

CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL MEDICINE

KANSAS CITY, MISSOURI

OWNER:	STATE OF MISSOURI MIKE KEHOE, GOVERNOR	DESIGNER:	INSITE GROUP, INC. Mechanical / Plumbing / Electrical
	DEPARTMENT OF MENTAL HEALTH	PROJECT NUMBER:	M2430-01
PROJECT MANAGEMENT:	OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION	SITE NUMBER: FACILITY NUMBER:	7360 6517360003

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STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR



MEP ENGINEER



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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

REVISION: _____
DATE: _____
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DATE: _____

ISSUE DATE: 02/04/2025

CAD DWG FILE: _____
DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

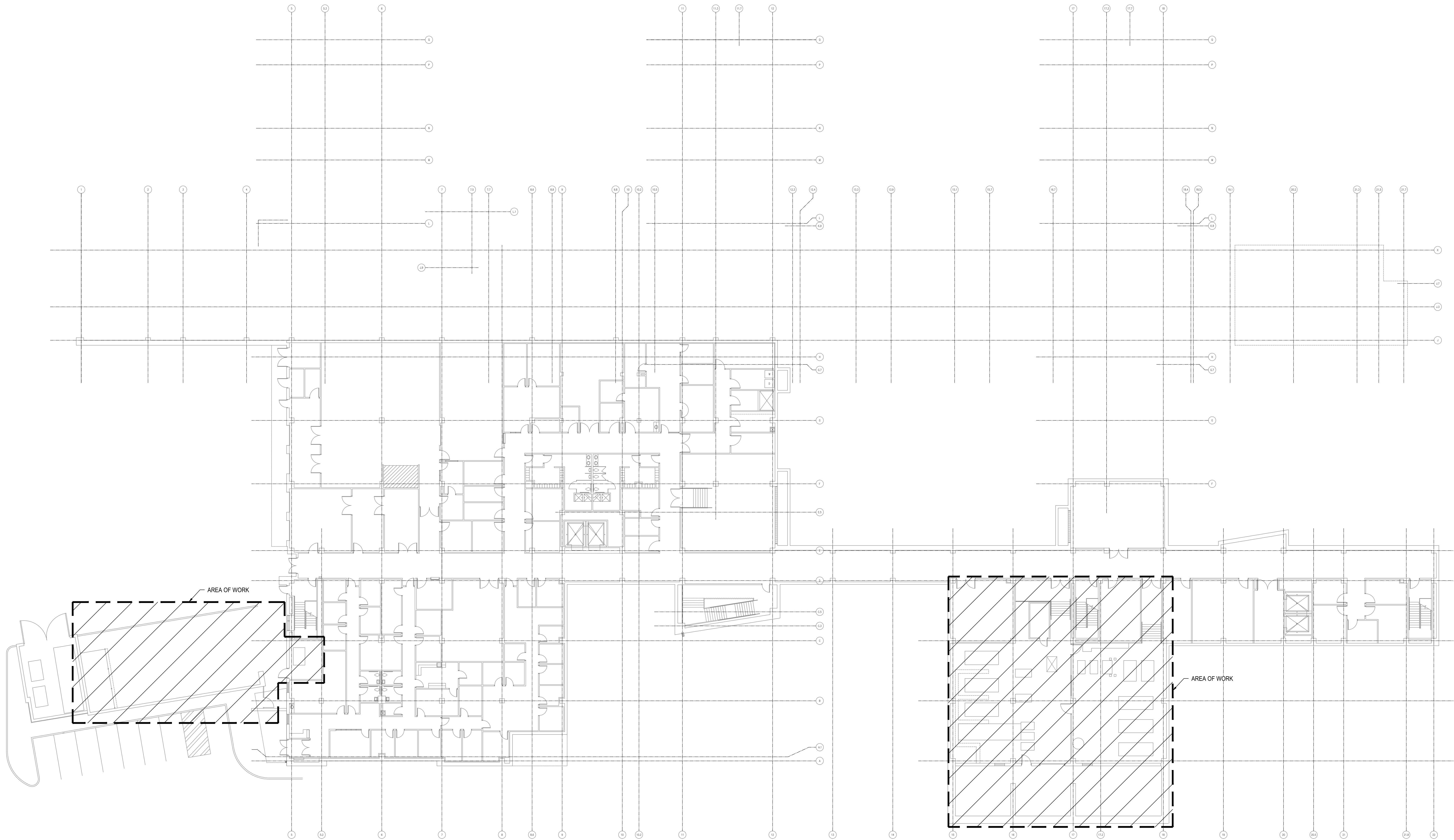
SHEET TITLE:

COVER SHEET

SHEET NUMBER:

G000

SHEET 1 OF 29
FEBRUARY 4, 2025



1 LEVEL 1 OVERALL PLAN
SCALE: 1/16" = 1'-0"
NORTH

STATE OF MISSOURI
MIKE KEHOE,
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SHEET TITLE:
**LEVEL 1
OVERALL PLAN**

SHEET NUMBER:

G001

SHEET 2 OF 29
FEBRUARY 4, 2025

PROJECT CODE INFORMATION

PROJECT: Center for Behavioral Medicine:
Mechanical Equipment Replacement

OWNER CONTACT:

PROJECT LOCATION: 1000 East 24th Street
Kansas City, Missouri 64108

BUILDING USE: Medical / Institutional (NO CHANGE)
OCCUPANCY TYPE: MIXED: I-2, A-3, A-2, B (NO CHANGE)
OCCUPANCY SEPARATION: 2-HR BETWEEN I-2 & B WITH 90-MIN OPENINGS (NO CHANGE)
CONSTRUCTION TYPE: I-B (NO CHANGE)

ALLOWABLE AREA(per story)
per table 506.2: UNLIMITED (NO CHANGE)

ALLOWABLE HEIGHT/STORIES: 160' / 5 (NO CHANGE)
ACTUAL HEIGHT/STORIES: (NO CHANGE)

OF OCCUPANTS (THERE ARE NO CHANGES TO OCCUPANCY RESULTING FROM THIS PROJECT)

LEVEL 1:	159 (NO CHANGE)
LEVEL 2:	694 (NO CHANGE)
LEVEL 3:	581 (NO CHANGE)
LEVEL 4:	104 (NO CHANGE)
LEVEL 5:	103 (NO CHANGE)
LEVEL 6:	24 (NO CHANGE)
TOTAL:	1,665 (NO CHANGE)

EXITS REQUIRED: PROJECT SCOPE DOES NOT CHANGE OCCUPANT LOAD AND THEREFORE DOES NOT IMPACT EXITING REQUIREMENTS. NO CHANGE.

NOTE: - EXISTING BUILDING PROTECTED THROUGHOUT WITH AUTOMATIC FIRE SPRINKLER SYSTEM.
NOTE: - EXISTING BUILDING PROTECTED THROUGHOUT WITH FIRE ALARM SYSTEM. FIRE AND SMOKE DETECTION AUTOMATICALLY & ELECTRICALLY SUPERVISED.
NOTE: - BUILDING IS EQUIPPED WITH AN EMERGENCY POWER GENERATOR SYSTEM TO MAINTAIN LIGHTING, FIRE PROTECTION, ALARM, & DETECTION SYSTEMS.

IECC - ENERGY CONSERVATION CODE: THE SCOPE OF THIS PROJECT INCLUDES MINOR MODIFICATIONS TO THE BUILDING INTERIOR TO ACCOMMODATE MECHANICAL SYSTEM MODIFICATIONS AND MAINTENANCE. THERE ARE NO MODIFICATIONS TO COMPONENTS OF THE BUILDING ENVELOPE. THEREFORE, THE IECC REQUIREMENTS FOR BUILDING ENVELOPES ARE NOT APPLICABLE TO THIS PROJECT. REFER TO "ECA" SHEETS FOR ANY MECHANICAL AND / OR ELECTRICAL ITEMS RELATED TO THE IECC.

CODES UTILIZED

2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL EXISTING BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2021 INTERNATIONAL ENERGY CONSERVATION CODE
2018 UNIFORM PLUMBING CODE
2017 NATIONAL ELECTRICAL CODE
2009 ICC/ANSI A117.1

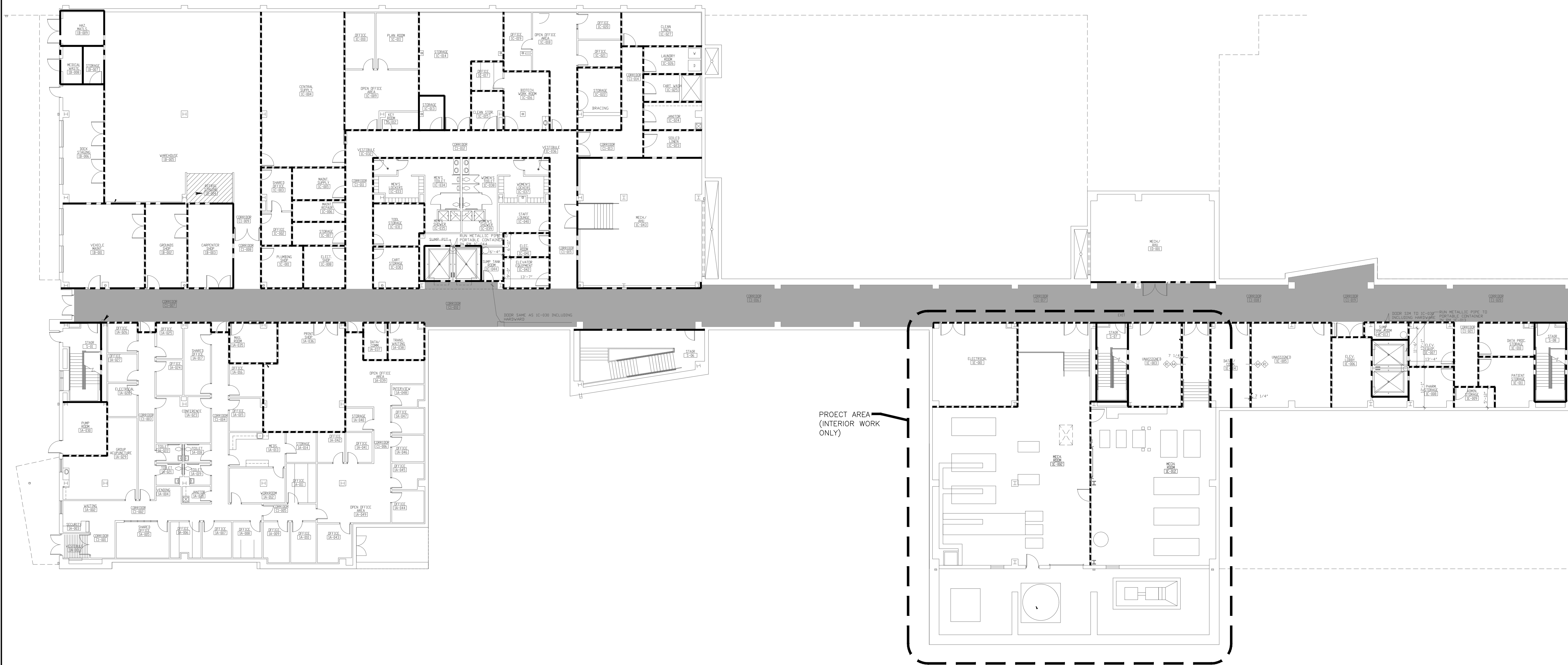
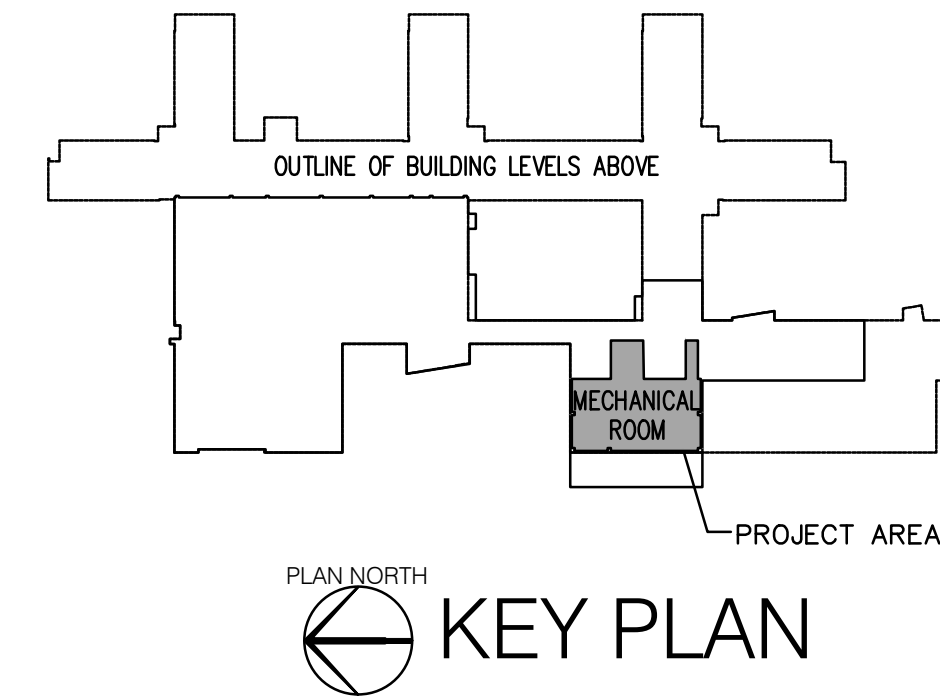
LEGEND

EGRESS COMPONENT WIDTH REQ.: $\frac{15 \times .2}{3} = 3$
OCCUPANT LOAD CALC (PER TABLE 1004.1.1) $\frac{255}{100} = 3$

1-HOUR FIRE & SMOKE BARRIER: **EXISTING WALL, NO CHANGE**

2-HOUR FIRE & SMOKE BARRIER: **EXISTING WALL, NO CHANGE**

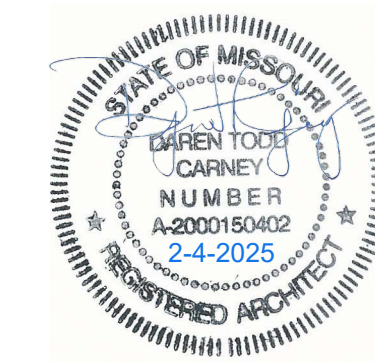
HAZARDOUS STORAGE AREA: **EXISTING, NO CHANGE**



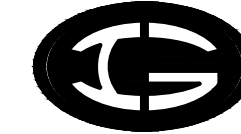
1 LOWER LEVEL CODE ANALYSIS
1/16" = 1'-0"



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The beginning of a new way of thinking
Missouri 201501010402 Date: 1/2/2025 Karen Torrey Architect: A-2000150402 PROJECT NUMBER: 24004

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CAD DWG FILE:
DRAWN BY: ALINEA STAFF
CHECKED BY: DTC
DESIGNED BY: DTC

SHEET TITLE:
CODE ANALYSIS

SHEET NUMBER:

G003
SHEET 3 OF 29
FEBRUARY 4, 2025

ABBREVIATIONS

A.F.F.	ABOVE FINISH FLOOR	F.D.	FLOOR DRAIN	PARTN.	PARTITION
ACOUST.	ACOUSTICAL	F.E.	FIRE EXTINGUISHER	P.B.D.	PARTICLE BOARD
ADI.	ADJACENT, ADJUSTABLE	F.E.C.	FIRE EXTINGUISHER CABINET	PL.	PLATE, PROPERTY LINE
A.H.U.	AIR HANDLING UNIT	FIN.	FINISH	PLAM	PLASTIC LAMINATE
ALT.	ALTERNATE	FLR.	FLOOR	PNL.	PANEL
ALUM.	ALUMINUM	FLUOR.	FLUORESCENT	P.S.F.	POUNDS PER SQUARE FOOT
	ANGLE	FND.	FOUNDATION	P.S.I.	POUNDS PER SQUARE INCH
ARCH.	ARCHITECTURAL	F.R.	FIRE-RATED	PWD.	PLYWOOD
@	AT	FT.	FOOT OR FEET	QTY.	QUANTITY
		FTG.	FOOTING		
BD.	BOARD			R.	RADIUS, RISER
BLDG.	BUILDING	GA.	GAUGE	R.A.	RETURN AIR
BLKG	BLOCKING	GALV.	GALVANIZED	R.D.	ROOF DRAIN
BOT.	BOTTOM	G.C.	GENERAL CONTRACTOR	RE:	REFER TO, REFERENCE
B.O.	BOTTOM OF / BY OTHERS	GYP.	GYPSUM	REF.	REFRIDGERATOR
BRG.	BEARING			REINF.	REINFORCING, REINFORCED
		H.B.	HOSE BIBB	REQD.	REQUIRED
CAB.	CABINET	HDWR.	HARDWARE	R.J.	RUSTICATION JOINT
CB.	CHALKBOARD	H.M.	HOLLOW METAL	RM./RMS.	ROOM, ROOMS
C.J.	CONTROL JOINT	HORIZ.	HORIZONTAL, HORIZONTALLY	R.O.	ROUGH OPENING
C.L.	CENTER LINE	HR.	HOUR	R.T.U.	ROOF TOP UNIT
CLG.	CEILING	HVAC	HEATING, VENT. & AIR COND.		
CLR.	CLEAR			S.A.	SUPPLY AIR
CMU	CONCRETE MASONRY UNIT	I.D.	INSIDE DIAMETER	SCHED.	SCHEDULE
COL.	COLUMN	INSUL.	INSULATION	S.F.	SQUARE FOOT
CONC.	CONCRETE	INT.	INTERIOR	SHT.	SHEET
CONST.	CONSTRUCTION			SIM.	SIMILAR
CONT.	CONTINUOUS	JAN.	JANITOR	SPEC.	SPECIFICATION
C.S.	CUP SINK	J.B.	JUNCTION BOX	SQ.	SQUARE
CW	COLD WATER	JST.	JOIST	S.S.	STAINLESS STEEL
		JT.	JOINT	STD.	STANDARD
DBL.	DOUBLE			STL.	STEEL
DEMO.	DEMOLISH/DEMOLITION	LAM.	LAMINATE	STOR.	STORAGE
D.F.	DRINKING FOUNTAIN	L.T.	LIGHT	STRUCT.	STRUCTURAL
D.I.	DE-IONIZED WATER	LTWT.	LIGHTWEIGHT		
DIA.	DIAMETER	LWCMU	LIGHTWEIGHT C.M.U.		
DIM.	DIMENSION			T.B.	TACKBOARD
DN.	DOWN	MANUF.	MANUFACTURER	TEL.	TELEPHONE
DR.	DOOR	MAT.	MATERIAL	TEMP.	TEMPERED/TEMPERATURE
D.S.	DOWNSPOUT	MAX.	MAXIMUM	TLT.	TOILET
DET.	DETAIL	MECH.	MECHANICAL	T.O.	TOP OF
DWG.	DRAWING	MIN.	MINIMUM	TYP.	TYPICAL
		MISC.	MISCELLANEOUS		
EA.	EACH	M.O.	MASONRY OPENING	V.B.	VAPOR BARRIER
E.J.	EXPANSION JOINT	MTL.	METAL	V.C.T.	VINYL COMPOSITION TILE
ELEC.	ELECTRICAL			VERT.	VERTICAL
EL.	ELEVATION	N.	NORTH	VEST.	VESTIBULE
ELEV.	ELEVATOR	N.I.C.	NOT IN CONTRACT		
EQUIP.	EQUIPMENT	N.T.S.	NOT TO SCALE	W.	WIDTH
EXIST.	EXISTING	NOM.	NOMINAL	W/	WITH
EXP.	EXPANSION			W/O	WITHOUT
EXT.	EXTERIOR	O.C.	ON CENTER	WD.	WOOD
		O.D.	OVERFLOW DRAIN / OUTSIDE DIAMETER	WIN.	WINDOW
		OPNG.	OPENING	WT.	WEIGHT
				W.W.F.	WELDED WIRE FABRIC

GRAPHIC SYMBOLS

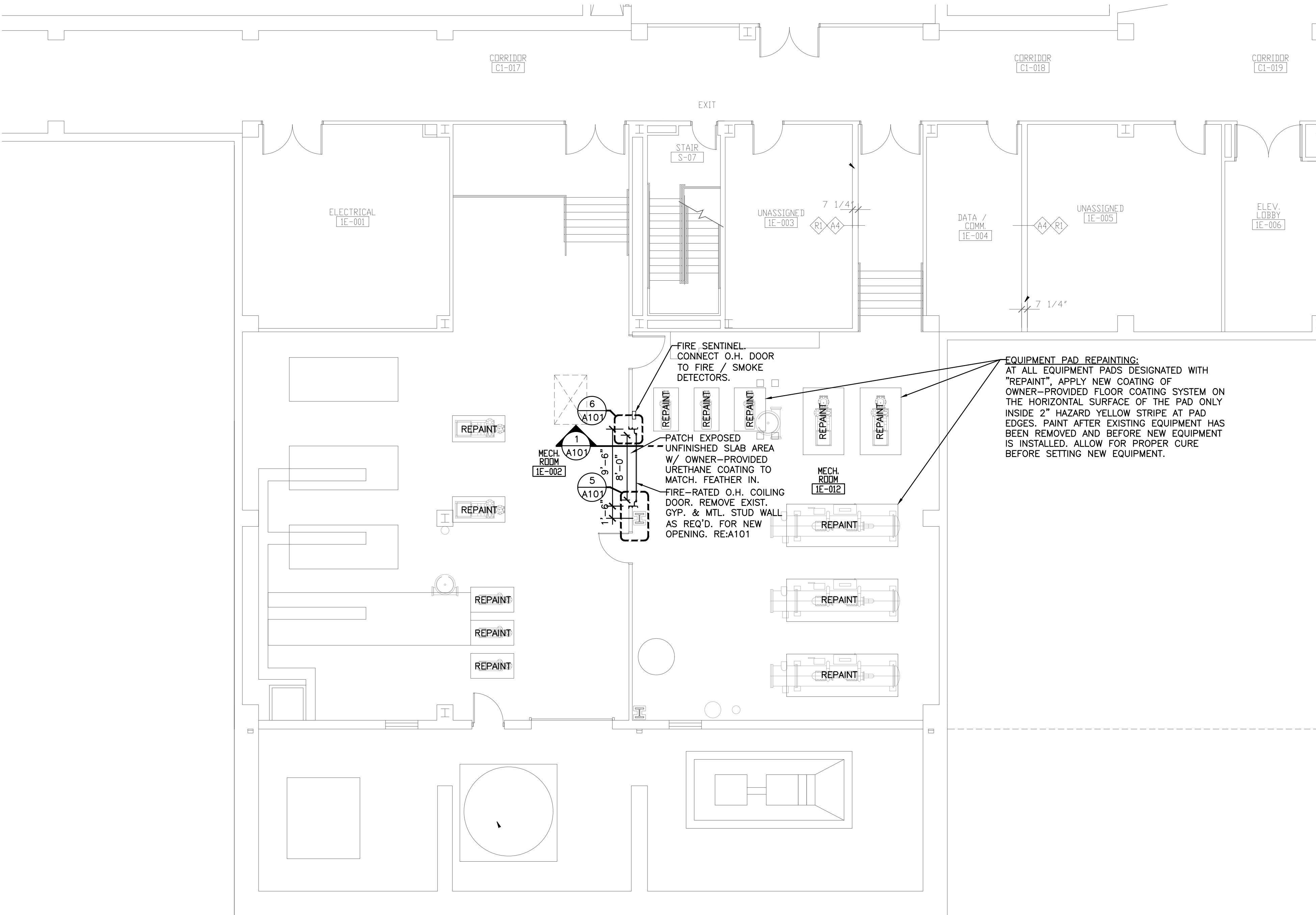
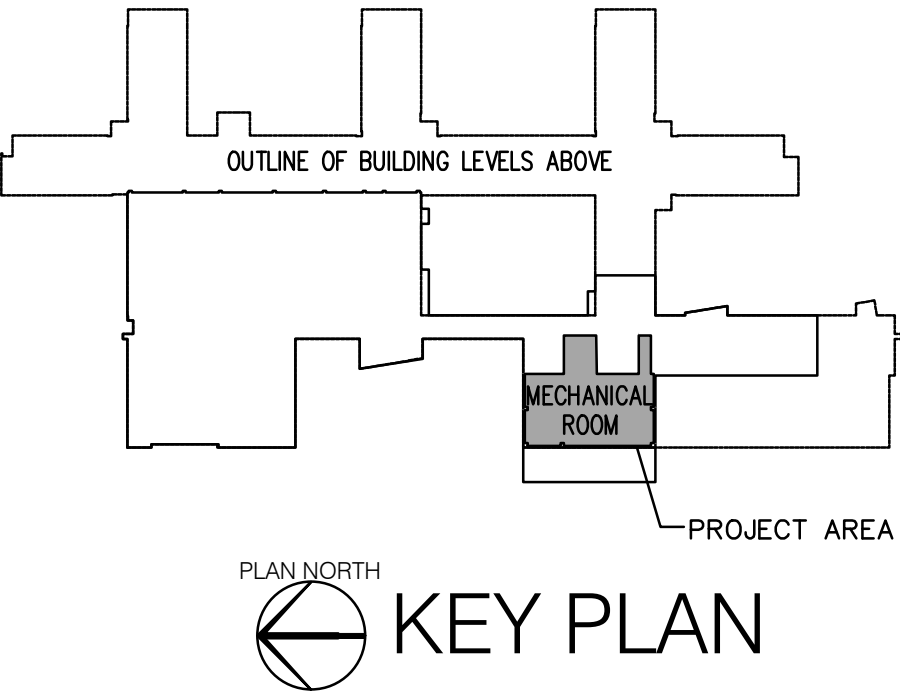
	EXPANSION JOINT
	CONTROL JOINT
	FLOORING MATERIAL CHANGE
	SPOT ELEVATION (FEET/INCHES)
	DEMOLITION / NEW WORK PLAN NOTE
	DETAIL SECTION: SECTION NUM. (TOP) SHEET NUM. (BOTTOM)
	WALL SECTION: SECTION NUM. (TOP) SHEET NUM. (BOTTOM)
	BUILDING SECTION: SECTION NUM. (TOP) SHEET NUM. (BOTTOM)
	ENLARGED PLAN/ ENLARGED DETAIL: SECTION NUM. (TOP) SHEET NUM. (BOTTOM)
	DOOR DESIGNATION: REF. DOOR SCHEDULE
	WINDOW / LOUVER DESIGNATION: REF. WINDOW / LOUVER SCHEDULE(S)
	ELEVATION MARKER: ELEVATION NUMBER (OUTSIDE) SHEET NUMBER (INSIDE)
	CONTROL JOINT IN PLAN (MASONRY & GYP. BD.)
	PHOTOGRAPH LOCATION DIRECTION & NUMBER

MATERIALS PLAN/SECTION

	CONCRETE MASONRY UNIT - PLAN
	METAL / STEEL STUD
	6" METAL / STEEL STUD - PLAN
	STUD WALL WITH SPECIAL BLOCKING - PLAN
	STUD WALL WITH WIRE MESH CONCEALED BEHIND GYP. BOARD- PLAN
	WOOD / FINISH MAT'L
	WOOD STUD - PLAN
	BATT INSULATION
	RIGID INSULATION / SPRAY FOAM
	GYPSON BOARD
	GRANULAR FILL
	WOOD FRAMING
	CONCRETE
	PLYWOOD
	EARTH
	GROUT
	STEEL
	BRICK

GENERAL NOTES

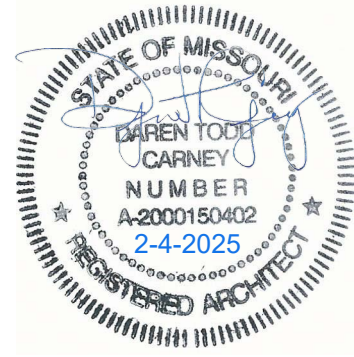
- THIS PROJECT SHALL BE PERMITTED THROUGH THE STATE OF MISSOURI. THE CITY OF KANSAS CITY, MISSOURI DOES NOT HAVE JURISDICTION OVER THIS PROJECT SITE. HOWEVER, THE GENERAL CONTRACTOR AND SUBCONTRACTORS ARE RESPONSIBLE FOR OBTAINING ANY AND ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO (FOR EXAMPLE) OCCUPATIONAL LICENSES, TEMPORARY STREET CLOSURE PERMITS, RIGHT-OF-WAY PERMITS, OR ANY OTHER PERMITS AS MAY BE NECESSARY FOR WORK THAT IS WITHIN KCMO'S JURISDICTION OR REQUIRES COOPERATION WITH KCMO. ALL WORK IS TO CONFORM TO ALL FEDERAL AND STATE CODES.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH LOCAL UTILITIES AS NEEDED TO COMPLETE THE SCOPE OF WORK.
- GENERAL CONTRACTOR SHALL VERIFY EXISTING CONDITIONS. THE DESIGN TEAM LEADER SHALL BE NOTIFIED IMMEDIATELY OF ANY OMISSIONS, VARIATIONS OR REQUIRED MODIFICATIONS TO THE SCOPE OF WORK.
- EXISTING BUILDINGS MAY CONTAIN HAZARDOUS MATERIALS INCLUDING BUT NOT LIMITED TO LEAD-BASED PAINT AND/OR ASBESTOS. ANY MATERIAL THAT IS SUSPECT SHALL BE TESTED BY A LICENSED ENVIRONMENTAL ENGINEER PRIOR TO DISRUPTION.
- ALL DIMENSIONS ARE TO OUTSIDE FACE OF STEEL STRUCTURE, FACE OF CONCRETE MASONRY OR CONCRETE AND TO FACE OF STEEL STUD, UNLESS NOTED OTHERWISE.
- GENERAL CONTRACTOR TO PROVIDE 4" HIGH HOUSEKEEPING PADS UNDER ALL MECHANICAL EQUIPMENT. VERIFY WITH MECHANICAL DRAWINGS.
- ALL GYPSUM BOARD SHALL BE 5/8" TYPE 'X' FIRE RESISTANT GYPSUM BOARD WITH MOLD-RESISTANCE UNLESS OTHERWISE NOTED.



1 ENLARGED MECHANICAL ROOM PLAN
1/4" = 1'-0"



STATE OF MISSOURI
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Dana T. Conry, Architect

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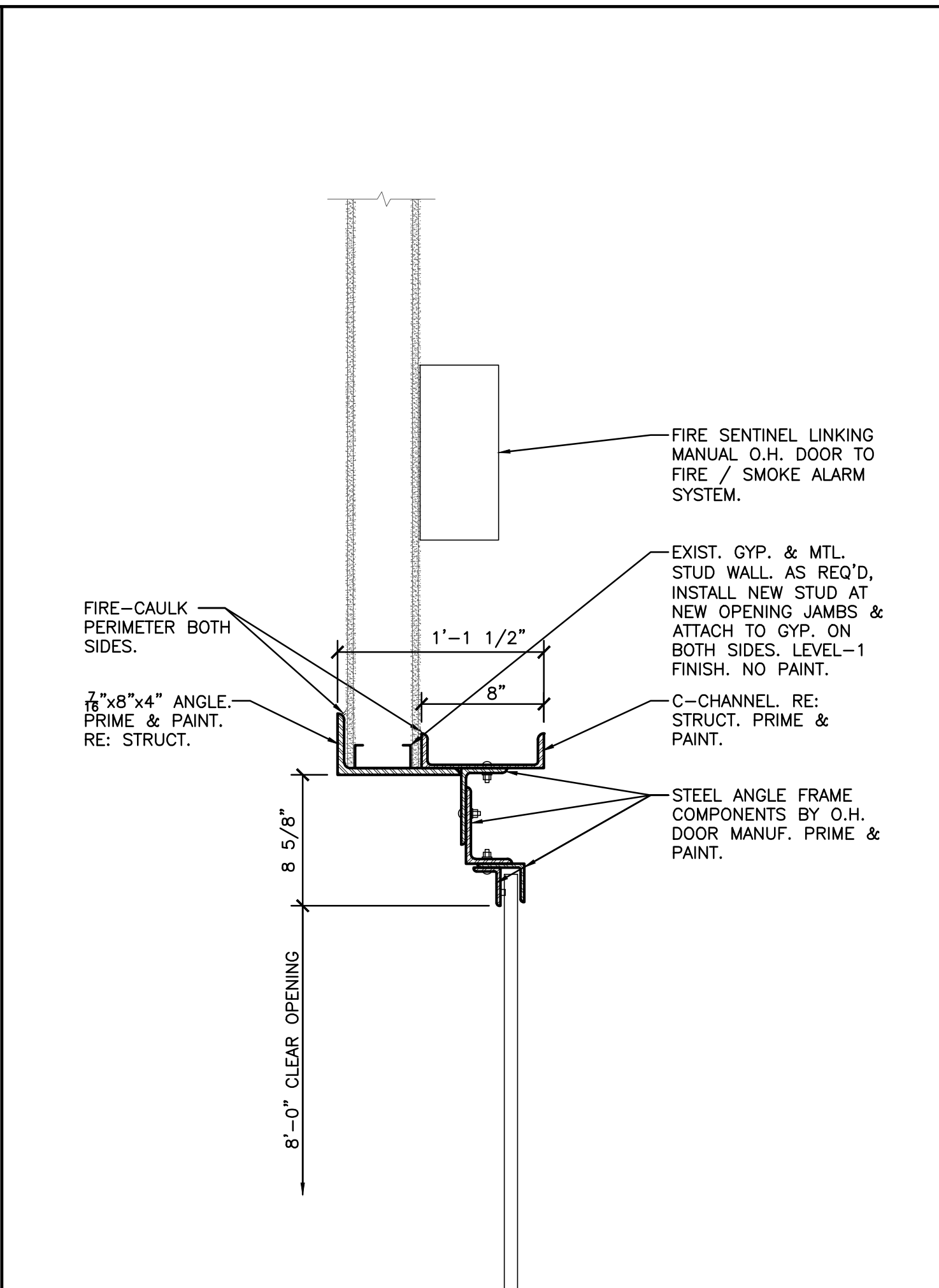
SHEET TITLE:
**ARCHITECTURAL
GENERAL INFO &
ENLARGED
FLOOR PLAN**

SHEET NUMBER:

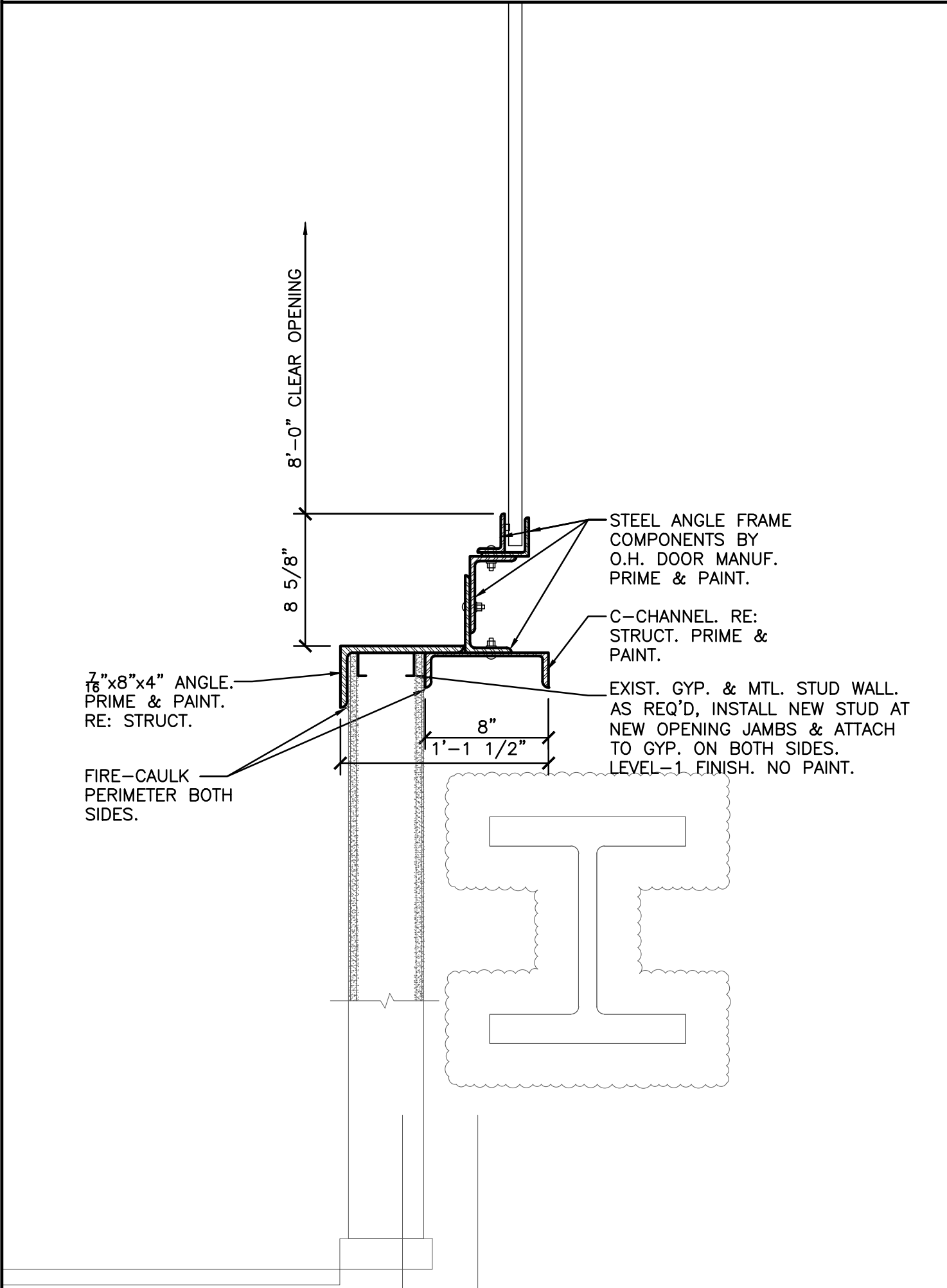
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SHEET 4 OF 29
FEBRUARY 4, 2025

