

MECHANICAL/ELECTRICAL:
BDH Engineering
10250 Regency Circle; Suite 225
Omaha, NE 68114
402 981 5527

OMAHA, NE

STANDARD ABBREVIATIONS

GENERAL	
Sheet Number	Sheet Name
COVER PAGE	
G0.0	COVER SHEET
Grand total: 1	

MECHANICAL	
Sheet Number	Sheet Name
MECHANICAL	
M0.0	MECHANICAL SYMBOLS LEGEND AND GENERAL NOTES
M0.1	MECHANICAL DEMOLITION PLAN
M1.1	MECHANICAL PLAN
M6.1	MECHANICAL ISO
M7.1	MECHANICAL DETAILS AND SCHEDULES
Grand total: 5	

ELECTRICAL	
Sheet Number	Sheet Name
ELECTRICAL	
E0.0	ELECTRICAL SYMBOLS LEGEND AND GENERAL NOTES
E0.1	ELECTRICAL DEMOLITION PLAN
E1.1	ELECTRICAL PLAN
E2.1	ELECTRICAL ONE-LINE DIAGRAMS
Grand total: 4	

A/C	AIR CONDITIONING	JAN	JANITOR																																																																																																																																																																												
A/E	ARCHITECT/ENGINEER	KIT	KITCHEN																																																																																																																																																																												
ADDL	ADDITIONAL	LAB	LABORATORY																																																																																																																																																																												
ADJ	ADJUSTABLE	LAV	LAVATORY																																																																																																																																																																												
AF	ABOVE FINISHED FLOOR	LVL	LEVEL																																																																																																																																																																												
AFS	ABOVE FINISHED SLAB	LWT	LIGHTWEIGHT																																																																																																																																																																												
AL	ALUMINUM	M/R	MOISTURE RESISTANT																																																																																																																																																																												
AMT	AMOUNT	MAINT	MAINTENANCE																																																																																																																																																																												
ANOD	ANODIZED	MATL	MATERIAL																																																																																																																																																																												
ADDL	ADDITIONAL	MAX	MAXIMUM																																																																																																																																																																												
ADDM	ADDENDUM	MDF	MEDIUM DENSITY																																																																																																																																																																												
ADJ	ADJUSTABLE		FIBERBOARD																																																																																																																																																																												
AFF	ABOVE FINISH FLOOR	MECH	MECHANICAL																																																																																																																																																																												
AFS	ABOVE FINISH SLAB	MEZZ	MEZZANINE																																																																																																																																																																												
ALT	ALTERNATE	MFG	MANUFACTURING																																																																																																																																																																												
ARCH	ARCHITECTURE	MFG	MANUFACTURE																																																																																																																																																																												
ACT	ACOUSTIC CEILING TILE	MISC	MISCELLANEOUS																																																																																																																																																																												
AVE	AVENUE	MULT	MULTIPLE																																																																																																																																																																												
BFF	BELOW FINISH FLOOR	N	NORTH																																																																																																																																																																												
