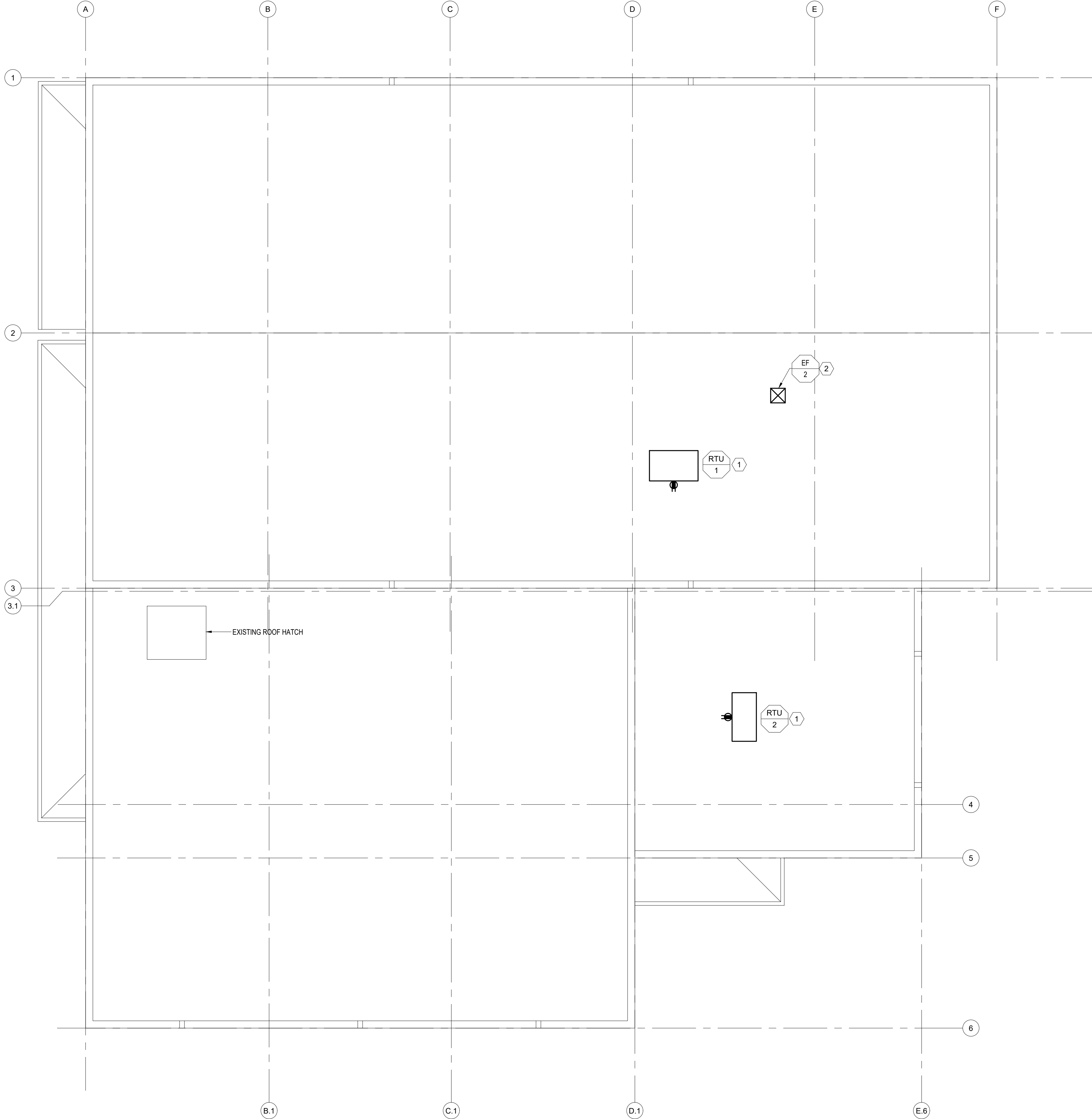
E-110

07/01/26
39 OF 45 SHEETS



ELECTRICAL SUPPLY BUILDING ROOF PLAN - RENOVATION BID ALTERNATE #1

SCALE: 1/8" = 1'-0"



KEYPLAN - N.T.S.