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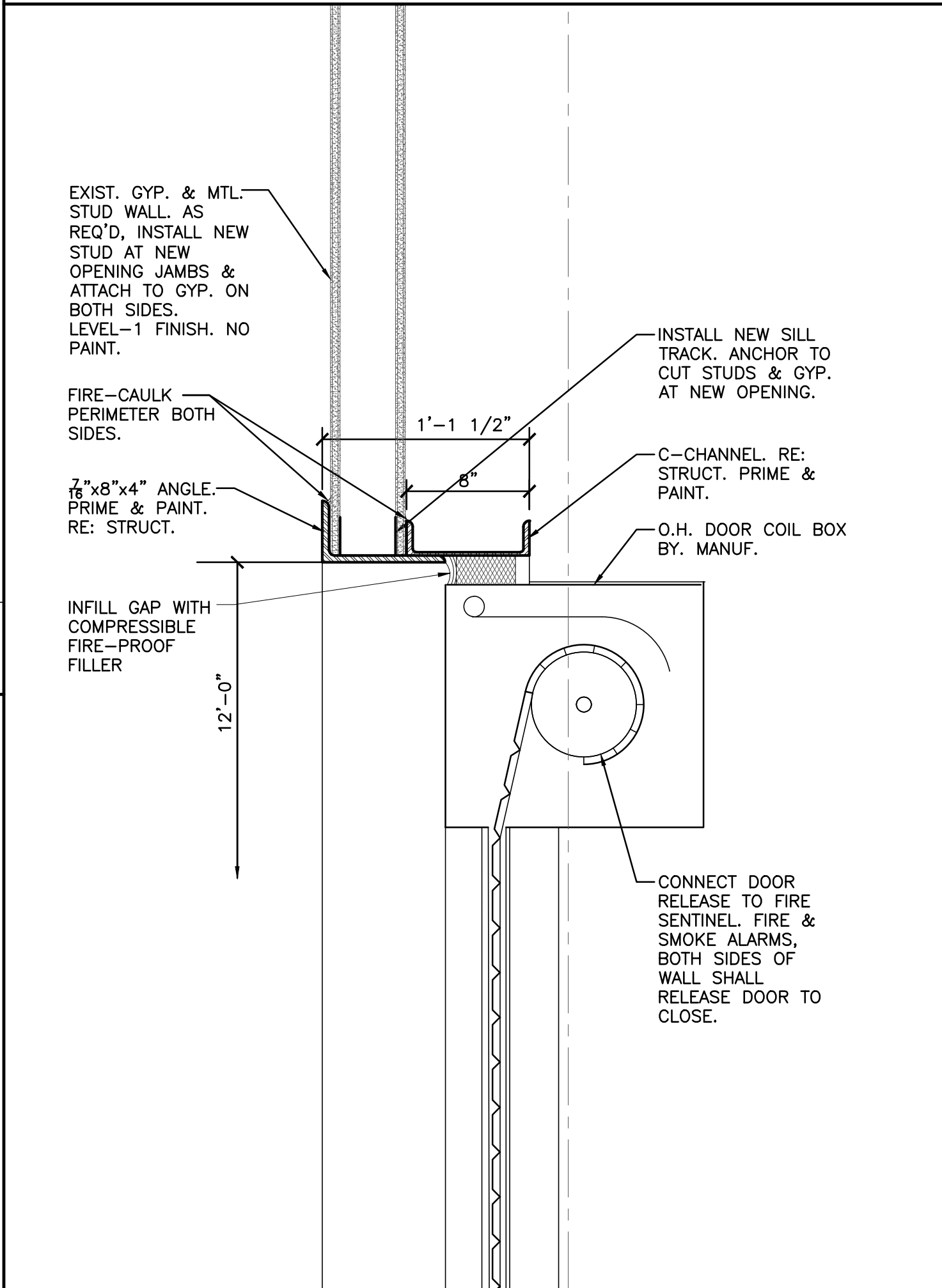


6 DOOR JAMB
1 1/2" = 1'-0"

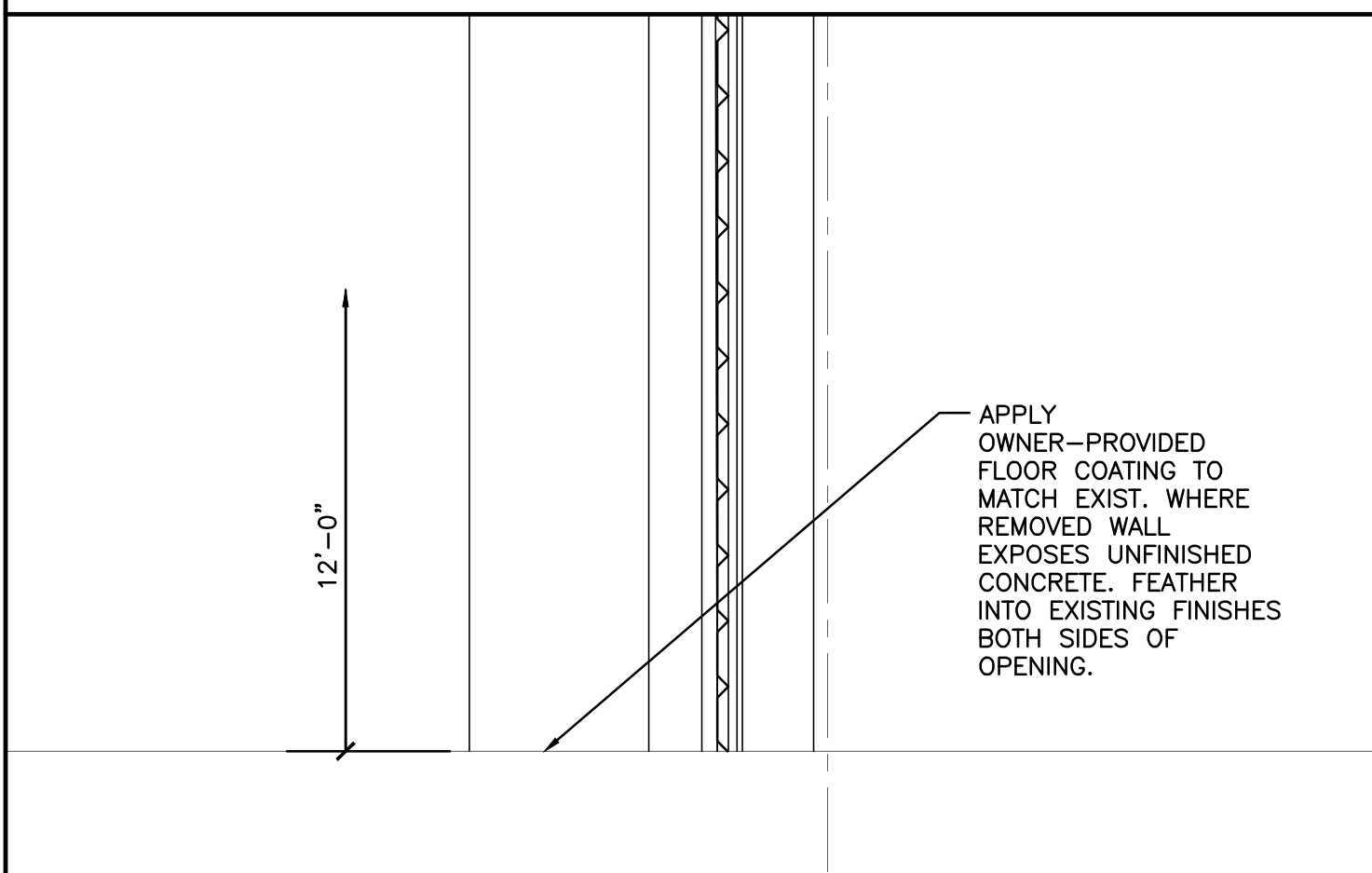


5 DOOR JAMB
1 1/2" = 1'-0"

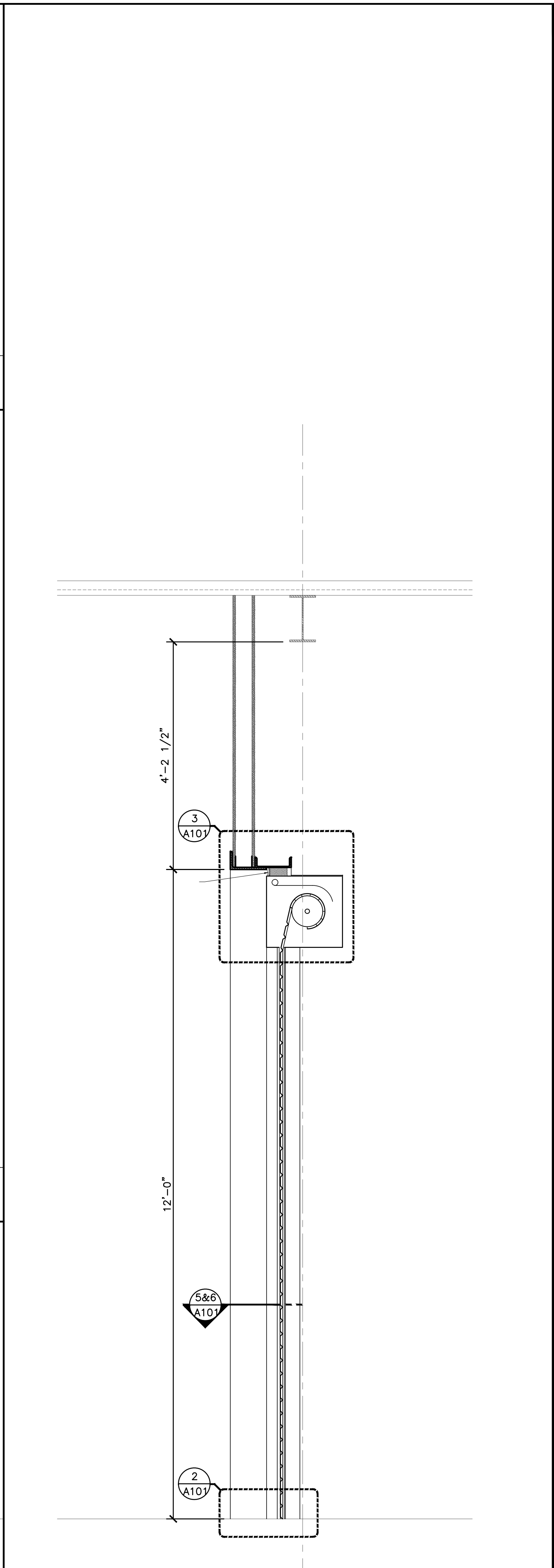
DETAIL NOT USED



3 DOOR HEAD
1 1/2" = 1'-0"

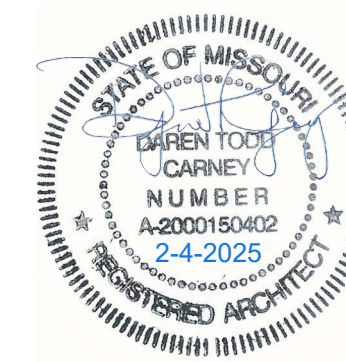


2 DOOR THRESHOLD
1 1/2" = 1'-0"



1 WALL SECTION
3/4" = 1'-0"

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Missouri 2010010100
Darren T. Carney, Architect A-2000150402 PROJECT NUMBER: 24024

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CAD DWG FILE:
DRAWN BY: ALINEA STAFF
CHECKED BY: DTC
DESIGNED BY: DTC

SHEET TITLE:
**WALL SECTION &
DETAILS**

SHEET NUMBER:

A101

SHEET 5 OF 29
FEBRUARY 4, 2025

1. BUILDING CODE(S): 2018 INTERNATIONAL BUILDING CODE WITH LOCAL AMENDMENTS	C. ALL ACCESSORIES FOR SUPPORTING REINFORCING SHALL BE GALVANIZED OR HAVE PLASTIC-COATED FEET.
2. DESIGN LOADS:	D. REINFORCING SHALL BE DETAILED, FABRICATED, PLACED, AND SUPPORTED IN ACCORDANCE WITH ACI 315, LATEST EDITION.
A. SNOW LOAD	E. STANDARD COVERAGE OF REINFORCING, UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:
a. GROUND SNOW LOAD, P _s	20 PSF
b. SNOW EXPOSURE FACTOR, C _e	1.0
c. RISK CATEGORY	IV
d. SNOW LOAD IMPORTANCE FACTOR, I	1.2
e. MINIMUM ROOF SNOW LOAD, P _m	24 PSF
B. WIND LOADS	
a. BASIC WIND SPEED (3 SECOND GUST)	
1 (V(ULTIMATE)	122 MPH
2 (V(SERVICE)	95 MPH
b. RISK CATEGORY	IV
c. WIND EXPOSURE	B
d. INTERNAL PRESSURE COEFFICIENT	+/- 0.18
e. COMPONENT AND CLADDING PRESSURE	SEE TABLE 4/S001
C. SEISMIC LOADS	
a. RISK CATEGORY	IV
b. SPECTRAL ACCELERATION	S _s = 0.095g, S ₁ = 0.069g
c. SEISMIC IMPORTANCE FACTOR, I	1.5
d. SPECTRAL RESPONSE COEFFICIENTS	
1 SDS	0.102
2 SD1	0.110
e. SITE CLASS	D - DEFAULT
f. SEISMIC DESIGN CATEGORY	C
g. MECHANICAL OR ELECTRICAL COMPONENT	MECHANICAL COMPONENTS ELEVATED ON INTEGRAL STRUCTURAL STEEL OF SHEET METAL SUPPORTS
h. COMPONENT APLIFICATION FACTOR, ap	2.5
i. COMPONENT RESPONSE MODIFICATION FACTOR, Rp	3.0
j. OVER-STRENGTH FACTOR, Do	1.5
k. COMPONENT SEISMIC COEFFICIENT, Fp	0.101Wp
D. DEAD LOADS	
a. STRUCTURE	ACTUAL WEIGHT
3. STATEMENT OF SPECIAL INSPECTIONS	
A. THIS STATEMENT OF SPECIAL INSPECTIONS IS IN ACCORDANCE WITH 1704.3 OF THE 2018 INTERNATIONAL BUILDING CODE (2018 IBC). THE INTENT OF THIS SECTION IS THAT ALL SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 17 OF THE 2018 IBC UNLESS SPECIFICALLY NOTED OTHERWISE. ADDITIONAL SPECIAL INSPECTIONS MAY BE REQUIRED BY LOCAL CODE OR BUILDING OFFICIAL, AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ANY ADDITIONAL REQUIREMENTS ABOVE AND BEYOND THE CODE REQUIRED SPECIAL INSPECTION INDICATED BELOW.	10. CONCRETE:
B. THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH THE BUILDING CODE.	A. CAST-IN-PLACE CONCRETE CONSTRUCTION SHALL COMPLY WITH THE APPLICABLE BUILDING CODE REQUIREMENTS, INDUSTRY GUIDES, AND REFERENCE STANDARDS INCLUDING, BUT NOT LIMITED TO:
a. STRUCTURAL STEEL FABRICATIONS	
b. STRUCTURAL STEEL BOLTING AND WELDING	
c. IN-SITU STRUCTURAL FRAMING	
d. POST-INSTALLED ANCHORS IN CONCRETE	
e. CONCRETE DESIGN MIX	
f. PLACING OF CONCRETE AND REINFORCING STEEL	
C. THE OWNER IS RESPONSIBLE FOR EMPLOYING ONE OR MORE SPECIAL INSPECTORS TO PERFORM INSPECTIONS DURING CONSTRUCTION, BASED ON REQUIREMENTS OF ONE OR MORE DESIGN PROFESSIONALS.	a. ACI 301 - SPECIFICATIONS FOR STRUCTURAL CONCRETE
D. THE CONTRACTOR SHALL REQUEST SPECIAL INSPECTION OF THE ITEMS LISTED ABOVE PRIOR TO THOSE ITEMS BECOMING INACCESSIBLE AND UNOBSERVABLE DUE TO PROGRESSION OF THE WORK. THE CONTRACTOR SHALL PROVIDE SAFE ACCESS TO THE JOB SITE AND ITEMS TO BE INSPECTED. SAFE ACCESS INCLUDES BUT IS NOT LIMITED TO LADDERS, SCAFFOLDING AND/OR CONTRACTOR OPERATED LIFTS AS REQUIRED FOR SITE OBSERVATION.	b. ACI 305R - GUIDE TO HOT WEATHER CONCRETING
E. SPECIAL INSPECTOR SHALL PROVIDE BI-WEEKLY SPECIAL INSPECTION REPORTS AND SHALL DISTRIBUTE THESE REPORTS TO THE BUILDING OFFICIAL, OWNER, CONTRACTOR, ARCHITECT, STRUCTURAL ENGINEER OF RECORD, AND MECHANICAL/ELECTRICAL/PLUMBING ENGINEER OF RECORD. SPECIAL INSPECTION REPORTING SHALL BE IN ACCORDANCE WITH SECTION 1704.2.4 OF THE 2018 IBC.	c. ACI 306R - GUIDE TO COLD WEATHER CONCRETING
F. ALL DISCREPANCIES NOTED DURING INSPECTIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR. IF LEFT UNCORRECTED, THESE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE APPROPRIATE DESIGN PROFESSIONALS AND/OR BUILDING OFFICIAL. THE INSPECTOR IS NOT AUTHORIZED TO APPROVE DEVIATIONS FROM THE CONTRACT DRAWINGS.	d. ACI 318 - STRUCTURAL CONCRETE BUILDING CODE
4. STRUCTURAL ENGINEER SITE OBSERVATIONS:	e. ACI 347 - GUIDE TO FORMWORK FOR CONCRETE
A. THE CONTRACT STRUCTURE DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCES.	f. ACI SP-66 - ACI DETAILING MANUAL
B. THE ENGINEER SHALL NOT HAVE CONTROL NOR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.	g. AWS D1.4 - STRUCTURAL WELDING CODE - REINFORCING STEEL
C. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF PMA ENGINEERING IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN GENERAL ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHOULD NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER PERIODIC IN AN EFFORT TO GUARD THE OWNER AGAINST DEFECTS OR DEFICIENCIES IN THE WORK OF THE CONTRACTOR.	h. CRSI - MANUAL OF STANDARD PRACTICE
5. CONDITIONS AND DIMENSIONS SHOWN HAVE BEEN TAKEN FROM EXISTING DRAWINGS, FIELD MEASUREMENTS, AND FIELD OBSERVATIONS. DETAILS HAVE BEEN DEVELOPED BASED ON THE AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS SHOWN PRIOR TO FABRICATION AND, IF THE AS-BUILT CONDITION IS DIFFERENT THAN REPRESENTED IN THESE DOCUMENTS, SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.	B. ALL CONCRETE, UNLESS NOTED OTHERWISE, SHALL DEVELOP A 28 DAY COMPRESSIVE STRENGTH OF 5,000 PSI AND HAVE MAXIMUM WATER/CEMENT RATIO OF 0.40.
6. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS FOR OTHER PERTINENT INFORMATION RELATED TO THE STRUCTURAL WORK AND COORDINATE AS REQUIRED. THESE STRUCTURAL DRAWINGS ARE INTENDED TO BE UTILIZED AS A COMPLETE SET OF DOCUMENTS THAT REPRESENT THE BUILDING'S STRUCTURAL SYSTEMS. NO SINGLE SHEET OR SERIES OF SHEETS IS INTENDED TO "STAND ALONE." THESE STRUCTURAL DRAWINGS ARE INTENDED TO BE INCLUDED IN A COMPLETE SET OF CONSTRUCTION DOCUMENTS, INCLUDING, BUT NOT LIMITED TO: ARCHITECTURAL DRAWINGS, CIVIL DRAWINGS, MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS, AND DEFERRED DESIGN DRAWINGS. CONTRACTOR SHALL VERIFY COORDINATION OF THESE DRAWINGS WITH CONTENTS OF ABOVE DRAWING SETS SPECIFIED AND ONLY PROCEED WITH BIDDING AND CONSTRUCTION AFTER SUCH HAS TAKEN PLACE.	C. CONCRETE EXPOSED TO WEATHER, VEHICLES, AND/OR DEICING CHEMICALS SHALL BE AIR-ENTRAINED WITH 6% (+/-) 1.5% ENTRAINED AIR BY VOLUME AT POINT OF DISCHARGE. DO NOT ALLOW AIR CONTENT OF TROWELED FINISHED FLOORS TO EXCEED 3%.
7. DETAILS LABELED "TYP" OR "TYPICAL" ARE TO BE APPLIED AT LOCATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY INDICATED. WHERE A DETAIL IS NOT INDICATED, THE DETAIL SHALL BE THE SAME AS FOR SIMILAR CONDITIONS OR AS SHOWN IN THE "TYPICAL DETAILS."	D. NORMAL WEIGHT AGGREGATES SHALL COMPLY WITH ASTM C33 STANDARD SPECIFICATION FOR CONCRETE AGGREGATES. COARSE AGGREGATE SHALL MEET THE DELETERIOUS SUBSTANCE AND PHYSICAL PROPERTIES REQUIREMENTS OF ASTM C33, TABLE 4 FOR CLASS DESIGNATION 3S OR BETTER. FINE AGGREGATE SHALL CONFORM TO ASTM C33.
8. REINFORCING STEEL:	E. IT IS THE INTENT OF THESE CONCRETE SPECIFICATIONS THAT THE CONTRACTOR SUPPLY CONCRETE MIXES WITH A MINIMUM AMOUNT OF WATER IN ORDER TO LIMIT PLASTIC SHRINKAGE CRACKING IN FRESHLY PLACED CONCRETE. IT IS EXPECTED THAT PRODUCING WORKABILITY FOR CONCRETE MIXES WILL REQUIRE THE ADDITION OF WATER-REDUCING AND/OR SUPER-PLASTICIZING CHEMICAL ADMIXTURES.
A. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60, EXCEPT WELDED REINFORCING WHICH SHALL BE ASTM A706 GRADE 60.	F. CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD PRIOR TO USE OF SELF-CONSOLIDATING CONCRETE MIX.
B. ALL WELDED WIRE FABRIC SHALL BE ASTM A185 AND A82 COLD DRAWN WIRE.	G. CONCRETE SLUMP SHALL BE A MAXIMUM OF 4" +/- 1" (ASTM C143) AS DELIVERED IN THE FIELD. CONTRACTOR MAY USE CHEMICAL ADMIXTURES TO ATTAIN A MAXIMUM SLUMP OF 8" FOR WORKABILITY.
	H. NO WATER MAY BE ADDED TO THE CONCRETE MIX ON SITE.
	I. THE COMBINED WEIGHT OF FLY ASH OR OTHER POZZOLANS CONFORMING TO ASTM C618 AND SLAG CEMENT CONFORMING TO ASTM C989 MAY BE USED AT A RATE NOT TO EXCEED 25% OF THE TOTAL CEMENT CONTENT WEIGHT.
	J. CHAMFER ALL EXPOSED CORNERS OF CONCRETE WALLS, BEAMS, AND COLUMNS 3/4".
	K. PRIOR TO PLACING CONCRETE IN ANY LOCATION, IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO HAVE THOROUGHLY CHECKED AND COORDINATED ALL DIMENSIONS, ELEVATIONS, OPENINGS, RECESSES, AND BLOCKOUTS SHOWN ON THE ARCHITECTURAL, STRUCTURAL, AND MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS. IN THE EVENT ERRORS, CONFLICTS, OR OMISSIONS EXIST, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE ARCHITECT OR ENGINEER FOR NECESSARY CORRECTIVE ACTION.
	L. EMBEDDED ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR PRIOR TO PLACING CONCRETE.
	11. STRUCTURAL STEEL:
	F. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, LATEST EDITION, AND AISC "CODE OF STANDARD PRACTICE."
	G. ALL STRUCTURAL STEEL FOR WIDE FLANGE AND WT SHAPES SHALL BE ASTM A992, GRADE 50, UNLESS NOTED OTHERWISE ON THE PLANS. ALL ANGLES, PLATES, AND CHANNELS SHALL BE ASTM A36 UNLESS NOTED OTHERWISE. ALL RECTANGULAR AND ROUND HSS SHAPES SHALL BE ASTM A500, GRADE C.
	H. ALL STRUCTURAL STEEL WELDS IN THE SHOP OR IN THE FIELD SHALL BE PERFORMED BY A QUALIFIED WELDER AND SHALL CONFORM TO THE CURRENT REQUIREMENTS OF AWS.
	I. FILLET WELDS NOT SPECIFICALLY SIZED IN THESE DOCUMENTS SHALL BE THE MINIMUM SIZE IN ACCORDANCE WITH AWS D1.1, LATEST EDITION, DEPENDENT ON THE THINNER PART JOINED, BUT NO LESS THAN 3/16".
	J. WELDING ELECTRODES SHALL BE E70XX.
	K. ALL STEEL LOCATED WITHIN UNCONDITIONED SPACES SUBJECT TO VARIATION IN BOTH TEMPERATURE AND MOISTURE SHALL BE SHOP PRIMED AND PAINTED TO RESIST RUSTING.
	12. POST-INSTALLED ANCHORAGE:
	A. DESIGN OF ALL POST-INSTALLED ANCHORAGE SHALL BE IN ACCORDANCE WITH ACI 318 CHAPTER 17 AND SHALL CONSIDER CRACKED CONCRETE CONDITIONS.
	B. ALL POST-INSTALLED ANCHORS SHALL BE INSTALLED BY TRAINED PERSONNEL PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AS SHOWN IN THE CORRESPONDING ICC-ESR REPORT AND INCLUDED IN THE ANCHOR PACKAGING.
	C. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL POST-INSTALLED ANCHORAGE ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
	D. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. EXISTING REINFORCING BARS SHALL NOT BE CUT UNLESS NOTED OTHERWISE ON THE DRAWINGS. THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS BY FERROSCAN, GPR, X-RAY, OR OTHER MEANS PRIOR TO INSTALLATION OF ANCHORS.
	E. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
	F. EMBEDMENT DEPTH FOR MECHANICAL EXPANSION ANCHORS SHALL BE DEFINED AS THE DISTANCE FROM THE SURFACE OF THE LOAD BEARING BASE MATERIAL TO THE DEEPEST PART OF THE ANCHOR WHICH TENSION LOAD IS TRANSFERRED TO THE CONCRETE, MEASURED PRIOR TO APPLYING TORQUE TO THE ANCHOR.
	G. EMBEDMENT DEPTH FOR ADHESIVE AND SCREW TYPE ANCHORS SHALL BE DEFINED AS THE DISTANCE FROM THE SURFACE OF THE LOAD BEARING BASE MATERIAL TO THE DEEPEST PART OF THE ANCHOR AFTER THE ANCHOR HAS BEEN INSTALLED INTO THE HOLE.
	H. ADHESIVE ANCHORING SYSTEMS SHALL BE ACCEPTABLE FOR LONG-TERM LOADING. ONLY NON-EPOXY (HYBRID) BASED ADHESIVES SHALL BE INSTALLED WHEN BASE MATERIAL TEMPERATURES ARE BELOW 40 DEGREES F, UNLESS MANUFACTURER SPECIFICATIONS APPROVE OTHERWISE.

STRUCTURAL GENERAL NOTES

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- I. POST-INSTALLED ANCHORAGE SHALL ONLY BE USED WHERE SPECIFIED ON THESE DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO USING POST-INSTALLED ANCHORAGE FOR MISSING OR MIS-LOCATED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN TO AVOID CONFLICTS WITH EXISTING REINFORCING.
- J. STAINLESS STEEL ANCHORS ARE REQUIRED AT ALL EXPOSED LOCATIONS.
- K. FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW OR ON THE DRAWINGS, CONTRACTOR SHALL SUBMIT DATA SUBSTANTIATING THE SUBSTITUTED PRODUCT PERFORMANCE VALUES. POST-INSTALLED ANCHOR SUBSTITUTIONS SHALL BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO THEIR USE.
- L. SUBMITTALS ARE THE CONTRACTOR'S RESPONSIBILITY AND MUST INCLUDE EVALUATION REPORTS FROM THE INTERNATIONAL CODE COUNCIL (ICC-ES EVALUATION REPORT).
- M. CONCRETE ANCHORS
- a. MECHANICAL ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193.
- b. ADHESIVE ANCHORING SYSTEMS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308.
13. FOUNDATIONS:
- A. FOUNDATIONS ARE DESIGNED TO BEAR ON NON-EXPANSIVE SOIL CAPABLE OF SUSTAINING A MINIMUM NET ALLOWABLE BEARING PRESSURE OF 2000 PSF.
- B. FOUNDATIONS HAVE BEEN DESIGNED TO BEAR AT OR BELOW THE LOCAL FROST DEPTH OF 36". PROVIDE FOOTING DEPTHS AS INDICATED IN THE DRAWINGS.
- C. A SITE INVESTIGATION AND GEOTECHNICAL REPORT WAS NOT PREPARED FOR THIS SITE. THE FINISH EXCAVATION SHALL BE INSPECTED BY A REGISTERED SOILS ENGINEER TO VERIFY THE BEARING CAPACITY. IF ADEQUATE BEARING IS NOT ENCOUNTERED AT THE SPECIFIED BEARING ELEVATION, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER IMMEDIATELY.
- D. CONTRACTOR SHALL REMOVE EXISTING FOOTINGS AND FOUNDATIONS THAT ARE LOCATED WITHIN THE FOOTPRINT OF THE NEW BUILDING.
- E. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY UNUSUAL SOIL CONDITIONS THAT ARE IN VARIANCE WITH THE SPECIFIED BEARING CAPACITIES OR WHEN DIFFERENT BEARING MATERIAL IS EVIDENT AND THERE IS A QUESTION OF BEARING CAPACITY.
- F. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF UNSUITABLE FILL MATERIAL OR ORGANIC MATERIAL.
14. SUBMITTALS:
- A. ALL SHOP DRAWINGS AND SUBMITTALS MUST BE REVIEWED AND APPROVED BY THE CONTRACTOR PRIOR TO SUBMITTAL. ENGINEER'S REVIEW OF SHOP DRAWINGS IS LIMITED TO CHECKING FOR GENERAL CONFORMANCE WITH DESIGN DRAWINGS AND STRENGTH OF COMPONENTS AND MATERIALS. CONTRACTOR IS RESPONSIBLE FOR ANY CHANGES FROM THE DESIGN DRAWINGS, QUANTITIES, DIMENSIONAL ERRORS, OR OMISSIONS IN THE SHOP DRAWINGS.
- B. ALL SHOP DRAWINGS MUST BE ORIGINAL DOCUMENTS AND SHALL NOT BE REPRODUCTIONS OF THESE CONTRACT DOCUMENTS.
- C. SUBMIT SHOP DRAWINGS DETAILING FABRICATION OF EACH MEMBER AND ITS CONNECTIONS. CONNECTION DRAWINGS ARE TO BE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER.
- D. CONTRACTOR SHALL SUBMIT STRUCTURAL SHOP DRAWINGS FOR THE FOLLOWING:
- a. STRUCTURAL STEEL
- b. LIGHT GAGE METAL FRAMING AND CONNECTIONS
- c. POST-INSTALLED ANCHORS
- d. CONCRETE MIX DESIGN AND MATERIALS
- e. CONCRETE REINFORCING STEEL

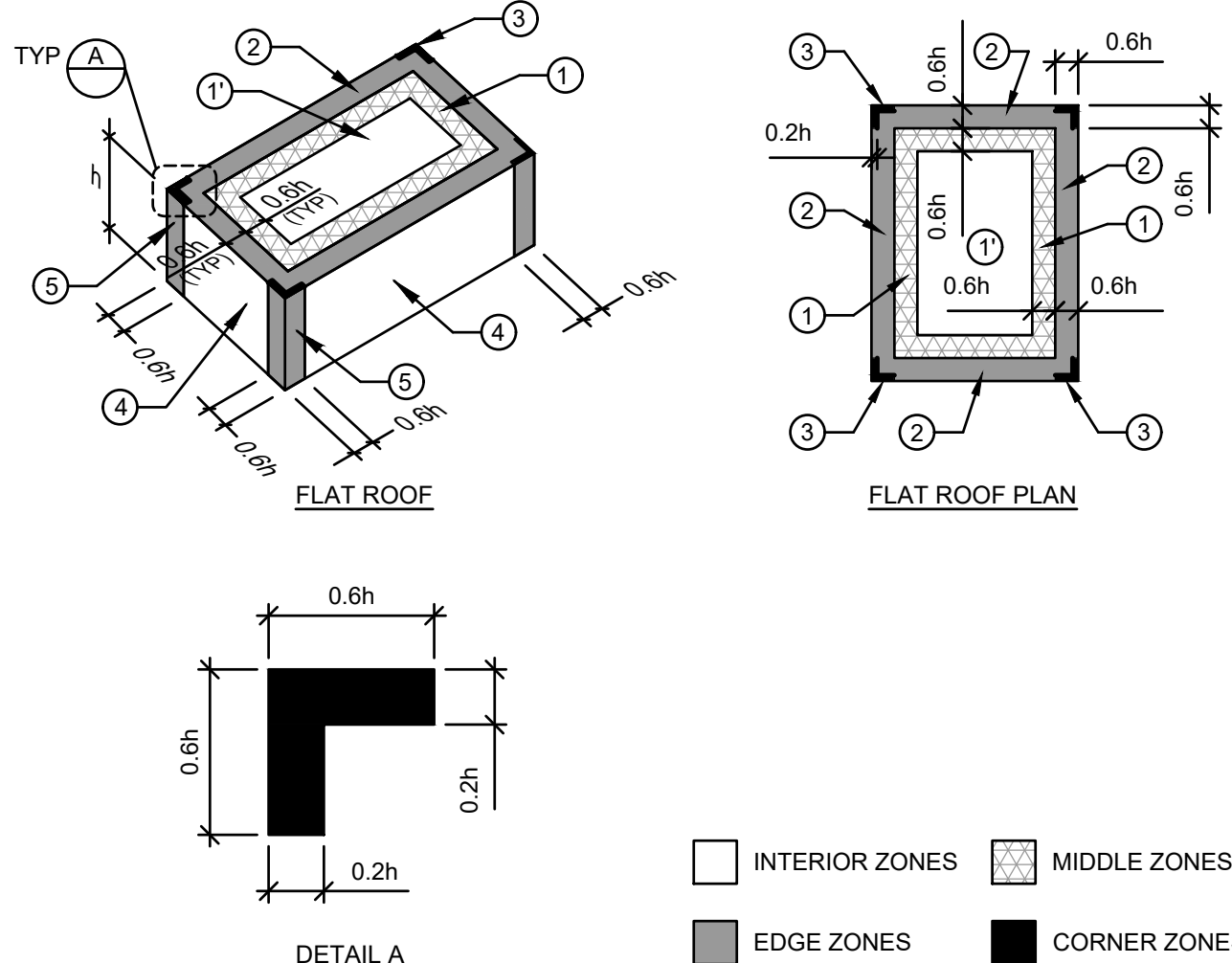
COMPONENTS & CLADDING WIND PRESSURES (PSF)
FLAT/GABLE/HIP ROOF, 0° < θ ≤ 7°, 110 MPH (3 SEC GUST), EXPOSURE B, LRFD

ZONE	HEIGHT											
	0-15'	15-20'	20-25'	25-30'	30-35'	35-40'	40-45'	45-50'	50-55'	55-60'		
1	+16.0	-28.5	+16.0	-30.9	+16.0	-32.8	+16.0	-34.7	+16.0	-36.4	+16.0	-37.8
1'	+16.0	-16.3	+16.0	-17.7	+16.0	-18.8	+16.0	-19.9	+16.0	-20.9	+16.0	-21.7
2	+16.0	-37.5	+16.0	-40.7	+16.0	-43.2	+16.0	-45.7	+16.0	-48.0	+16.0	-49.8
3	+16.0	-51.1	+16.0	-55.4	+16.0	-58.9	+16.0	-62.3	+16.0	-65.4	+16.0	-67.9
4	+17.9	-19.4	+19.4	-21.0	+20.6	-22.3	+21.8	-23.6	+22.9	-24.8	+23.8	-25.7
5	+17.9	-23.9	+19.4	-25.9	+20.6	-27.5	+21.8	-29.1	+22.9	-30.6	+23.8	-31.7

NOTES:

- WIND ZONES ARE IN ACCORDANCE WITH ASCE 7-16, FIGURE 30.4-1 WITH A ROOF ANGLE 0° - 7° (FLAT ROOF).
- PRESSURES ARE BASED ON AN EFFECTIVE WIND AREA OF 10 SQUARE FEET.
- PRESSURES SHOWN ARE NOMINAL WIND PRESSURES AT ULTIMATE LOAD LEVEL (LRFD) AND SHALL BE USED IN ACCORDANCE WITH THE LOAD COMBINATIONS SPECIFIED IN ASCE 7-16, CHAPTER 2.
- DESIGNER MAY USE THE APPROPRIATE ADJUSTMENT FACTORS OR METHODS OF ASCE 7-16 TO COMPUTE COMPONENT & CLADDING PRESSURES FOR SPECIFIC COMPONENTS OF THIS STRUCTURE.
- PRESSURES SHOWN ARE APPLIED NORMAL TO THE SURFACE, FOR EXPOSURE & HEIGHT INDICATED ON THE TABLE. ADJUST TO OTHER CONDITIONS USING EQUATION 30.4-1.
- PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE SURFACES, RESPECTIVELY.
- PARAPET WIND PRESSURES HAVE NOT BEEN PROVIDED AND SHALL BE CALCULATED USING SECTION 30.8 OF ASCE 7-16.
- NOTATION:

- h: MEAN ROOF HEIGHT, IN FEET. EXCEPT THAT EAVE HEIGHT SHALL BE USED FOR ROOF ANGLES <10°.
- θ: ANGLE OF PLANE OF ROOF FROM HORIZONTAL, IN DEGREES.