BLDG	BUILDING	N/A	NOT APPLICABLE																																																																																																																																																																												
B.O.	BOTTOM OF	NIC	NOT IN CONTRACT																																																																																																																																																																												
BOT	BOTTOM	NOM	NOMINAL																																																																																																																																																																												
BRG	BEARING	NTS	NOT TO SCALE																																																																																																																																																																												
BSMT	BASEMENT	OFCL	OWNER FURNISHED																																																																																																																																																																												
CIP	CAST IN PLACE		CONTRACTOR INSTALLED																																																																																																																																																																												
CJ	CONTROL JOINT	OFF	OFFICE																																																																																																																																																																												
CL	CLEAR	OFQL	OWNER FURNISHED																																																																																																																																																																												
CLG	CEILING		OWNER INSTALLED																																																																																																																																																																												
CST	CLOSET	OCH	OVERHEAD																																																																																																																																																																												
CLR	CLEAR	OPP	OPPOSITE																																																																																																																																																																												
CML	CONCRETE MASONRY UNIT	OPT	OPTIONAL																																																																																																																																																																												
CONC	CONCRETE	ORIG	ORIGINAL																																																																																																																																																																												
CONF	CONFERENCE	P	PAINT																																																																																																																																																																												
CONT	CONTINUOUS	PLAM	PLASTIC LAMINATE																																																																																																																																																																												
COORD	COORDINATE	PLY	PLYWOOD																																																																																																																																																																												
CPT	CARPET	POLY	POLYSTYRENE																																																																																																																																																																												
CT	CERAMIC TILE	POLYSIO	POLYSCIOYANURATE																																																																																																																																																																												
DBL	DOUBLE	PBR	PAIR																																																																																																																																																																												
CEMO	DEMOLISH	PREFAB	PREFABRICATED																																																																																																																																																																												
DEPT	DEPARTMENT	PRELIM	PRELIMINARY																																																																																																																																																																												
DF	DRINKING FOUNTAIN	PVC	POLYVINYL CHLORIDE																																																																																																																																																																												