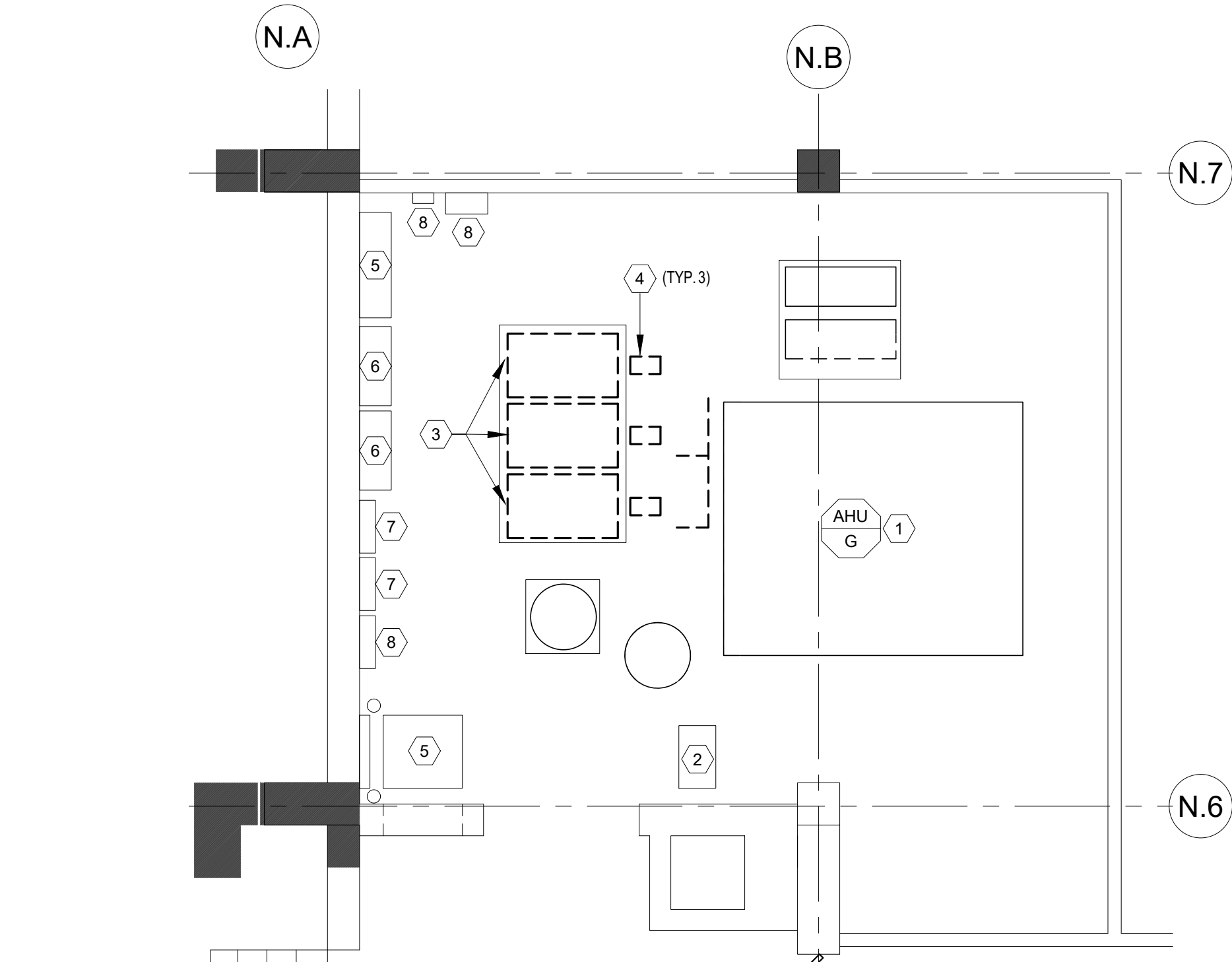
NORTH

ELECTRICAL KEYED NOTES

1. NEW RTU SHALL REPLACE EXISTING. EC SHALL MAINTAIN EXISTING CONDUIT AND PROVIDE NEW CIRCUITING AND OVERCURRENT PROTECTION FOR CONNECTION TO NEW RTU FACTORY FURNISHED VFD. UNIT SHALL BE FURNISHED WITH CONVENIENCE RECEPTACLE FROM FACTORY MOUNTED TRANSFORMER. EC SHALL FIELD VERIFY RTU POWER SOURCE PANELBOARD LOCATION PRIOR TO BID.
2. NEW IN-LINE EXHAUST FAN SHALL BE INSTALLED BELOW ROOF TO REPLACE EXISTING. EC SHALL EXTEND EXISTING EXHAUST FAN CIRCUITING FOR CONNECTION TO NEW UNIT. VERIFY EXISTING FAN OVERCURRENT PROTECTION AND WIRING MEETS NEW FAN SPECIFICATIONS. ADJUST AND OR REPLACE OVERCURRENT PROTECTION AND WIRING AS REQUIRED.

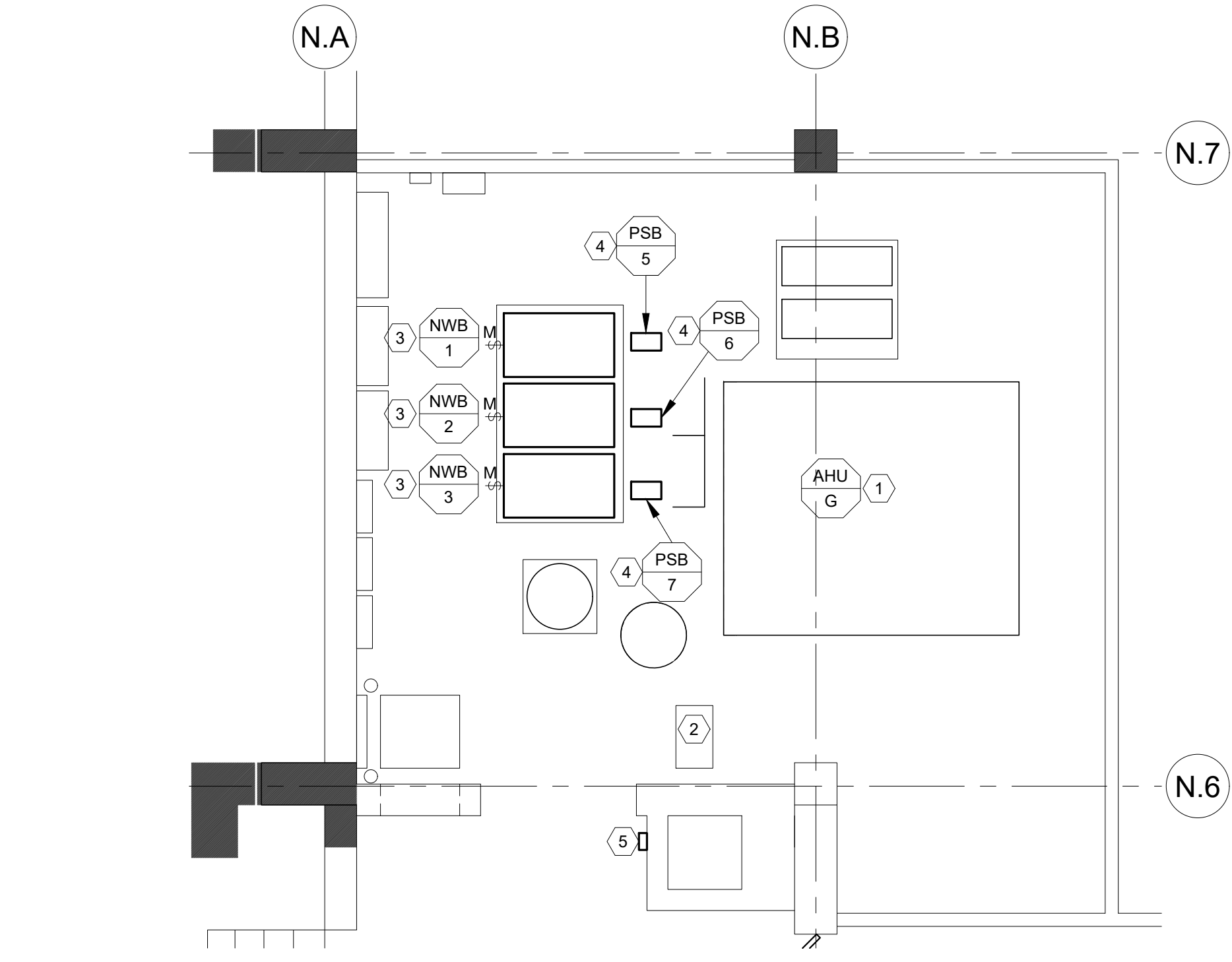
GENERAL ELECTRICAL NOTES

- A. ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE 2023 NEC, 2024 IBC, NFPA 101, AND NFPA 72. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL OTHER APPLICABLE STATE AND LOCAL CODES AS WELL AS ALL MISSOURI STATE HIGHWAY PATROL GUIDELINES.
- B. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
- C. WHERE EXISTING CONDITIONS DIFFER FROM DRAWINGS OR CREATIVE CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- D. THE CONTRACTOR SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- E. COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- F. COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- G. VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- H. COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
- I. PROVIDE NEW CIRCUITS, BREAKERS, SPACES, AND PANELBOARDS AS REQUIRED TO SUPPORT NEW WORK. UPDATE ALL PANEL SCHEDULES, DIRECTORIES, AND LABELING TO REFLECT FINAL CONDITIONS.
- J. ALL WIRING SHALL BE IN RIGID CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. ALL ABANDONED WIRING SHALL BE REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX, PANELBOARD, OR SOURCE.
- K. MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
- L. MAINTAIN FIRE ALARM, EMERGENCY LIGHTING, EGRESS LIGHTING, AND LIFE SAFETY SYSTEMS ACTIVE AT ALL TIMES DURING CONSTRUCTION. ANY INTERRUPTIONS TO FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH THE OWNER AND MONITORING SERVICE.
- M. COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- N. LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- O. PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL c&m MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.



ELECTRICAL NORTHWING BASEMENT FLOOR PLAN - DEMOLITION

SCALE: 1/4" = 1'-0"



ELECTRICAL NORTHWING BASEMENT FLOOR PLAN - RENOVATION

SCALE: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES

- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE 2023 NEC, 2024 IBC, NFPA 101, AND NFPA 72. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL OTHER APPLICABLE STATE AND LOCAL CODES AS WELL AS ALL MISSOURI STATE HIGHWAY PATROL GUIDELINES.
- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
- WHERE EXISTING CONDITIONS DIFFER FROM DRAWINGS OR CREATIVE CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- THE CONTRACTORS SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
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- MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
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- LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL o&m MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.