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GENERAL NOTES
TYPICAL DETAILS
PARTIAL PLANS

STRUCTURAL SHEET INDEX

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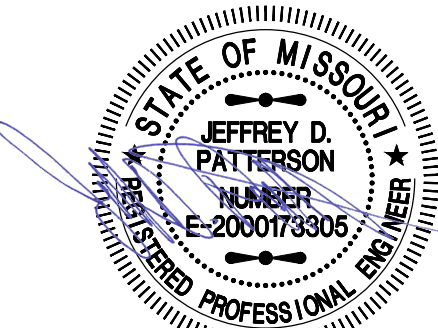
A.F.F.	ABOVE FINISH FLOOR	INT	INTERIOR
ALT	ALTERNATE	JST	JOIST
A.B.	ANCHOR BOLT	JT	JOINT
ARCH &	ARCHITECTURAL PLANS	K	KIP (1000 LBS)
AND		LBS	POUNDS
@	AT	LLH	LONG LEG HORIZONTAL
BAL	BALANCE	LLV	LONG LEG VERTICAL
BLDG	BUILDING	MANUF	MANUFACTURER
BM	BEAM	MAS	MASONRY
B.O.	BOTTOM OF... (ADD ITEM)	MAX	MAXIMUM
BRG	BEARING	MIN	MINIMUM
BTWN	BETWEEN	MISC	MISCELLANEOUS
CL	CENTER LINE	MK	MARK
C.G.S.	CENTER OF GRAVITY OF STRANDS	N.S.	NEAR SIDE
CIP	CAST-IN-PLACE CONCRETE	N.T.S.	NOT TO SCALE
CLR	CLEAR	O.C.	ON CENTER
C.O.	CONTROL JOINT	O.F.	OUTSIDE FACE
COL	COLUMN	OPNG	OPENING
CMU	CONCRETE MASONRY UNIT	OPP	OPPOSITE
CONC	CONCRETE	PC	PRECAST
CONT	CONTINUOUS	PSF	POUNDS PER SQUARE FOOT
CTR	CENTER	PSI	POUNDS PER SQUARE INCH
DIA	DIAMETER	PT	POST TENSION
DEG	DEGREE	RAD	RADIUS
DIM	DIMENSION	REINF	REINFORCEMENT
DTL	DETAIL	REF	REFERENCE
DWG	DRAWING	RE:	REFERENCE
E.V.	EACH FACE	SCHED	SCHEDULE
ELEV	ELEVATION	SECT	SECTION
EQ	EQUAL	SHT	SHEET
E.W.	EACH WAY	SIM	SIMILAR
EXIST	EXISTING	SPA	SPACING
EXP	EXPANSION	SPECS	SPECIFICATION
EXT	EXTERIOR	SQ	SQUARE
FND	FOUNDATION	STD	STANDARD
FIN	FINISHED	STL	STEEL
FLR	FLOOR	SW	SHEAR WALL
F.S.	FAR SIDE	T&B	TOP & BOTTOM
FTG	FOOTING	T.O.	TOP OF... (ADD ITEM)
F.V.	FIELD VERIFY	TYP	TYPICAL
G.B.	GAUGE	U.N.O.	UNLESS NOTED OTHERWISE
G.B.	GRADE BEAM	VAR	VARIES
GALV	GALVANIZED	VERT	VERTICAL
HORIZ	HORIZONTAL	w/	WITH
I.F.	INSIDE FACE	W.W.F.	WELDED WIRE FABRIC

STRUCTURAL ABBREVIATIONS

3

S001

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR



02/06/2025
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(PROJECT # P24150)

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Professional Engineering Corp
MO CERTIFICATE OF AUTHORITY: #001400

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:

CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01

SITE # 7360

FACILITY # 6517360003

REVISION:

DATE:

REVISION:

DATE:

REVISION:

DATE:

ISSUE DATE: 02/04/2025

CAD DWG FILE:

DRAWN BY: SMWS

CHECKED BY: JDP

DESIGNED BY: ZRR

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

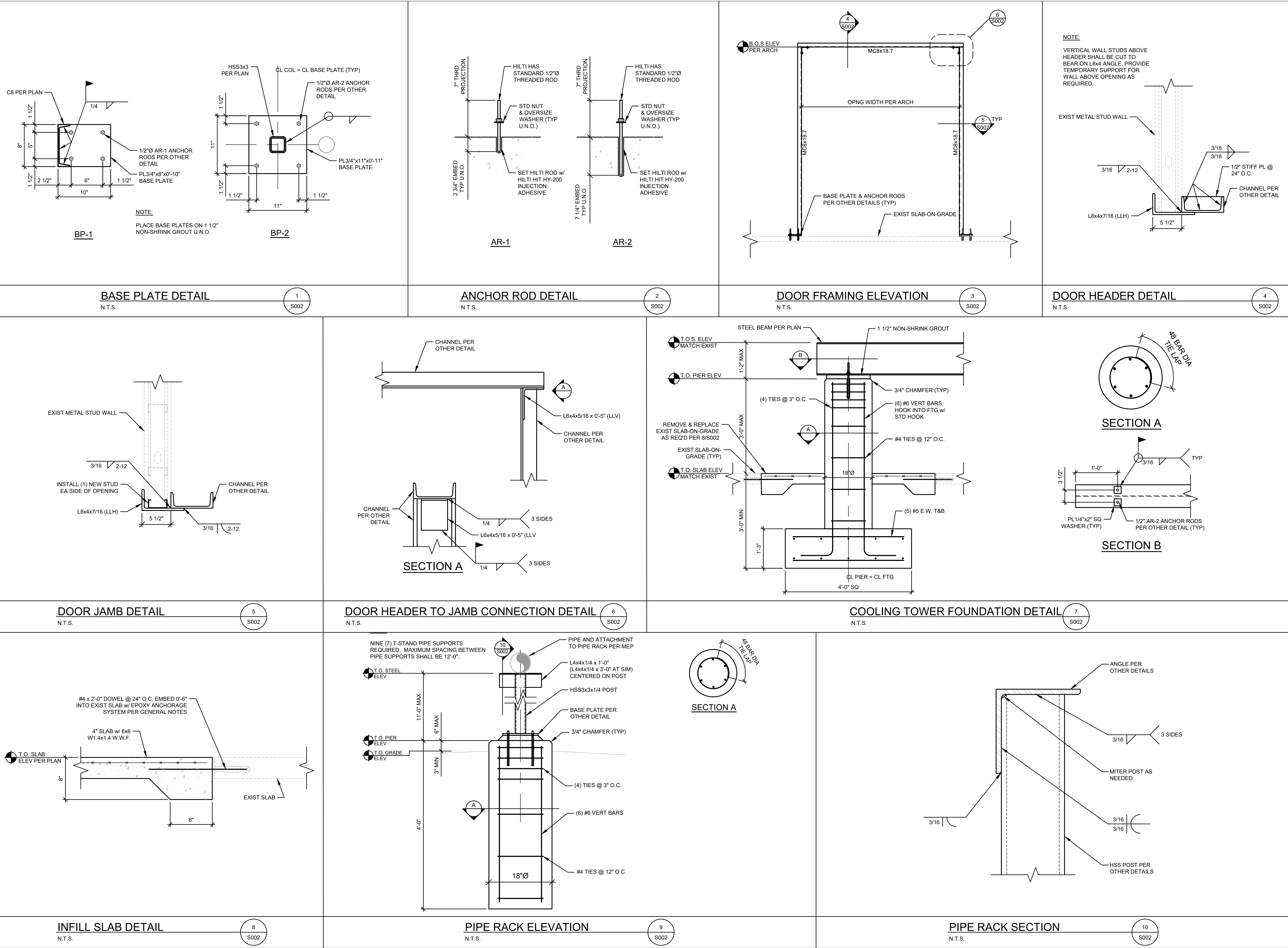
S001

SHEET 6 OF 29
FEBRUARY 4, 2025

COMPONENTS & CLADDING WINDPRESSURES TABLE

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STATE OF MISSOURI
MIKE KEHOE,
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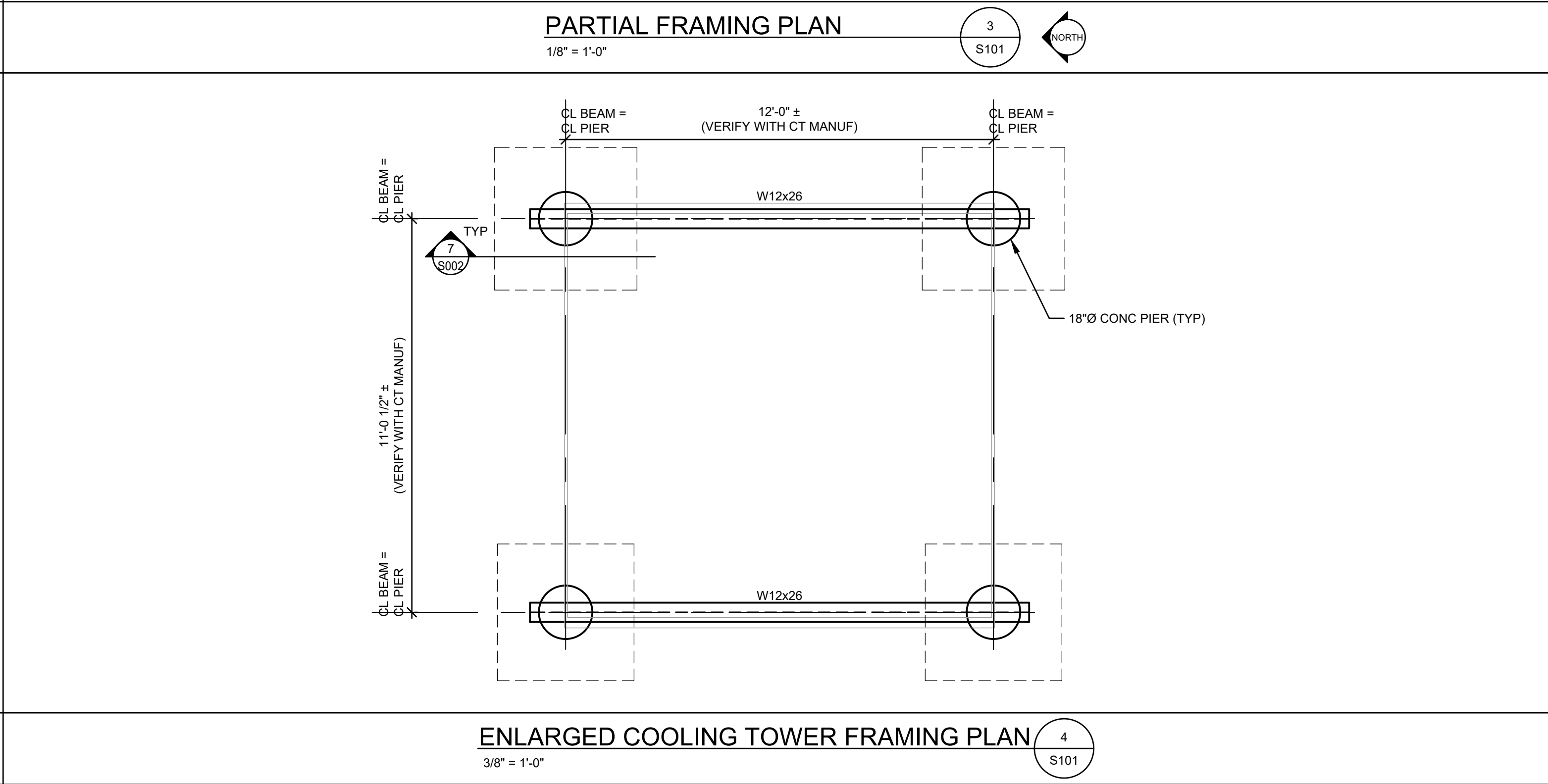
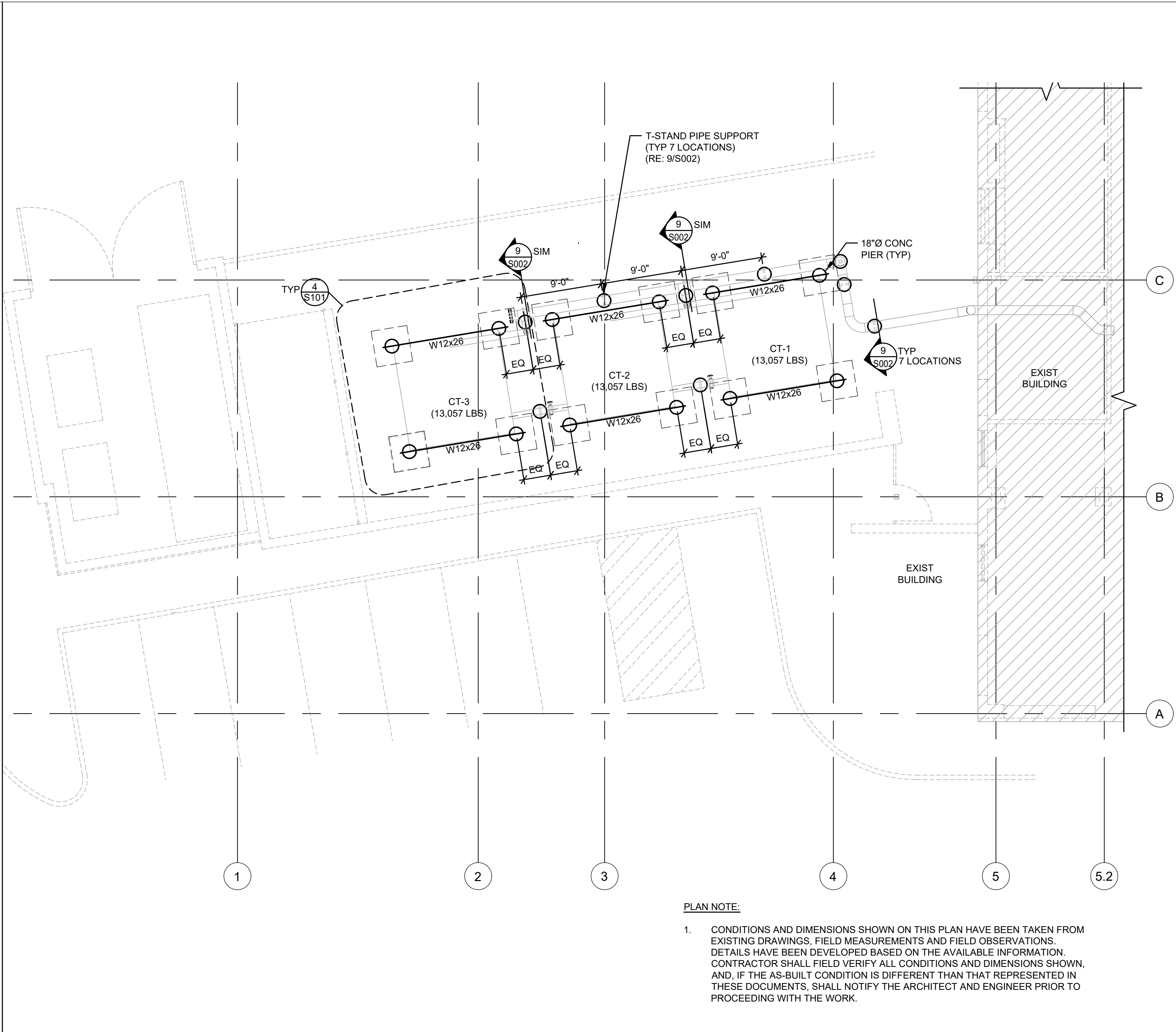
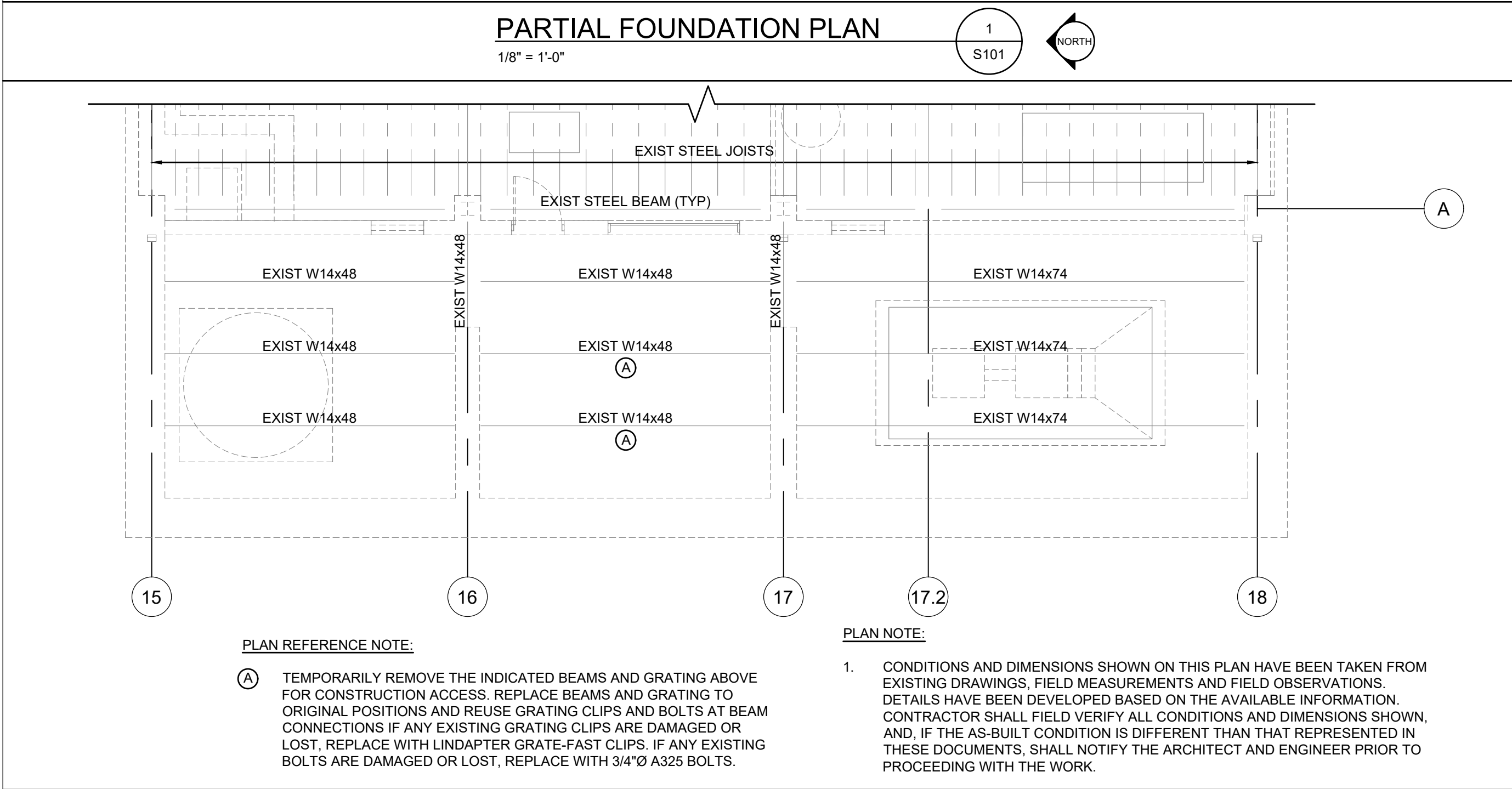
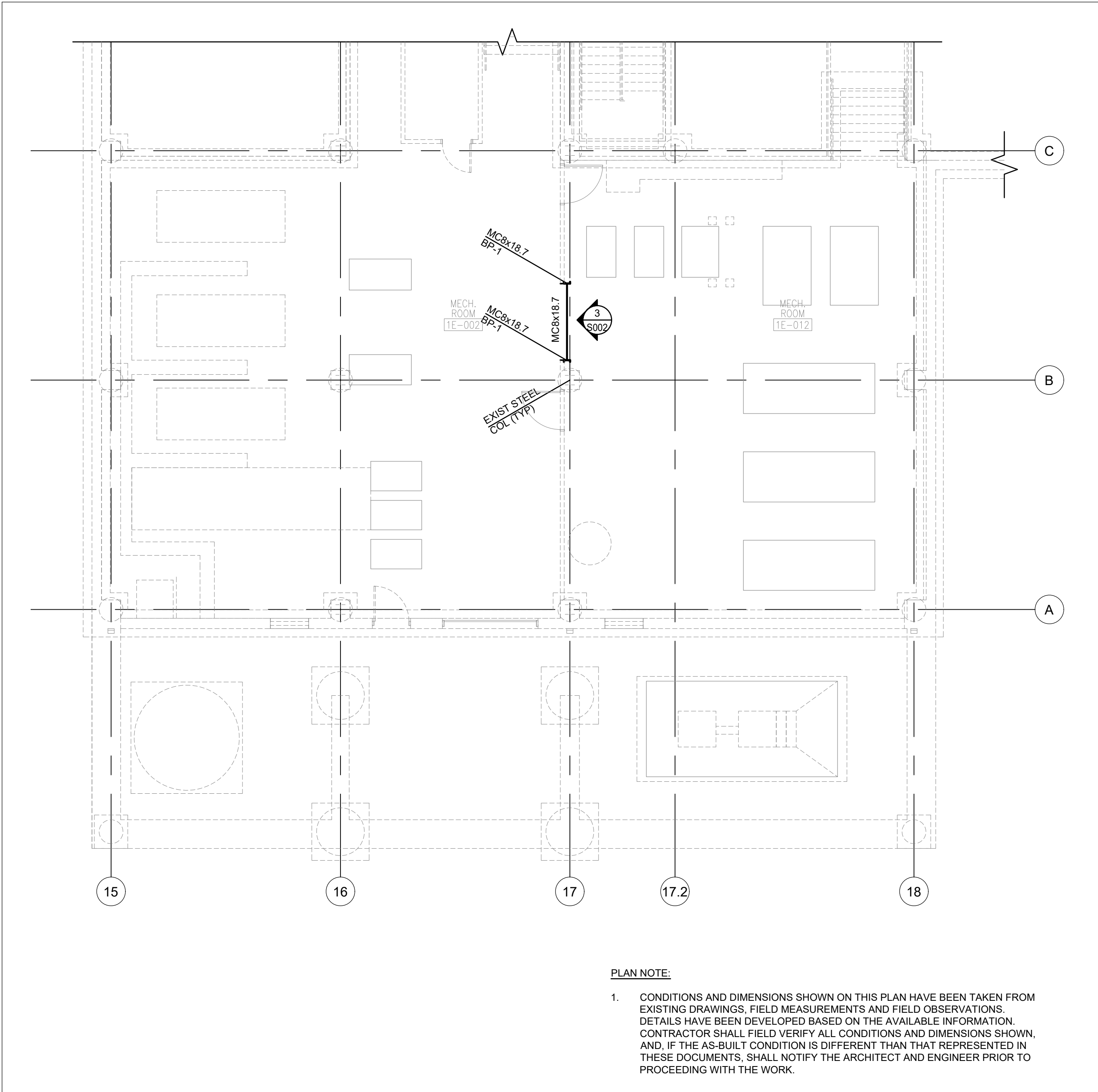
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SITE # 7360
FACILITY # 6517360003

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ISSUE DATE: 02/04/2025

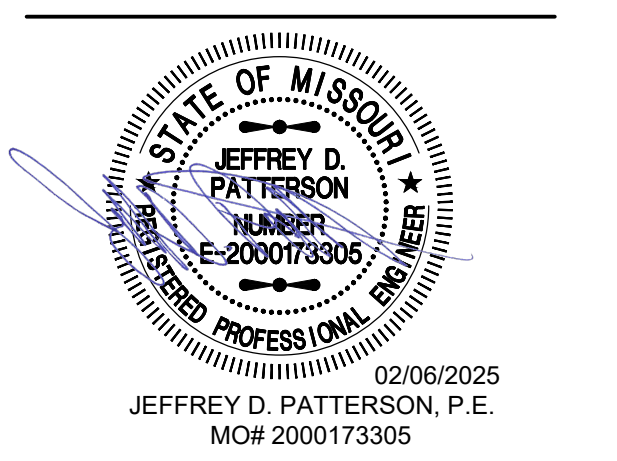
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DRAWN BY: SMWS
CHECKED BY: JDP
DESIGNED BY: ZRR

SHEET TITLE:
TYPICAL DETAILS

SHEET NUMBER:
S002
SHEET 7 OF 29
FEBRUARY 4, 2025



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d/b/a PMA Engineering
Professional Engineering Corp
MO CERTIFICATE OF AUTHORITY: #001400

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 02/04/2025

CAD DWG FILE:
DRAWN BY: SMWS
CHECKED BY: JDP
DESIGNED BY: ZRR

SHEET TITLE:
PARTIAL PLANS

SHEET NUMBER:

S101
SHEET 8 OF 29
FEBRUARY 4, 2025

MECHANICAL SYMBOLS

	EXISTING DUCTWORK TO REMAIN.
	EXISTING DUCTWORK TO BE REMOVED.
	NEW ROUND RIGID DUCTWORK.
	NEW RECTANGULAR DUCTWORK.
	NEW FLAT OVAL DUCTWORK.
	RECTANGULAR DUCTWORK TRANSITION
	SQUARE TO ROUND DUCTWORK TRANSITION.
	RISE.
	DROP.
	RECTANGULAR 90 DEG EL WITH TURNING VANES
	SUPPLY AIR GRILLE
	SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	EXHAUST AIR GRILLE
	ACCESS DOOR.
	HEAVY-DUTY BACKDRAFT DAMPER
	FIRE DAMPER.
	COMBINATION FIRE/SMOKE DAMPER – 1-HR. RATING
	DUCT SMOKE DETECTOR WITH REMOTE TEST STATION, VISIBLE AND AUDIBLE DEVICES (SIGNAL UPON SMOKE DETECTION – LABEL AS SUCH), AND VISIBLE DEVICES (SIGNAL UPON SMOKE DETECTOR TROUBLE – LABEL AS SUCH).
	MANUAL VOLUME DAMPER.
	MOTORIZED CONTROL DAMPER.
	SPIN-IN TYPE DUCT TAP WITH BALANCING DAMPER.
	STO-HIGH EFFICIENCY TAKE-OFF WITH INTEGRAL BALANCING DAMPER AND 2" STANDOFF.
	STO-HIGH EFFICIENCY TAKE-OFF.
	FAN TERMINAL UNIT (FTU).
	VARIABLE AIR VOLUME BOX (VAV).
	HUMIDITY SENSOR
	TEMPERATURE SENSOR
	HUMIDIFIER.
	F&T TRAP.
	EXISTING PIPING TO REMAIN.
	EXISTING PIPING TO BE REMOVED.
	NEW PIPING.
	VENT.
	DOMESTIC COLD WATER.
	HOT WATER.
	HOT WATER CIRCULATION
	ABOVE GRADE WASTE.
	BELOW GRADE WASTE
	STORM DRAIN.
	CONDENSATE DRAIN.
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	HEATING HOT WATER SUPPLY
	HEATING HOT WATER RETURN
	PIPE @ ELEV. ABOVE FINISHED FLOOR
	PIPE INSULATION. SEE SPECS.
	FLANGED CONNECTION
	BUTTERFLY ISOLATION VALVE.
	BALANCING VALVE
	GATE VALVE
	CHECK VALVE
	GAUGE COCK
	SOLENOID VALVE
	ISOLATION VALVE.
	TWO-WAY CONTROL VALVE.
	THREE-WAY CONTROL VALVE.

MECHANICAL SYMBOLS

	BALANCING VALVE.
	AUTOMATIC FLOW CONTROL VALVE.
	BALL VALVE.
	ISOLATION VALVE.
	VALVE IN RISE.
	REDUCER / INCREASER.
	STRAINER.
	BACKFLOW PREVENTER
	PIPE DOWN
	PIPE UP
	PIPE TEE DOWN
	PIPE TEE UP
	PIPE CAP
	CLEAN OUT (C.O.)
	HOSE BIBB.
	WALL HYDRANT
	BLIND FLANGE CONNECTION
	FIRE SUPPRESSION SPRINKLER HEAD.
	FLOOR DRAIN.
	AIR DEVICE DESIGNATION.
	AIR DEVICE DESIGNATION. EQUIPMENT DESIGNATION.
	PLAN NOTE DESIGNATION.
	CONNECT TO EXISTING.
	SECTION/ELEVATION REFERENCE NUMBER. SECTION/ELEVATION SHEET NUMBER
	SUPPLY AIR
	RETURN AIR

MECHANICAL NOTATIONS

ARF	ABOVE RAISED FLOOR.
AFF	ABOVE FINISHED FLOOR.
BFF	BELOW FINISHED FLOOR.
UNO	UNLESS NOTED OTHERWISE
FO / FC	FAIL OPEN / FAIL CLOSE
VTR	VENT THRU ROOF
AD	ACCESS DOOR
AHU	AIR HANDLING UNIT
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CD	CONDENSATE DRAIN
UH	UNIT HEATER
FD	FIRE DAMPER
MVD	MANUAL VOLUME DAMPER
FTU	FAN TERMINAL UNIT
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
BOD	BOTTOM OF DUCT ELEVATION
BOP	BOTTOM OF PIPE ELEVATION
OC	ON CENTER
FD	FLOOR DRAIN
RG	RETURN GRILLE
RG-EX	EXISTING RETURN GRILLE
RTU	ROOF TOP UNIT
TG	TRANSFER GRILLE
SD	SUPPLY DIFFUSER
SD-EX	EXISTING SUPPLY DIFFUSER
SG	SUPPLY GRILLE
VAV-EX	EXISTING VAV TERMINAL UNIT
VAV	VARIABLE AIR VOLUME
CU	AIR COOLED CONDENSING UNIT
RE:1M2	REFERENCE DESIGNATION
Y	SHEET NUMBER
	DETAIL/PLAN NUMBER

PLUMBING NOTATIONS

CW	COLD WATER.
D.F.	DRINKING FOUNTAIN.
F.F.C.O.	FINISHED FLOOR CLEAN OUT.
F.G.C.O.	FINISHED GRADE CLEAN OUT.
F.W.C.O.	FINISHED WALL CLEAN OUT.
FD	FLOOR DRAIN.
FS	FLOOR SINK.
HW	HOT WATER.
HWC	HOT WATER CIRCULATION
MS	MOP SINK
NG	NATURAL GAS.
SHWR	SHOWER.
V	VENT.
W	WASTE.
DN.	PIPE DOWN.
RE:1P2	REFERENCE DESIGNATION.
Y	SHEET NUMBER.
	DETAIL/PLAN NUMBER.
A	PLUMBING FIXTURE DESIGNATION.
##	PLAN NOTE DESIGNATION.

ELECTRICAL SYMBOLS

	2'x4' STATIC TROFFER FLUORESCENT LIGHT FIXTURE TO BE RELOCATED
	FLUORESCENT CAN FIXTURE TO BE RELOCATED
	NEW FLUORESCENT CAN FIXTURE WITH FIXTURE TYP DESIGNATION
	FLUORESCENT NIGHT LIGHT – UNSWITCHED.
	EXISTING 2'x4' LIGHT FIXTURE
	2'x4' LIGHT FIXTURE TO BE REMOVED
	2'x4', FLUORESCENT LIGHT FIXTURE WITH FIXTURE TYPE DESIGNATION.
	2'x4', FLUORESCENT EMERGENCY LIGHT FIXTURE WITH FIXTURE TYPE DESIGNATION.
	EMERGENCY LIGHT WITH FIXTURE TYPE DESIGNATION.
	COMBINATION EMERGENCY LIGHT AND EXIT LIGHT WITH FIXTURE TYPE DESIGNATION.
	EMERGENCY LIGHT FIXTURE.
	WALL MOUNTED EXIT LIGHT.
	Ceiling MOUNTED EXIT LIGHT.
	LIGHT SWITCH, TOGGLE TYPE, SINGLE POLE, 20 AMP,
	3-WAY LIGHT SWITCH, TOGGLE TYPE, 20 AMP,
	4-WAY LIGHT SWITCH, TOGGLE TYPE, 20 AMP,
	DIMMABLE LIGHT SWITCH
	MOTION SENSOR LIGHT SWITCH, 1000/1800 WATT 120-277 VOLT AC.
	WEATHERPROOF LIGHT SWITCH. 20A.
	CEILING MOUNTED MOTION SENSOR
	PANELBOARD, 120/208 VOLT OR 277/480 VOLT. SURFACE MOUNTED.
	PANELBOARD, 120/208 VOLT OR 277/480 VOLT. RECESSED
	CONTROL PANEL.
	NON-FUSED DISCONNECT SWITCH.
	FUSED DISCONNECT SWITCH.
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH.
	DUPLEX CONVENIENCE RECEPTACLE
	DUPLEX CONVENIENCE RECEPTACLE. MOUNT 6" ABOVE COUNTERTOP.
	WEATHER PROOF, GROUNDING TYPE DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, 20 AMP, AC, 125 VOLT, NEMA 20-R, HEAVY DUTY, HUBBELL CAT. NO. GF5362CY.
	GROUNDING TYPE DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, 20 AMP, 120 VOLT AC, NEMA 5-20 R, HEAVY DUTY, HUBBEL CAT. NO. GF5362CY.
	DUPLEX RECEPTACLE MOUNTED IN CABINERY FOR MICROWAVE. COORDINATE ELEVATIONS WITH CABINERY DETAILS.
	RETRACTABLE CORD REEL WITH NEMA 5-20R PLUG.
	FOURPLEX CONVENIENCE RECEPTACLE
	SINGLE RECEPTACLE, 208 VOLT, 1PH, 2W (SEE PLANS FOR AMPERAGE)
	SINGLE RECEPTACLE, 480 VOLT, 3PH, 3W, 30 AMP
	PLAN NOTE DESIGNATION.
	CONNECT TO EXISTING
	EQUIPMENT DESIGNATION.
	SECTION/ELEVATION REFERENCE NUMBER. SECTION/ELEVATION SHEET NUMBER

ELECTRICAL SYMBOLS

	CONDUIT AND CIRCUITRY TO BE REMOVED.
	BRANCH CIRCUIT WIRING RUN IN CONCEALED CONDUIT WHERE POSSIBLE.
	BRANCH CIRCUIT CONDUCTORS: GROUND, NEUTRAL, HOT (OR SWITCHED HOT) #10 CU A.W.G. (U.N.O.)
	BRANCH CIRCUIT HOME RUN WITH PANELBOARD DESIGNATION AND CIRCUIT BREAKER NO.
	BRANCH CIRCUIT UNDERFLOOR/BELOW GRADE CONDUIT
#18 shielded twisted (u.n.o.) symbol"/>	#18 SHIELDED TWISTED (U.N.O.)
	24VDC MOISTURE DETECTOR POWER
	TERMINAL BLOCK (BY OTHERS)
	RELAY COIL
	KIRK KEY INTERLOCK
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	SWITCH
	FUSE
	EARTH GROUND
	TRANSFORMER
	PUSH BUTTON
	CONTROL MODULE
	DOOR SECURITY CARD READER.
	EMBARRASSMENT ALARM.
	EXIT REQUEST PUSHBUTTON.
	ELECTRIFIED LOCKSET WITH INTERNAL EXIT REQUEST.
	END SWITCH.
	DOOR CONTACT
	PHONE, DATA, PHONE/DATA OUTLET. ROUTE 3/4" CONDUIT WITH 90 DEGREE SWEEP ABOVE CEILING. ROUTE CONDUIT OUTSIDE OF AREA WITH HARD CEILING IF IT EXISTS. PROVIDE PULL STRING IN CONDUIT. (MOUNT AT 18" A.F.F. UNO) "XD/XY" INDICATES NUMBER OF DATA OUTLETS AND CABLES TO BE PROVIDED.
	TV/CABLE OUTLET. ROUTE 3/4" CONDUIT WITH 90 DEGREE SWEEP ABOVE CEILING UON. PROVIDE PULL STRING IN CONDUIT. (MOUNT AT 18" A.F.F. UNO)
	MOTOR.
	MOTOR STARTER.
	TRANSFORMER.
	VARIABLE SPEED DRIVE.
	JUNCTION BOX.
	VOLTMETER
	AMMETER
	END OF LINE RESISTOR.