DM	DIMENSION	QTY	QUANTITY </tr <tr><td>DIST</td><td>DISTANCE</td><td>RE</td><td>REFERENCE</td></tr> <tr><td>DS</td><td>DOWNSPOUT</td><td>REQ'D</td><td>REQUIRED</td></tr> <tr><td>DW</td><td>DISHWASHER</td><td>REV</td><td>REVERSE/REVISION</td></tr> <tr><td>DWG</td><td>DRAWING</td><td>RO</td><td>ROUGH OPENING</td></tr> <tr><td>DWR</td><td>DRAWER</td><td>S</td><td>SOUTHEAST</td></tr> <tr><td>EA</td><td>EAST</td><td>SC</td><td>SOLID CORE</td></tr> <tr><td>EA</td><td>EACH</td><td>SCHED</td><td>SCHEDULE</td></tr> <tr><td>EIFS</td><td>EXTERIOR INSULATION</td><td>SCWD</td><td>SINGLE CORE WOODCORE</td></tr> <tr><td>EJ</td><td>EXPANSION JOINT</td><td>SF</td><td>SQUARE FEET</td></tr> <tr><td>EJ</td><td>EXPANSION JOINT</td><td>SGCL</td><td>SHINGLE</td></tr> <tr><td>ELEC</td><td>ELECTRICAL</td><td>SM</td><td>SIMILAR</td></tr> <tr><td>ELEV</td><td>ELEVATOR</td><td>SPEC</td><td>SPECIFICATION</td></tr> <tr><td>EMER</td><td>EMERGENCY</td><td>SQ</td><td>SQUARE</td></tr> <tr><td>ENCL</td><td>ENCLOSURE</td><td>SS</td><td>STAINLESS STEEL</td></tr> <tr><td>ENGR</td><td>ENGINEER</td><td>ST</td><td>STREET</td></tr> <tr><td>EPS</td><td>EXPANDED POLYSTYRENE</td><td>STD</td><td>STANDARD</td></tr> <tr><td>EQ</td><td>EQUAL</td><td>STO</td><td>STORAGE</td></tr> <tr><td>EXT</td><td>EXTERIOR</td><td>STRUCT</td><td>STRUCTURAL</td></tr> <tr><td>FE</td><td>FIRE EXTINGUISHER</td><td>SUSP</td><td>SUSPENDED</td></tr> <tr><td>F&E</td><td>FIXTURES FURNITURE & EQUIPMENT</td><td>T&B</td><td>TOP & BOTTOM</td></tr> <tr><td>FFE</td><td>FINISH FLOOR ELEVATION</td><td>T&G</td><td>TONGUE & GROOVE</td></tr> <tr><td>FLG</td><td>FLANGE/FLASHING/FLOORING</td><td>TBD</td><td>TO BE DETERMINED</td></tr> <tr><td>FLR</td><td>FLOOR</td><td>TEMP</td><td>TEMPORARY</td></tr> <tr><td>FRPG</td><td>FIREPROOFING</td><td>THRU</td><td>THROUGH</td></tr> <tr><td>FT</td><td>FOOT</td><td>TLT</td><td>TOILET/TOILET ROOM</td></tr> <tr><td>FTG</td><td>FOOTING</td><td>TOP</td><td>TOP OF</td></tr> <tr><td>FUT</td><td>FUTURE</td><td>TYP</td><td>TYPICAL</td></tr> <tr><td>FV</td><td>FIELD VERIFY</td><td>UNFIN</td><td>UNFINISHED</td></tr> <tr><td>GALV</td><td>GALVANIZED</td><td>UNO</td><td>UNLESS NOTED OTHERWISE</td></tr> <tr><td>GEN</td><td>GENERAL CONTRACTOR</td><td>UTIL</td><td>UTILITY</td></tr> <tr><td>GFL</td><td>GYPSPUM PLASTER</td><td>V</td><td>VINYL COMPOSITION</td></tr> <tr><td>GPM</td><td>GYPSPUM PLASTER</td><td>VERT</td><td>VERTICAL</td></tr> <tr><td>GWB</td><td>GYPSPUM WALL BOARD</td><td>VEST</td><td>VESTIBULE</td></tr> <tr><td>HC</td><td>HOLLOW CORE</td><td>W</td><td>WEST</td></tr> <tr><td>HD</td><td>HARDBOARD</td><td>W/</td><td>WITH</td></tr> <tr><td>HDBD</td><td>HARDWOOD</td><td>W/O</td><td>WITHOUT</td></tr> <tr><td>HDWR</td><td>HARDWARE</td><td>WR</td><td>WATER RESISTANT</td></tr> <tr><td>HM</td><td>HOLLOW METAL</td><td>WC</td><td>WATER CLOSET</td></tr> <tr><td>HORIZ</td><td>HORIZONTAL</td><td>WHSE</td><td>WAREHOUSE</td></tr> <tr><td>HVT</td><td>HEIGHT</td><td>WMT</td><td>WALK-OFF MAT</td></tr> <tr><td>HVAC</td><td>HEATING, VENTILATION, & AIR CONDITIONING</td><td></td><td></td></tr> <tr><td>INSUL</td><td>INSULATION</td><td></td><td></td></tr> <tr><td>INT</td><td>INTERIOR</td><td></td><td></td></tr>	DIST	DISTANCE	RE	REFERENCE	DS	DOWNSPOUT	REQ'D	REQUIRED	DW	DISHWASHER	REV	REVERSE/REVISION	DWG	DRAWING	RO	ROUGH OPENING	DWR	DRAWER	S	SOUTHEAST	EA	EAST	SC	SOLID CORE	EA	EACH	SCHED	SCHEDULE	EIFS	EXTERIOR INSULATION	SCWD	SINGLE CORE WOODCORE	EJ	EXPANSION JOINT	SF	SQUARE FEET	EJ	EXPANSION JOINT	SGCL	SHINGLE	ELEC	ELECTRICAL	SM	SIMILAR	ELEV	ELEVATOR	SPEC	SPECIFICATION	EMER	EMERGENCY	SQ	SQUARE	ENCL	ENCLOSURE	SS	STAINLESS STEEL	ENGR	ENGINEER	ST	STREET	EPS	EXPANDED POLYSTYRENE	STD	STANDARD	EQ	EQUAL	STO	STORAGE	EXT	EXTERIOR	STRUCT	STRUCTURAL	FE	FIRE EXTINGUISHER	SUSP	SUSPENDED	F&E	FIXTURES FURNITURE & EQUIPMENT	T&B	TOP & BOTTOM	FFE	FINISH FLOOR ELEVATION	T&G	TONGUE & GROOVE	FLG	FLANGE/FLASHING/FLOORING	TBD	TO BE DETERMINED	FLR	FLOOR	TEMP	TEMPORARY	FRPG	FIREPROOFING	THRU	THROUGH	FT	FOOT	TLT	TOILET/TOILET ROOM	FTG	FOOTING	TOP	TOP OF	FUT	FUTURE	TYP	TYPICAL	FV	FIELD VERIFY	UNFIN	UNFINISHED	GALV	GALVANIZED	UNO	UNLESS NOTED OTHERWISE	GEN	GENERAL CONTRACTOR	UTIL	UTILITY	GFL	GYPSPUM PLASTER	V	VINYL COMPOSITION	GPM	GYPSPUM PLASTER	VERT	VERTICAL	GWB	GYPSPUM WALL BOARD	VEST	VESTIBULE	HC	HOLLOW CORE	W	WEST	HD	HARDBOARD	W/	WITH	HDBD	HARDWOOD	W/O	WITHOUT	HDWR	HARDWARE	WR	WATER RESISTANT	HM	HOLLOW METAL	WC	WATER CLOSET	HORIZ	HORIZONTAL	WHSE	WAREHOUSE	HVT	HEIGHT	WMT	WALK-OFF MAT	HVAC	HEATING, VENTILATION, & AIR CONDITIONING			INSUL	INSULATION			INT	INTERIOR		
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BID NUMBER 27-010