GENERAL ELECTRICAL NOTES

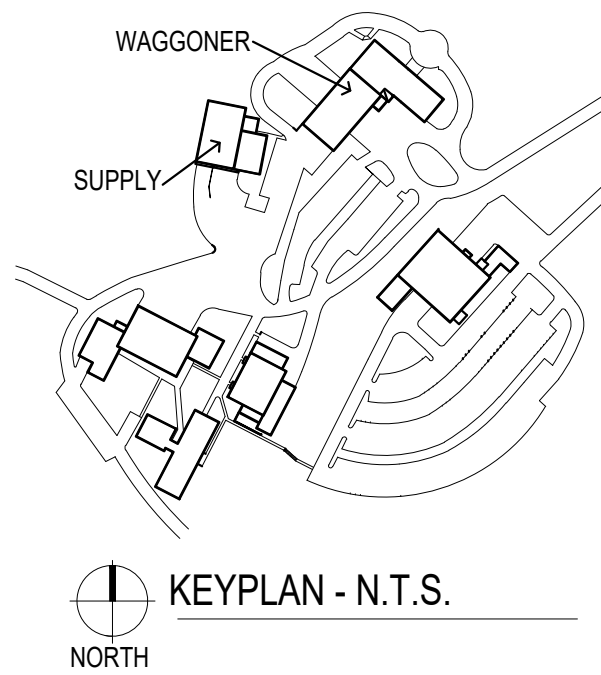
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- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
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- THE CONTRACTOR SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
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- MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
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- COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL o&m MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.

ELECTRICAL DEMOLITION KEYED NOTES

- EXISTING AHU TO REMAIN.
- EC SHALL DISCONNECT AND DEMOLISH THE EXISTING VFD SERVING THE AHU. MAINTAIN WIRING FOR RECONNECTION TO NEW VFD.
- (3) EXISTING BOILERS SHALL BE REPLACED. EC SHALL DISCONNECT EXISTING CIRCUITING AND MAINTAIN FOR RECONNECTION TO NEW UNITS IN SAME LOCATION.
- (3) EXISTING BOILER PUMPS SHALL BE REPLACED. EC SHALL DISCONNECT EXISTING CIRCUITING AND MAINTAIN FOR RECONNECTION TO NEW UNITS IN SAME LOCATION.
- EXISTING MAIN DISTRIBUTION PANEL.
- EXISTING MOTOR CONTROL CENTER.
- EXISTING PANELBOARD.
- EXISTING DISCONNECT SWITCH.

ELECTRICAL RENOVATION KEYED NOTES

- EXISTING AHU TO REMAIN.
- EC SHALL PROVIDE AND INSTALL NEW VFD FOR SUPPLY FAN MOTOR AND RECONNECT EXISTING WIRING. SEE EQUIPMENT AND VFD SCHEDULES ON SHEET E-601.
- EC SHALL RECONNECT EXISTING 120V CIRCUIT TO (3) NEW BOILERS. TIE INTO NEW E-STOP BUTTON LOCATED AT ROOM'S EXTERIOR.
- (3) EXISTING BOILER PUMPS SHALL REPLACE EXISTING. EC SHALL RECONNECT EXISTING CIRCUITING TO NEW UNITS.
- EC SHALL PROVIDE A NEW DEDICATED 120V CIRCUIT FOR E-STOP BUTTON SERVING THE EMERGENCY SHUTDOWN OF THE BOILERS AND CONNECT THE E-STOP BUTTON TO THE EMERGENCY STOPPING CONTROLS OF THE BOILERS.



STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
Expiration Date: 12/31/27

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DEPARTMENT OF
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MISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL NORTHWING
BASEMENT FLOOR PLAN

SHEET NUMBER:

E-111

07/01/26
40 OF 45 SHEETS



Professional of Record:

MARK KUHLMAN
License Number: PE2017000321
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FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #:	2504992
DRAWN BY:	AJS
CHECKED BY:	DAT
DESIGNED BY:	KJC

SHEET TITLE:

ELECTRICAL NORTHWING
SECOND FLOOR PLAN

SHEET NUMBER:

E-112

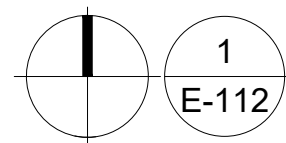
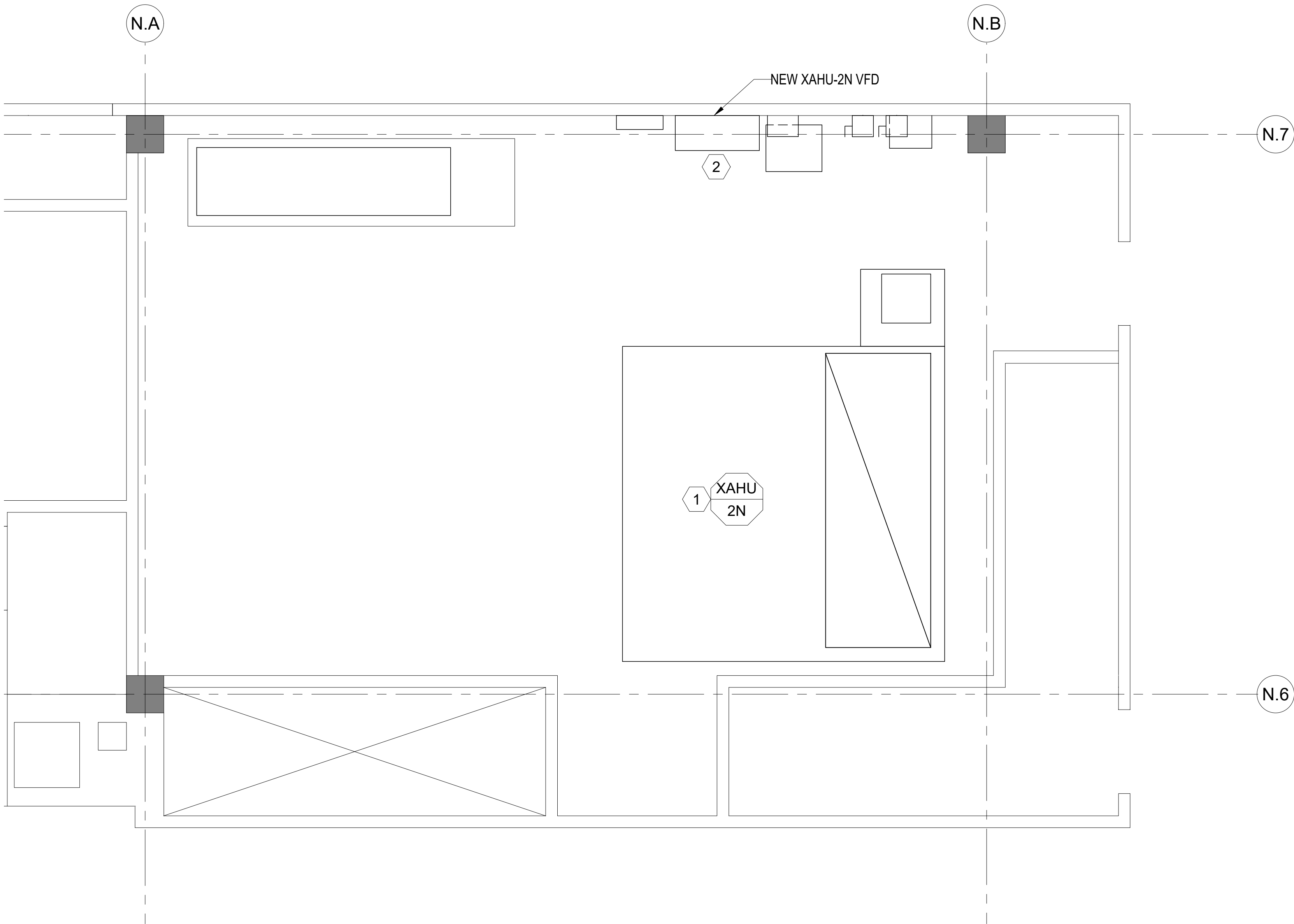
07/01/26
41 OF 45 SHEETS

ELECTRICAL KEYED NOTES

- EXISTING AHU TO REMAIN.
- EC SHALL DISCONNECT AND REMOVE THE EXISTING VFD SERVING THE AHU AND IN ITS PLACE PROVIDE AND INSTALL A NEW VFD FOR AHU FAN MOTOR AND RECONNECT EXISTING WIRING. SEE EQUIPMENT AND VFD SCHEDULES ON SHEET E-601.