ELECTRICAL NOTATIONS

ARF	ABOVE RAISED FLOOR.
AFF	ABOVE FINISHED FLOOR.
UNO	UNLESS NOTED OTHERWISE
ICC	INDEPENDENT CONTROLS CONTRACTOR
TSP	TWISTED SHIELDED PAIR
I/C	INDICATES SINGLE CONDUCTOR CABLE.
DZ	INDICATES FIXTURE IS DIMMABLE.
"A"	THIS LETTER ADJACENT TO ANY SYMBOL INDICATES DEVICE BOTTOM TO BE MOUNTED 4" ABOVE COUNTERTOP BACKSPLASH.
"G"	THIS LETTER ADJACENT TO ANY SYMBOL INDICATES GROUND FAULT INTERRUPTER.
"I"	THIS LETTER ADJACENT TO ANY SYMBOL INDICATES ISOLATED GROUND DEVICE.
"R"	THIS LETTER ADJACENT TO ANY SYMBOL INDICATES CORD REEL RECEPTACLE.
"WG"	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATE WEATHERPROOF ENCLOSURE AND GROUND FAULT RECEPTACLE.
"AG"	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATE ABOVE COUNTERTOP BACKSPLASH AND GROUND FAULT RECEPTACLE.
"TL"	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES LOCKING OR TWIST-LOCK TYPE DEVICE.
"W"	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES WEATHER-PROOF ENCLOSURE.
"XP"	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES EXPLOSION-PROOF ENCLOSURE.
60"	DIMENSIONS ADJACENT TO ANY SYMBOL INDICATES MOUNTING HEIGHT TO CENTERLINE OF DEVICE.
RE:1E2	REFERENCE DESIGNATION
Y	SHEET NUMBER
	DETAIL/PLAN NUMBER

GENERAL NOTES:
1) THE SYMBOLS SHOWN ON THIS SHEET ARE A COMPLETE LIST OF SYMBOLS USED BY InSite Group, Inc. AND NOT ALL SYMBOLS OR ABBREVIATIONS MAY BE USED ON THIS PROJECT.

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR



MEP ENGINEER



InSite Group
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OFFICE OF ADMINISTRATION
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DEPARTMENT OF
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PROJECT TITLE:

CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01

SITE # 7360

FACILITY # 6517360003

REVISION: _____

DATE: _____

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CAD DWG FILE: _____
DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:

MECHANICAL /
ELECTRICAL
SYMBOLS

SHEET NUMBER:

ME001

SHEET 9 OF 29
FEBRUARY 4, 2025



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1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
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SHEET TITLE:

MECHANICAL /
ELECTRICAL
GENERAL NOTES

SHEET NUMBER:

ME002

SHEET 10 OF 29
FEBRUARY 4, 2025

MEP GENERAL NOTES:

- THESE PLANS ARE SCHEMATIC IN NATURE AND ARE INTENDED TO DEPICT GENERAL SCOPE OF WORK. ALL WORK TO BE PERFORMED PER ALL LOCAL AND STATE CODES AND REGULATIONS.
- COORDINATE WORK WITH ALL OTHER TRADES.
- COORDINATE ALL WORK WITH OWNER, ARCHITECT, ENGINEER, EQUIPMENT MANUFACTURERS, AND ALL OTHER TRADES.
- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS INCLUDING THE CURRENT RULES AND REGULATIONS OF THE NATIONAL ELECTRIC CODE, THE NATIONAL FIRE PROTECTION ASSOCIATION, MECHANICAL CODE, OSHA, AND ALL STATE AND LOCAL LAWS, CODES, AND ORDINANCES.
- INSTALL ALL EQUIPMENT WHILE MAINTAINING ALL CLEARANCES PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND PER LOCAL CODES.
- CONTRACTOR SHALL PAY ALL PERMITTING COSTS ASSOCIATED WITH WORK.
- THE OWNER, ENGINEER, AND ARCHITECT ARE NOT RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUTIONS OR TO MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM HIS/HER WORK.
- DRAWINGS ARE DESIGNED FOR THE MANUFACTURER'S MATERIALS, EQUIPMENT OR SERVICES NAMED ON PLANS AND ANY CHANGES AND THEIR ASSOCIATED COSTS, REQUIRED TO ACCOMMODATE OTHER APPROVED EQUIVALENT MATERIAL OR EQUIPMENT AS WELL AS SPACE REQUIREMENTS FOR THE OTHER APPROVED EQUIVALENT MATERIAL OR EQUIPMENT, MUST BE ASSUMED BY THE CONTRACTOR IN HIS/HER BID.
- PROVIDE ONE ELECTRONIC SUBMITTAL FOR ALL EQUIPMENT TO THE ENGINEER AND PROVIDE RED LINE AS-BUILT DRAWINGS TO ARCHITECT/OWNER.
- ALL EXTERIOR PENETRATIONS SHALL BE SEALED WEATHER TIGHT.
- PROVIDE MEANS TO PROTECT ALL FIRE ALARM DETECTION DEVICES LOCATED IN AREA OF WORK DISABLING FIRE ALARM SYSTEMS AND COVERING ALL SMOKE/HEAT/FLAME DETECTORS. COORDINATE ALL WORK WITH OWNER.
- PENETRATIONS OF FIRE-RESISTANCE RATED WALLS MUST BE PROTECTED PER APPROVED PLAN DETAILS. THE USE OF OTHER PRODUCTS FOR THE SAME PURPOSE MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION TO MAINTAIN THE FIRE RESISTANCE RATING OF THE ASSEMBLY.
- MAINTAIN FIRE-RATED ASSEMBLIES:
 - MAINTAIN FIRE-RATED ASSEMBLIES WITH FIRE STOPS AT MEMBRANE AND ASSEMBLY PENETRATIONS:
 - FABRICATE AND INSTALL FIRE-STOP ACCORDING TO AN APPROPRIATE DETAIL IN THE UL FIRE RESISTANCE DIRECTORY, OR
 - PROVIDE UL-LISTED FIRE-STOP KIT.
 - FABRICATE, INSTALL AND LABEL FIRE-STOPS IN ACCORDANCE WITH FCA FIRESTOP MANUAL OF PRACTICE.
 - UTILIZE 3M CP-25 FIRE-BARRIER CAULK WITH THICKNESS AS RECOMMENDED BY 3M OR AS REQUIRED BY UL DETAIL.
 - FIRE CAULK PIPE PENETRATIONS.
- THE DRAWINGS, SPECIFICATIONS, REFERENCED STANDARDS, ETC. ARE COMPLIMENTARY OF ONE ANOTHER. IN THE EVENT OF CONFLICT BETWEEN ANY PORTION OF THESE DOCUMENTS, THE ARCHITECT/ENGINEER SHALL BE CONTACTED FOR FORMAL INTERPRETATION OF THE REQUIREMENTS. THE CONTRACTOR SHALL BE DEEMED TO HAVE PROVIDED THE MOST DETAILED AND EXPENSIVE INTERPRETATION OF THE REQUIREMENT IN BID. ANY WORK INSTALLED IN CONFLICT WITH THE ARCHITECT/ENGINEER INTERPRETATION SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND AT NO EXPENSE TO THE OWNER.

DEFINITIONS:

- TO "FURNISH" IS TO SUPPLY AND DELIVER TO THE PROJECT SITE READY FOR UNLOADING. THE FURNISHER SHALL COORDINATE DELIVERY AND NEGOTIATE UNLOADING WITH INSTALLER. UNLESS STATED OTHERWISE, FURNISHED PRODUCTS AND MATERIALS SHALL BE NEW.
- TO "INSTALL" IS TO UNLOAD, UNPACK, ASSEMBLE, ERECT, PLACE, ANCHOR, APPLY, WORK TO DIMENSION, FINISH, CURE, PROTECT, CLEAN, INTERFACE TO SERVICES, AND OTHERWISE MAKE COMPLETE AND READY FOR INTENDED USE.
- TO "PROVIDE" IS TO "FURNISH" AND "INSTALL" AS DEFINED ABOVE.
- TO "REINSTALL" IS TO CLEAN, REFURBISH TO FULL FUNCTIONALITY, REASSEMBLE, ERECT, PLACE, ANCHOR, FINISH, PROTECT, INTERFACE TO SERVICES, AND OTHERWISE MAKE COMPLETE AND READY FOR INTENDED USE.
- TO "SALVAGE" IS TO REMOVE BY DECONSTRUCTING IN A CONTROLLED MANNER LEAVING PRODUCT OR MATERIAL UNDAMAGED AND READY FOR REUSE. BEFORE PROCEEDING WITH SALVAGE OPERATION, INSPECT CONDITION AND TEST FUNCTIONALITY OF PRODUCTS AND MATERIALS TO BE SALVAGED; AND INSPECT CONDITION OF ADJACENT PRODUCTS AND SURFACES NOT SLATED FOR DEMOLITION. REPORT EXISTING DEFICIENCIES OR DAMAGE AND WAIT FOR RESPONSE BEFORE PROCEEDING. IF DAMAGED WHILE SALVAGING, PRODUCT OR MATERIAL SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
- TO "DEMOLISH" IS TO REMOVE WITHOUT REGARD TO CONDITION OF PRODUCT OR MATERIAL, AND RECYCLE OR LAWFULLY DISPOSE OFF-SITE AS WASTE. CONTRACTOR MAY OPT TO SALVAGE AND TAKE OWNERSHIP, BUT THE ADDITIONAL COSTS ASSOCIATED WITH SALVAGE EFFORT SHALL BE BORNE BY CONTRACTOR. BEFORE PROCEEDING WITH DEMOLITION OPERATION, INSPECT CONDITION OF ADJACENT PRODUCTS AND SURFACES NOT SLATED FOR DEMOLITION. REPORT EXISTING DAMAGE AND WAIT FOR RESPONSE BEFORE PROCEEDING. IF DAMAGED DURING DEMOLITION, ADJACENT PRODUCTS AND SURFACES SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
- TO "CUT" IS TO REMOVE IN-PLACE CONSTRUCTION AS NECESSARY FOR EXECUTION OF SPECIFIED OR INDICATED WORK.
- TO "PATCH" IS TO FIT, REPAIR AND REFINISH CONSTRUCTION AS NECESSARY FOR RESTORATION TO ORIGINAL CONDITIONS, AND FIRE AND SMOKE RATING.

MECHANICAL GENERAL NOTES:

- ALL DUCTWORK TO BE MOUNTED AS HIGH AS POSSIBLE. ALL DUCTWORK LOCATED ABOVE CEILING IN CONCEALED LOCATIONS SHALL BE WRAPPED WITH 2" THICK BLANKET INSULATION WITH TAPED LAP JOINTS.
- SOME DUCTWORK MAY HAVE BEEN SHOWN OFFSET FOR CLARITY.
- VERIFY ALL DIMENSIONS & CONDITIONS IN THE FIELD. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, ELBOWS, ETC., WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF WORK. PROVIDE ADDITIONAL BENDS AND/OR OFFSETS AS REQUIRED TO COMPLETE WORK AT NO ADDITIONAL COST.
- FURNISH AND INSTALL ALL GALVANIZED STEEL DUCTWORK AND HOUSINGS AS SHOWN ON DRAWINGS. ALL DUCTWORK SHALL BE IN CONFORMANCE WITH CURRENT SMACNA STANDARDS RELATIVE TO GAUGE, BRACING, JOINTS, ETC. SUPPORT HORIZONTAL RUNS OF DUCT FROM STRAP IRON HANGERS ON CENTERS NOT TO EXCEED 8'-0". DO NOT SUPPORT CEILING GRID, CONDUITS, PIPES, EQUIPMENT, ETC. FROM DUCTWORK. HVAC PLAN SIZES INDICATE CLEAR INSIDE DIMENSIONS, SHEET METAL SIZES SHALL BE INCREASED ACCORDINGLY.
- DUCT MATERIALS ABOVE CEILING SHALL BE AS FOLLOWS:
 - RECTANGULAR DUCTWORK SHALL BE ASTM G90 GALVANIZED STEEL: ASTM A525, LOCK-FORMING QUALITY, 1.25 OZ. ZINC COATED EACH SIDE.
 - ROUND RIGID DUCTWORK - GALVANIZED SNAP-LOCK PIPE WITH TRANSVERSE JOINTS TAPED.
 - ROUND FLEXIBLE DUCT - UL LISTED CLASS 1 PRE-INSULATED FLEX DUCT. RUNS OF FLEXIBLE DUCT SHALL NOT EXCEED 5 LINEAR FEET.
- ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS, MANUAL 15d. ALL SUPPLY AIR DUCT PRESSURE SHALL BE THE SAME AS THE EXTERNAL STATIC PRESSURE (ESP) OF THE EQUIPMENT SUPPLYING THE DUCT. THE EQUIPMENT (ESP) SHALL BE THE PRESSURE CLASS FOR THE ENTIRE SUPPLY DUCT SYSTEM.
- ALL DUCTWORK SHALL BE SEALED BY USING DUCT SEALANT AS RECOMMENDED BY MANUFACTURER. DUCT SEALANT SHALL BE NON-HARDENING, WATER RESISTANT, NON-COMBUSTIBLE, LIQUID OR MASTIC OR WITH TAPE AS RECOMMENDED BY MANUFACTURER. ALL SEALANTS SHALL HAVE APPROVED FIRE RATING FOR PLENUM APPLICATION AS REQUIRED BY CODE AUTHORITY.
- ALL RECTANGULAR AND SQUARE MANUAL VOLUME DAMPERS SHALL BE GALVANIZED STEEL OPPOSED BLADE WITH 2" STANDOFF BRACKET AND LOCKING HAND QUADRANT. RUSKIN MODEL MD15 OR MD35 OR APPROVED EQUIVALENT.
- ALL ROUND MANUAL VOLUME DAMPERS SHALL BE GALVANIZED STEEL WITH 2" STANDOFF BRACKET AND LOCKING HAND QUADRANT. RUSKIN MODEL MDRS25 OR APPROVED EQUIVALENT.
- ALL DUCTWORK, DIFFUSERS, GRILLES, ETC. SHALL BE BALANCED TO AIR FLOW INDICATED ON PLANS BY OWNER.
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY HARDWARE FOR A COMPLETE WORKING INSTALLATION OF MECHANICAL EQUIPMENT, DUCTWORK, DEVICES, ETC.
- PROVIDE TURNING VANES IN ALL ELBOWS THAT CHANGE THE AIR FLOW DIRECTION MORE THAN 30 DEGREES OR USE RADIUS ELBOWS.
- FIELD VERIFY EXACT ROUTING OF PIPE. ALL PIPING SHALL BE MOUNTED FROM STRUCTURE ABOVE AS HIGH AS POSSIBLE AND RAN PARALLEL OR PERPENDICULAR TO BUILDING LINES.
- ALL NEW PIPING SHALL BE SUPPORTED EVERY 6'-0" BY CLEVIS STYLE HANGERS WITH ALL-THREAD RODS AND INSULATION PROTECTION SHIELDS. PIPING SHALL BE SUPPORTED FROM STRUCTURE ABOVE AND NOT FROM DUCTWORK, OTHER PIPING, CONDUIT, ETC. NOR SHALL DUCTWORK, OTHER PIPING, CONDUIT, ETC. BE SUPPORTED FROM PIPING.
- ALL EXPOSED PIPES PENETRATING FINISHED WALLS SHALL BE EQUIPPED WITH ESCUTCHEON PLATES FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- CONTRACTOR SHALL SCOPE REUSED PIPING WHERE PIPING WILL BE OPENED DURING THE COURSE OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES.
- ALL TEST & BALANCE WORK TO BE PROVIDED BY THE GENERAL CONTRACTOR.
- ALL COMMISSIONING WORK TO BE PROVIDED BY OWNER. CONTACT MATT BEGNOUCHE @ 816-228-3377.
- ALL CONTROLS WORK TO BE PERFORMED BY DYNAMIC CONTROLS UNDER GENERAL CONTRACTOR. CONTACT BRANDON ACKLEY @ 816-533-4200.

PLUMBING GENERAL NOTES:

- SOME PIPING MAY BE SHOWN OFFSET FOR CLARITY.
- VERIFY ALL DIMENSIONS & CONDITIONS IN THE FIELD. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS, ELBOWS, ETC., WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF WORK. PROVIDE ADDITIONAL BENDS AND/OR OFFSETS AS REQUIRED TO COMPLETE WORK AT NO ADDITIONAL COST.
- FIELD VERIFY EXACT ROUTING OF PIPE. ALL PIPING TO BE MOUNTED FROM STRUCTURE ABOVE AS HIGH AS POSSIBLE AND RAN PARALLEL OR PERPENDICULAR TO BUILDING LINES. PROVIDE ALL REQUIRED OFFSETS AND TRANSITIONS AS NECESSARY TO AVOID EXISTING OBSTRUCTIONS.
- ALL NEW PIPING SHALL BE SUPPORTED BY CLEVIS STYLE HANGERS WITH ALL-THREAD RODS AND INSULATION PROTECTION SHIELDS PER SPECIFICATIONS. PIPING SHALL BE SUPPORTED FROM STRUCTURE ABOVE AND NOT FROM DUCTWORK, OTHER PIPING, CONDUIT, ETC. NOR SHALL DUCTWORK, OTHER PIPING, CONDUIT, ETC. BE SUPPORTED FROM PIPING.
- ABOVEGROUND SANITARY WASTE AND VENT PIPING SHALL BE SUPPORTED EVERY 5 FEET.
- ALL COPPER PIPING SHALL BE SUPPORTED AS FOLLOWS:
 - 3/4" & SMALLER: SUPPORT EVERY 5 FEET
 - 1" & 1-1/4": SUPPORT EVERY 6 FEET.
 - 1-1/2" & LARGER: SUPPORT EVERY 8 FEET.
- COORDINATE ALL CONNECTION SIZES AND REQUIREMENTS WITH FINAL EQUIPMENT SELECTION. ALL PIPING SHALL BE SIZED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL PROVIDE ALL DIELECTRIC CONNECTIONS BETWEEN FERROUS AND NONFERROUS PIPING.
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY HARDWARE FOR COMPLETE WORKING INSTALLATION OF PLUMBING EQUIPMENT, PIPING, PLUMBING FIXTURES, ETC.
- ALL WASTE PIPING LESS THAN 4" SHALL SLOPE 1/4" PER 1'-0". ALL WASTE PIPING EQUAL TO OR GREATER THAN 4" SHALL SLOPE 1/8" PER 1'-0".

ELECTRICAL GENERAL NOTES:

- PROVIDE COPPER CONDUCTORS FOR LISTED APPLICATIONS AS FOLLOWS:
 - PROVIDE CONDUCTORS FOR LISTED APPLICATIONS AS FOLLOWS: INTERIOR POWER AND LIGHTING CIRCUITS: COPPER, TYPE THHN, 600 VOLTS, 90 DEGREES C (194 DEGREES F), THERMOPLASTIC INSULATED CONDUCTOR.
 - EXTERIOR POWER AND LIGHTING CIRCUITS: COPPER, TYPE THWN-2, 600 VOLTS, 90 DEGREES C (194 DEGREES F), THERMOPLASTIC INSULATED CONDUCTOR.
 - SERVICE OR DISTRIBUTION FEEDERS CONCEALED IN CEILINGS, WALLS, PARTITIONS, AND CRAWLSPACES: COPPER, TYPE THHN OR THWN-2 (WET LOCATIONS), 600 VOLTS, 90 DEGREE C (194 DEGREE F), THERMOPLASTIC INSULATED CONDUCTOR.
 - SERVICE OR DISTRIBUTION FEEDERS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, OR ANY UNDERGROUND INSTALLATION: COPPER, TYPE XHHW-2, 600 VOLTS, 90 DEGREE C (194 DEGREE F), THERMOSET INSULATED CONDUCTOR.
 - LOW VOLTAGE AND LINE VOLTAGE CONDUCTORS SIZES NO. 16 AND 18 AWG (DRY LOCATION ONLY): COPPER TYPE TFFN, 600 VOLTS, 90 DEGREES C (194 DEGREES F), THERMOPLASTIC INSULATED BUILDING CONDUCTOR.
 - MINIMUM CIRCUIT WIRE SIZE IS #12 AWG UNLESS NOTED OTHERWISE. REFER TO KITCHEN EQUIPMENT ELECTRICAL SCHEDULE FOR WIRE SIZES.
 - USE SOLID CONDUCTOR FOR #10 AWG AND SMALLER CONDUCTORS, AND STRANDED FOR #8 AWG AND LARGER.
 - ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE INDICATED.
 - ALL CONDUCTORS SHALL BE PROVIDED WITH SOLID COLOR INSULATION THE ENTIRE LENGTH OF THE CONDUCTOR. TAPED ENDS ARE NOT ACCEPTABLE, UNLESS APPROVED BY ENGINEER.
- ALL INTERIOR WIRING SHALL BE IN EMT CONDUIT AND ALL EXTERIOR WIRING SHALL BE IN IMC CONDUIT. LOW VOLTAGE/COMMUNICATION WIRING MAY BE EXPOSED WHEN USING PLENUM RATED CABLE.
- ALL EXPOSED CONDUIT IN FINISHED AREAS SHALL BE PAINTED TO MATCH ADJACENT SURFACE.
- UPDATE ALL PANELBOARD REGISTRIES. PANELBOARD REGISTRIES SHALL BE TYPE WRITTEN AND PLACED IN THE PLASTIC COVER ON THE INTERIOR DOOR OF EACH PANELBOARD.
- FURNISH, INSTALL, AND CONNECT ALL WIRE, WIREWAY, CONDUIT, CONNECTORS, OUTLETS, ETC. NECESSARY TO ACHIEVE A COMPLETE ELECTRICAL INSTALLATION. ALTHOUGH SUCH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED EQUIPMENT SHALL BE INSTALLED PER CODE REQUIREMENTS PROVIDING A SOUND, SECURE AND COMPLETE INSTALLATION. ALL CONDUIT AND WIRING SHALL BE ROUTED PARALLEL OR PERPENDICULAR TO BUILDING LINES.
- ALL CIRCUITS SHALL BE ROUTED IN DEDICATED RACEWAY AND PULL BOXES. CIRCUITS ARE NOT ALLOWED TO BE ROUTED IN A COMMON PULLBOX UNLESS APPROVED BY ENGINEER. DO NOT SHARE ANY NEUTRAL CONDUCTORS FOR DIFFERENT CIRCUITS.
- ALL CIRCUIT BREAKERS SERVING HVAC EQUIPMENT SHALL BE HACR TYPE CIRCUIT BREAKERS.
- COORDINATE POWER REQUIREMENTS AND FINAL LOCATIONS OF ALL EQUIPMENT, DEVICES, ETC. WITH FINAL EQUIPMENT SELECTION AND INSTALL ALL NECESSARY DEVICES ALLOWING FOR END TERMINATION/CONNECTIONS.
- ALL CONDUITS SHALL BE LABELED EVERY 30'-0" O.C. AND WITHIN 3'-0" OF THE END OF ALL CONDUIT RUNS WITH SOURCE OF POWER AND TERMINATION DESTINATION. ALL LABELING SHALL BE VISIBLE FROM A MINIMUM OF THREE SIDES.
- LABEL ALL JUNCTION BOXES WITH CIRCUIT NUMBER(S) CONTAINED IN THE JUNCTION BOX AND EQUIPMENT SERVED BY CIRCUITRY IN THE JUNCTION BOX WITH SELF ADHESIVE PRINTED LABEL (BRADY OR EQUIVALENT).
- ALL DEVICES/OUTLETS SHALL BE LABELED WITH BLACK LETTERING ON CLEAR BACKING TO INDICATE PANELBOARD AND CIRCUIT BREAKER SERVING IT.
- ALL LOW VOLTAGE WIRING SHALL BE PLENUM RATED.
- CONTRACTOR SHALL PROVIDE ONE ELECTRONIC SUBMITTAL FOR ALL EQUIPMENT TO THE ENGINEER AND PROVIDE RED LINE AS-BUILT DRAWINGS TO ARCHITECT/OWNER.

GENERAL PHASING SEQUENCE

IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH OWNER AND PROVIDE A COMPLETE PHASING PLAN FOR THIS PROJECT. THIS ANTICIPATED PROJECT PHASING PLAN IS PROVIDED AS A REFERENCE ONLY FOR GENERAL PHASING INTENT, AND DOES NOT INCLUDE ALL STEPS AND PROCEDURES REQUIRED TO COMPLETE THIS PROJECT. THE CONTRACTOR AND SUB-CONTRACTORS SHALL COORDINATE SCOPE OF WORK BASED ON CONTRACTORS PAST EXPERIENCE TO ENSURE THAT ALL OWNER'S REQUIREMENTS FOR TEMPORARY EQUIPMENT IS INCLUDED IN THE BID. CONTRACTOR SHALL COORDINATE SEQUENCING WITH OWNER AND MINIMIZE HEATING/COOLING DOWNTIME. DOWNTIME SHALL BE COORDINATED WITH WEATHER FORECAST AND CONTRACTOR SHALL PROVIDE TEMPORARY HEATING/COOLING AS NECESSARY IF DOWNTIME OF EQUIPMENT OCCURS DURING EXTREME CONDITIONS.

GENERAL PHASING SEQUENCE

PHASE 1:

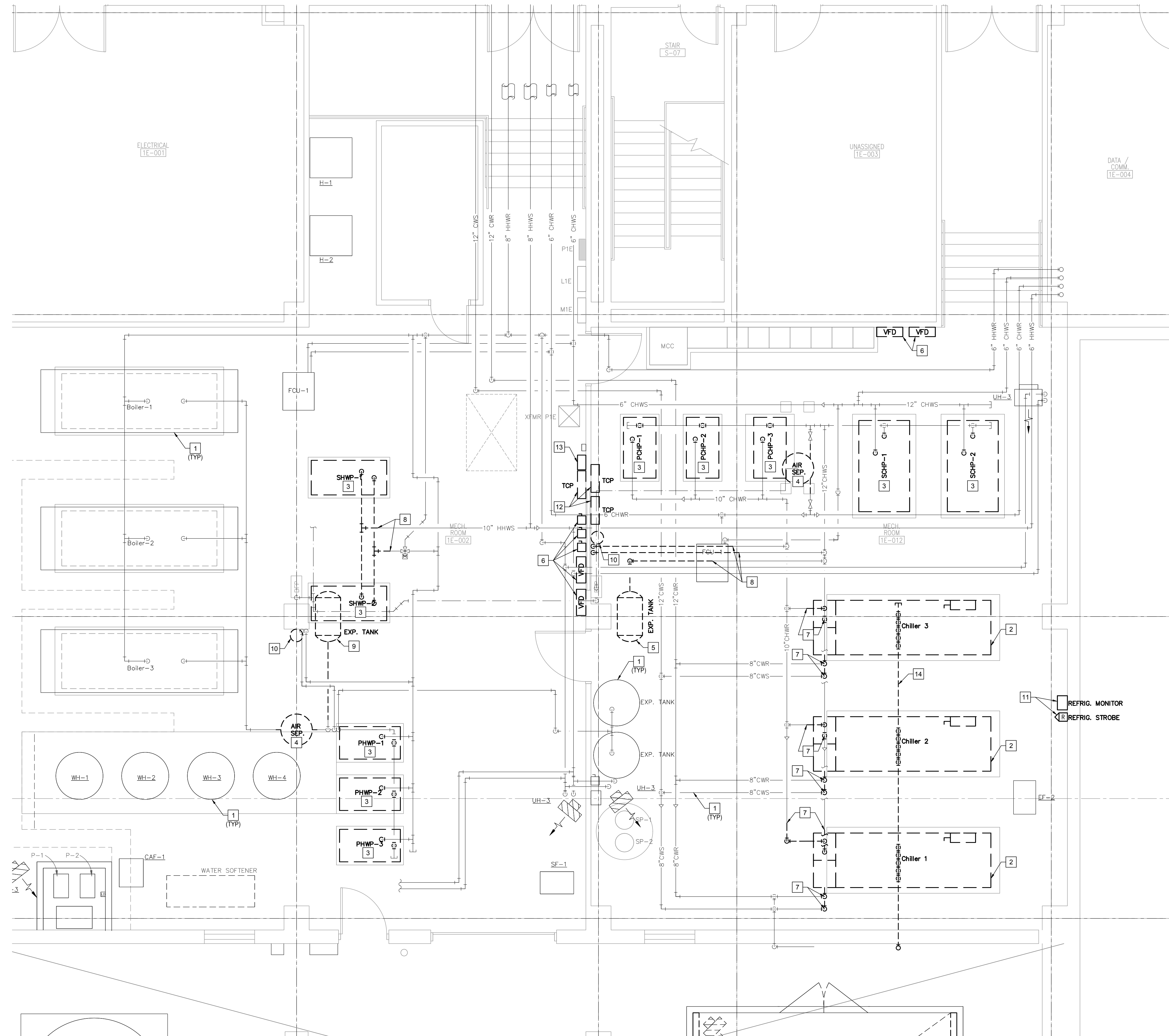
- INSTALL ALL NEW ISOLATION VALVES SERVING EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT TO BE PROVIDED IN ITS PLACE. REFER TO PAID ON SERIES M510 DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE SYSTEM SHUTDOWNS WITH OWNER AND WEATHER FORECASTS. AS THE BUILDING IS A 24/7 OPERATION, CARE SHALL BE TAKEN TO MINIMIZE DISRUPTION TO OCCUPANTS. COOLING SYSTEM SHUTDOWNS SHALL OCCUR ONLY DURING SUFFICIENT AIRSIDE ECONOMIZER WINDOWS. HEATING SYSTEM SHUTDOWNS SHALL OCCUR ONLY DURING COOLING SEASON. COORDINATE WITH OWNER TO SELECT A TIME TO MINIMIZE DISRUPTION TO RE-HEATING OPERATIONS. ALL SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH OWNER AND ENGINEER MINIMUM 10 BUSINESS DAYS PRIOR TO PROPOSED SHUTDOWN.

PHASE 2:

- ONCE SUFFICIENT ISOLATION VALVES HAVE BEEN INSTALLED TO MINIMIZE DISRUPTION TO OVERALL SYSTEM, CONTRACTOR MAY BEGIN REPLACEMENT OF EQUIPMENT, PIPING, ACCESSORIES, ETC. PER CONTRACT DOCUMENTS. ALL SYSTEMS ARE DESIGNED WITH N+1 CAPACITY. THEREFORE, CONTRACTOR MAY REMOVE FROM OPERATION ANY (1) PIECE OF EQUIPMENT WITHIN SUB-SYSTEM AT A TIME. E.G. (1) PRIMARY CHILLED WATER PUMP AT A TIME. AT CONTRACTORS OPTION, IT IS ACCEPTABLE TO REMOVE MULTIPLE SUB-SYSTEMS AT A TIME. E.G. (1) SECONDARY CHILLED WATER PUMP, (1) CHILLER, (1) PRIMARY HOT WATER PUMP MAY ALL BE REPLACED AT THE SAME TIME. CONTRACTOR SHALL FULLY START-UP, BALANCE, AND VERIFY OPERATION OF NEW EQUIPMENT PRIOR TO REMOVAL OF NEXT.

PHASE 3:

- REPLACEMENT OF COOLING TOWERS. AS COOLING TOWER HEADER WILL NEED TO BE RE-WORKED DURING CONSTRUCTION, ALL COOLING TOWERS WILL NEED TO BE REMOVED AT SAME TIME. THEREFORE, CONTRACTOR SHALL PROVIDE TEMPORARY COOLING TOWER IF WORK IS TO BE COMPLETED DURING THE COOLING SEASON.



1 LEVEL 1 MECHANICAL PIPING PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"



KEYED NOTES: ##

- EXISTING PIPING/EQUIPMENT SHALL REMAIN.
- REMOVE EXISTING CHILLER IN APPROXIMATE LOCATION INDICATED. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL. EXISTING EQUIPMENT SHALL BE REMOVED IN ITS ENTIRETY AND NEW EQUIPMENT INSTALLED AND STARTED UP IN ITS PLACE PRIOR TO REMOVAL OF NEXT CHILLER.
- REMOVE EXISTING PUMP IN APPROXIMATE LOCATION INDICATED. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL. EXISTING EQUIPMENT SHALL BE REMOVED IN ITS ENTIRETY AND NEW EQUIPMENT INSTALLED AND STARTED UP IN ITS PLACE PRIOR TO REMOVAL OF NEXT PUMP.
- REMOVE EXISTING AIR SEPARATOR IN APPROXIMATE LOCATION INDICATED. AT CONTRACTOR'S OPTION, IT SHALL BE ACCEPTABLE TO MODIFY/REUSE EXISTING EQUIPMENT STAND. CONTRACTOR SHALL VERIFY EXISTING STAND IS IN GOOD, WORKING ORDER AND ADEQUATE FOR NEW EQUIPMENT. IMMEDIATELY NOTIFY ENGINEER OF ANY DEFICIENCIES FOUND. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL.
- REMOVE EXISTING EXPANSION TANK IN APPROXIMATE LOCATION INDICATED. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL.
- COORDINATE REMOVAL OF ELECTRICAL EQUIPMENT ASSOCIATED WITH REMOVED MECHANICAL EQUIPMENT.
- REMOVE CHILLED WATER/CONDENSER WATER PIPING SERVING CHILLER BACK TO HEADER OR APPROXIMATE LOCATION INDICATED TO PREPARE FOR NEW CHILLER INSTALLATION IN SAME LOCATION AS CHILLER TO BE REMOVED. REFER TO SHEET M511 FOR PIPING AND ACCESSORIES TO BE PROVIDED WITH NEW CHILLER. COORDINATE EXTENTS OF PIPING REMOVAL WITH NEW CHILLER. REFER TO MANUFACTURER LITERATURE AND DRAWING MP110A FOR ADDITIONAL INFORMATION.
- REMOVE PIPING BACK TO APPROXIMATE LOCATION INDICATED AND PROVIDE TEMPORARY CAP FOR RECONNECTION UNDER NEW WORK.
- REMOVE EXISTING EXPANSION TANK NO LONGER REQUIRED IN SYSTEM DUE TO LARGER EXPANSION TANKS INSTALLED WITHIN SYSTEM. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. PROVIDE PERMANENT CAP AND REPAIR INSULATION TO MATCH SURROUNDING CONSTRUCTION.
- REMOVE CHEMICAL POT FEEDER IN APPROXIMATE LOCATION INDICATED. CONTRACTOR SHALL REMOVE EQUIPMENT IN ITS ENTIRETY AND PROVIDE TEMPORARY CAPS FOR CONNECTION OF NEW EQUIPMENT UNDER NEW WORK.
- REMOVE EXISTING REFRIGERANT MONITOR SYSTEM AND ALL ASSOCIATED PIPING, STROBE, POWER SUPPLIES, ETC. AS REQUIRED FOR A COMPLETE REMOVAL OF SYSTEM. COORDINATE REMOVAL WITH OTHER TRADES AS REQUIRED.
- REMOVE TEMPERATURE CONTROL PANEL IN APPROXIMATE LOCATION INDICATED. COORDINATE REMOVAL WITH TEMPERATURE CONTROL. CONTRACTOR PANEL SHALL BE RETAINED FOR RE-INSTALLATION UNDER NEW WORK. REFER TO SHEET MP110A FOR ADDITIONAL INFORMATION.
- REMOVE CHILLER MASTER CONTROL PANEL FROM LOCATION INDICATED.
- REMOVE EXISTING CHILLER REFRIGERANT VENT HEADER IN APPROXIMATE LOCATION INDICATED. REMOVE ALL PIPING, HANGERS, CHILLER TAP(S), ETC. AS REQUIRED. ALL TAPS ARE NOT SHOWN ON FLOORPLANS. CONTRACTOR SHALL FIELD VERIFY EXACT NUMBER OF TAPS TO EACH CHILLER AND REMOVE IN ITS ENTIRETY. CONTRACTOR SHALL STAGE REMOVAL OF EXISTING VENT PIPING AND INSTALLATION OF NEW PIPING SUCH THAT THERE IS ALWAYS A RELIEF PATH FOR OPERATING CHILLER REFRIGERANT.