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I, Brian Howel, am the Coordinating Professional on the OPS MARRS COOLING TOWER REPLACEMENT project.

1. THE GENERAL CONTRACTOR SHALL VERIFY THE EXISTING/ACTUAL DIMENSIONS AND CONDITIONS SHOWN ON THE PLANS PRIOR TO COMMENCEMENT OF THE WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL AGENCIES AND UTILITIES TO RESOLVE EXISTING/ACTUAL CONDITIONS. DEVIATIONS IN THE EXISTING/ACTUAL CONDITIONS OR DIMENSIONS INDICATED SHALL BE COORDINATED WITH THE ARCHITECT AND OWNER IN ORDER TO MODIFY THE PLANS ACCORDINGLY.
2. THE DRAWINGS MAY SPECIFY DIMENSIONS, ELEVATIONS AND/OR CONSTRUCTION CONDITIONS TO BE FIELD VERIFIED. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL SPECIFIED DIMENSIONS, ELEVATIONS, AND/OR CONSTRUCTION CONDITIONS PRIOR TO PROCEEDING WITH CONSTRUCTION OR FABRICATION OF ANY COMPONENTS RELATED TO SUCH CONDITIONS.
3. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS.
4. PROVIDE ALL SPECIFIED PRODUCTS/MATERIALS UNLESS OTHERWISE NOTED OR APPROVED BY OWNER, ARCHITECT, OR ENGINEER.

OPS MARRS COOLING TOWER REPLACEMENT

OMAHA, NE

COVER SHEET



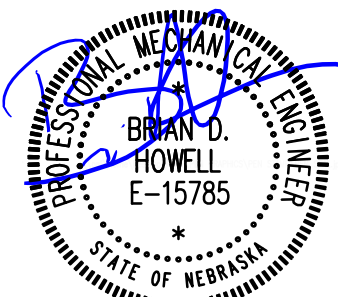
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DATE: 10/09/2026

SHEET L

G0.0



10/09/2026

(AS APPLICABLE)

PIPING AND SPECIALTIES					
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	RD		PGR		INLINE PUMP
	RL		PGS		AIR VENT - MANUAL
	RS		FOR		AIR VENT - AUTOMATIC
	CD		FOS		FLOW SWITCH
	LPS (XX)		FOV		PRESSURE SWITCH
	MPS (XX)		CR		AIR SEPARATOR
	HPS (XX)		CS		THERMOMETER
	LPC		HPWR		THERMOMETER WELL
	MPC		HPWS		BALL JOINT
	HPC				PUMP SUCTION DIFFUSER
	PC				FLOAT THERMOSTATIC TRAP
	MU				FLOWMETER - ORIFICE
	HCR				FLOWMETER - VENTURI
	HCS				DUPLEX STRAINER
	HWR				
	HWS				
	CWR				
	CWS				
	EGR				
	EGS				