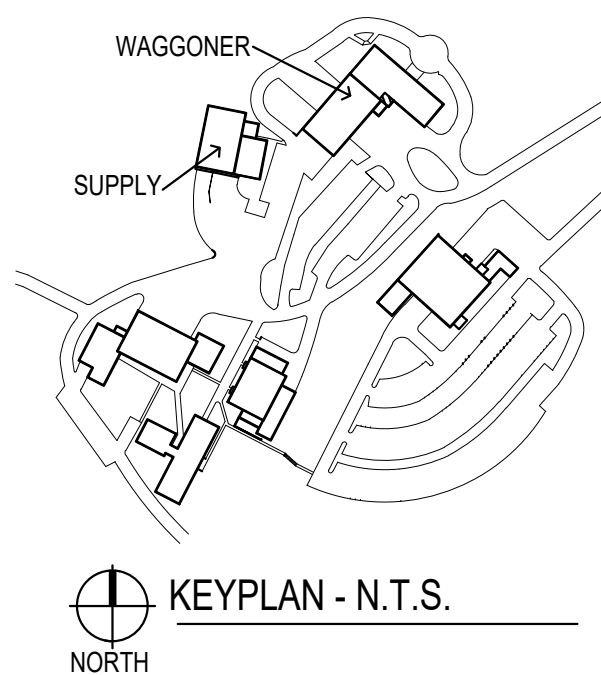
GENERAL ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE 2023 NEC, 2024 IBC, NFPA 101, AND NFPA 72. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL OTHER APPLICABLE STATE AND LOCAL CODES AS WELL AS ALL MISSOURI STATE HIGHWAY PATROL GUIDELINES.
- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
- WHERE EXISTING CONDITIONS DIFFER FROM DRAWINGS OR CREATIVE CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- THE CONTRACTOR SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
- PROVIDE NEW CIRCUITS, BREAKERS, SPACES, AND PANELBOARDS AS REQUIRED TO SUPPORT NEW WORK. UPDATE ALL PANEL SCHEDULES, DIRECTORIES, AND LABELING TO REFLECT FINAL CONDITIONS.
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- MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
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- COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL O&M MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.



ELECTRICAL NORTHWING SECOND FLOOR PLAN - RENOVATION

SCALE: 3/32"=1'-0"





Professional of Record:

MARK KUHLMAN
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Expiration Date: 12/31/27

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PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: AJS
CHECKED BY: DAT
DESIGNED BY: KJC

SHEET TITLE:

ELECTRICAL SOUTHWING
ROOF PLAN - RENOVATION

SHEET NUMBER:

E-113

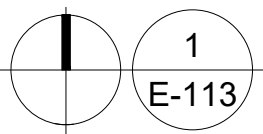
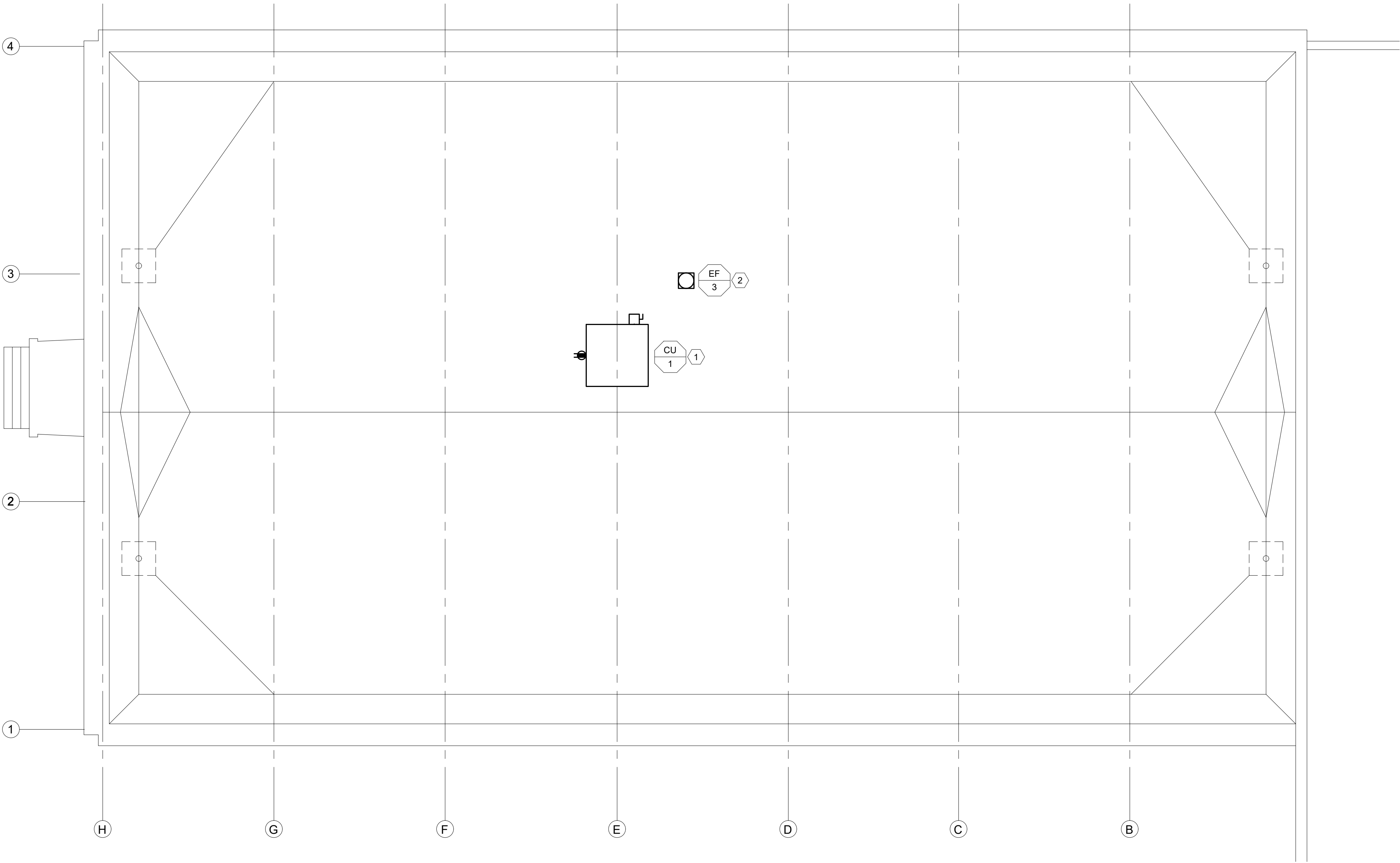
07/01/26
42 OF 45 SHEETS

ELECTRICAL KEYED NOTES

- EC SHALL UTILIZE THE EXISTING 300A/3P LSI CIRCUIT BREAKER SERVING THE OLD CONDENSING UNIT FOR THE NEW CONDENSING UNIT. THE EXISTING LSI CIRCUIT BREAKER SHALL BE ADJUSTED TO A 250A SETTING PER THE BASIS OF DESIGN CONDENSING UNIT. EC SHALL FIELD VERIFY THE EXISTING WIRING TO THE CONDENSING UNIT IS MINIMUM SIZE OF #250KCMIL. IF EXISTING WIRING IS SMALLER THAN #250KCMIL, EC SHALL PROVIDE NEW WIRING (3#250, 1#4GND). EC SHALL FIELD VERIFY IF THE EXISTING CONDUIT CAN ACCOMMODATE THE WIRING SIZE REQUIRED AND REPLACE THE CONDUIT BACK TO PANEL PD2 IF REQUIRED. EC SHALL COORDINATE WITH MC AND ADJUST CIRCUIT BREAKER SETTINGS AND WIRING SIZE TO THE FINAL EQUIPMENT SELECTION. CONDENSING UNIT SHALL BE FURNISHED WITH CONVENIENCE RECEPTACLE POWERED FROM A FACTORY MOUNTED TRANSFORMER.
- NEW RESTROOM EXHAUST FAN TO REPLACE EXISTING RESTROOM EXHAUST FAN. CONNECT NEW EXHAUST FAN TO PREVIOUS 120V CIRCUIT SERVING THE EXHAUST FAN BEING REMOVED.