STATE OF MISSOURI
MIKE KEHOE,
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

REVISION: _____
DATE: _____
REVISION: _____
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DATE: _____
ISSUE DATE: 02/04/2025

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DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

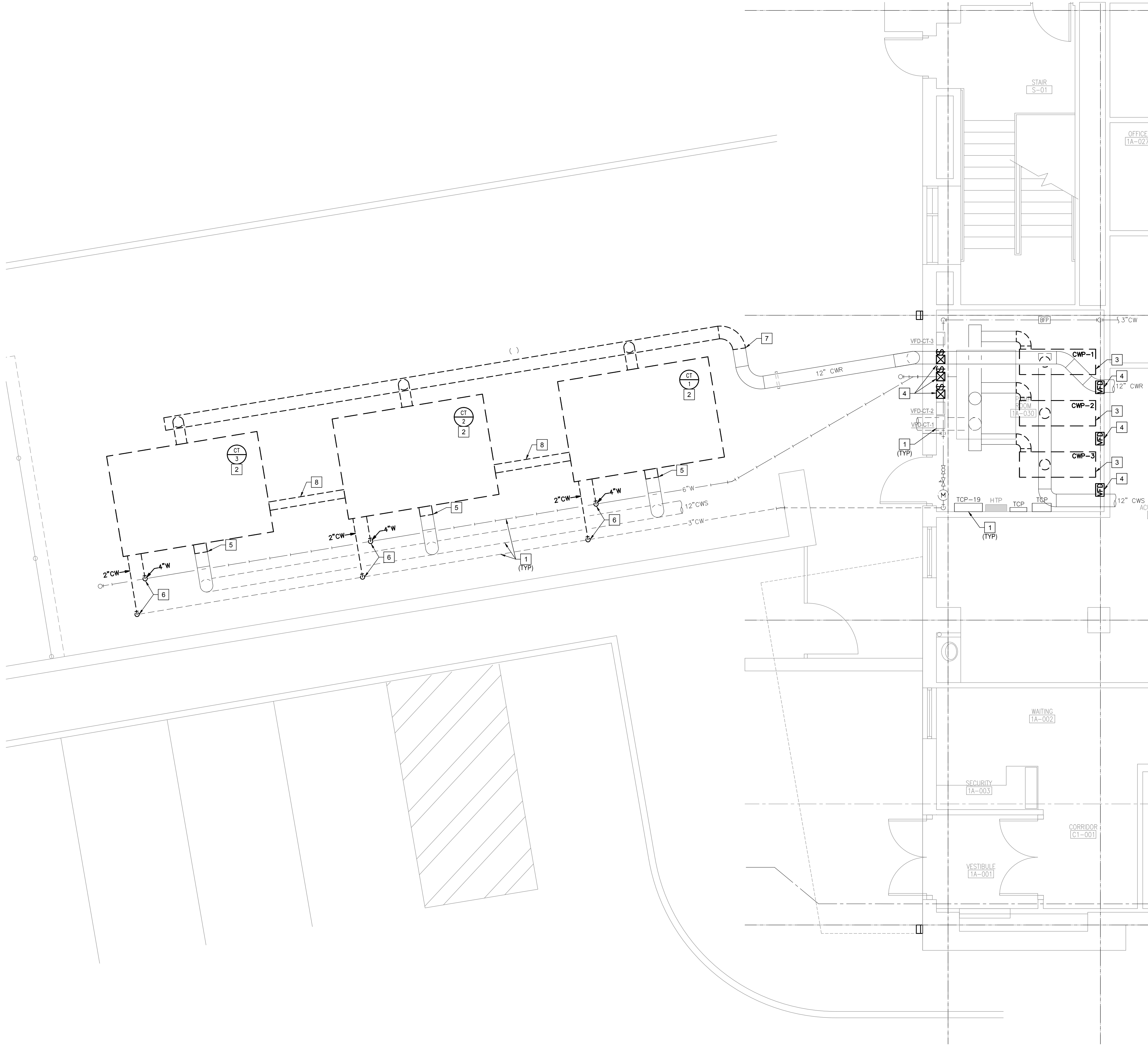
SHEET TITLE:

**LEVEL 1
MECHANICAL PIPING
DEMOLITION**

SHEET NUMBER:

MPD110A

SHEET 11 OF 29
FEBRUARY 4, 2025



1 LEVEL 1 MECHANICAL PIPING PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"

KEYED NOTES: #

- EXISTING PIPING, EQUIPMENT, ETC. SHALL REMAIN.
- REMOVE EXISTING COOLING TOWER IN APPROXIMATE LOCATION INDICATED. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL.
- REMOVE EXISTING PUMP AND ASSOCIATED PIPING AS INDICATED IN APPROXIMATE LOCATION SHOWN. REFER TO P&ID DRAWINGS ON SHEET MD511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING REMOVAL. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL. EXISTING EQUIPMENT SHALL BE REMOVED IN ITS ENTIRETY AND NEW EQUIPMENT INSTALLED AND STARTED UP IN ITS PLACE PRIOR TO REMOVAL OF NEXT PUMP.
- COORDINATE REMOVAL OF ELECTRICAL EQUIPMENT ASSOCIATED WITH REMOVED MECHANICAL EQUIPMENT.
- REMOVE PIPING BACK TO APPROXIMATE LOCATION INDICATED. PROVIDE TEMPORARY CAP ON EXISTING TO REMAIN PIPING FOR RECONNECTION UNDER NEW WORK.
- REMOVE PIPING BACK JUST ABOVE GRADE IN APPROXIMATE LOCATION INDICATED. ENOUGH ABOVE GRADE PIPING SHALL REMAIN FOR RECONNECTION. PROVIDE TEMPORARY CAP ON EXISTING TO REMAIN PIPING FOR RECONNECTION UNDER NEW WORK.
- REMOVE PIPING HEADER IN ITS ENTIRETY BACK TO LOCATION INDICATED INCLUDING ALL PIPING, SUPPORTS, ETC. PROVIDE TEMPORARY CAP ON EXISTING TO REMAIN PIPING FOR RECONNECTION UNDER NEW WORK.
- REMOVE EQUALIZER PIPING BETWEEN COOLING TOWER(S) IN APPROXIMATE LOCATION INDICATED INCLUDING ALL PIPING, SUPPORTS, ETC. AS REQUIRED FOR A COMPLETE REMOVAL.

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR



OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

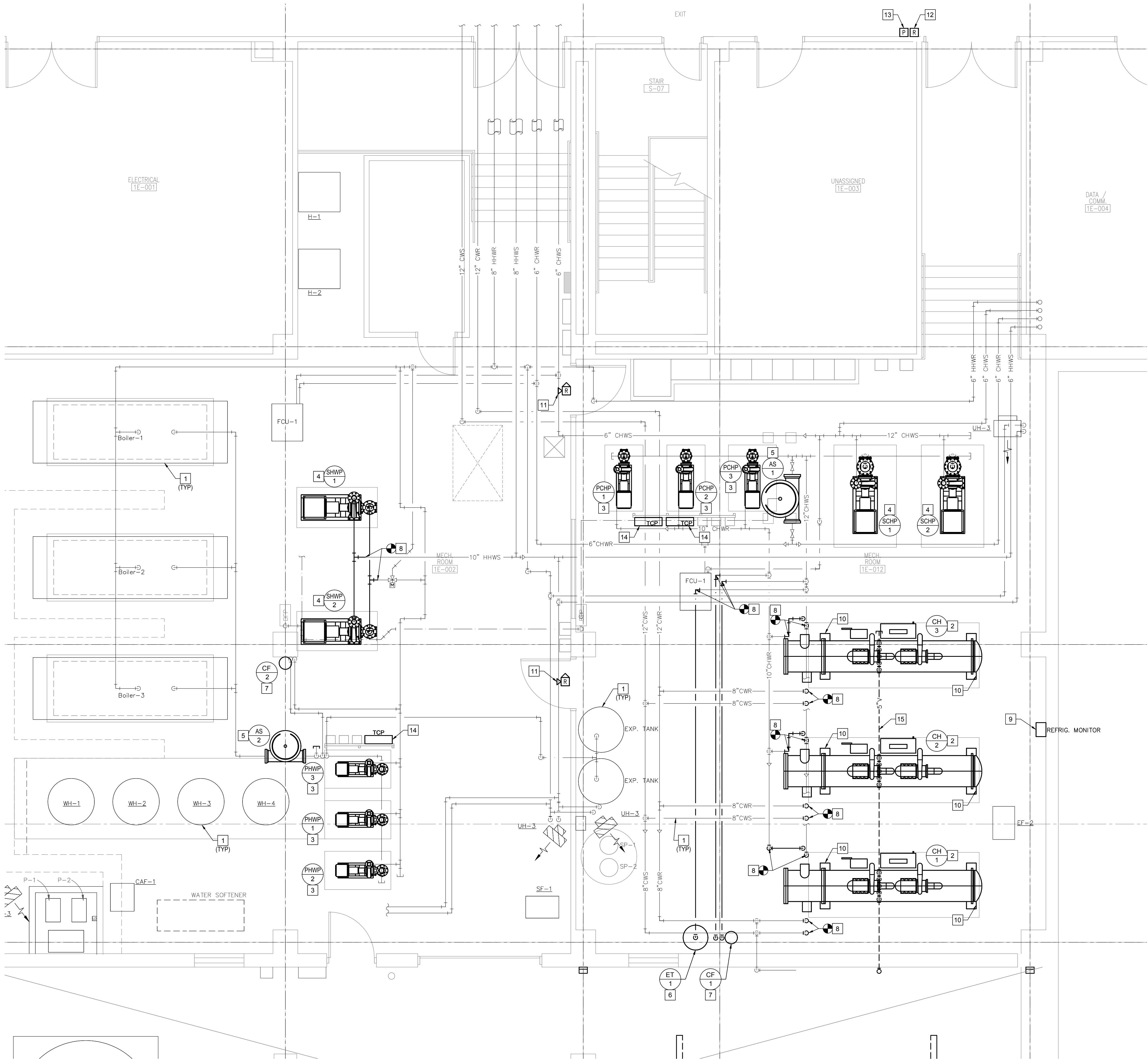
PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

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DATE: _____
ISSUE DATE: 02/04/2025

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DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:
LEVEL 1
MECH PIPING
DEMOLITION

SHEET NUMBER:
MPD110B
SHEET 12 OF 29
FEBRUARY 4, 2025



KEYED NOTES:

- EXISTING PIPING/EQUIPMENT SHALL REMAIN.
- PROVIDE NEW WATER-COOLED CHILLER ON EXISTING HOUSEKEEPING PAD IN APPROXIMATE LOCATION INDICATED. CONTRACTOR SHALL FIELD VERIFY HOUSEKEEPING PAD IS ADEQUATE FOR NEW CHILLER AND IS IN GOOD CONDITION. NOTIFY ENGINEER OF ANY DEFICIENCIES. CHILLER REMOVAL/ INSTALLATION SHALL BE SEQUENCED SUCH THAT (2) CHILLERS ARE OPERATIONAL AT ALL TIMES. NEW CHILLER SHALL BE FULLY TESTED AND STARTED UP PRIOR TO REMOVAL OF NEXT CHILLER. PROVIDE ALL PIPING, FITTINGS, ACCESSORIES, ETC. AS REQUIRED FOR A COMPLETE SYSTEM. REFER TO MANUFACTURER LITERATURE. P&ID DIAGRAM ON SHEET M511, AND SCHEDULE ON M601 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW PRIMARY PUMP ON EXISTING HOUSEKEEPING PAD IN APPROXIMATE LOCATION INDICATED. CONTRACTOR SHALL FIELD VERIFY HOUSEKEEPING PAD IS ADEQUATE FOR NEW PUMP AND IS IN GOOD CONDITION. NOTIFY ENGINEER OF ANY DEFICIENCIES. PRIMARY PUMP REMOVAL/ INSTALLATION SHALL BE SEQUENCED SUCH THAT (2) PRIMARY PUMPS ARE OPERATIONAL AT ALL TIMES. NEW PUMP SHALL BE FULLY TESTED AND STARTED UP PRIOR TO REMOVAL OF NEXT PUMP. PROVIDE ALL PIPING, FITTINGS, ACCESSORIES, ETC. AS REQUIRED FOR A COMPLETE SYSTEM. REFER TO MANUFACTURER LITERATURE. DETAIL ON SHEET M501, P&ID DIAGRAM ON SHEET M511, AND SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW SECONDARY PUMP ON EXISTING HOUSEKEEPING PAD IN APPROXIMATE LOCATION INDICATED. CONTRACTOR SHALL FIELD VERIFY HOUSEKEEPING PAD IS ADEQUATE FOR NEW PUMP AND IS IN GOOD CONDITION. NOTIFY ENGINEER OF ANY DEFICIENCIES. SECONDARY PUMP REMOVAL/ INSTALLATION SHALL BE SEQUENCED SUCH THAT (1) SECONDARY PUMP IS OPERATIONAL AT ALL TIMES. NEW PUMP SHALL BE FULLY TESTED AND STARTED UP PRIOR TO REMOVAL OF NEXT PUMP. PROVIDE ALL PIPING, FITTINGS, ACCESSORIES, ETC. AS REQUIRED FOR A COMPLETE SYSTEM. REFER TO MANUFACTURER LITERATURE. DETAIL ON SHEET M501, P&ID DIAGRAM ON SHEET M511, AND SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW AIR SEPARATOR IN APPROXIMATE LOCATION INDICATED. INSTALL NEW AIR SEPARATOR PER MANUFACTURER INSTRUCTIONS AND ON EXISTING TO REMAIN EQUIPMENT STAND SERVING AIR SEPARATOR REMOVED UNDER DEMOLITION. CONTRACTOR SHALL FIELD VERIFY EXISTING EQUIPMENT STAND IS IN GOOD CONDITION PRIOR TO INSTALLATION. NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES. REFER TO MANUFACTURER LITERATURE, DETAIL ON SHEET M501, P&ID DIAGRAM ON SHEET M511, AND SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW EXPANSION TANK IN APPROXIMATE LOCATION INDICATED. CONTRACTOR SHALL INSTALL NEW EXPANSION TANK PRIOR TO REMOVAL OF EXISTING EXPANSION TANK TO ALLOW FOR MINIMAL SYSTEM OUTAGE. REFER TO MANUFACTURER LITERATURE, P&ID DIAGRAM ON SHEET M511, AND SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION.
- PROVIDE NEW CHEMICAL POT FEEDER AND INSTALL IN APPROXIMATE LOCATION INDICATED. REFER TO MANUFACTURER LITERATURE, P&ID DIAGRAM ON SHEET M511, AND SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION.
- CONNECT NEW PIPING TO EXISTING IN APPROXIMATE LOCATION INDICATED AND ROUTE AS SHOWN. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING PIPING. NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES.
- PROVIDE NEW REFRIGERANT MONITORING SYSTEM IN LOCATION INDICATED. REFRIGERANT MONITORING SYSTEM SHALL BE MSA CHILLGARD 5000 OR PRIOR APPROVED EQUAL. REFRIGERANT MONITORING SYSTEM SHALL INCLUDE HORN/STROBE, RELAY OUTPUT SHALL ENGAGE ASSOCIATED HORN/STROBES AND EMERGENCY VENTILATION FANS SF-2/EF-2 PER ASHRAE 15. SET ALARM TO ENGAGE AT 650PPM. SENSOR SHALL BE FULLY COMPATIBLE WITH R-513A. COORDINATE FINAL REFRIGERANT SELECTION WITH APPROVED CHILLER SHOP DRAWINGS. PROVIDE ALL WIRING, CONDUIT, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION.
- PROVIDE 1/4" OD COPPER TUBING FROM REFRIGERANT MONITORING SYSTEM TO APPROXIMATE LOCATION INDICATED TO MONITOR CHILLER REFRIGERANT LEAKS. INSTALL TUBING PER MONITORING SYSTEM MANUFACTURER INSTRUCTIONS, CHILLER MANUFACTURER INSTRUCTIONS, AND PER ASHRAE 15.
- PROVIDE HORN/STROBE IN APPROXIMATE LOCATION INDICATED WITH SUITABLE LABELING PER ASHRAE 15. PROVIDE/EXTEND WIRING AND CONDUIT AS REQUIRED. PROVIDE ALL ACCESSORIES, POWER SUPPLIES, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE INSTALLATION WITH ALL OTHER TRADES.
- PROVIDE CHILLGARD 5000 REMOTE MONITOR WITH HORN/STROBE NOTIFICATION DEVICES PER ASHRAE 15. PROVIDE ALL WIRING, CONDUIT, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE INSTALLATION WITH ALL OTHER TRADES.
- PROVIDE PULL STATION AND REMOTE ACKNOWLEDGE BUTTON ADJACENT TO DOOR IN APPROXIMATE LOCATION INDICATED PER ASHRAE 15. PROVIDE ALL WIRING, CONDUIT, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE INSTALLATION WITH ALL OTHER TRADES.
- REINSTALL TEMPERATURE CONTROL PANEL ON UNISTRUT RACK (BY ELECTRICAL CONTRACTOR). COORDINATE INSTALLATION WITH TEMPERATURE CONTROL CONTRACTOR. CONTRACTOR SHALL PROVIDE/EXTEND ALL CONDUIT, WIRING, ETC. AS REQUIRED FOR A COMPLETE REINSTALLATION OF SYSTEMS.
- PROVIDE REFRIGERANT VENT PIPING HEADER OF SIZE INDICATED PER ASHRAE 15 IN APPROXIMATE LOCATION INDICATED. CONTRACTOR SHALL STAGE REMOVAL OF EXISTING VENT PIPING AND INSTALLATION OF NEW PIPING SUCH THAT THERE IS ALWAYS A RELIEF PATH FOR OPERATING CHILLER REFRIGERANT. NOT ALL PIPING/TAPS ARE SHOWN FOR EACH CHILLER. PROVIDE TAPS AND PIPING AS REQUIRED PER MANUFACTURER INSTRUCTIONS. TERMINATE REFRIGERANT VENT PIPING TO EXTERIOR WITH GOOSENECK PER ASHRAE 15.



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OFFICE OF ADMINISTRATION
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DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

REVISION: _____
DATE: _____
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DATE: _____
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DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:

LEVEL 1
MECHANICAL PIPING
NEW WORK

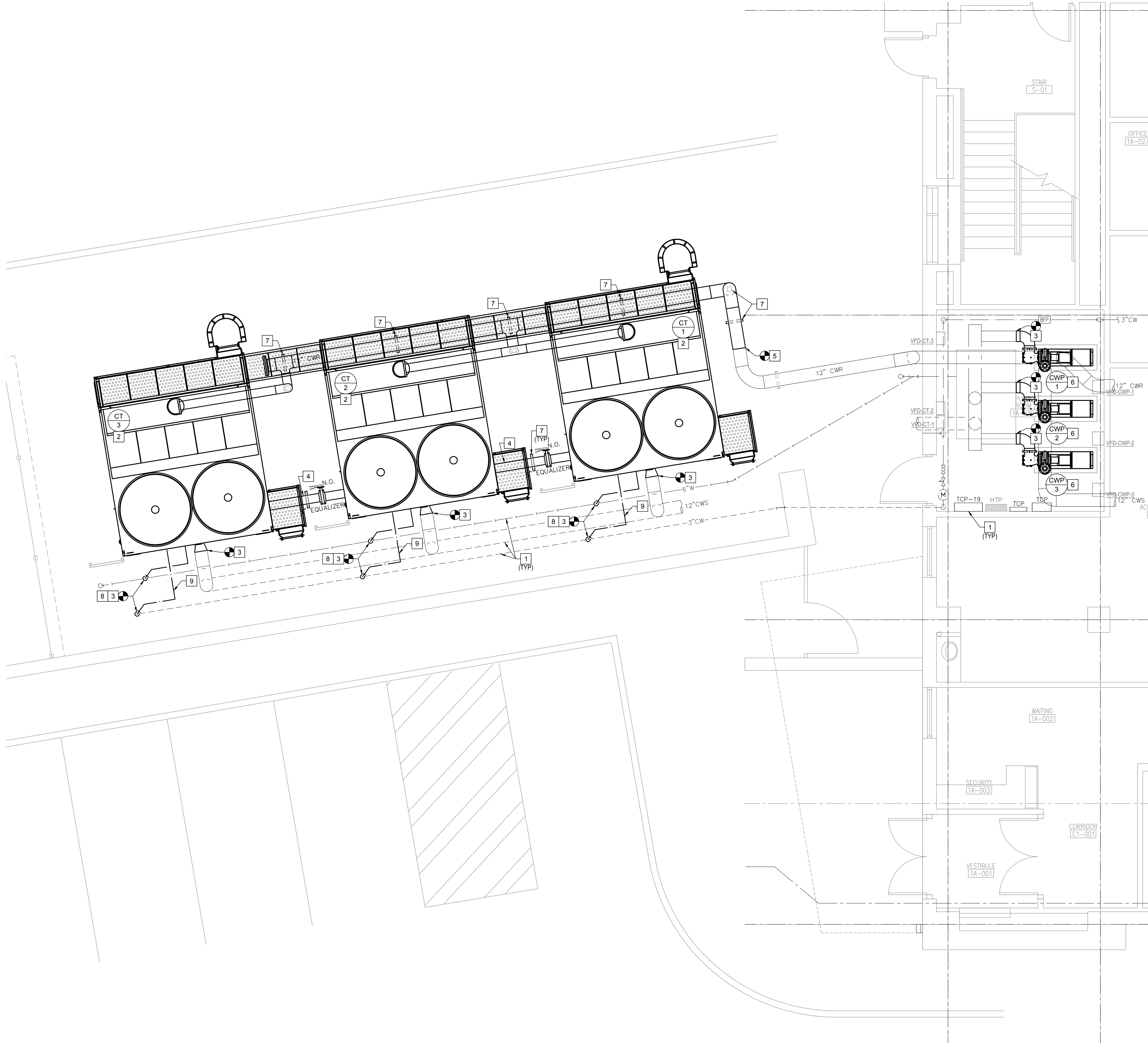
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MP110A

SHEET 13 OF 29
FEBRUARY 4, 2025

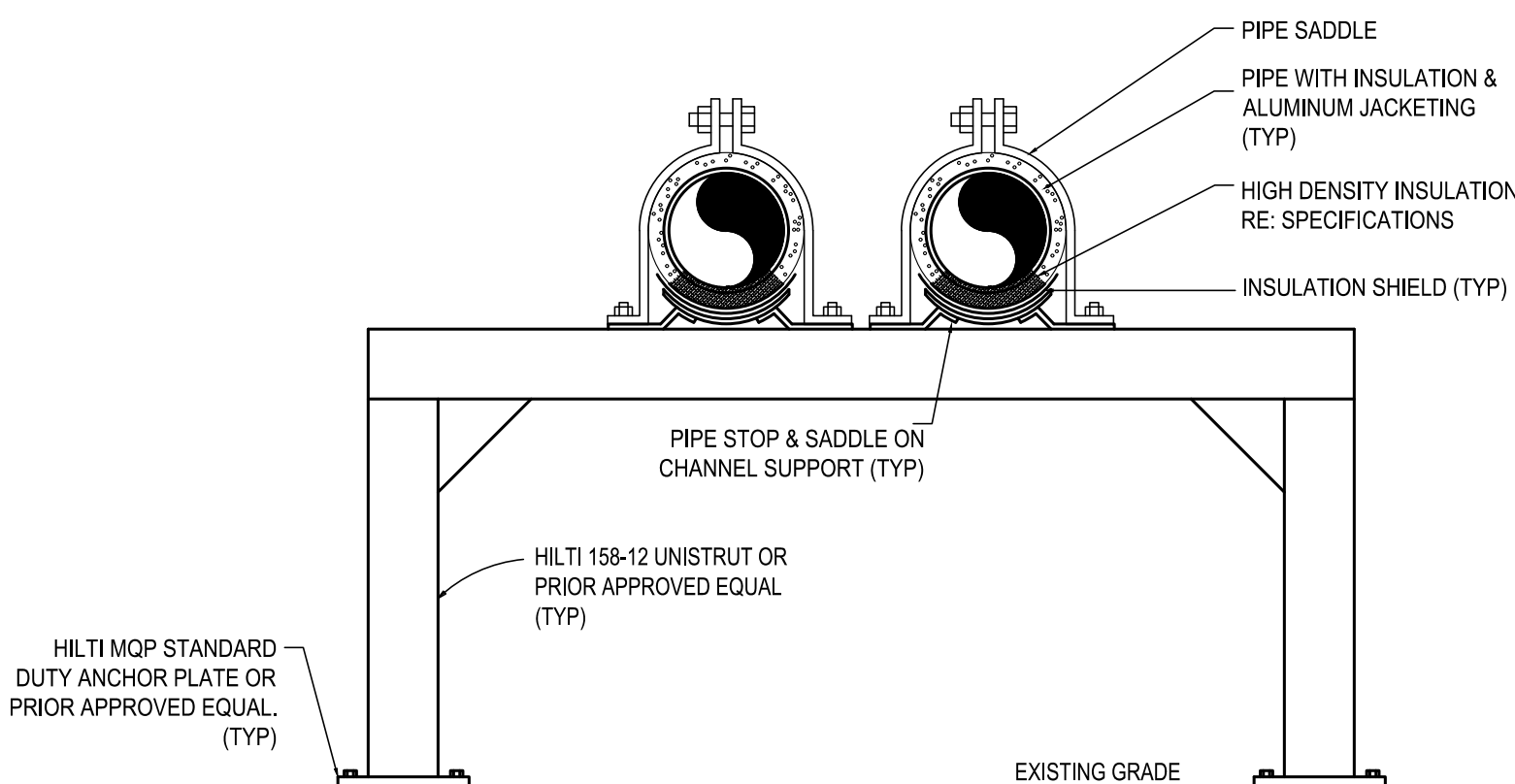
1 LEVEL 1 MECHANICAL PIPING PLAN - NEW WORK
SCALE: 1/4" = 1'-0"





- KEYED NOTES:** ##
- EXISTING PIPING, EQUIPMENT, ETC. SHALL REMAIN.
 - PROVIDE COOLING TOWER IN EXISTING LOCATION INDICATED ON CONCRETE PIERS AND STRUCTURAL STEEL. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL SUPPORT INFORMATION. STRUCTURE PROVIDED SHALL BE IN FULL ACCORDANCE WITH ALL MANUFACTURER REQUIREMENTS. REFER TO P&ID ON SHEET M511 AND SCHEDULE ON SHEET M601 FOR ADDITIONAL INFORMATION.
 - PROVIDE/EXTEND EXISTING PIPING FROM LOCATION INDICATED AND CONNECT TO NEW COOLING TOWER. PROVIDE TRANSITIONS AS REQUIRED FOR A COMPLETE INSTALLATION. REFER TO P&ID ON SHEET M511 FOR ADDITIONAL INFORMATION AND PIPE SIZES.
 - PROVIDE 8" COLD WATER BASIN EQUALIZER LINE AND NORMALLY OPEN BUTTERFLY VALVE IN APPROXIMATE LOCATION INDICATED. FIELD VERIFY EXACT CONNECTION LOCATION. PROVIDE SUPPORTS FOR PIPING FROM GRADE. COOLING TOWER CONNECTIONS SHALL NOT BE USED TO SUPPORT PIPING.
 - EXTEND EXISTING CONDENSER WATER HEADER AT LOCATION INDICATED. INSTALL NEW HEADER SUCH THAT IT DOES NOT INTERFERE WITH COOLING TOWER ACCESS POINTS OR INTERFERE WITH AIR INTAKE. ROUTE HEADER BELOW PLATFORM. BOTTOM OF PIPE TO BE APPROXIMATELY 7' ABOVE GRADE. REFER TO P&ID ON SHEET M511 FOR ADDITIONAL INFORMATION AND PIPE SIZES. NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES.
 - PROVIDE NEW PUMP IN APPROXIMATE LOCATION INDICATED. REFER TO P&ID ON SHEET M511 FOR ADDITIONAL INFORMATION AND EXTENT OF PIPING. RE-INSTALLATION REQUIRED. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION SEQUENCING WITH OWNER AND ENGINEER PRIOR TO REMOVAL. EXISTING EQUIPMENT SHALL BE REMOVED IN ITS ENTIRETY AND NEW EQUIPMENT INSTALLED AND STARTED UP IN ITS PLACE PRIOR TO REMOVAL OF NEXT PUMP.
 - APPROXIMATE LOCATION OF STRUCTURAL PIPE SUPPORTS. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
 - PROVIDE SUPPORTS FOR NEW PIPING PER CODE. REFER TO DETAIL ON SHEET M501 FOR ADDITIONAL INFORMATION.
 - PROVIDE HEAT TRACE ON ALL ABOVE GRADE, EXTERIOR WATER PIPING FOR FREEZE PROTECTION. CABLE TO BE SWIFT RAYCHEM SBTV1-CT SELF-REGULATING HEATING CABLE. PROVIDE WITH RAYCHEM C910 DIGITRACE TEMPERATURE CONTROLLER AND ALL OTHER ACCESSORIES AS REQUIRED FOR A COMPLETE SYSTEM. COORDINATE CONTROLLER LOCATION AND SYSTEM INSTALLATION WITH ELECTRICAL CONTRACTOR AS REQUIRED.

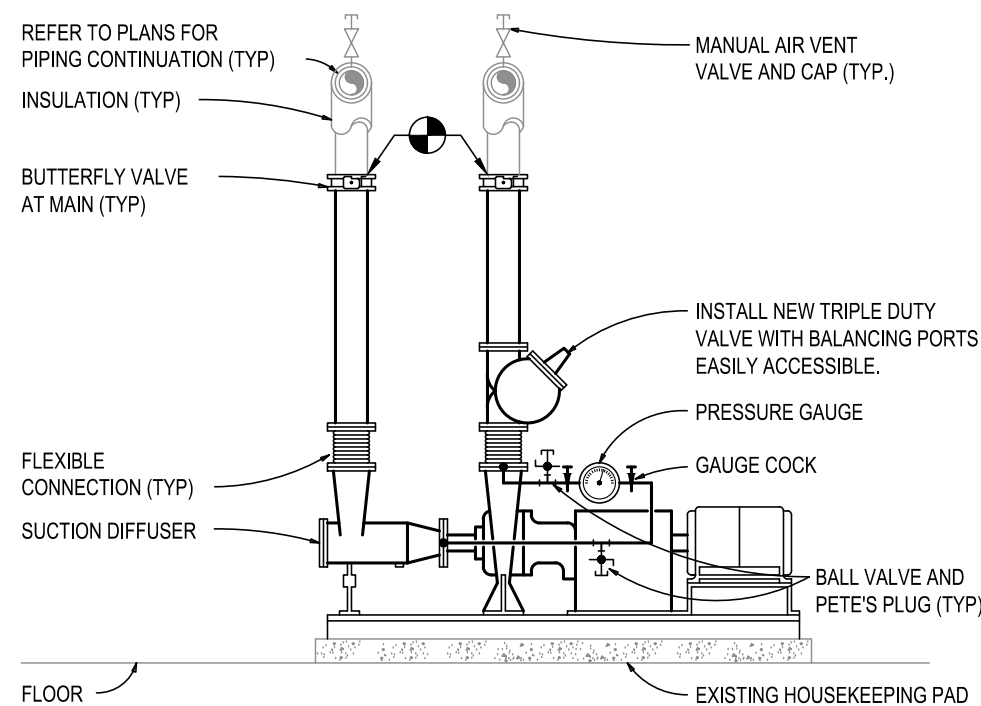
1 LEVEL 1 MECHANICAL PIPING PLAN - NEW WORK
SCALE: 1/4" = 1'-0"



NOTE: THIS PIPING SUPPORT DETAIL SHALL BE USED FOR SUPPORTS LESS THAN 4' HIGH AND SERVING <2" PIPING. FOR OTHER PIPE SIZES OR HEIGHTS, REFER TO STRUCTURAL DRAWINGS.

4 PIPE SUPPORT DETAIL

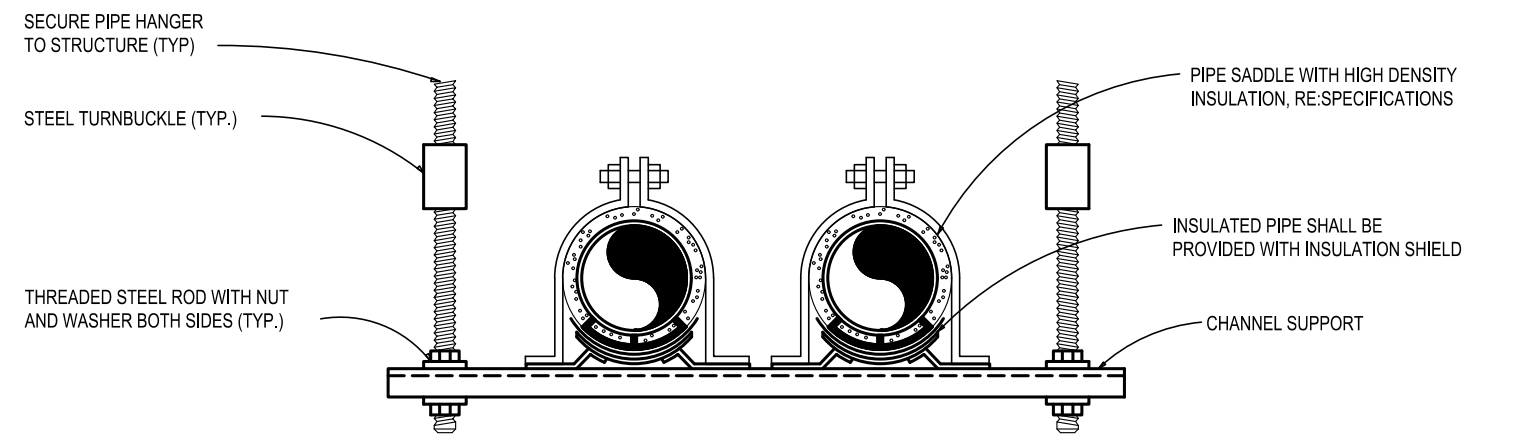
SCALE: NO SCALE



NOTE: EXISTING TO REMAIN PIPING, INSULATION, ETC. IS SHOWN LIGHT. NEW PIPING, EQUIPMENT, ETC. IS SHOWN BOLD.