DUCTWORK

	RECT. RND. OVAL		SUPPLY (SA), OUTSIDE (OA) VENTILATION (VA) AIR DUCT (UP/DOWN/SECTION)		RETURN (RA) AIR DUCT (UP/DOWN/SECTION)		EXHAUST (EA) AIR DUCT (UP/DOWN/SECTION)		RECTANGLE DUCT (WIDTH/HEIGHT/SYSTEM)		ROUND DUCT (DIAMETER/SYSTEM)		FLAT OVAL DUCT (WIDTH/HEIGHT/SYSTEM)		FLEXIBLE DUCTWORK		ELEVATION CHANGE (RISE OR DROP)		HIGH EFF. TAKE OFF FITTING WITH VOLUME DAMPER		BACKDRAFT DAMPER		TURNING VANES		VOLUME CONTROL DAMPER		VOLUME CONTROL DAMPER		OPPOSED BLADE DAMPER		PARALLEL BLADE DAMPER		FIRE DAMPER (IN HORIZONTAL DUCT)		SMOKE DAMPER (IN HORIZONTAL DUCT)		FIRE DAMPER (IN VERTICAL DUCT)		SMOKE DAMPER (IN VERTICAL DUCT)		FIRE/SMOKE DAMPER (IN HORIZONTAL DUCT)		FIRE/SMOKE DAMPER (IN VERTICAL DUCT)		DUCT ACCESS PANEL		RELIEF PANEL
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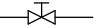
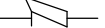
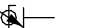
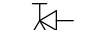
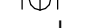
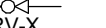
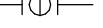
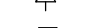
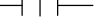
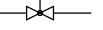
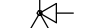
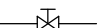
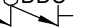
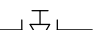
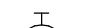
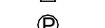
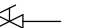
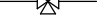
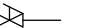
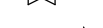
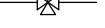
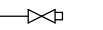
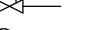
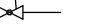
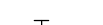
H.V.A.C.

	SUPPLY DIFFUSER		VAV TERMINAL UNIT		THERMOSTAT
	SUPPLY REGISTER		FAN POWERED VAV TERMINAL UNIT		THERMOSTAT WITH GUARD
	SUPPLY SLOT DIFFUSER		SIDE WALL DIFFUSER		TEMPERATURE SENSOR - XX-X DENOTES SERVED
	RETURN REGISTER		ROUND DIFFUSER		CARBON MONOXIDE SENSOR
	RETURN GRILLE		EXTERIOR LOUVER		CARBON DIOXIDE SENSOR
	EXHAUST REGISTER		SUPPLY IDENTIFICATION TAG X DENOTES TYPE		NITROGEN DIOXIDE SENSOR
	EXHAUST GRILLE		RETURN/EXHAUST/LOUVER IDENTIFICATION TAG X DENOTES TYPE		HUMIDITY SENSOR
	DUAL DUCT TERMINAL UNIT		MOTORIZED ACTUATOR		PRESSURE SENSOR
			PNEUMATIC ACTUATOR		TEMPERATURE SENSOR WITH GUARD
					HUMIDISTAT
					EMERGENCY SHUTDOWN SWITCH

FITTINGS

SINGLE LINE	DOUBLE LINE		SINGLE LINE	DOUBLE LINE		SINGLE LINE	DOUBLE LINE	
		ELBOW			ELBOW - DOUBLE BRANCH			REDUCER - CONCENTRIC
		LONG RADIUS ELBOW			ELBOW - SIDE OUTLET UP			REDUCER - ECCENTRIC
		SHORT RADIUS ELBOW			ELBOW - SIDE OUTLET DOWN			CAPPED CONNECTION
		45° ELBOW			ELBOW - OUTLET DOWN			THREADED CONNECTION
		TEE			ELBOW - OUTLET UP			FLANGED CONNECTION
		CROSS			TEE - OUTLET DOWN			STRAINER
		TEE			TEE - OUTLET UP			STRAINER WITH BALL VALVE DRAIN
		LATERAL			TEE - SIDE OUTLET DOWN			STRAINER WITH COUPLER
		TEE - SINGLE SWEEP			TEE - SIDE OUTLET UP			BUSHING
					SIAMESE CONNECTION			FLOW DIRECTION