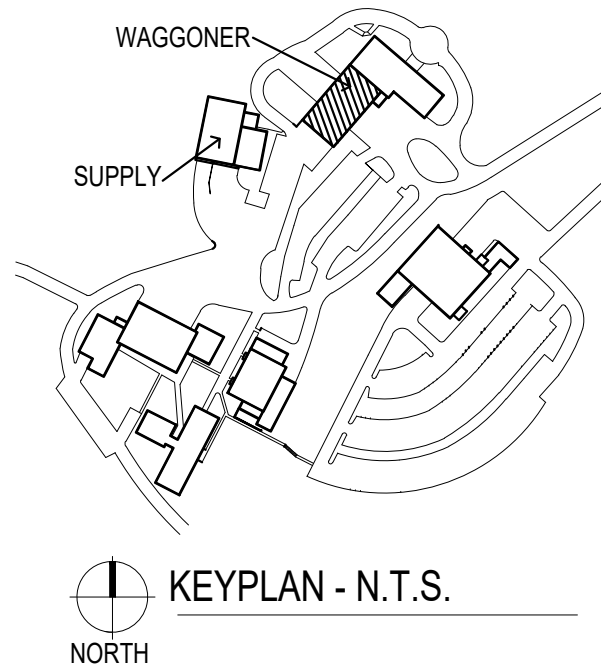
GENERAL ELECTRICAL NOTES

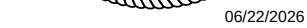
- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITIONS OF THE 2023 NEC, 2024 IBC, NFPA 101, AND NFPA 72. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL OTHER APPLICABLE STATE AND LOCAL CODES AS WELL AS ALL MISSOURI STATE HIGHWAY PATROL GUIDELINES.
- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL CONDITIONS PRIOR TO INSTALLATION.
- WHERE EXISTING CONDITIONS DIFFER FROM DRAWINGS OR CREATIVE CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING.
- THE CONTRACTOR SHALL MAINTAIN OPERATION OF CIRCUITS SERVING OCCUPIED OR ADJACENT SPACES UNLESS OTHERWISE NOTED.
- COORDINATE WITH ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL, AND OTHER TRADES TO AVOID CONFLICTS.
- COORDINATE POWER REQUIREMENTS, CONNECTION POINTS, AND DEVICE MOUNTING HEIGHTS WITH EQUIPMENT MANUFACTURERS.
- VERIFY ALL DEVICE MOUNTING LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ROOM LAYOUTS.
- COORDINATE ELECTRICAL SHUTDOWNS WITH OWNER MINIMUM OF 72 HOURS IN ADVANCE. SHUTDOWNS IMPACTING OCCUPIED SPACES SHALL OCCUR DURING OWNER APPROVED TIME WINDOWS.
- PROVIDE NEW CIRCUITS, BREAKERS, SPACES, AND PANELBOARDS AS REQUIRED TO SUPPORT NEW WORK. UPDATE ALL PANEL SCHEDULES, DIRECTORIES, AND LABELING TO REFLECT FINAL CONDITIONS.
- ALL WIRING SHALL BE IN RIGID CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE. ALL ABANDONED WIRING SHALL BE REMOVED BACK TO THE NEAREST ACCESSIBLE JUNCTION BOX, PANELBOARD, OR SOURCE.
- MAINTAIN CONTINUITY OF THE GROUNDING AND BONDING SYSTEM THROUGHOUT CONSTRUCTION. GROUND ALL NEW EQUIPMENT PER NEC ARTICLE 250.
- MAINTAIN FIRE ALARM, EMERGENCY LIGHTING, EGRESS LIGHTING, AND LIFE SAFETY SYSTEMS ACTIVE AT ALL TIMES DURING CONSTRUCTION. ANY INTERRUPTIONS TO FIRE ALARM SYSTEMS SHALL BE COORDINATED WITH THE OWNER AND MONITORING SERVICE.
- COORDINATE FIRE ALARM, ACCESS CONTROL, CCTV, DATA/TELECOM, AND WI-FI CABLING WITH OWNER. PROVIDE CONDUITS, BOXES, AND SUPPORTS FOR ALL LOW VOLTAGE SYSTEMS UNLESS NOTED OTHERWISE. FINAL DEVICE INSTALLATION, PROGRAMMING, AND TESTING SHALL BE PERFORMED BY THE OWNER'S DESIGNATED VENDORS UNLESS NOTED OTHERWISE.
- LABEL ALL NEW CIRCUITS, DEVICES, AND EQUIPMENT IN ACCORDANCE WITH NEC.
- PROVIDE RED-LINE/AS-BUILT MARKUPS DAILY AND FINAL UPDATED AS-BUILT DRAWINGS AT PROJECT COMPLETION. SUBMIT ALL O&M MANUALS, TEST REPORTS, AND EQUIPMENT DATA AT REQUEST FOR SUBSTANTIAL COMPLETION.



ELECTRICAL SOUTHWING ROOF PLAN - RENOVATION

SCALE: 1/8" = 1'-0"





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Expiration Date: 12/31/27

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T: 314-821-1100DEPARTMENT OF
PUBLIC SAFETYMISSOURI STATE
HIGHWAY PATROL

REPLACE HVAC SYSTEM
WAGGONER BUILDING
MISSOURI STATE HIGHWAY
PATROL

1510 E. ELM STREET
JEFFERSON CITY, MO 651501

PROJECT # R2411-01

SITE # 6001

FACILITY #8136001001
8136001007

No.	Description	Date
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ISSUE DATE:06/25/2026

DWG FILE #: 2504992
DRAWN BY: AJS
CHECKED BY: DAT
DESIGNED BY: KJC

SHEET TITLE:

ELECTRICAL SCHEDULES

SHEET NUMBER

E-601

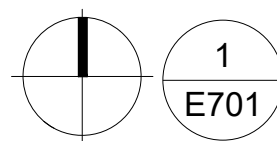
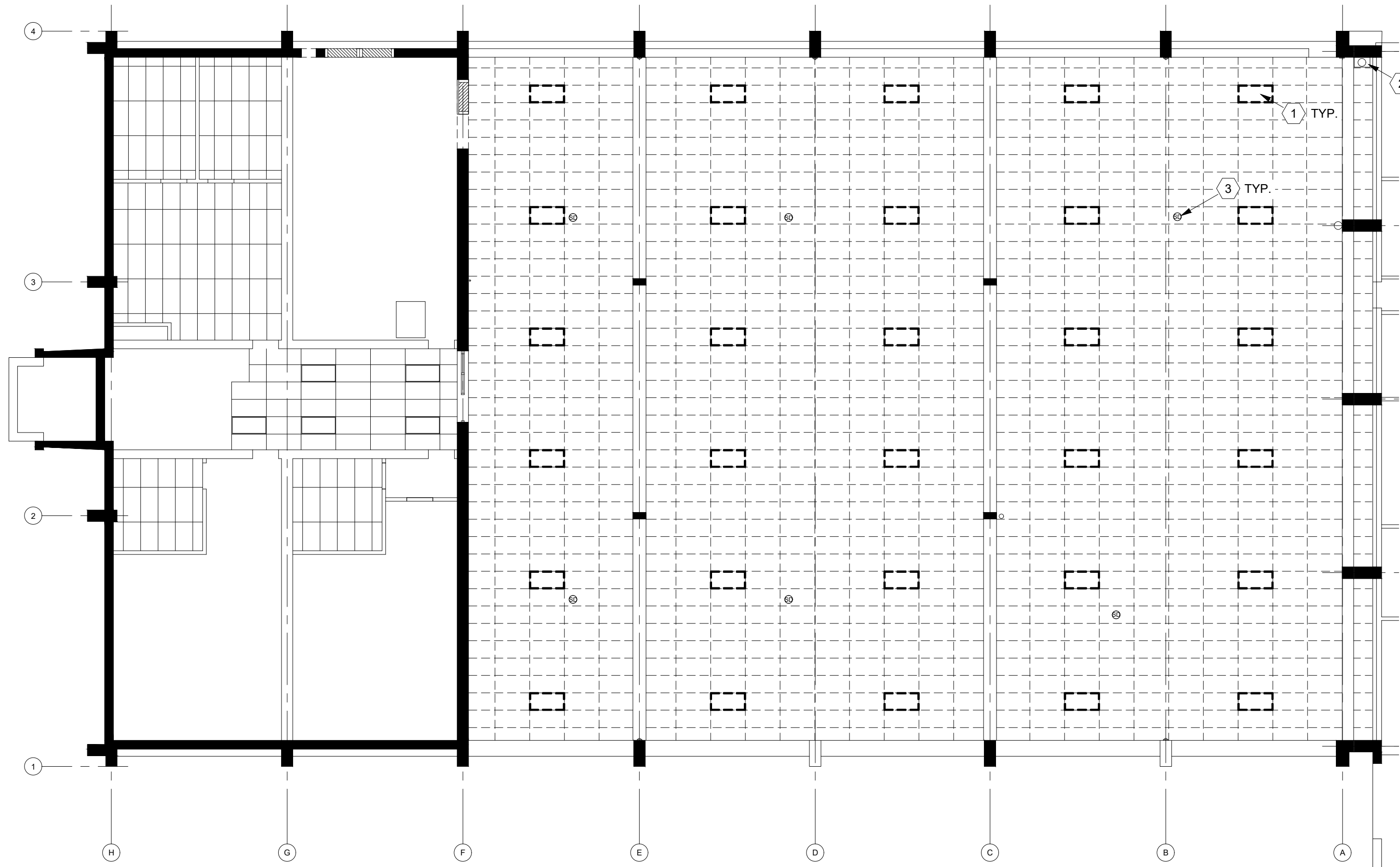
07/01/26
43 OF 45 SHEETS

VFD SCHEDULE										
EQUIPMENT SERVED	MANUFACTURER	MOTOR DATA			ENCLOSURE RATING	DISCONNECT	HARMONIC MITIGATION	BYPASS	VFD ISOLATION SWITCH	REMARKS
		QTY.	VOLTS	HP (EA.)						
RF-1	ABB	2	208 / 3PH	7.5	NEMA TYPE 1	YES	DC LINK CHOKE	YES	YES	ALL
XAHU-2N	ABB	1	208 / 3PH	30	NEMA TYPE 1	YES	DC LINK CHOKE	YES	YES	ALL
XAHU-G	ABB	1	208 / 3PH	20	NEMA TYPE 1	YES	DC LINK CHOKE	YES	YES	ALL

NOTES:

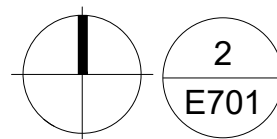
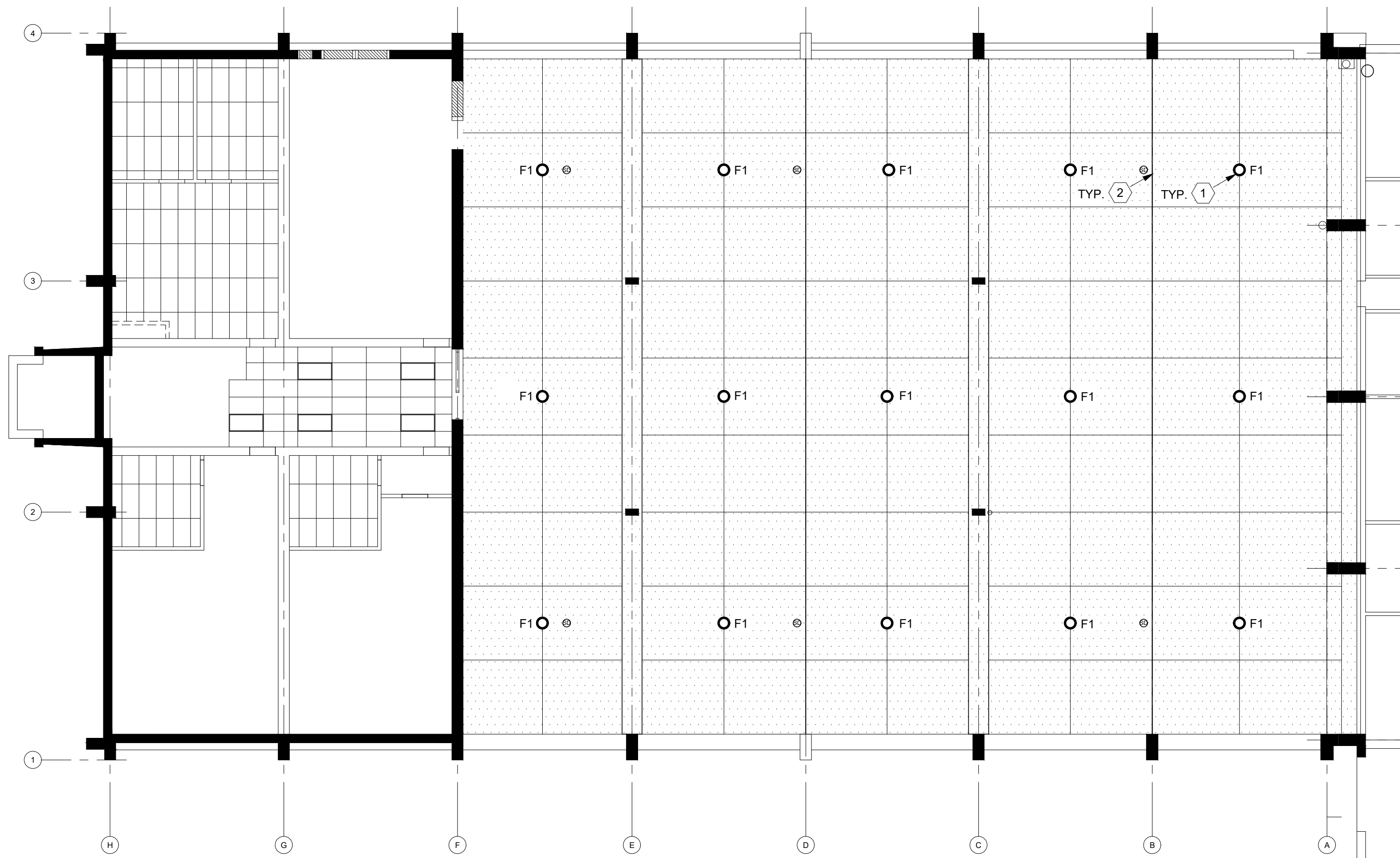
1. AT MINIMUM, VFD SHALL INCLUDE 5% IMPEDANCE VIA 5% AC LINE REACTOR OR DUEL DC BUS CHOKE SIZED TO 5% EQUIVALENT IMPEDANCE. REACTORS OR CHOKES SHALL BE SWINGING DESIGN.
2. PROVIDE UL 1449 TYPE 2 SURGE SUPPRESSION DEVICE.
3. VFD SHALL INCLUDE ALPHA-NUMERIC KEYPAD INTERFACE, WITH DISPLAY IN ENGLISH. DISPLAY RELYING ON CODES ARE NOT ACCEPTABLE.
4. VFD SCCR RATING SHALL MATCH EXISTING SOURCE PANEL'S RATING.