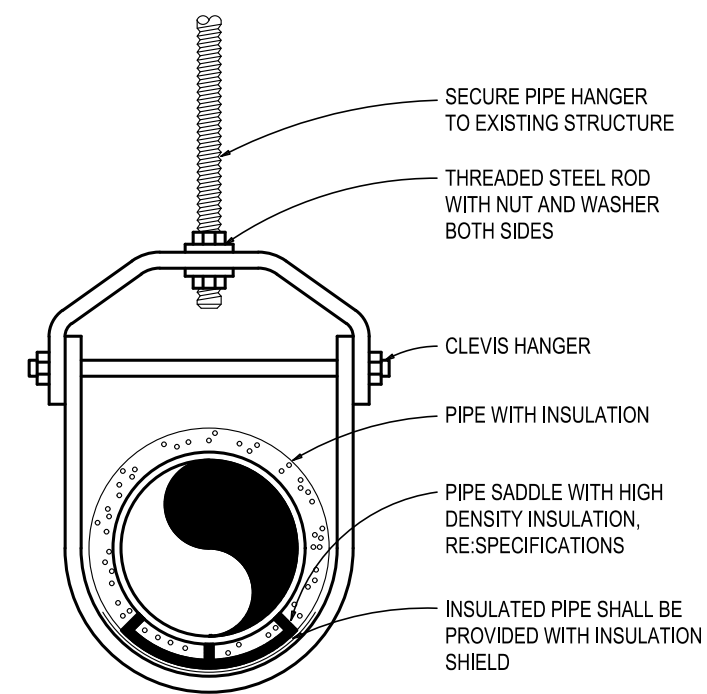
3 BASE MOUNTED PUMP DETAIL

SCALE: NO SCALE



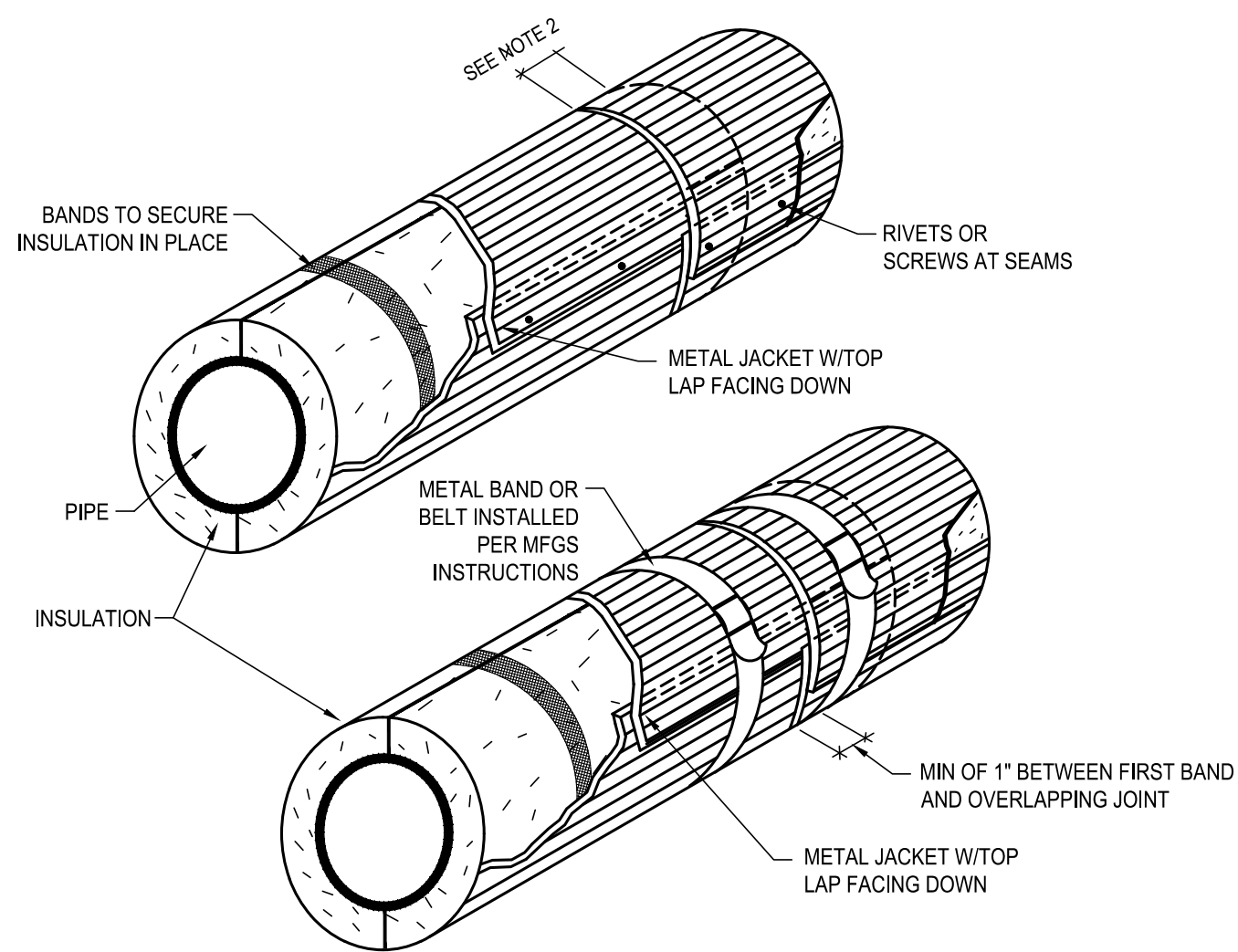
2 TYPICAL TRAPEZE PIPE HANGER DETAIL

SCALE: NO SCALE



1 PIPE HANGER DETAIL

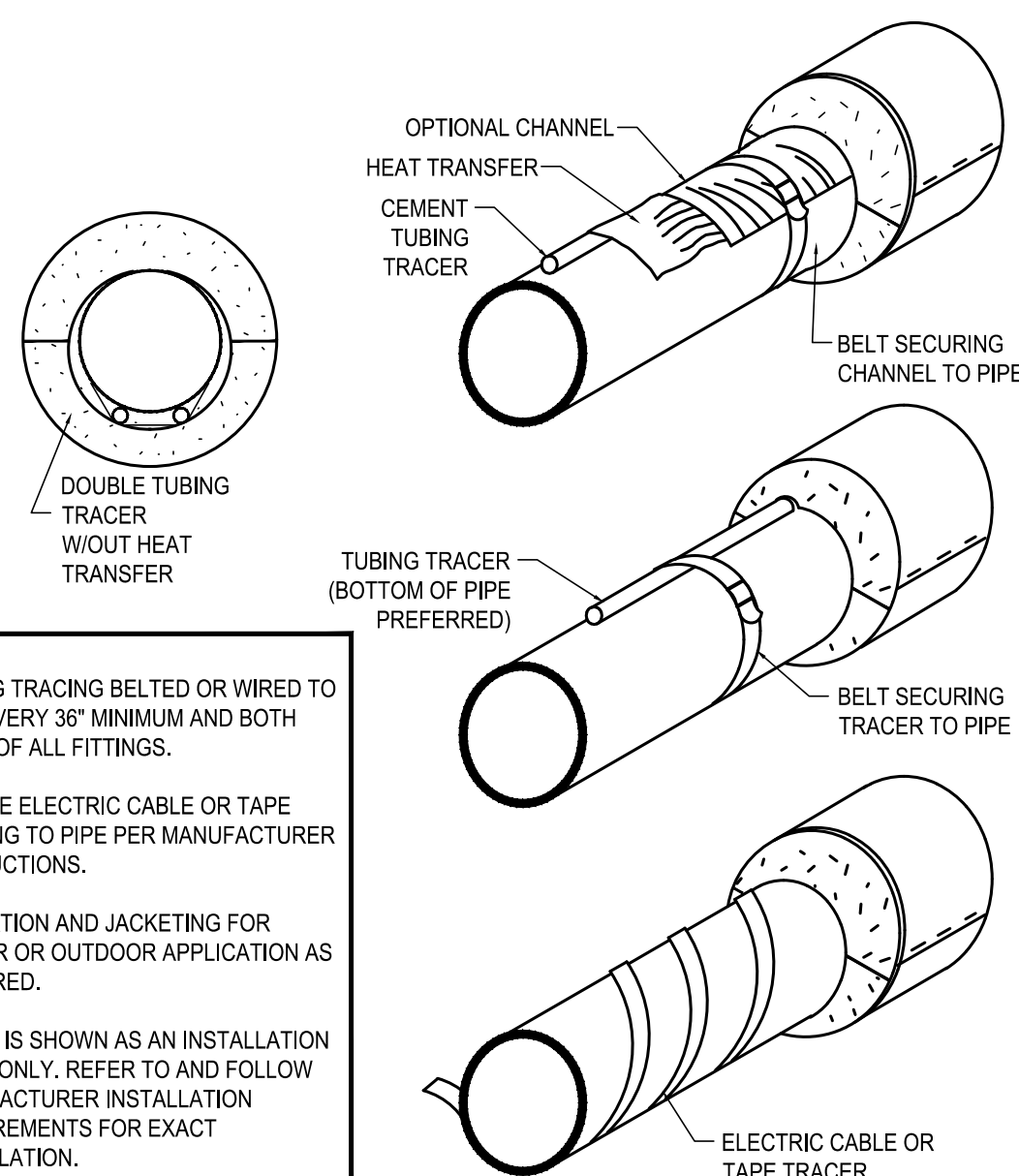
SCALE: NO SCALE



- NOTES:
1. LONGITUDINAL JACKETING SEAMS POSITIONED AT 3 OR 9 O'CLOCK ONLY W/TOP LAP FACING DOWN FOR WEATHER PROOFING.
 2. OVERLAP JACKETING A MIN OF 1-1/2".
 3. DETAIL IS SHOWN AS AN INSTALLATION GUIDE ONLY. REFER TO AND FOLLOW MANUFACTURER INSTALLATION REQUIREMENTS FOR EXACT INSTALLATION.

7 FIELD APPLIED METAL JACKETING OVER PIPE INSULATION

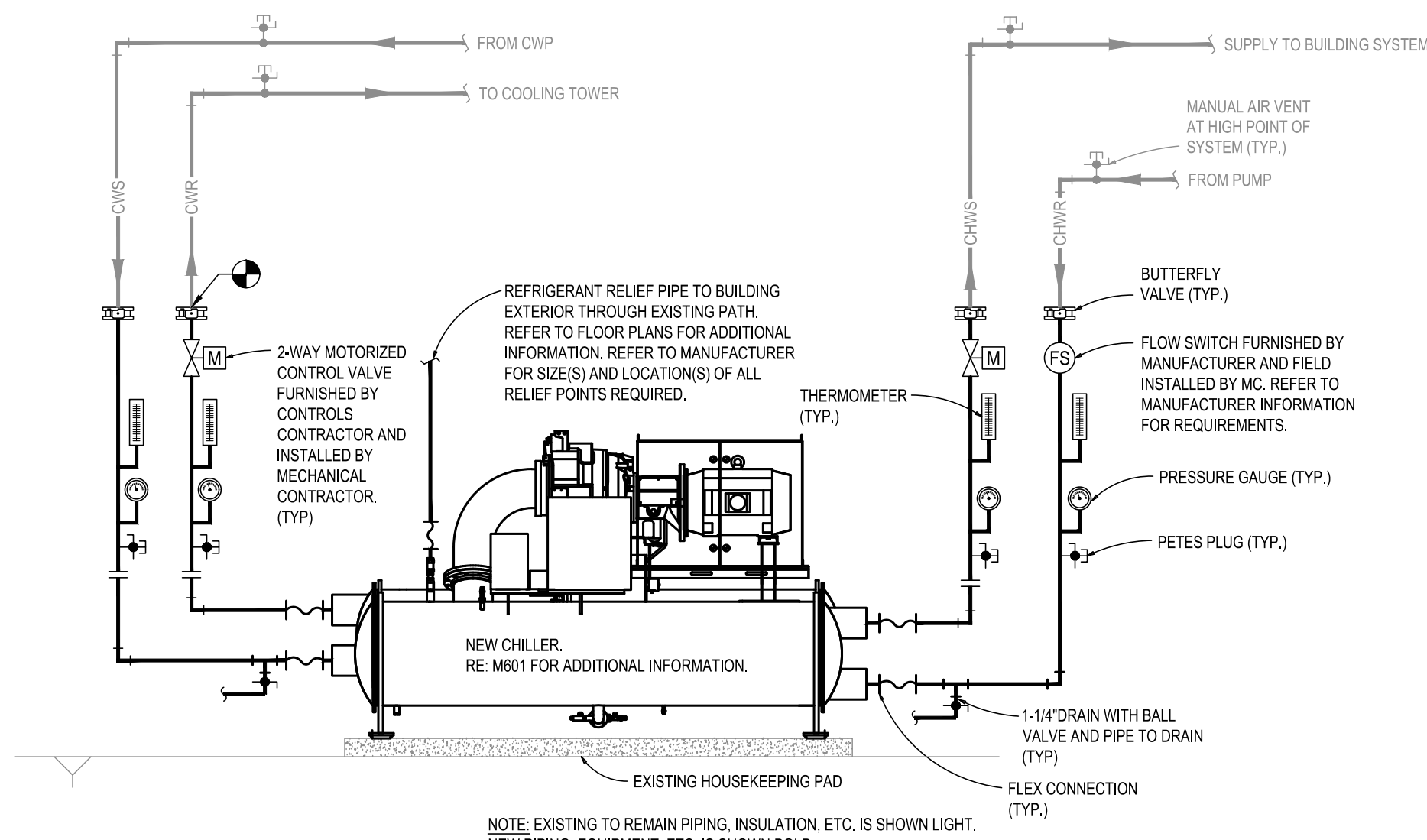
SCALE: NO SCALE



- NOTES:
1. TUBING TRACING BELTED OR WIRED TO PIPE EVERY 36" MINIMUM AND BOTH SIDES OF ALL FITTINGS.
 2. SECURE ELECTRIC CABLE OR TAPE TRACING TO PIPE PER MANUFACTURER INSTRUCTIONS.
 3. INSULATION AND JACKETING FOR INDOOR OR OUTDOOR APPLICATION AS REQUIRED.
 4. DETAIL IS SHOWN AS AN INSTALLATION GUIDE ONLY. REFER TO AND FOLLOW MANUFACTURER INSTALLATION REQUIREMENTS FOR EXACT INSTALLATION.

6 HEAT TRACED PIPING

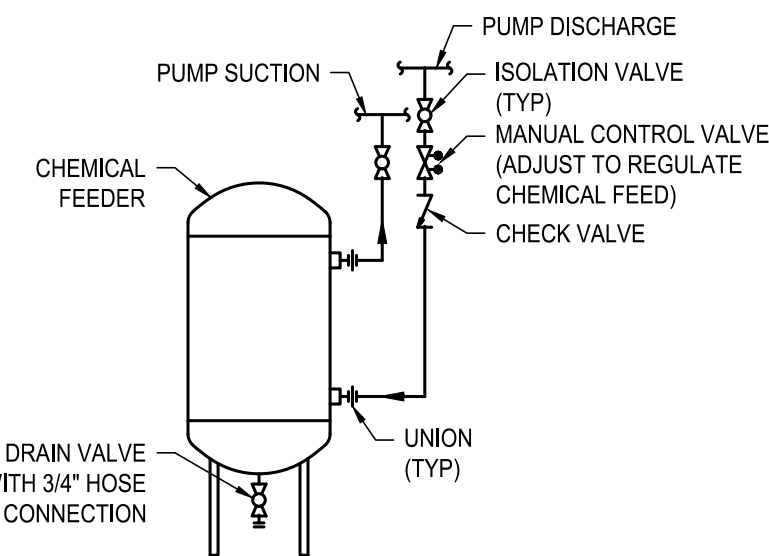
SCALE: NO SCALE



NOTE: EXISTING TO REMAIN PIPING, INSULATION, ETC. IS SHOWN LIGHT. NEW PIPING, EQUIPMENT, ETC. IS SHOWN BOLD.

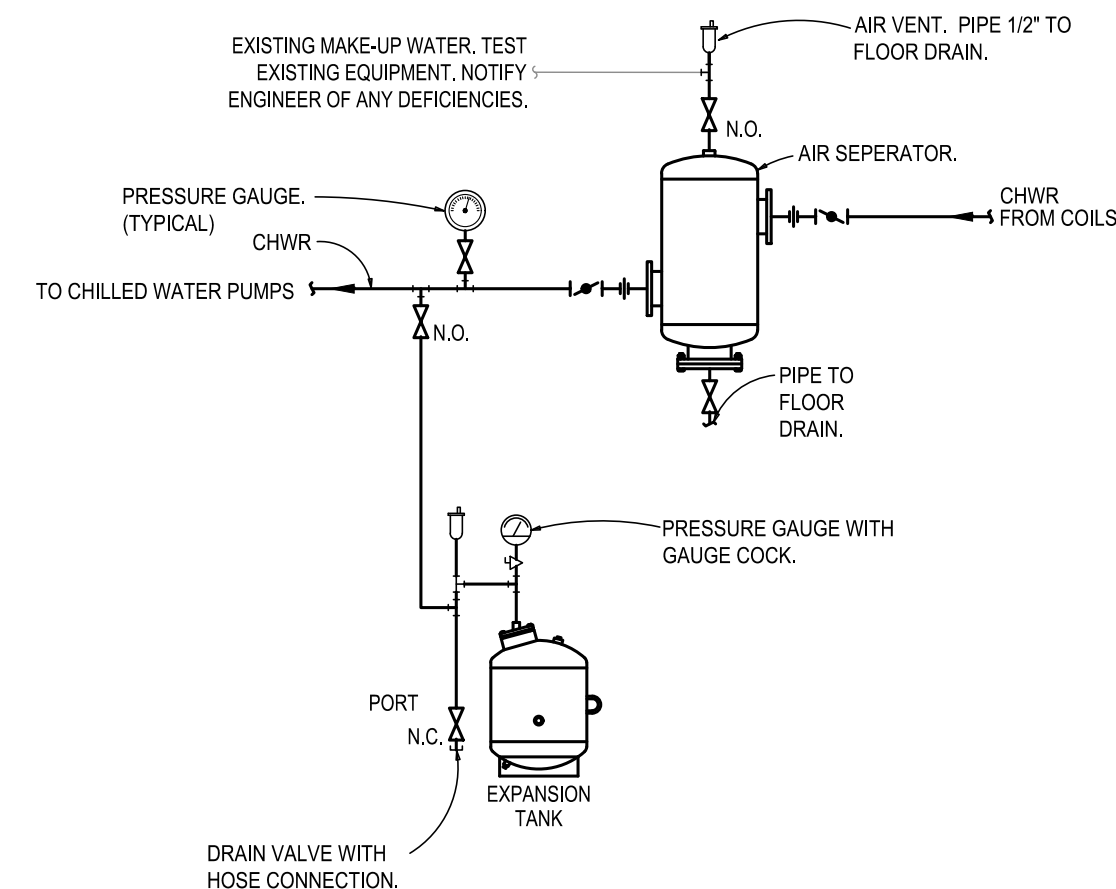
5 CHILLER CONNECTION DETAIL

SCALE: NO SCALE



9 CHEMICAL FEEDER DETAIL

SCALE: NO SCALE



8 AIR SEPARATOR, MAKE-UP WATER & EXPANSION TANK DETAIL

SCALE: NO SCALE

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR



MEP ENGINEER



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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 02/04/2025

CAD DWG FILE: _____
DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

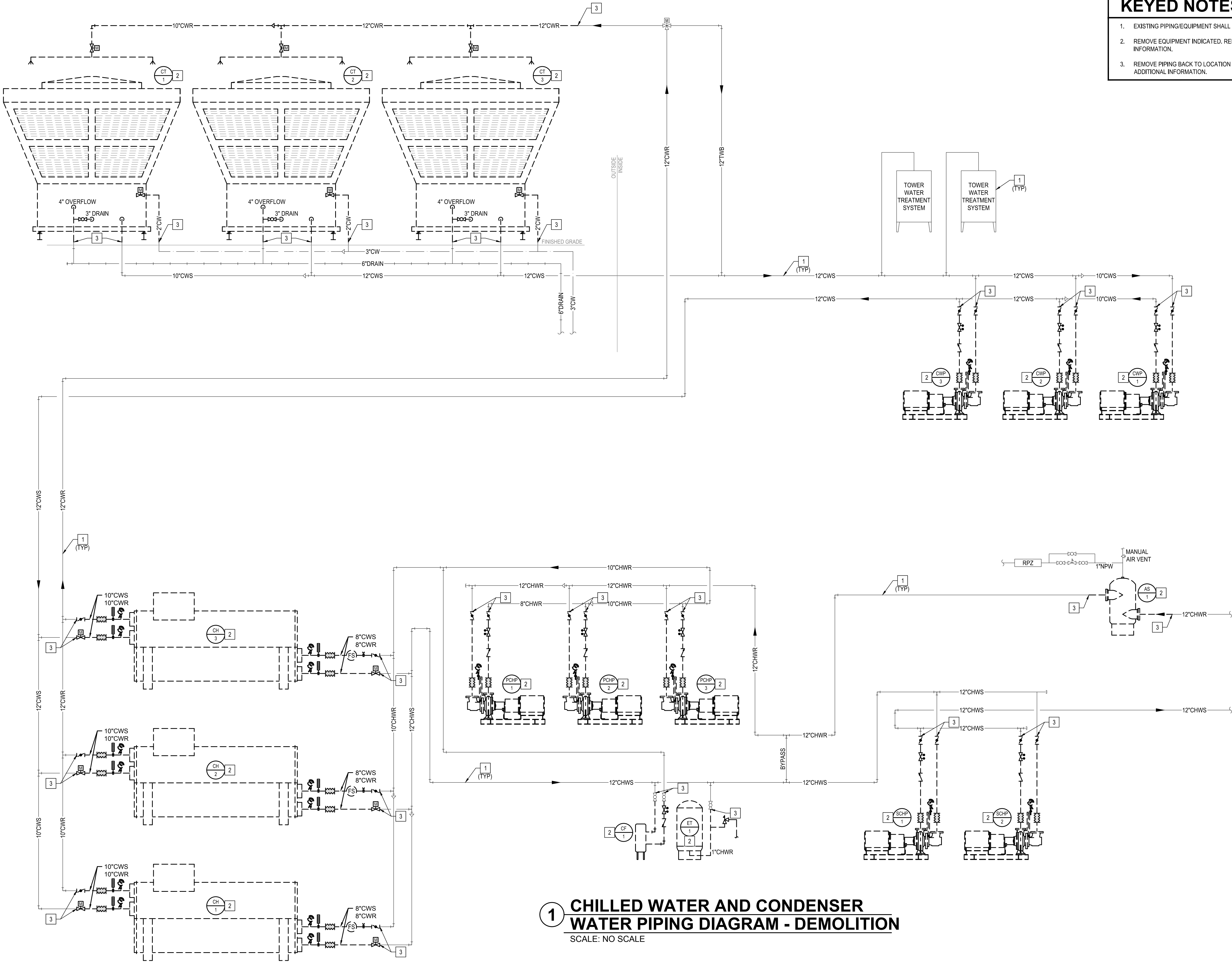
SHEET TITLE:

MECHANICAL
DETAILS

SHEET NUMBER:

M501

SHEET 15 OF 29
FEBRUARY 4, 2025



- KEYED NOTES:** ##
- EXISTING PIPING/EQUIPMENT SHALL REMAIN.
 - REMOVE EQUIPMENT INDICATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.
 - REMOVE PIPING BACK TO LOCATION INDICATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.

1 CHILLED WATER AND CONDENSER WATER PIPING DIAGRAM - DEMOLITION
SCALE: NO SCALE

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR



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KANSAS CITY, MISSOURI

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DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:

MECHANICAL
P&IDs

SHEET NUMBER:

MD511

SHEET 16 OF 29
FEBRUARY 4, 2025



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SHEET TITLE:

MECHANICAL
P&IDs

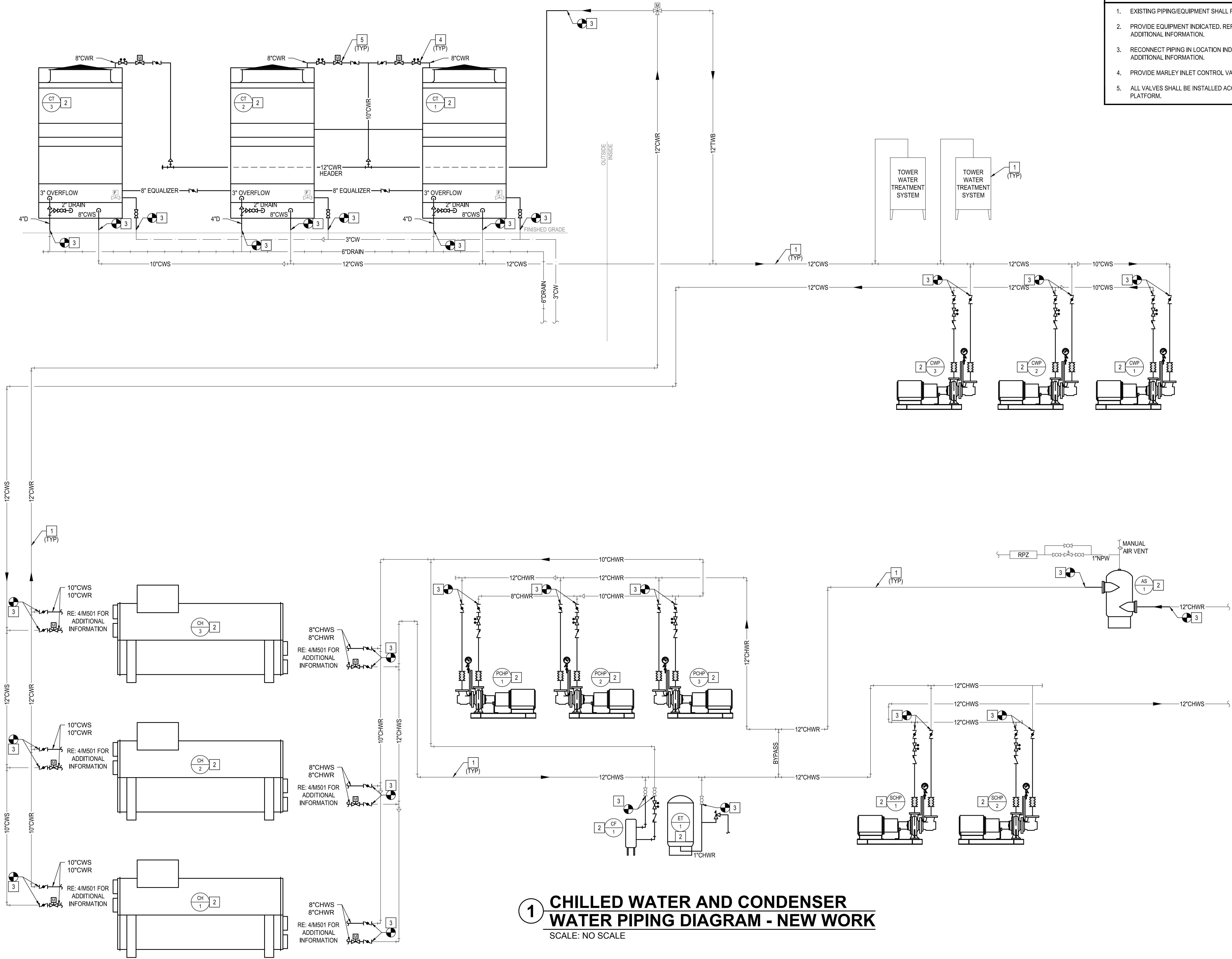
SHEET NUMBER:

M511

SHEET 17 OF 29
FEBRUARY 4, 2025

KEYED NOTES:

- EXISTING PIPING/EQUIPMENT SHALL REMAIN.
- PROVIDE EQUIPMENT INDICATED. REFER TO FLOOR PLANS AND SCHEDULES FOR ADDITIONAL INFORMATION.
- RECONNECT PIPING IN LOCATION INDICATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.
- PROVIDE MARLEY INLET CONTROL VALVE AT TOWER INLET.
- ALL VALVES SHALL BE INSTALLED ACCESSIBLE FROM LOUVER FACE ACCESS PLATFORM.



**1 CHILLED WATER AND CONDENSER
WATER PIPING DIAGRAM - NEW WORK**
SCALE: NO SCALE



MEP ENGINEER



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KANSAS CITY, MISSOURI

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SITE # 7360
FACILITY # 6517360003

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ISSUE DATE: 02/04/2025

CAD DWG FILE: _____
DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:

MECHANICAL
P&IDs

SHEET NUMBER:

M512

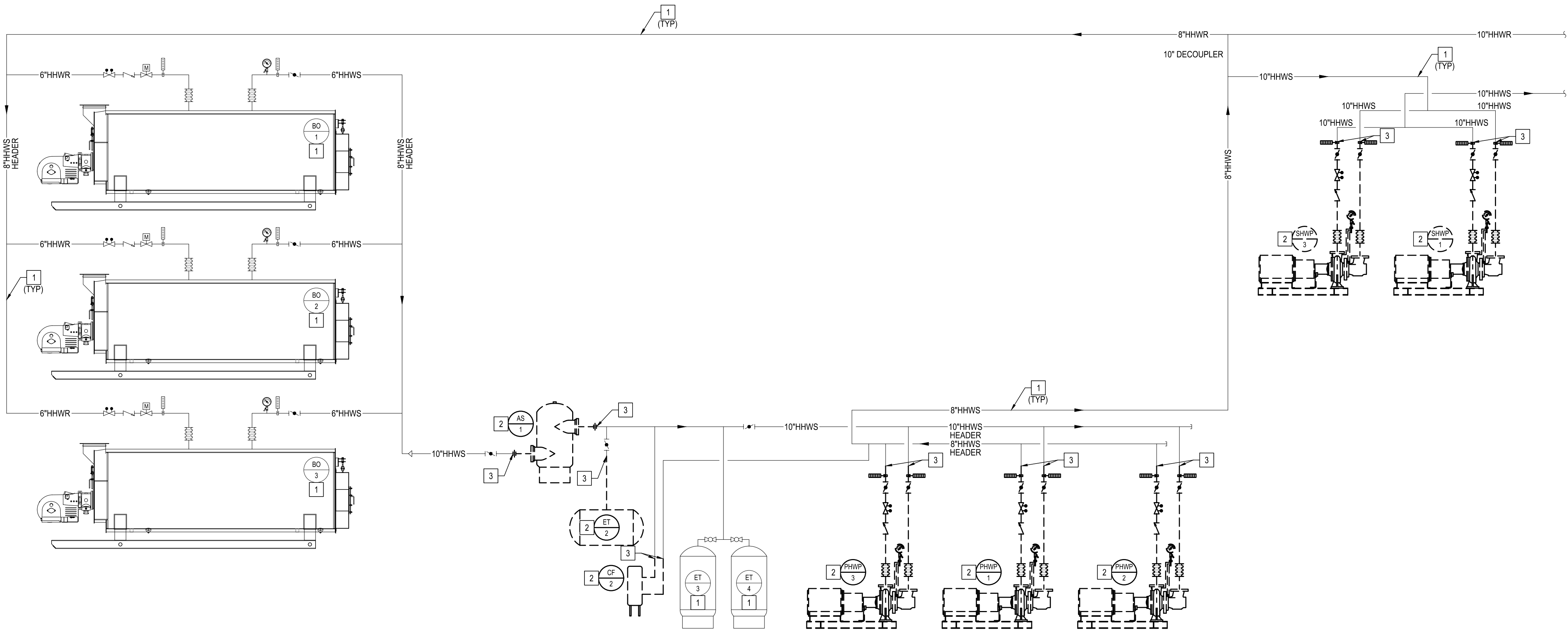
SHEET 18 OF 29
FEBRUARY 4, 2025

KEYED NOTES:

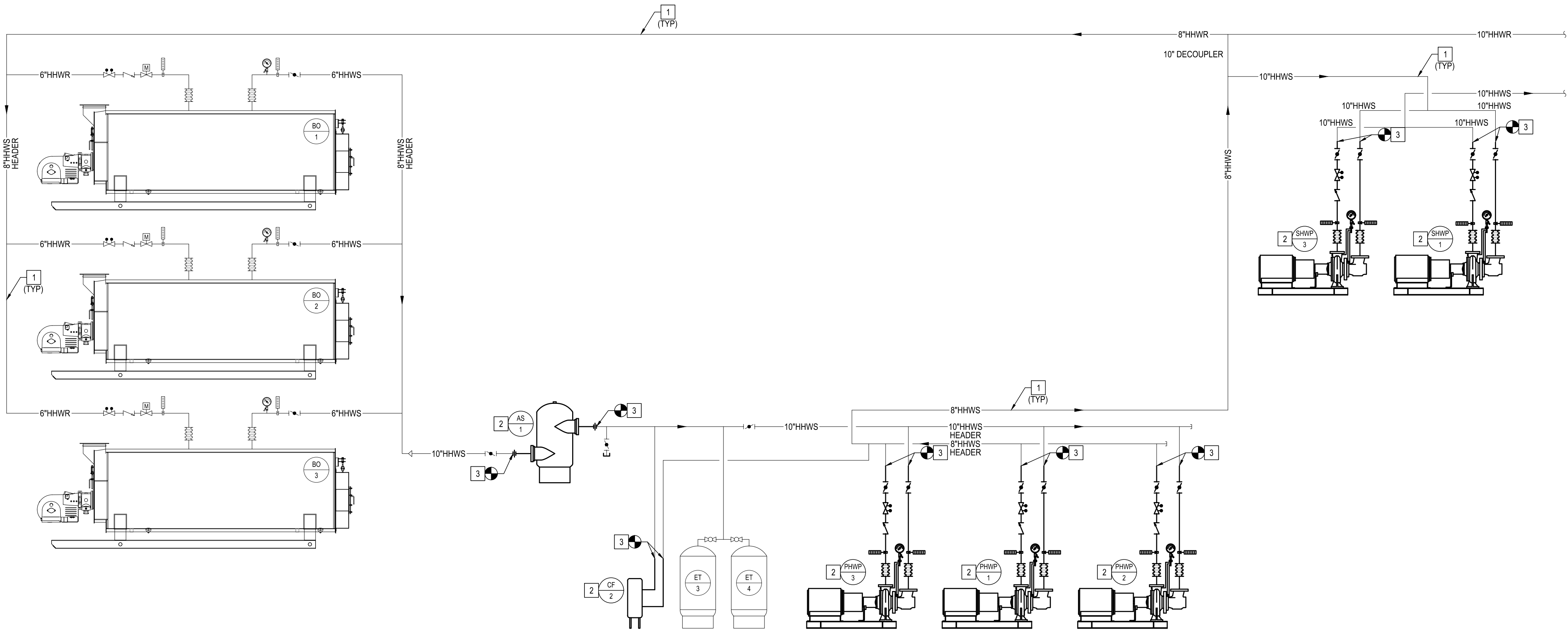
- EXISTING PIPING/EQUIPMENT SHALL REMAIN.
- REMOVE EQUIPMENT INDICATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.
- REMOVE PIPING BACK TO LOCATION INDICATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.

KEYED NOTES:

- EXISTING PIPING/EQUIPMENT SHALL REMAIN.
- PROVIDE EQUIPMENT INDICATED. REFER TO FLOOR PLANS AND SCHEDULES FOR ADDITIONAL INFORMATION.
- RECONNECT PIPING IN LOCATION INDICATED. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.



1 HOT WATER PIPNG DIAGRAM - DEMOLITION
SCALE: NO SCALE



2 HOT WATER PIPNG DIAGRAM - NEW WORK
SCALE: NO SCALE

NOTES:

1) PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION AND MANUFACTURER PROVIDED UNIT MOUNTED NON-FUSED DISCONNECT SWITCH.	7) PROVIDE 3/4" INSULATION ON EVAPORATOR SHELL, SUCTION PIPING, COMPRESSOR INLET, AND MOTOR BARREL. PROVIDE OPTIONAL INSULATION ON EVAPORATOR HEADS AND WATERBOX.
2) PROVIDE WITH 120V CONTROL POWER TRANSFORMER.	8) UNIT SHALL HAVE (1) YEAR WHOLE UNIT PARTS AND LABOR WARRANTY; PROVIDE 2nd thru 5th YEAR COMPRESSOR PARTS ONLY WARRANTY.
3) PROVIDE WITH CONVENIENCE OUTLET FOR SERVICE UNIT.	9) PROVIDE FACTORY AUTHORIZED SERVICE TECH TO PERFORM STARTUP PER SPECIFICATIONS. START UP TECH SHALL PROVIDE ADDITIONAL ASSISTANCE DURING COMMISSIONING TO ASSIST COMMISSIONING AGENT IN ADJUSTING SETTINGS/TESTING EQUIPMENT TO MEET/VERIFY PROJECT REQUIREMENTS. TECH SHALL PROVIDE COMMISSIONING DOCUMENTATION OF FINAL PARAMETER SETTINGS FOR EACH UNIT AFTER COMMISSIONING IS COMPLETE IN ADDITION TO STARTUP REPORT. PROVIDE COMMISSIONING DOCUMENTATION TO ENGINEER AND COMMISSIONING AGENT. MANUFACTURER SHALL ASSUME UP TO 1 DAY (PER CHILLER) OF ONSITE COMMISSIONING ASSISTANCE. RE: SPECIFICATIONS FOR ADDITIONAL OCCUPANCY ADJUSTMENTS AND DEMONSTRATION/TRAINING REQUIREMENTS. RE: M700 SERIES DRAWINGS FOR ADDITIONAL PARAMETER AND STARTUP REQUIREMENTS WITHIN EQUIPMENT SEQUENCE OF OPERATIONS.
4) PROVIDE CHILLER WITH INTEGRAL SAFETIES INCLUDING FLOW SWITCH, ETC. TO PROPERLY SHUT DOWN CHILLER AND PROTECT CHILLER FROM DAMAGE.	
5) PROVIDE WITH MARINE WATER BOX.	
6) PROVIDE UNIT WITH BACnet MS/TP COMMUNICATION INTERFACE.	