VALVES

	GATE VALVE		STOP/CHECK GATE VALVE (ARROW IND. FLOW)		MULTIPURPOSE VALVE
	ANGLE GATE VALVE		SPRING GATE CHECK VALVE (ARROW IND. FLOW)		PRESSURE REDUCING VALVE
	BALL VALVE		SWING GATE CHECK VALVE (ARROW IND. FLOW)		PRESSURE REDUCING PILOT VALVE
	LOCKABLE BALL VALVE		ANGLE STOP/CHECK VALVE		REDUCED PRESS. BACKFLOW ASSY.
	BUTTERFLY VALVE		2-WAY ELECTROMOTOR VALVE		DOUBLE CHK VALVE BACKFLOW ASSY.
	GLOBE VALVE		2-WAY AIRMOTOR VALVE		DOUBLE DETECTOR CHECK VALVE
	ANGLE GLOBE VALVE		2-WAY MANUAL VALVE		OUTSIDE STEM & YOKE VALVE
	PLUG VALVE		3-WAY ELECTROMOTOR VALVE		QUICK CLOSING FUSIBLE LINK VALVE
	DIAPHRAGM VALVE		3-WAY AIRMOTOR VALVE		QUICK OPENING VALVE
	DIAPHRAGM ACTUATED VALVE		3-WAY MANUAL VALVE		PRESSURE GAUGE & BALL VALVE
	VALVE IN VERTICAL LINE		SAFETY PRESSURE RELIEF VALVE		GATE VALVE WITH GLOBE VALVE BY-PASS
	HOSE GATE VALVE		PRESSURE RELIEF VALVE		GLOBE VALVE WITH GLOBE VALVE BY-PASS
	HOSE GLOBE VALVE		TEMPERATURE MIXING VALVE		SPRINKLER - CONCEALED
	HOSE ANGLE VALVE		AUTO FLOW VALVE		SPRINKLER - RECESSED
	SOLENOID VALVE		FLOAT VALVE		SPRINKLER - SIDEWALL
	POST INDICATOR VALVE		LOCK SHIELD		SPRINKLER - UPRIGHT
			CIRCUIT SETTER		SPRINKLER - ZONE CONTROL

MEDICAL PIPING

== MA ==	MEDICAL AIR	== N ==	MEDICAL NITROGEN	== VAC ==	MEDICAL VACUUM
== NOX ==	MEDICAL NITROUS OXIDE	== OX ==	MEDICAL OXYGEN	== WAG ==	WASTE ANESTHETIC GAS DISPOSAL

PLUMBING

— — — —	PIPE REMOVAL	== NPCW ==	NON-POTABLE COLD WATER	== P ==	TRAP PRIMER
== DCW ==	DOMESTIC COLD WATER	== NPHW ==	NON-POTABLE HOT WATER	— HB	HOSE BIBB
== DHW ==	DOMESTIC HOT WATER	== NPSW ==	NON-POTABLE SOFT WATER	— WH	WALL HYDRANT
== RHW ==	DOMESTIC HOT WATER RECIRC.	== PD ==	PUMPED DISCHARGE	— RH	ROOF HYDRANT
== DSW ==	DOMESTIC SOFT WATER	== G (XX) ==	NATURAL GAS (PSIG)	— CO	CLEAN OUT
== SAN ==	SANITARY	== PG (XX) ==	PROPANE GAS (PSIG)	== FCO ==	FLOOR CLEAN OUT
== ST ==	STORM	== V ==	VENT	== FD ==	FLOOR DRAIN
== SO ==	STORM OVERFLOW	== AW ==	ACID WASTE	⊗ VTR	VENT THRU ROOF (X DENOTES IDENTIFICATION)
== GW ==	GREASE WASTE	== AV ==	ACID VENT	⊗ RD	ROOF DRAIN
== CA ==	COMPRESSED AIR	== OSW ==	OIL/SAND	⊗ ORD	OVERFLOW ROOF DRAIN
== PA ==	PROCESSED AIR	== IR ==	IRRIGATION	⊏ DSN	DOWNSPOUT NOZZLE

MISCELLANEOUS

	EQUIPMENT IDENTIFICATION TAG (ELECTRICAL CONNECTION REQUIRED)		NEW CONNECTION POINT	WC	WATER CLOSET
	DETAIL REFERENCE SHEET REFERENCE		POINT OF DISCONNECT	UR	URINAL
	SECTION CUT REFERENCE SHEET REFERENCE	OA	OUTSIDE AIR	L	LAVATORY
		VA	VENTILATION AIR	S	SINK
		EA	EXHAUST AIR	DF	DRINKING FOUNTAIN
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY	RA	RELIEF OR RETURN AIR	EWC	ELECTRIC WATER COOLER
		SA	SUPPLY AIR	SS	SERVICE SINK
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY	MA	MIXED AIR	SH	SHOWER
		RF	RELIEF OR RETURN FAN	DWH	DOMESTIC WATER HEATER
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY	EF	EXHAUST FAN	MSB	MOP SINK BASIN
	ELECTRICAL TRANSFORMER - SHOWN FOR COORDINATION PURPOSES ONLY	DCE (TYP)	DUST COLLECTION EXHAUST TYPICAL	(E)	LIGHT LINEWORK = EXISTING DARK LINEWORK = NEW