LIGHTING FIXTURE SCHEDULE							
TYPE MARK	MANUFACTURER	CATALOG NUMBER	LAMP	LUMEN OUTPUT	VOLTAGE	WATTAGE	COLOR TEMPERATURE
F1	CREE LIGHTING	IG B NM5S 10L 40K8 UL WH	LED	10000 lm	120-277V	76	4000K
ALTERNATE MANUFACTURERS: A. ACUTY BRAND B. EATON LIGHTING C. PHILLIPS LIGHTING							



ELECTRICAL FIRST FLOOR DEMO RCP

SCALE: 3/32" = 1'-0"



ELECTRICAL FIRST FLOOR RCP

SCALE: 3/32" = 1'-0"

ELECTRICAL GENERAL NOTES:

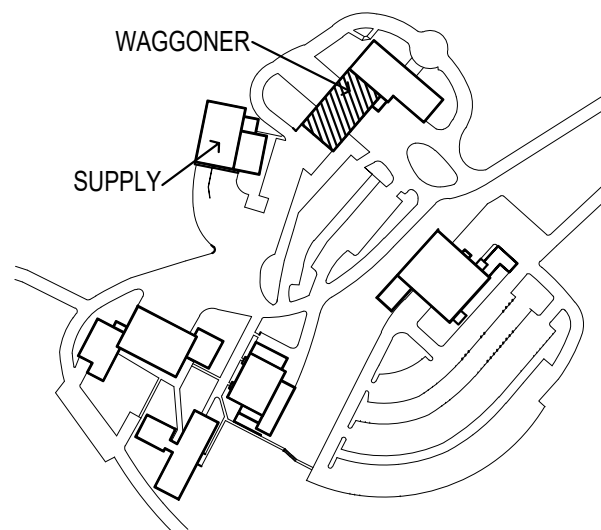
- A. ALL WIRING INSTALLED IN PLENUM SPACE ABOVE GARAGE CEILING SHALL BE PLENUM RATED CABLE.

(X) ELECTRICAL DEMO KEYED NOTES:

- EXISTING LAY-IN CEILING AND LIGHTING SHALL BE DEMOLISHED IN ENTIRETY. EC SHALL DISCONNECT EXISTING LIGHT FIXTURES AND DEMOLISH WIRING BACK TO NEAREST JBOX.
- EXISTING CONDUIT TO REMAIN.
- EXISTING PHOTOELECTRIC SMOKE DETECTOR TO BE REMOVED. SMOKE DETECTOR SHALL BE SALVAGED AND PROTECTED FOR REUSE. REPLACE ANY MOUNTING HARDWARE THAT IS DAMAGED.

(X) ELECTRICAL RENO KEYED NOTES:

- EC SHALL PROVIDE NEW SURFACE MOUNT LIGHTING IN PARKING GARAGE. MAINTAIN EXISTING CIRCUITING AND PROVIDE NEW WIRING.
- EC SHALL REINSTALL SALVAGED SMOKE DETECTOR IN EXISTING LOCATION. RECONNECT TO EXISTING FIRE ALARM SYSTEM.



STATE OF MISSOURI
MIKE KEHOE
GOVERNOR

CASCO Diversified Corporation



Professional of Record:

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License Number: PE2017000321
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FACILITY #8136001001
8136001007

REVISIONS

No.	Description	Date
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ISSUE DATE: 06/25/2026

DWG FILE #: 2504992
DRAWN BY: AJS
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DESIGNED BY: KJC

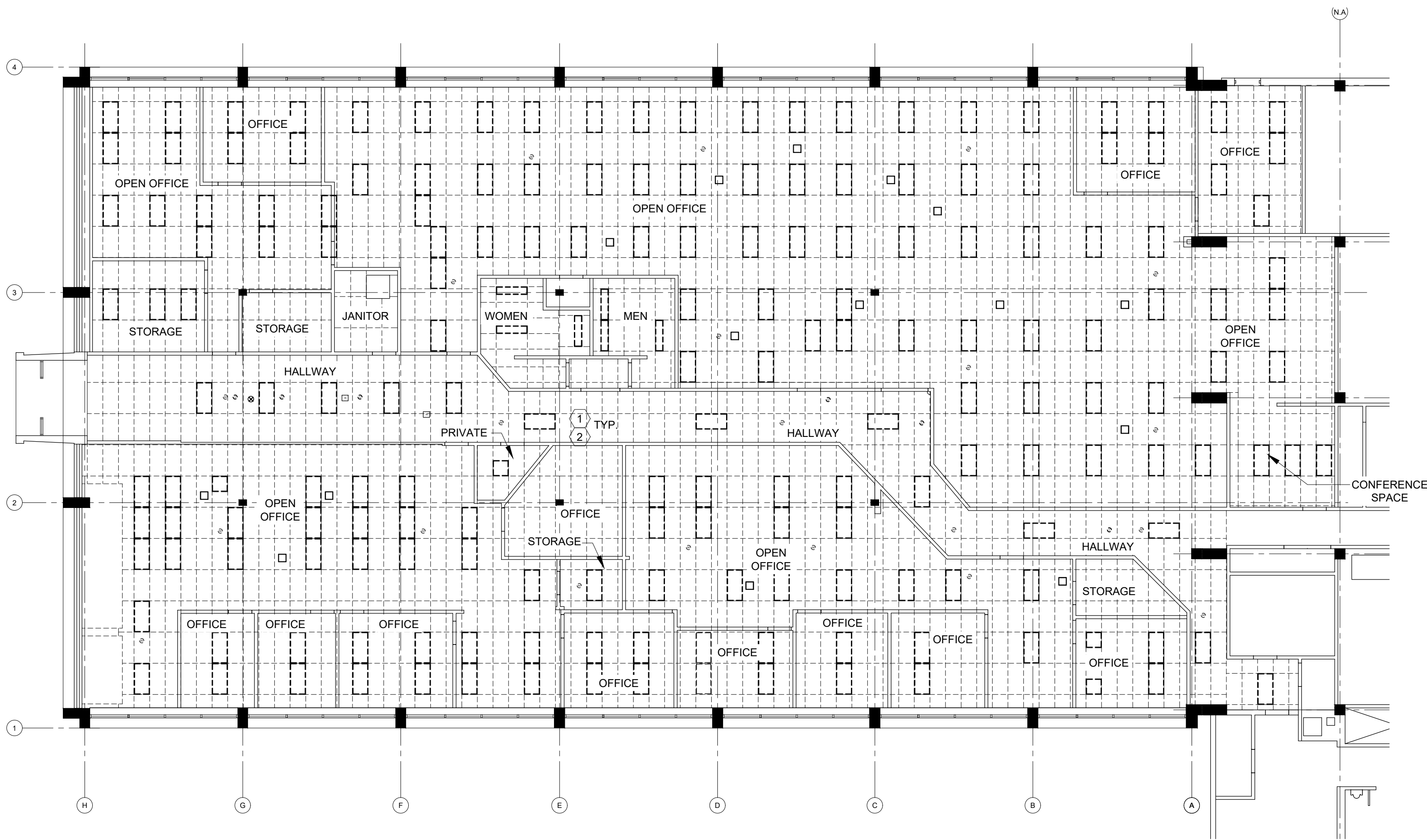
SHEET TITLE:

ELECTRICAL DEMO AND
NEW RCP AT WB - 1ST
FLOOR

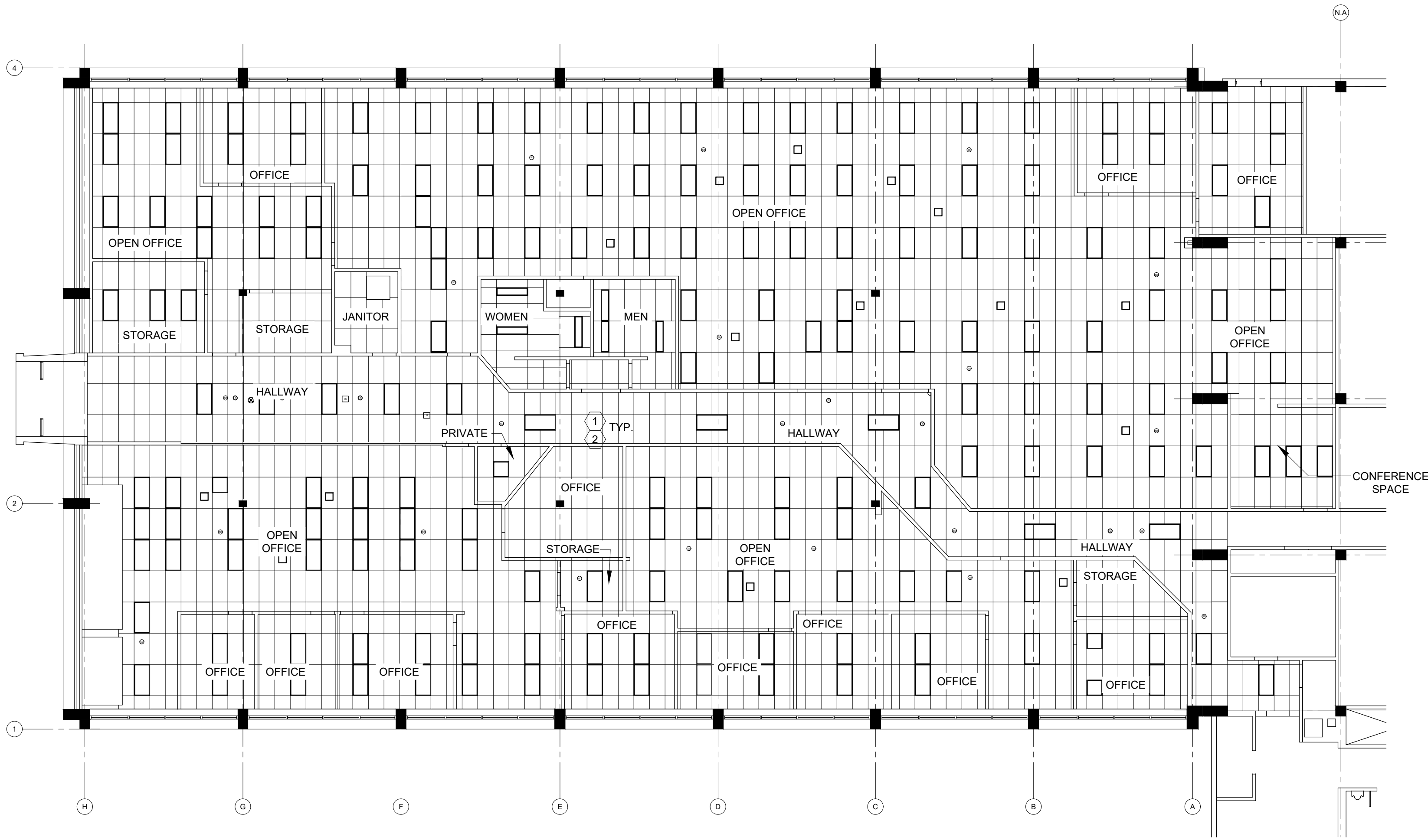
SHEET NUMBER:

E-701

07/01/26
44 OF 45 SHEETS



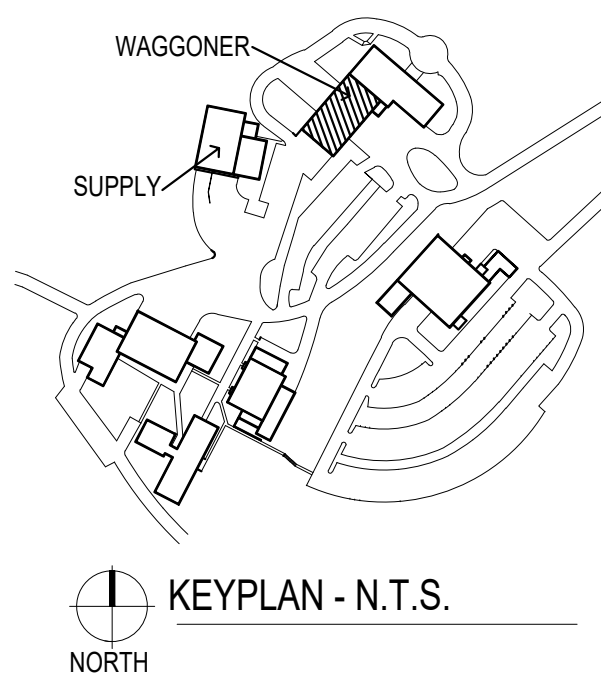
1
A702
ELECTRICAL SECOND FLOOR DEMO RCP
SCALE: 3/32" = 1'-0"



2
E702
ELECTRICAL SECOND FLOOR RCP
SCALE: 3/32" = 1'-0"

- ELECTRICAL KEYED NOTES:**
- EXISTING CEILING SHALL BE REPLACED AND EXISTING LIGHTING FIXTURES SHALL BE TIED TO STRUCTURE ABOVE AND MAINTAINED FOR REINSTALLATION IN THEIR ORIGINAL LOCATIONS. EC SHALL COORDINATE WITH MECHANICAL AND ARCHITECTURE FOR ANY REQUIRED RELOCATION OR DISCONNECTION AND RECONNECTION OF LIGHTING FIXTURES.
 - CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING ANY NON-FUNCTIONING LIGHT FIXTURES. ONLY FULLY FUNCTIONING FIXTURES SHALL BE INSTALLED, WHERE APPLICABLE. INTEGRAL EMERGENCY BATTERY PACKS SHALL BE REPLACED WITH NEW. SEE SPECIFICATIONS FOR UNIT PRICING.

CEILING DEVICE LEGEND	
—	EXISTING CONSTRUCTION TO REMAIN
----	EXISTING CEILING, DIFFUSERS, ETC. TO BE REMOVED
—	NEW CEILING, DIFFUSERS, ETC.
□	RELOCATED LIGHT FIXTURE
▤	ACT CEILING TILE SYSTEM
⊗	EXIT SIGN
⊠	MECHANICAL SUPPLY DIFFUSER
⊡	MECHANICAL RETURN DIFFUSER
⊙	SMOKE DETECTOR
⦿	CAMERA



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SHEET TITLE:

ELECTRICAL DEMO AND
NEW RCP AT WB - 2ND
FLOOR

SHEET NUMBER:

E-702

07/01/26
45 OF 45 SHEETS