* OR PRIOR APPROVED EQUIVALENT: TRANE, YORK, SMARDT

Item	Description	Piping Spec	Fittings	Pipe Material	Size	Insulation Type	Fluid Temp	Thickness	Jacket Material	Notes
1	INDOOR Chilled Water	A53	Threaded	Sch. 80	<2"	Fiberglass Molded	42F	1"	ASJ (White)	
			Welded	Sch. 40	2-1/2" to 14"			1-1/2"		
					16"+			2"		
2A	INDOOR Condenser Water	A53	Threaded	Sch. 80	<2"	N/A	85F	N/A	N/A	
			Welded	Sch. 40	2-1/2" to 14"					
					16"+					
2B	OUTDOOR Condenser Water	A53	Threaded	Sch. 80	<2"	N/A	85F	N/A	N/A	
			Welded	Sch. 40	2-1/2" to 14"					
					16"+					
3	INDOOR Heating Hot Water	A53	Threaded	Sch. 80	<2"	Fiberglass Molded	180F	1"	ASJ (White)	
			Welded	Sch. 40	2-1/2" to 14"			1-1/2"		
					16"+			2"		
4A	INDOOR Non-Potable Water	B88	Sweat	Type L	<2"	Fiberglass Molded	55F	1"	ASJ (White)	
					2.5"+			1-1/2"		
4B	OUTDOOR Non-Potable Water	B88	Sweat	Type L	<2"	Flexible Elastomeric	55F	1"	Aluminum 0.016" Thick	Provide Heat Trace and Aluminum Jacket for above grade exterior piping.
					2.5"+			1-1/2"		

NOTES:

- 1) PROVIDE BASIN HEATER FOR 10°F AMBIENT. HEATER CONTROLS SHALL BE INCLUDED FOR FIELD INSTALLATION.
- 2) PROVIDE UNIT WITH VFD RATED MOTOR WITH SHAFT GROUNDING.
- 3) PROVIDE UNIT WITH CTI CERTIFIED THERMAL PERFORMANCE.
- 4) PROVIDE UNIT WITH MINIMUM 15 MIL. PVC FILL.
- 5) PROVIDE OUTLET OF UNIT TRASH SCREEN OR SIMILAR TO PREVENT DEBRIS FROM ENTERING CONDENSER WATER SYSTEM.
- 6) PROVIDE UNIT WITH EQUALIZER CONNECTIONS TO OTHER COOLING TOWER BASINS. REFER TO M100 SERIES DRAWINGS FOR LOCATION(S).
- 7) PROVIDE UNIT WITH MECHANICAL VIBRATION CUTOFF SWITCH TO BE FACTORY INSTALLED, FIELD WIRED FROM TERMINAL BOX.
- 8) FURNISH COOLING TOWERS WITH A SINGLE, CONTINUOUS, LOUVER FACE ACCESS PLATFORM WITH SAFETY GATE & LADDER. OPERATOR SHALL BE ABLE TO ACCESS ALL COOLING TOWERS FROM SAME PLATFORM. EQUIPMENT SHALL MEET OSHA SAFETY STANDARDS FOR ACCESS TO AND BELOW BASE OF TOWER.
- 9) FURNISH EACH COOLING TOWER WITH TOWER PLENUM ACCESS PLATFORM WITH SAFETY GATE & LADDER. EQUIPMENT SHALL MEET OSHA SAFETY STANDARDS. LADDER SHALL EXTEND 4 FEET BELOW BASE OF TOWER.
- 10) PROVIDE UNIT WITH STAINLESS STEEL COLD WATER AND HOT WATER BASIN.
- 11) PROVIDE EACH UNIT WITH MECHANICAL FLOAT FOR TOWER MAKE-UP WATER. REFER TO M100 SERIES DRAWINGS FOR LOCATIONS.
- 12) PROVIDE INLET FLOW CONTROL VALVE AT EACH TOWER INLET.
- 13) FAN MOTOR(S), IMMERSION HEATER, AND VIBRATION ISOLATION CUTOFF SHALL BE FACTORY WIRED TO TERMINAL BOX FOR FIELD CONNECTION. COORDINATE INSTALLATION LOCATION WITH FLOOR PLANS AND ELECTRICAL CONTRACTOR.
- 14) EXISTING VFDs ARE TO BE REUSED FOR CONTROL OF NEW TOWERS. CONTRACTOR SHALL FIELD VERIFY EXISTING VFDs ARE IN GOOD, WORKING CONDITION AND SUFFICIENTLY SIZED FOR NEW EQUIPMENT. NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES.

*OR PRIOR APPROVED EQUIVALENT: BAC, EVAPCO.

NOTES:

- 1) TANK TO BE ASME-RATED PRESSURE VESSEL

* OR APPROVED EQUAL: TACO COMFORT, AMTROL, PATTERSON PUMPS

NOTES:

- 1) AIR SEPARATOR SHALL BE ASME RATED

* OR APPROVED EQUAL: TACO COMFORT, PATTERSON PUMPS

NOTES:

- 1) PROVIDE CHEMICAL FEEDER WITH 50 MICRON FILTER.

* OR APPROVED EQUAL: WESSELS TANK, AMERICAN WHEATLEY.

NOTES:

- 1) PROVIDE PUMP WITH VARIABLE FREQUENCY DRIVE RATED MOTOR AND SHAFT GROUNDING RING.
- 2) PROVIDE PUMP WITH SUCTION DIFFUSER AND REMOVABLE SCREEN.

* OR PRIOR APPROVED EQUAL: TACO COMFORT, PATTERSON PUMPS.



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1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01

SITE # 7360

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DATE: _____

ISSUE DATE: 02/04/2025

CAD DWG FILE: _____

DRAWN BY: AJL

CHECKED BY: MRB

DESIGNED BY: AJL

SHEET TITLE:

MECHANICAL
SCHEMATICS

SHEET NUMBER:

M701

SHEET 20 OF 29
FEBRUARY 4, 2025

DDC POINTS LIST SUMMARY - CHILLED WATER SYSTEM																							
#	CONTROL POINTS	DDC HARD WIRED POINTS			INTEGRATION			GUI APPLICATION			ALARMING SCENARIOS		ALARM PRIORITIES										
		DIGITAL INPUTS	DIGITAL OUTPUTS	ANALOG INPUTS	ANALOG OUTPUTS	BINARY VARIABLE	ANALOG VARIABLE	MULTISTAGE VARIABLE	READ ONLY	RED / WHITE	TREND LOGGING	OPERATION SCHEDULE	SCREEN DISPLAYED	USER OVERRIDE	OUT OF RANGE	POINT STATUS	COMMAND FAILURE	CALCULATED EVENT	NOTIFICATION	MAINTENANCE	MAJOR	CRITICAL	SUPPLEMENTARY NOTES
1	CHILLED WATER SYSTEM ENABLE										X	X	X	X	X		X				X		
2	CHILLER 1 - REMOTE ENABLE	X									X	X					X						
3	CHILLER 1 - STATUS						X	X			X	X				X				X			
4	CHILLER 1 - FAULT ALARM						X				X	X				X							
5	CHILLER 1 - % UNIT LOADING						X	X			X	X											
6	CHILLER 1 - CONDENSER WATER VALVE COMMAND				X						X	X				X			X				
7	CHILLER 1 - CONDENSER WATER VALVE FEEDBACK		X								X	X											
8	CHILLER 1 - CHILLED WATER VALVE COMMAND			X							X	X					X			X			
9	CHILLER 1 - CHILLED WATER VALVE FEEDBACK		X								X	X											
10	CHILLER 1 - CONDENSER WATER DP SENSOR			X							X					X				X			
11	CHILLER 1 - CHILLED WATER DP SENSOR			X							X					X				X			
12	CHILLER 1 - CONDENSER WATER SUPPLY TEMP.			X							X					X				X			
13	CHILLER 1 - CONDENSER WATER RETURN TEMP.			X							X					X				X			
14	CHILLER 1 - CHILLED WATER SUPPLY TEMP.		X								X					X				X			
15	CHILLER 1 - CHILLED WATER RETURN TEMP.		X								X					X				X			
16	CHILLER 2 - REMOTE ENABLE	X									X	X				X				X			
17	CHILLER 2 - STATUS						X	X			X	X				X				X			
18	CHILLER 2 - FAULT ALARM						X	X			X	X				X				X			
19	CHILLER 2 - % UNIT LOADING						X	X			X	X											
20	CHILLER 2 - CONDENSER WATER VALVE COMMAND			X							X	X				X				X			
21	CHILLER 2 - CONDENSER WATER VALVE FEEDBACK		X								X	X											
22	CHILLER 2 - CHILLED WATER VALVE COMMAND			X							X	X				X				X			
23	CHILLER 2 - CHILLED WATER VALVE FEEDBACK		X								X	X											
24	CHILLER 2 - CONDENSER WATER DP SENSOR			X							X					X				X			
25	CHILLER 2 - CHILLED WATER DP SENSOR			X							X					X				X			
26	CHILLER 2 - CONDENSER WATER SUPPLY TEMP.			X							X					X				X			
27	CHILLER 2 - CONDENSER WATER RETURN TEMP.			X							X					X				X			
28	CHILLER 2 - CHILLED WATER SUPPLY TEMP.			X							X					X				X			
29	CHILLER 2 - CHILLED WATER RETURN TEMP.			X							X					X				X			
30	CHILLER 3 - REMOTE ENABLE	X									X	X				X				X			
31	CHILLER 3 - STATUS						X	X			X	X				X				X			
32	CHILLER 3 - FAULT ALARM						X	X			X	X				X				X			
33	CHILLER 3 - % UNIT LOADING						X	X			X	X											
34	CHILLER 3 - CONDENSER WATER VALVE COMMAND			X							X	X				X							
35	CHILLER 3 - CONDENSER WATER VALVE FEEDBACK		X								X	X											
36	CHILLER 3 - CHILLED WATER VALVE COMMAND			X							X	X				X				X			
37	CHILLER 3 - CHILLED WATER VALVE FEEDBACK			X							X	X											
38	CHILLER 3 - CONDENSER WATER DP SENSOR			X							X					X				X			
39	CHILLER 3 - CHILLED WATER DP SENSOR			X							X					X				X			
40	CHILLER 3 - CONDENSER WATER SUPPLY TEMP.			X							X					X				X			
41	CHILLER 3 - CONDENSER WATER RETURN TEMP.			X							X					X				X			
42	CHILLER 3 - CHILLED WATER SUPPLY TEMP.			X							X					X				X			
43	CHILLER 3 - CHILLED WATER RETURN TEMP.			X							X					X				X			
44	PCHP-1 PUMP START/STOP		X								X	X	X	X									
45	PCHP-1 PUMP RUN STATUS		X								X	X	X	X		X				X			
46	PCHP-1 PUMP SPEED COMMAND				X						X	X											
47	PCHP-1 PUMP FAULT		X								X	X				X				X			
48	PCHP-2 PUMP START/STOP		X								X	X	X	X									
49	PCHP-2 PUMP RUN STATUS										X	X	X	X		X							
50	PCHP-2 PUMP SPEED COMMAND				X						X	X											
51	PCHP-2 PUMP FAULT		X								X	X	X	X		X				X			
52	PCHP-3 PUMP START/STOP		X								X	X	X	X	X								
53	PCHP-3 PUMP RUN STATUS		X								X	X	X	X		X				X			
54	PCHP-3 PUMP SPEED COMMAND				X						X	X											
55	PCHP-3 PUMP FAULT		X								X	X	X	X		X				X			
56	SCHP-2 PUMP START/STOP			X							X	X	X	X	X								
57	SCHP-1 PUMP RUN STATUS		X								X	X	X	X		X				X			
58	SCHP-1 PUMP SPEED COMMAND				X						X	X											
59	SCHP-1 PUMP FAULT		X								X	X	X	X		X				X			
60	SCHP-2 PUMP START/STOP			X							X	X	X	X	X								
61	SCHP-2 PUMP RUN STATUS		X								X	X	X	X		X				X			
62	SCHP-2 PUMP SPEED COMMAND				X						X	X											
63	SCHP-2 PUMP FAULT			X							X	X	X	X		X				X			
64	COOLING TOWER 1 VALVE COMMAND		X								X	X	X	X		X				X			
65	COOLING TOWER 1 VALVE FEEDBACK				X						X												
66	COOLING TOWER 1 BASIN LEVEL				X						X	X	X	X		X							
67	COOLING TOWER 1 FAN START/STOP			X							X	X	X	X	X								
68	COOLING TOWER 1 RUN STATUS		X								X	X	X	X		X				X			
69	COOLING TOWER 1 SPEED COMMAND				X						X	X											
70	COOLING TOWER 1 PUMP FAULT		X								X	X	X	X		X				X			
71	COOLING TOWER 2 VALVE COMMAND				X						X	X	X	X		X				X			
72	COOLING TOWER 2 VALVE FEEDBACK				X						X												
73	COOLING TOWER 2 BASIN LEVEL				X						X	X	X	X		X							
74	COOLING TOWER 2 FAN START/STOP			X							X	X	X	X	X								
75	COOLING TOWER 2 RUN STATUS		X								X	X	X	X		X				X			
76	COOLING TOWER 2 SPEED COMMAND				X						X	X											
77	COOLING TOWER 2 PUMP FAULT		X								X	X	X	X		X				X			
78	COOLING TOWER 3 VALVE COMMAND				X						X	X	X	X		X							
79	COOLING TOWER 3 VALVE FEEDBACK				X						X												
80	COOLING TOWER 3 BASIN LEVEL				X						X	X	X	X		X				X			
81	COOLING TOWER 3 FAN START/STOP			X							X	X	X	X	X								
82	COOLING TOWER 3 RUN STATUS		X								X	X	X	X		X				X			
83	COOLING TOWER 3 SPEED COMMAND				X						X	X	X	X		X							
84	COOLING TOWER 3 PUMP FAULT		X								X	X	X	X	X	X				X			
85	CWP-1 PUMP START/STOP			X							X	X	X	X	X								
86	CWP-1 PUMP RUN STATUS		X								X	X	X	X		X				X			
87	CWP-1 PUMP SPEED COMMAND				X						X	X											
88	CWP-1 PUMP FAULT		X								X	X	X	X		X				X			
89	CWP-2 P																						

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:

CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

REVISION: _____
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DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 02/04/2025

CAD DWG FILE: _____
DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:

MECHANICAL
SCHEMATICS

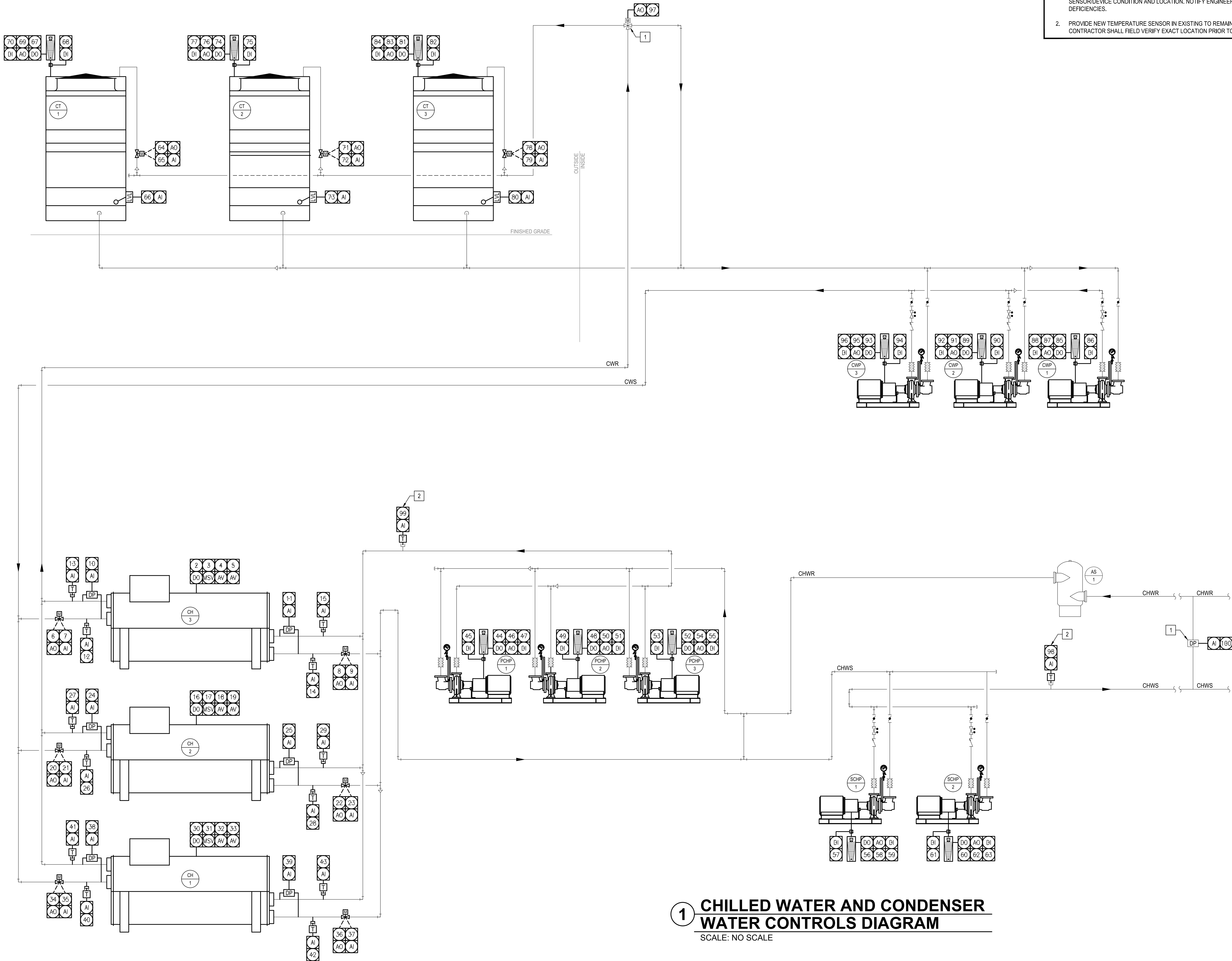
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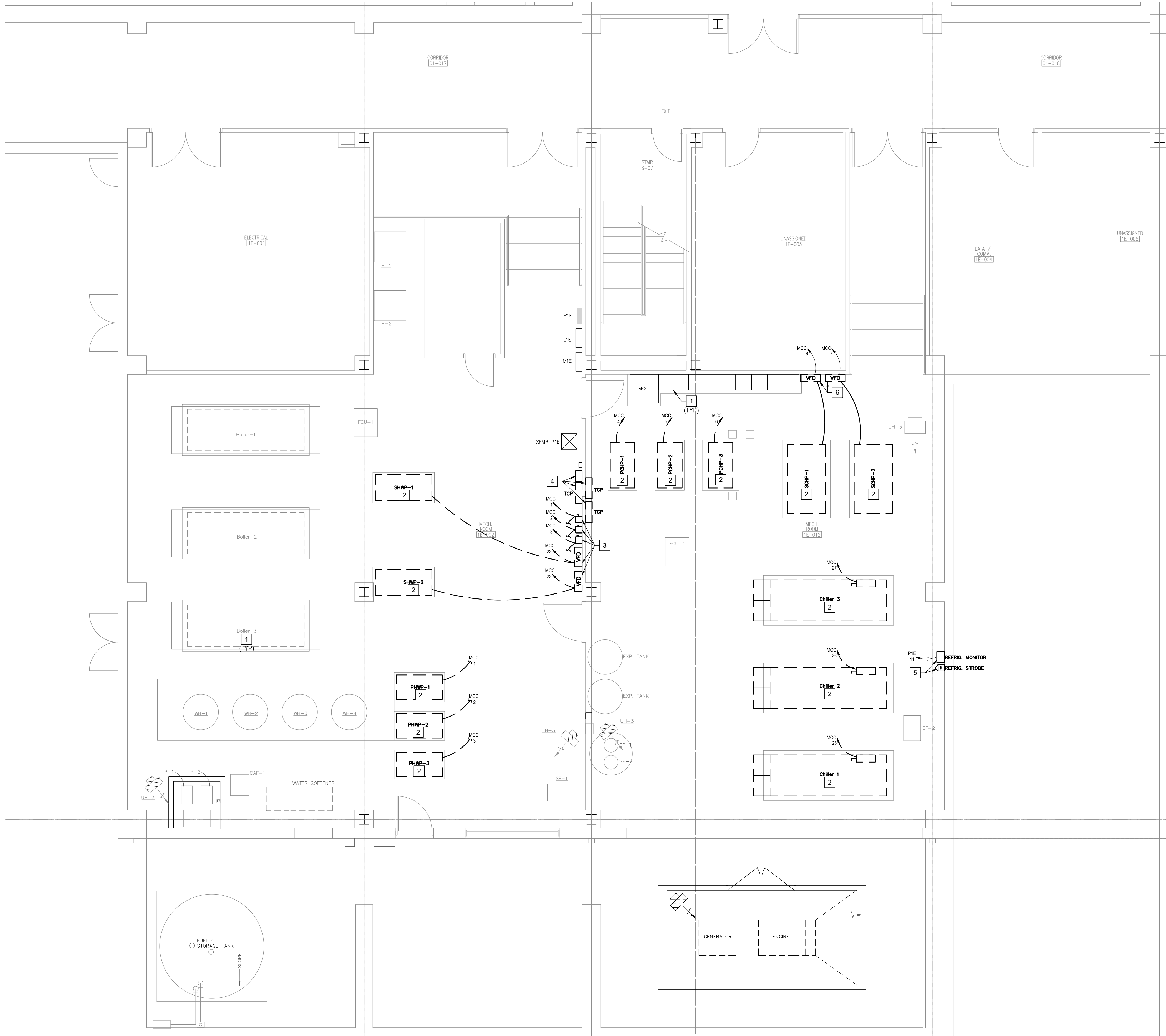
M702

SHEET 21 OF 29
FEBRUARY 4, 2025

KEYED NOTES:

- EXISTING SENSOR/DEVICE TO REMAIN. CONTROLS CONTRACTOR SHALL VERIFY SENSOR/DEVICE CONDITION AND LOCATION. NOTIFY ENGINEER OF ANY DEFICIENCIES.
- PROVIDE NEW TEMPERATURE SENSOR IN EXISTING TO REMAIN THERMOWELL. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION PRIOR TO INSTALLATION.





1 LEVEL 1 ELECTRICAL POWER PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"

KEYED NOTES:

- 1. EXISTING EQUIPMENT SHALL REMAIN.
- 2. MECHANICAL EQUIPMENT TO BE REMOVED BY OTHERS. MAKE SAFE AND REMOVE ASSOCIATED FEEDERS AND CONDUIT BACK TO SOURCE OR NEAREST LOCATION SHOWN TO REMAIN.
- 3. ELECTRICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY INCLUDING ASSOCIATED FEEDERS AND CONDUIT BACK TO SOURCE.
- 4. CONTROLS EQUIPMENT TO BE REMOVED AND RETAINED BY OTHERS.
- 5. REMOVE EXISTING REFRIGERANT MONITOR AND ASSOCIATED NOTIFICATION DEVICE IN THEIR ENTIRETY. CIRCUIT TO BE RETAINED FOR REUSE UNDER NEW WORK. ALL OTHER WIRING, CONDUIT, DEVICES, ETC. TO BE REMOVED.
- 6. ELECTRICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY. ASSOCIATED FEEDERS AND CONDUIT BACK TO SOURCE ARE TO REMAIN FOR REUSE UNDER NEW WORK.

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1000 EAST 24TH ST
KANSAS CITY, MISSOURI

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SITE # 7360
FACILITY # 6517360003

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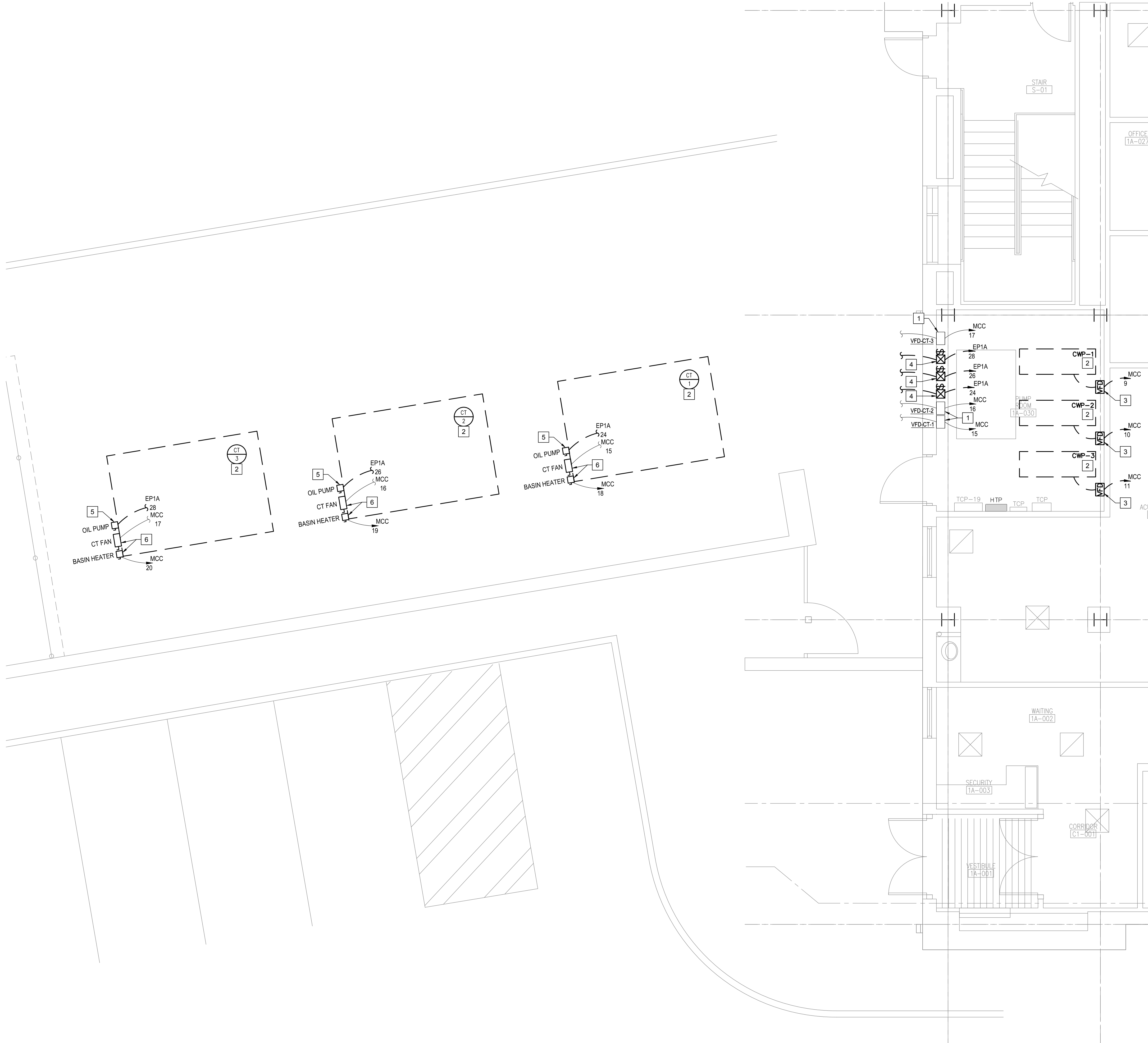
SHEET TITLE:

**LEVEL 1
ELECTRICAL POWER
DEMOLITION**

SHEET NUMBER:

ED110A

SHEET 22 OF 29
FEBRUARY 4, 2025



1 LEVEL 1 ELECTRICAL POWER PLAN - DEMOLITION
SCALE: 1/4" = 1'-0" 

- KEYED NOTES:** ##
- EXISTING EQUIPMENT SHALL REMAIN.
 - MECHANICAL EQUIPMENT TO BE REMOVED BY OTHERS. MAKE SAFE AND REMOVE ASSOCIATED FEEDERS AND CONDUIT BACK TO SOURCE OR NEAREST LOCATION INDICATED TO REMAIN IN ITS ENTIRETY.
 - ELECTRICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY INCLUDING ASSOCIATED FEEDERS AND CONDUIT BACK TO SOURCE OR NEAREST LOCATION INDICATED TO REMAIN.
 - ELECTRICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY INCLUDING ASSOCIATED FEEDERS BACK TO SOURCE. CONDUIT SHALL BE REMOVED FROM WITHIN PUMP ROOM AND ABANDONED OUTSIDE OF PUMP ROOM.
 - ELECTRICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY INCLUDING ASSOCIATED FEEDERS BACK TO SOURCE. BELOW GRADE CONDUIT SHALL REMAIN FOR REUSE UNDER NEW WORK.
 - ELECTRICAL EQUIPMENT TO BE REMOVED IN ITS ENTIRETY. EXISTING FEEDERS AND CONDUIT ARE EXISTING FOR REUSE UNDER NEW WORK, REFER TO NEW WORK PLANS FOR ADDITIONAL INFORMATION.

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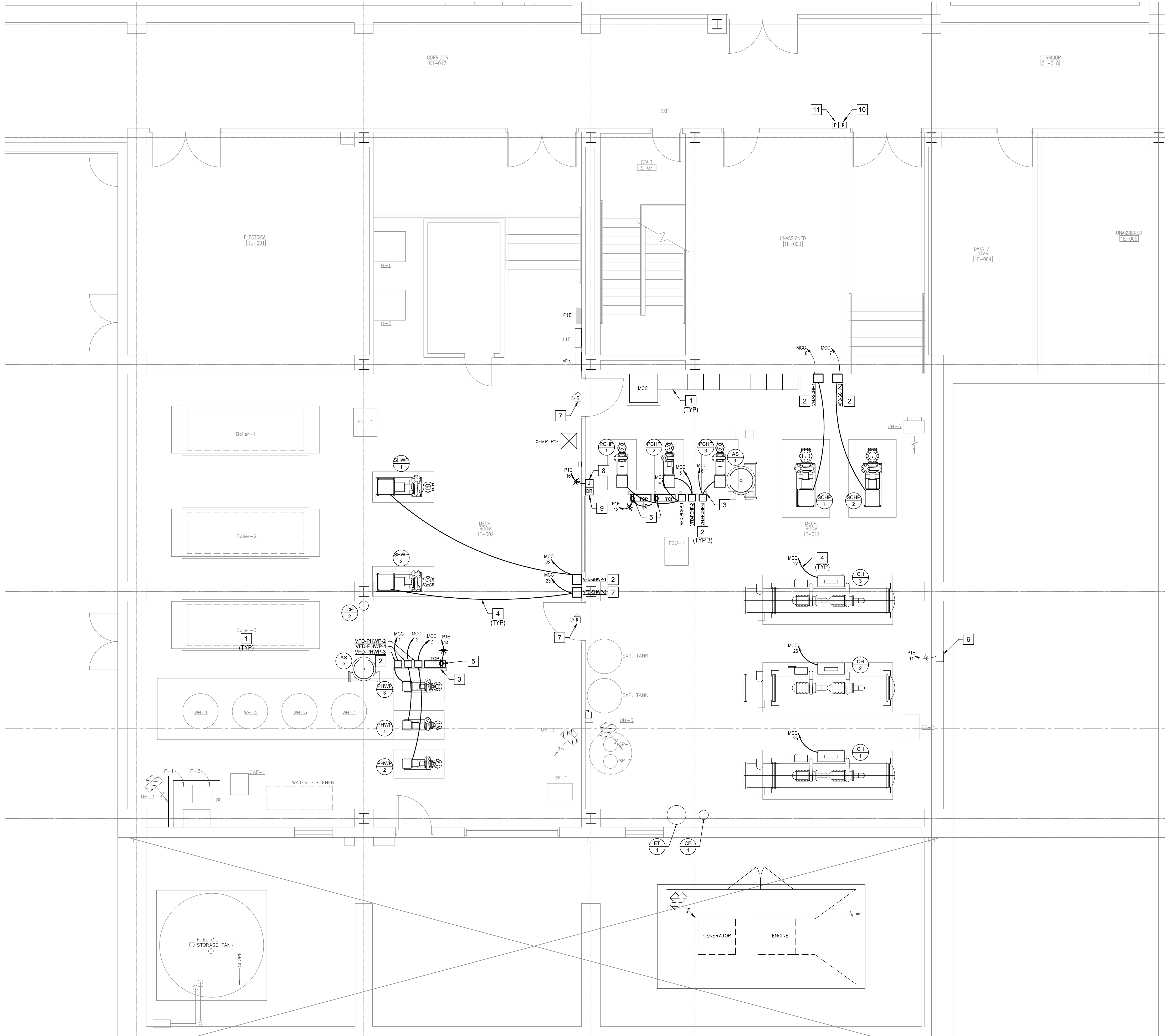
SHEET TITLE:

**LEVEL 1
ELECTRICAL POWER
DEMOLITION**

SHEET NUMBER:

ED110B

SHEET 23 OF 29
FEBRUARY 4, 2025



1 LEVEL 1 ELECTRICAL POWER PLAN - NEW WORK
SCALE: 1/4" = 1'-0"

KEYED NOTES:

- EXISTING EQUIPMENT SHALL REMAIN.
- PROVIDE VFD ON UNISTRUT IN APPROXIMATE LOCATION INDICATED. COORDINATE FINAL VFD SELECTION WITH APPROVED PUMP SHOP DRAWINGS. PROVIDE ALL WIRING, CONDUIT, ETC., FROM SOURCE AND TO EQUIPMENT AS REQUIRED FOR A COMPLETE INSTALLATION.
- PROVIDE NEW UNISTRUT RACK IN APPROXIMATE LOCATION INDICATED. RACK SHALL BE SUFFICIENTLY SIZED FOR ALL EQUIPMENT SHOWN TO BE MOUNTED. FIELD VERIFY EXACT DIMENSIONS. REFER TO DETAIL ON SHEET E501 FOR ADDITIONAL INFORMATION.
- PROVIDE FEEDERS AND CONDUIT FROM EQUIPMENT TO PANELBOARD AS INDICATED. REFER TO PANELBOARD SCHEDULES ON SERIES E800 AND ONE-LINE DIAGRAM ON SERIES E700 FOR ADDITIONAL INFORMATION.
- PROVIDE RECEPTACLE FOR RELOCATED TEMPERATURE CONTROL PANEL ON UNISTRUT RACK IN APPROXIMATE LOCATION INDICATED. COORDINATE EXACT LOCATION WITH TEMPERATURE CONTROL CONTRACTOR.
- RECONNECT EXISTING WIRING/CONDUIT TO NEW REFRIGERANT MONITOR (BY MECHANICAL CONTRACTOR) IN APPROXIMATE LOCATION INDICATED. COORDINATE FINAL LOCATION WITH MECHANICAL CONTRACTOR.
- PROVIDE WIRING/CONDUIT FROM REFRIGERANT MONITOR (BY MECHANICAL CONTRACTOR) TO REFRIGERANT MONITOR NOTIFICATION DEVICE (BY MECHANICAL CONTRACTOR) IN APPROXIMATE LOCATION INDICATED. COORDINATE FINAL LOCATION WITH MECHANICAL CONTRACTOR.
- PROVIDE JUNCTION BOX IN LOCATION INDICATED TO SERVE FIRE DOOR RELEASE DEVICE. PROVIDE WIRING/CONDUIT AS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE INSTALLATION WITH FIRE ALARM CONTRACTOR AND OVERHEAD DOOR INSTALLER.
- FIRE ALARM CONTRACTOR SHALL CONNECT FIRE DOOR RELEASE DEVICE TO FIRE ALARM SYSTEM. PROVIDE ALL WIRING, CONDUIT, PROGRAMMING, ETC. AS REQUIRED FOR A COMPLETE SYSTEM. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR AND OVERHEAD DOOR INSTALLER.
- PROVIDE WIRING/CONDUIT FROM REFRIGERANT MONITOR TO REMOTE MONITOR PANEL IN LOCATION INDICATED. COORDINATE INSTALLATION WITH ALL OTHER TRADES.
- PROVIDE WIRING/CONDUIT FROM PULL STATION AND REMOTE ACKNOWLEDGE BUTTON ADJACENT TO DOOR AND CONNECT TO REFRIGERANT MONITOR. COORDINATE INSTALLATION WITH ALL OTHER TRADES.