GENERAL MECHANICAL / PLUMBING DEMOLITION NOTES

APPLY TO ALL MECHANICAL AND PLUMBING SHEETS

1. ALL EXISTING ITEMS AND ASSOCIATED PIPING, ACCESSORIES, SUPPORTS AND HANGERS INDICATED BY BOLD, DASHED, HEAVY LINES OR IDENTIFIED BY NOTES, SHALL BE COMPLETELY REMOVED PRIOR TO PROPER DISPOSAL OF REMOVED ITEMS, OWNER SHALL HAVE FIRST RIGHT TO REMOVE.
2. DRAWINGS INDICATE APPROXIMATE ROUTING OF PIPING, DUCTWORK AND MAJOR COMPONENTS AND DO NOT INCLUDE ALL OFFSETS, FITTINGS, VALVES, ETC. CONTRACTOR SHALL FIELD VERIFY EXACT SIZE AND ROUTING PRIOR TO REMOVAL OR RELOCATION. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REMOVAL OF MISCELLANEOUS MECHANICAL ITEMS NOT SPECIFICALLY NOTED ON OR IN ANY WALLS.
3. EXISTING INSULATION DAMAGED DURING DEMOLITION / CONSTRUCTION ACTIVITIES SHALL BE REPAIRED WITH SIMILAR MATERIALS.
4. ALL OPENINGS THROUGH WALLS AND FLOOR SLABS NOT BEING REMOVED SHALL BE PATCHED WITH LIKE MATERIALS AND PAINTED TO MATCH EXISTING.
5. ALL OPENINGS THROUGH ROOF NOT BEING REUSED SHALL BE PATCHED WITH LIKE MATERIALS AND SEALED WATERTIGHT.
6. CONTRACTOR SHALL REMOVE ALL MATERIALS AS REQUIRED AND SHALL GIVE OWNER THE OPPORTUNITY TO INSPECT SUCH MATERIALS FOR POTENTIAL SALVAGE. CONTRACTOR SHALL REMOVE ALL MATERIALS DEEMED "NON-SALVAGEABLE" BY THE OWNER. CONTRACTOR SHALL TURN OVER TO OWNER ALL MATERIALS DEEMED "SALVAGEABLE" BY THE OWNER.