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DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

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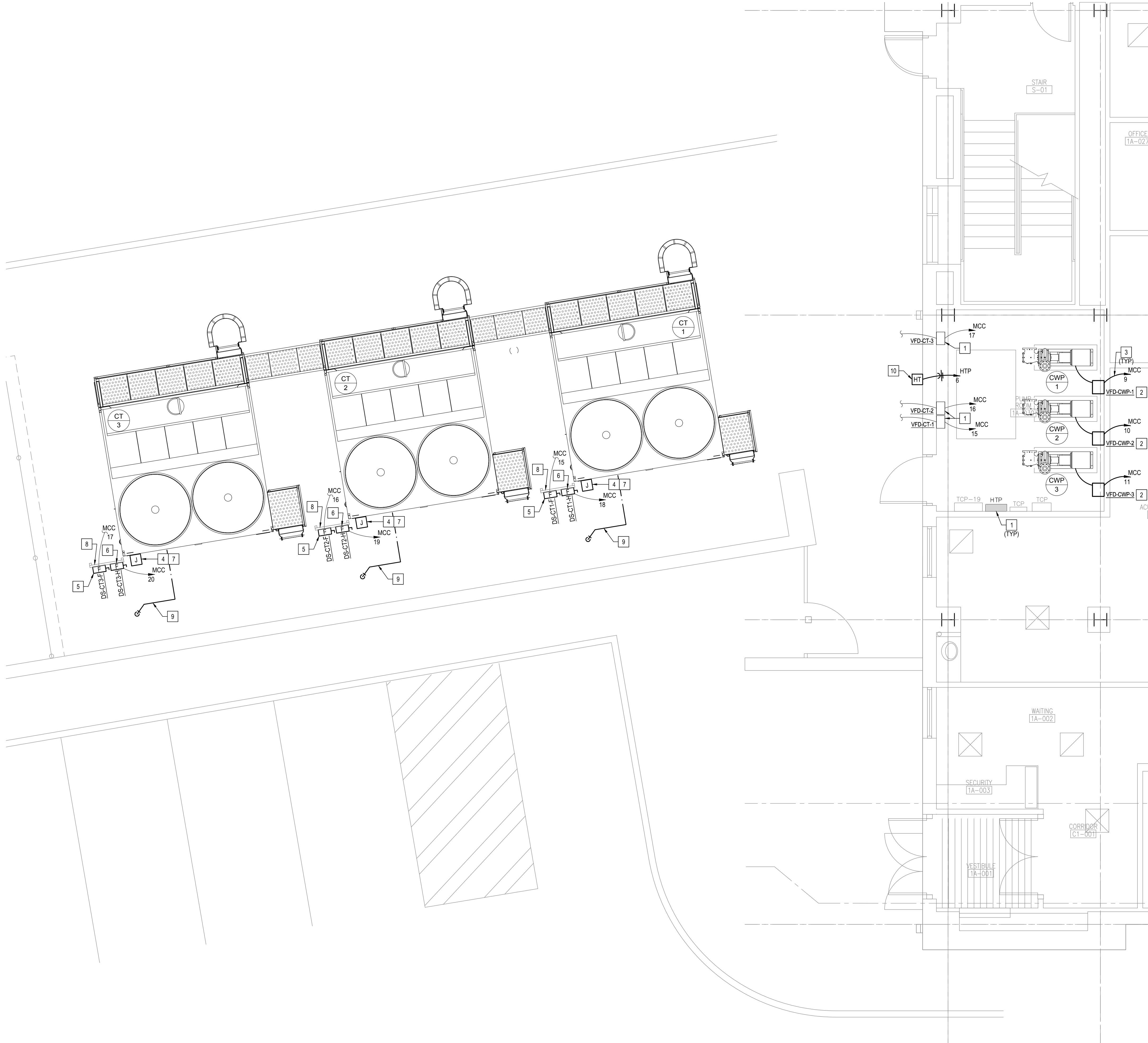
SHEET TITLE:

**LEVEL 1
ELECTRICAL POWER
NEW WORK**

SHEET NUMBER:

E110A

SHEET 24 OF 29
FEBRUARY 4, 2025



1 LEVEL 1 ELECTRICAL POWER PLAN - NEW WORK
SCALE: 1/4" = 1'-0"



- KEYED NOTES:** ##
- EXISTING EQUIPMENT SHALL REMAIN.
 - PROVIDE VFD ON WALL IN APPROXIMATE LOCATION INDICATED. COORDINATE FINAL VFD SELECTION WITH APPROVED SHOP DRAWINGS. PROVIDE ALL WIRING, CONDUIT, ETC. FROM SOURCE AND TO EQUIPMENT AS REQUIRED FOR A COMPLETE INSTALLATION.
 - PROVIDE FEEDERS AND CONDUIT FROM EQUIPMENT TO PANELBOARD AS INDICATED. REFER TO PANELBOARD SCHEDULES ON SERIES E800 AND ONE-LINE DIAGRAM ON SERIES E700 FOR ADDITIONAL INFORMATION.
 - TERMINAL BOX FURNISHED AND INSTALLED BY COOLING TOWER MANUFACTURER. ELECTRICAL CONTRACTOR SHALL PROVIDE FEEDERS FROM TERMINAL BOX TO DISCONNECTS INDICATED. PROVIDE WIRING, CONDUIT, ETC. AS REQUIRED.
 - PROVIDE HEAVY DUTY, NEMA 3R, 480V/100A FUSED DISCONNECT SWITCH MOUNTED TO UNISTRUT IN LOCATION INDICATED. PROVIDE WITH 70A FUSES. RECONNECT NEW DISCONNECT SWITCH TO EXISTING TO REMAIN FEEDERS SERVING EQUIPMENT REMOVED. NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES. DISCONNECT SWITCH SHALL BE PROVIDED WITH AUXILIARY CONTACTS AND WIRED SUCH THAT TURNING OFF THE DISCONNECT WILL DISABLE THE ASSOCIATED VFD. PROVIDE ALL WIRING, CONDUIT, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. REFER TO SCHEDULE ON SHEET E801 FOR ADDITIONAL INFORMATION. PROVIDE NEW CONDUIT FROM COOLING TOWER(S) FOR CONTROLS WIRES PROVIDED WITH NEW TOWER(S). CONDUIT SHALL BE ROUTED MIN. 8" ABOVE GRADE AND ACCESS PLATFORM. CONDUIT SHALL NOT HINDER ACCESS TO COOLING TOWER COMPONENTS.
 - PROVIDE HEAVY DUTY, NEMA 3R, 480V/30A FUSED DISCONNECT SWITCH MOUNTED TO UNISTRUT RACK IN LOCATION INDICATED. PROVIDE WITH 20A FUSES. REFER TO SCHEDULE ON SHEET E801 FOR ADDITIONAL INFORMATION. PROVIDE ALL WIRING, CONDUIT, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. RECONNECT NEW DISCONNECT SWITCH TO EXISTING TO REMAIN FEEDERS SERVING EQUIPMENT REMOVED. NOTIFY ENGINEER IMMEDIATELY OF ANY DEFICIENCIES.
 - PROVIDE CONDUIT/WIRING FROM COOLING TOWER VIBRATION CUTOUT TO VFD FOR HARDWIRED SHUTDOWN OF COOLING TOWER. PROVIDE ALL WIRING, CONDUIT, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION.
 - PROVIDE NEW UNISTRUT RACK IN APPROXIMATE LOCATION INDICATED. RACK SHALL BE SUFFICIENTLY SIZED FOR ALL EQUIPMENT SHOWN TO BE MOUNTED. FIELD VERIFY EXACT DIMENSIONS. REFER TO DETAIL ON SHEET E501 FOR ADDITIONAL INFORMATION.
 - PROVIDE WIRING/CONDUIT FROM HEAT TRACE SYSTEM SERVING ABOVE GRADE WATER PIPING FROM LOCATION INDICATED TO HEAT TRACE CONTROLLER. PROVIDE ALL WIRING/CONDUIT AS REQUIRED FOR A COMPLETE SYSTEM.
 - INSTALL HEAT TRACE CONTROLLER FURNISHED BY MECHANICAL CONTRACTOR IN APPROXIMATE LOCATION INDICATED. COORDINATE FINAL INSTALLATION LOCATION WITH MECHANICAL CONTRACTOR. PROVIDE ALL WIRING/CONDUIT AS REQUIRED FOR A COMPLETE SYSTEM.

STATE OF MISSOURI
MIKE KEHOE,
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
MENTAL HEALTH

PROJECT TITLE:
CHILLER SYSTEM UPGRADE

CENTER FOR BEHAVIORAL
MEDICINE BUILDING

1000 EAST 24TH ST
KANSAS CITY, MISSOURI

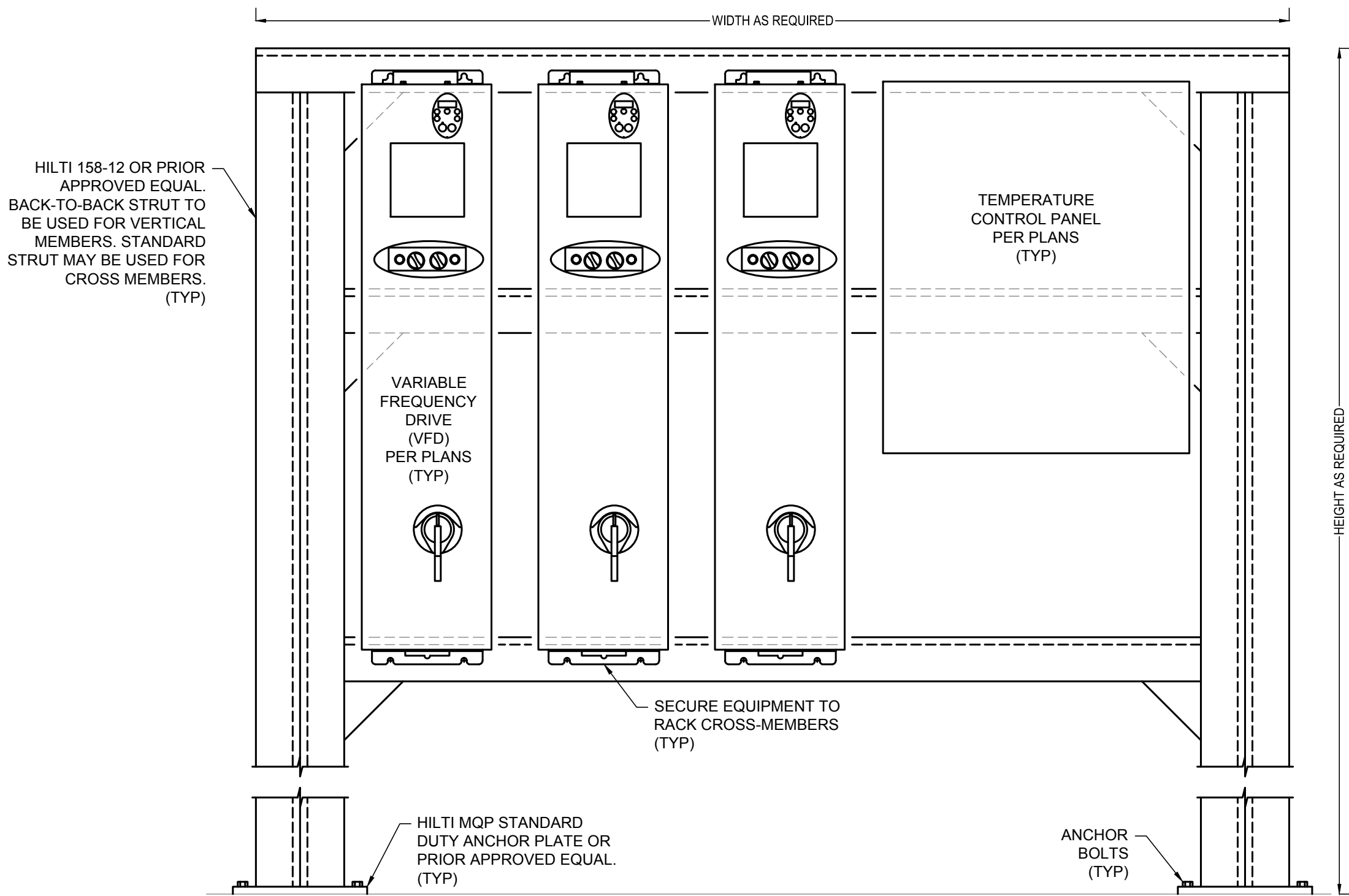
PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

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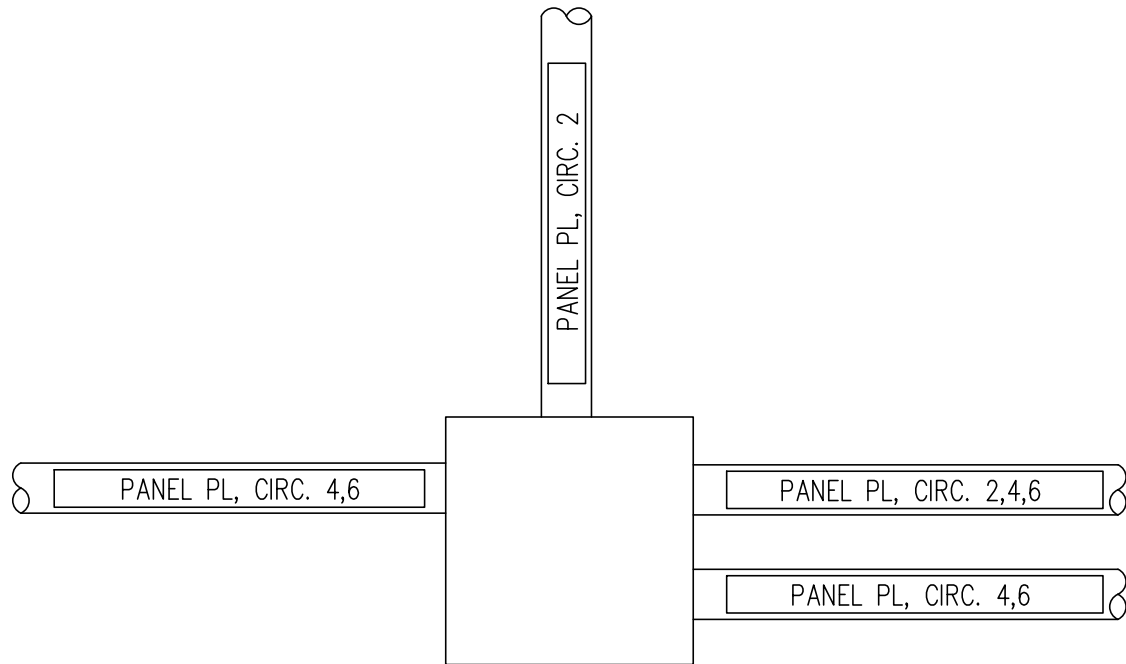
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DESIGNED BY: AJL

SHEET TITLE:
**LEVEL 1
ELECTRICAL POWER
NEW WORK**

SHEET NUMBER:
E110B
SHEET 25 OF 29
FEBRUARY 4, 2025



3 UNISTRUT RACK DETAIL
SCALE: NO SCALE



PROVIDE CONDUIT LABELING AT ALL LOCATIONS WHERE CONDUITS ENTER OR LEAVE, JUNCTION BOXES, PULL BOXES, PANELBOARDS, DISCONNECTS, SWITCHES, WALLS, FLOORS, LIGHT FIXTURES, MECHANICAL EQUIPMENT, ETC., AND AT MAXIMUM 30' INTERVALS IN BETWEEN BOXES AND DEVICES. PROVIDE PANELBOARD NAME AND CIRCUIT NUMBERS CONTAINED WITHIN CONDUIT. LABELS SHALL BE WHITE WITH BLACK LETTERING, AND SHALL BE VISIBLE FROM FLOOR WHERE POSSIBLE.

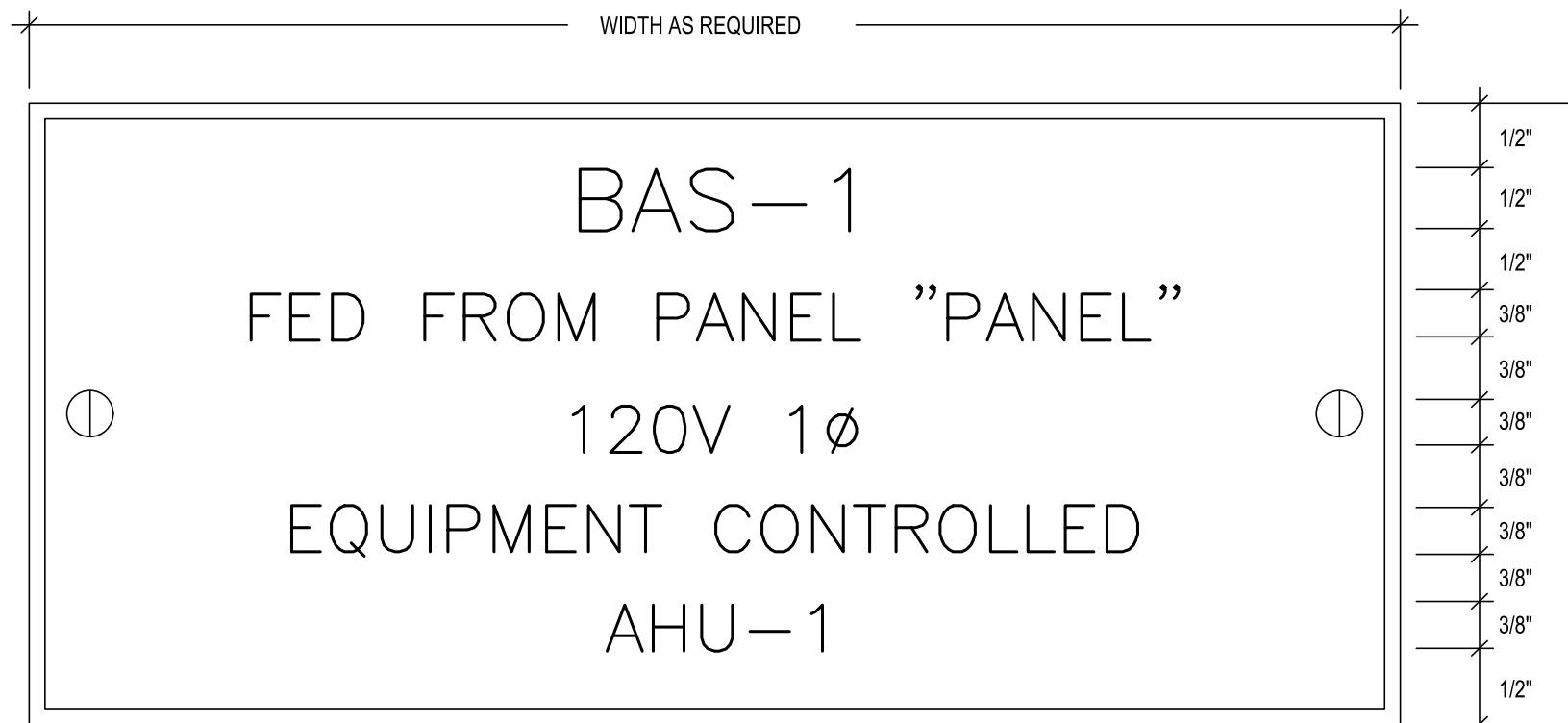
2 TYPICAL CONDUIT LABELING DETAIL
SCALE: NO SCALE



DETAIL NOTES

- 1) SEE SPECIFICATIONS FOR ADDITIONAL NAMEPLATE INFORMATION.
- 2) REWORD NAMEPLATE FOR FIELD CONDITIONS.
- 3) PROVIDE SIMILAR NAMEPLATE ON ALL MECHANICAL, PLUMBING, ELECTRICAL, ETC. EQUIPMENT. ALL POWERED EQUIPMENT SHALL BE LABELED.
- 4) LABELS SHALL BE MECHANICALLY ATTACHED. ADHESIVE ATTACHMENT IS NOT ACCEPTABLE.

1 TYP. EQUIPMENT NAMEPLATE DETAIL
SCALE: NO SCALE



DETAIL NOTES

- 1) PROVIDE WHITE PLACARD WITH BLACK TEXT.
- 2) REWORD NAMEPLATE FOR FIELD CONDITIONS.
- 3) PROVIDE SIMILAR NAMEPLATE ON ALL BAS PANELS.

4 TYP. BAS PANEL NAMEPLATE DETAIL
SCALE: NO SCALE

STATE OF MISSOURI
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1000 EAST 24TH ST
KANSAS CITY, MISSOURI

PROJECT # M2430-01
SITE # 7360
FACILITY # 6517360003

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DRAWN BY: AJL
CHECKED BY: MRB
DESIGNED BY: AJL

SHEET TITLE:

ELECTRICAL
DETAILS

SHEET NUMBER:

E501

SHEET 26 OF 29
FEBRUARY 4, 2025



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SHEET TITLE:

ELECTRICAL
SCHEDULES

SHEET NUMBER:

E601

SHEET 27 OF 29
FEBRUARY 4, 2025

VFD SCHEDULE:

TAG NO	MANUFACTURER	MODEL	LOAD					DRIVE ENCLOSURE	NOTES
			SERVES	HP	VOLTS	PHASE	HZ		
VFD-CWP-1	SCHNEIDER	SFD212	CWP-1	30	480	3	60	NEMA 1	1-5
VFD-CWP-2	SCHNEIDER	SFD212	CWP-2	30	480	3	60	NEMA 1	1-5
VFD-CWP-3	SCHNEIDER	SFD212	CWP-3	30	480	3	60	NEMA 1	1-5
VFD-PCHP-1	SCHNEIDER	SFD212	PCHP-1	10	480	3	60	NEMA 1	1-5
VFD-PCHP-2	SCHNEIDER	SFD212	PCHP-2	10	480	3	60	NEMA 1	1-5
VFD-PCHP-3	SCHNEIDER	SFD212	PCHP-3	10	480	3	60	NEMA 1	1-5
VFD-SCHP-1	SCHNEIDER	SFD212	SCHP-1	50	480	3	60	NEMA 1	1-5
VFD-SCHP-2	SCHNEIDER	SFD212	SCHP-2	50	480	3	60	NEMA 1	1-5
VFD-PHWP-1	SCHNEIDER	SFD212	PHWP-1	7.5	480	3	60	NEMA 1	1-5
VFD-PHWP-2	SCHNEIDER	SFD212	PHWP-2	7.5	480	3	60	NEMA 1	1-5
VFD-PHWP-3	SCHNEIDER	SFD212	PHWP-3	7.5	480	3	60	NEMA 1	1-5
VFD-SHWP-1	SCHNEIDER	SFD212	SHWP-1	40	480	3	60	NEMA 1	1-5
VFD-SHWP-2	SCHNEIDER	SFD212	SHWP-2	40	480	3	60	NEMA 1	1-5
VFD-CT-1 (EXIST.)	SCHNEIDER	SFD212	CT-1	25	480	3	60	NEMA 1	6
VFD-CT-2 (EXIST.)	SCHNEIDER	SFD212	CT-2	25	480	3	60	NEMA 1	6
VFD-CT-3 (EXIST.)	SCHNEIDER	SFD212	CT-3	25	480	3	60	NEMA 1	6

- NOTES:
- VFD TO BE PROVIDED BY DIVISION 26 AND INSTALLED BY DIVISION 26.
 - PROVIDE WITH LOCAL CIRCUIT BREAKER DISCONNECT.
 - PROVIDE WITH CONTROLS INTERFACE BOARD FOR SINGLE TERMINATION BY CONTROLS CONTRACTOR FOR START/STOP, PROOF, SPEED OUTPUT, AND SPEED INPUT. COORDINATE WITH CONTROLS CONTRACTOR.
 - VFD TO HAVE FACTORY STARTUP.
 - VFD TO HAVE BYPASS.
 - EQUIPMENT IS EXISTING TO REMAIN. SHOWN FOR REFERENCE ONLY.

DISCONNECT SWITCH SCHEDULE:

TAG NO	LOAD		SWITCH			FUSE		ACCESSORIES	ENCLOSURE	NOTES
	EQUIPMENT SERVED	VOLTS	DUTY	AMP	POLE	AMP	TYPE			
DS-CT1-F	COOLING TOWER 1 FAN	480	HD	100	3	70	FRS-R	AUX. CONTACTS	NEMA 3R	1-2
DS-CT1-H	COOLING TOWER 1 HEATER	480	HD	30	3	20	FRS-R	-	NEMA 3R	1-2
DS-CT2-F	COOLING TOWER 2 FAN	480	HD	100	3	70	FRS-R	AUX. CONTACTS	NEMA 3R	1-2
DS-CT2-H	COOLING TOWER 2 HEATER	480	HD	30	3	20	FRS-R	-	NEMA 3R	1-2
DS-CT3-F	COOLING TOWER 3 FAN	480	HD	100	3	70	FRS-R	AUX. CONTACTS	NEMA 3R	1-2
DS-CT3-H	COOLING TOWER 3 HEATER	480	HD	30	3	20	FRS-R	-	NEMA 3R	1-2

- NOTES:
- PROVIDE WITH GROUND LUG KIT.
 - APPROVED EQUIVALENT MANUFACTURERS: SQUARE D, SIEMENS, EATON, ABB (GE).
- ABBREVIATIONS:
GD - GENERAL DUTY
HD - HEAVY DUTY

PANELBOARD SCHEDULE: P1E (EXISTING)

PANELBOARD TYPE										FEEDER ENTRANCE:			PANEL LOCATION:		
120/208	VOLTAGE	3	PHASE	4	WIRE	<input checked="" type="checkbox"/> X	125	MAIN BREAKER	<input type="checkbox"/> MAIN LUGS	<input checked="" type="checkbox"/> X	TOP	MECHANICAL ROOM 1E-002			
125	AMP MAIN BUS								<input type="checkbox"/> SUB-FEED LUGS	<input type="checkbox"/> BOTTOM		FEEDER CABLE:			
1	NEMA ENCLOSURE	<input type="checkbox"/>	200% RATED NEUTRAL						<input type="checkbox"/> SUB-FEED BREAKER	MOUNT:	<input type="checkbox"/> X	SURFACE	EXISTING		
22,000	RMS SYMMETRICAL AMPS @		120	VOLTS					<input type="checkbox"/> SOLID NEUTRAL	<input type="checkbox"/> FLUSH			SOURCE:		
1/31/25	DATE	<input type="checkbox"/>	COPPER BUSSING										PANELBOARD L1E		
POLE #	SERVICE	VA LOAD			LOAD TYPE	C.B.		C.B.		LOAD TYPE	VA LOAD			SERVICE	POLE #
		A	B	C		TRIP	POLE	TRIP	POLE		A	B	C		
1	CORRIDOR RECEPTS	1080			R	20	1	20	1	M	1920		WATER HEATER 182	2	
3	UH-2		150		M	20	1	20	1	M		1920	WATER HEATER 384	4	
5	RECIRC. PUMP 1			1656	M	20	1	20	1	M		1920	WATER HEATER 586	6	
7	RECIRC. PUMP 2	1176			M	25	1	EX.	1				EXISTING	8	
9	RECIRC. PUMP 3		1176		M	20	1	20	1	M		600	WATER SOFTENER	10	
11	REFRIGERANT MONITORING			150	M	20	1	20***	1	R		1000	TEMP. CONTROL PANEL	12	
13	UH-3	150			M	20	1	20***	1	R	500		TEMP. CONTROL PANEL	14	
15	PUMP "P-1"		1920		M	20	1	20***	1	MI		500	FIRE DOOR RELEASE	16	
17	PUMP "P-2"			1920	M	20	1	20	1	M		1000	HEATWHEEL AHU-3	18	
19					H			30	2	MI	2496		COMMERCIAL EXTRACTOR	20	
21	COMMERCIAL DRYER		1660		H	15	3			MI		2496		22	
23				1660	H			20	1	R		1440	STORAGE RECEPTS	24	
25	SOUTH ELEVATOR LTS (R)	800			L	20	1	20	1	R	1440		STORAGE RECEPTS	26	
27	HEATWHEEL AHU-2		1000		M	20	1						EXISTING	28	
29	SOUTH ELEVATOR LTS (L)			800	L	20	1	EX.	2					30	
		4866	5906	6186							6356	5516	5360		
CONNECTED VA/PH (LESS FEED THRU & SUB FEED)					A -	11222		B -	11422		C -	11546			
CONNECTED VA/PH FROM FEED THRU AND SUB FEED					A -			B -			C -				
TOTAL CONNECTED VA/PH					A -	11222		B -	11422		C -	11546			
LOAD TYPE	CODE DEMAND REQUIREMENTS					CONNECTED VA			DEMAND VA	MIN. CODE VA (1.25 x CONT.) (NEC 210.19 & 215.2)					
						THIS PANEL	SUB PNLS	TOTAL							
LIGHTING (NEC 220.42)	100%					1600		1600	1600				2000		
RECEPTACLES (NEC 220.44)	1st 10,000VA + 1/2 x REMAINING					5460		5460	5460				5460		
LARGEST MOTOR (NEC 430.24)	1.25 x LARGEST FLA					0		0	0				0		
REMAINING MOTORS (NEC 430.24)	100% REMAINING MOTORS					16658		16658	16658				16658		
HEATING (NEC 220.51)	100%					4980		4980	4980				6225		
KITCHEN EQUIPMENT (NEC 220.56)	VARIES (SEE CODE SECTION)					0		0	0				0		
WATER HEATER (NEC 210.19 & 215.2)	100%					0		0	0				0		
MISC. (NEC 210.19 & 215.2)	100%					5492		5492	5492				5492		
SPARE	0 x CODE MIN.VA												0		
TOTAL LOADS						34190	0	34190	34190				35835		
SIZING LOAD						99 AMPS									

- NOTES:
- * PANEL SHALL HAVE LOCKABLE HINGED DOOR.
 - ** CIRCUIT BREAKERS USED FOR PROTECTION OF HVAC EQUIPMENT SHALL BE HACR TYPE BREAKERS.
 - *** PROVIDE NEW CIRCUIT BREAKER OF SAME TYPE AND KAIC RATING OF OTHER BREAKERS WITHIN PANELBOARD.

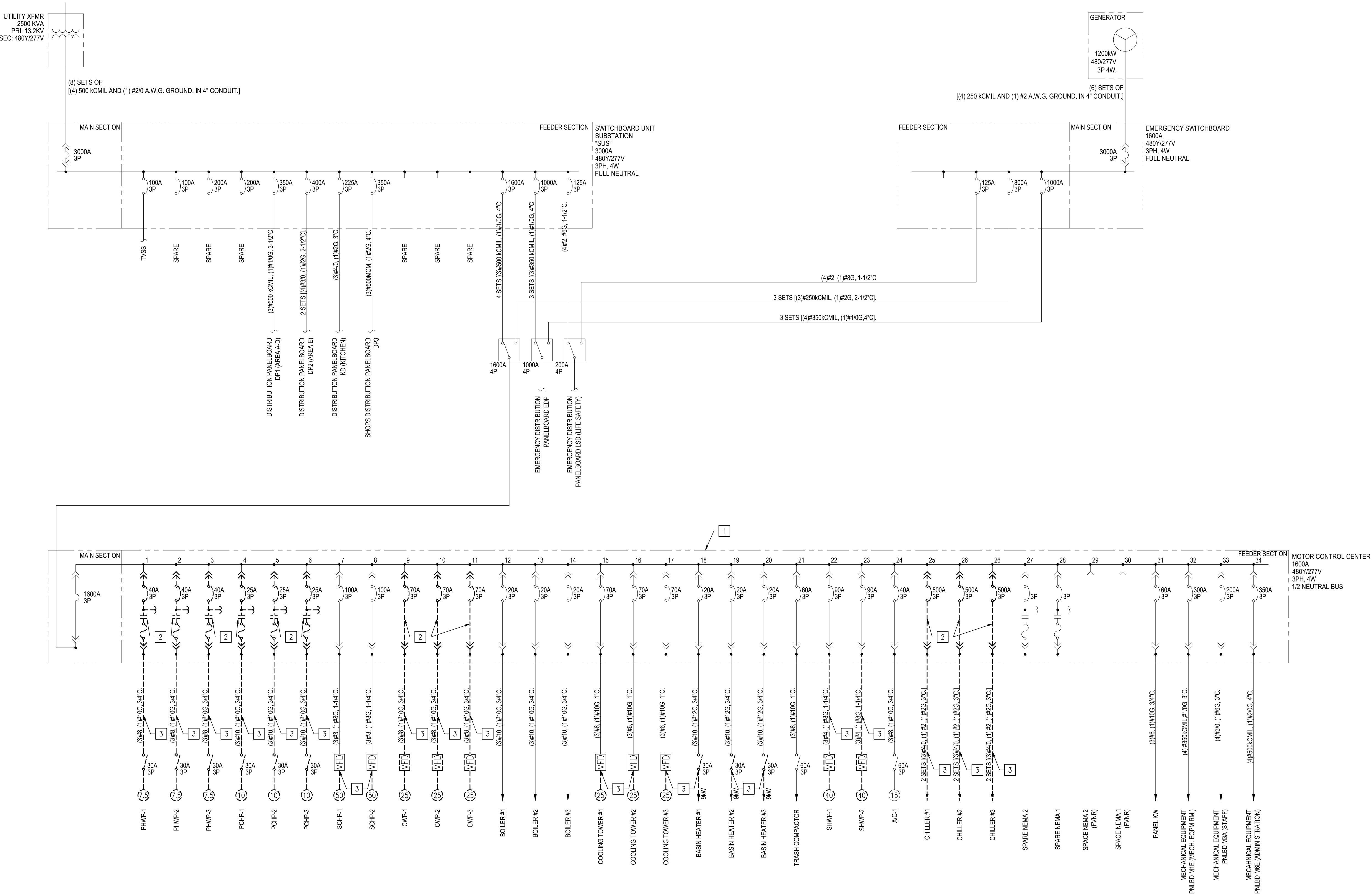
PANELBOARD SCHEDULE: HTP (EXISTING)

PANELBOARD TYPE										FEEDER ENTRANCE:		PANEL LOCATION:	
120/208	VOLTAGE	3	PHASE	4	WIRE	<input checked="" type="checkbox"/> X	100	MAIN BREAKER	<input checked="" type="checkbox"/> X	TOP	PUMP ROOM 1A-030		
125	AMP MAIN BUS					<input type="checkbox"/>		MAIN LUGS	<input type="checkbox"/>	BOTTOM	FEEDER CABLE:		
1	NEMA ENCLOSURE	<input type="text"/>	200% RATED NEUTRAL			<input type="checkbox"/>		SUB-FEED LUGS		MOUNT:	(4) #3, #8G, 1" C.		
22,000	RMS SYMMETRICAL AMPS @		240	VOLTS		<input type="checkbox"/>		SUB-FEED BREAKER	<input checked="" type="checkbox"/> X	SURFACE	SOURCE:		
27/25	DATE	<input type="text"/>	COPPER BUSSING			<input type="checkbox"/>		SOLID NEUTRAL	<input type="checkbox"/>	FLUSH	M1E		

POLE #		SERVICE	VA LOAD			LOAD TYPE	C.B.		C.B		LOAD TYPE	VA LOAD			SERVICE	POLE #
			A	B	C		TRIP	POLE	TRIP	POLE		A	B	C		
1		HEAT TRACE	1296			H	20	1	20	2	H	1664		PUMP ROOM HEATER	2	
3		HEAT TRACE		792		H	20	1			H		1664			4
5		HEAT TRACE CONTROL			500	MI	20	1	20	1	H			500	TOWER MAKE-UP HEAT TRACE	6
7		SPARE					20	1	20	1					SPARE	8
9		SPARE					20	1	20	1					SPARE	10
11		SPARE					20	1	20	1					SPARE	12
13		SPACE													SPACE	14
15		SPACE													SPACE	16
17		SPACE													SPACE	18
			1296	792	500						1664	1664	500			
CONNECTED VA/PH (LESS FEED THRU & SUB FEED)						A -	2960		B -	2456		C -	1000			
CONNECTED VA/PH FROM FEED THRU AND SUB FEED						A -			B -			C -				
TOTAL CONNECTED VA/PH						A -	2960		B -	2456		C -	1000			

LOAD TYPE		CODE DEMAND REQUIREMENTS	CONNECTED VA			DEMAND VA	MIN. CODE VA (1.25 x CONT.) (NEC 210.19 & 215.2)
			THIS PANEL	SUB PNLS	TOTAL		
LIGHTING (NEC 220.42)	100%		0		0	0	0
RECEPTACLES (NEC 220.44)	1st 10,000VA + 1/2 x REMAINING		0		0	0	0
LARGEST MOTOR (NEC 430.24)	1.25 x LARGEST FLA		0		0	0	0
REMAINING MOTORS (NEC 430.24)	100% REMAINING MOTORS		0		0	0	0
HEATING (NEC 220.51)	100%		5916		5916	5916	7395
KITCHEN EQUIPMENT (NEC 220.56)	VARIES (SEE CODE SECTION)		0		0	0	0
WATER HEATER (NEC 210.19 & 215.2)	100%		0		0	0	0
MISC. (NEC 210.19 & 215.2)	100%		500		500	500	500
SPARE	0 x CODE MIN.VA						0
TOTAL LOADS			6416	0	6416	6416	7895
SIZING LOAD			22 AMPS				

- NOTES:
- * PANEL SHALL HAVE LOCKABLE HINGED DOOR.
 - ** CIRCU



1. EXISTING EQUIPMENT, DEVICE, ETC. SHALL REMAIN.
2. PROVIDE NEW OVERCURRENT PROTECTION DEVICE OF SIZE INDICATED WITHIN EXISTING MOTOR CONTROL CENTER BUCKET IN LOCATION INDICATED. NEW OCP SHALL MATCH THE EXISTING OCP KAIC RATING.
3. PROVIDE/EXTEND WIRING AND CONDUIT OF SIZE INDICATED TO NEW EQUIPMENT. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.