GENERAL MECHANICAL NOTES

APPLY TO ALL MECHANICAL SHEETS

- A. LIGHT LINE WEIGHT INDICATES EXISTING ITEMS AND ASSOCIATED MATERIALS TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED UNDER THIS CONTRACT.
- B. ROUTING INDICATED ON DRAWINGS IS APPROXIMATE AND DOES NOT INCLUDE ALL OFFSETS, FITTINGS, OR CONTRACTOR TO FIELD VERIFY DUCT SIZE AND SERVICE PRIOR TO FINAL CONNECTION. COORDINATE LOCATION OF HVAC WORK WITH LIGHTING, STRUCTURAL MEMBERS, PIPING SYSTEMS, ETC. PROVIDE OFFSETS AND CLEARANCES OR RELOCATE HVAC WORK AS REQUIRED TO AVOID CONFLICTS WITH WORK OF ALL OTHER TRADES.
- C. HVAC WORK SHALL NOT BE LOCATED OVER ELECTRICAL, DATA, OR COMMUNICATION EQUIPMENT ROOMS. HVAC WORK SHALL NOT BE LOCATED ABOVE ELECTRICAL / DATA / COMMUNICATION EQUIPMENT OR PANELS.
- D. SUPPORT ALL DUCTWORK, PIPING, EQUIPMENT, ETC. FROM BUILDING STRUCTURE. HOLD PIPING TIGHT TO BOTTOM OF STRUCTURAL MEMBERS OR RUN THROUGH JOIST WEBS IF POSSIBLE. DO NOT SUPPORT PIPING FROM MECHANICAL EQUIPMENT OR PIPING. DO NOT SUPPORT PIPING FROM OTHER PIPING. DUCTWORK AND/OR ELECTRICAL CONDUITS, DO NOT SUPPORT FROM BOTTOM OF CHORD OF BAR JOIST OR FROM METAL ROOF DECK. ALL DUCT SIZES SHOWN ARE CLEAR AIRWAY DIMENSIONS. INCREASE SHEET METAL SIZE TO ACCOMMODATE DUCT LINER AS REQUIRED.
- E. F. ALL DUCTS SHALL BE LOCATED WITH CENTERLINE RADIUS OF NOT LESS THAN 1-1/2 TIMES THE WIDTH OF DUCT. WHERE SPACE CONDITIONS DO NOT PERMIT THIS RADIUS OR WHERE INDICATED ON DRAWINGS SQUARE ELBOWS WITH TURNING VANES SHALL BE USED. SIZE TRANSITIONS WITH A MINIMUM SLOPE OF 1:4.
- G. PROVIDE DRAW BANDS AND SEAL END OF DUCT INSULATION ON ALL FLEXIBLE CONNECTIONS. MAXIMUM LENGTH OF EXPOSED DUCTS SHALL BE THREE FEET.
- H. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SEALING PENETRATIONS THROUGH A FIRE RATED, SMOKE RATED OR COMBINATION FIRE & SMOKE RATED SEPARATIONS. SEE SPECIFICATIONS FOR FIRE & SMOKE RATED SEALANTS. SEE ARCHITECTURAL PLANS FOR RATED SEPARATIONS.
- J. COORDINATE ALL GRILLE, REGISTER AND DIFFUSER LOCATIONS WITH REFLECTED CEILING PLAN, LIGHT FIXTURES, SPRINKLER HEADS, COMMUNICATION/SOUND DEVICES AND FIRE ALARM DEVICES.
- K. INSTALL ESCUTCHEON PLATES ON ALL WALL PENETRATIONS SERVING ROOM DUCT WALL PENETRATIONS. FABRICATE ESCUTCHEON PLATES TO TRIM THE OPENING IN THE WALL.
- L. INSTALL WALL AND/OR FLOOR RECTANGULAR DUCT PENETRATIONS THROUGH WALLS.
- M. FOR EXPOSED DUCTWORK, THOROUGHLY CLEAN, REMOVE ALL SHIPPING LABELS AND OTHER IDENTIFICATION TAGS. DUCTWORK DESIGNATED TO BE PAINTED SHALL HAVE PHOSPHATIZED FINISH. PROVIDE MILL-PHOSPHATIZED FINISH FOR EXPOSED NOT DESIGNATED TO BE PAINTED. COORDINATE WITH ARCHITECTURAL DRAWINGS DUCTWORK DESIGNATED FOR PAINTING AND EXPOSED DUCTWORK REQUIREMENTS.
- N. PROVIDE DUCT MOUNTED ACCESS DOOR ON FIRE DAMPER, SMOKE DAMPER OR COMBINATION FIRE/SMOKE DAMPERS TO ALLOW FOR MAINTENANCE AND VISUAL INSPECTION PER NFPA REQUIREMENTS.
- O. VOLUME DAMPERS ABOVE INACCESSIBLE CEILINGS SHALL HAVE EXTENSION RODS AND ESCUTCHEON PLATES.
- P. LOCATE AND INSTALL EQUIPMENT TO PROVIDE ALL CODE AND MANUFACTURER'S RECOMMENDED CLEARANCES. KEEP HVAC PIPING, DUCTWORK, ETC. OUT OF CLEARANCE AREAS.
- Q. ALL OPENINGS IN WALLS AND FLOORS FOR PIPING SHALL BE CORE DRILLED OR SAW CUT, UNLESS OTHERWISE NOTED.
- R. ALL HVAC PIPING SHALL BE LOCATED ABOVE CEILINGS, IN A PIPE CHASE, OR OTHER CONCEALED LOCATIONS, UNLESS OTHERWISE NOTED. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE ACCESS PANEL OR ACCESS DOOR FOR ALL VALVES, DRAIN FITTINGS, ETC. AT NON-ACCESSIBLE LOCATIONS.
- S. INSULATE SECTIONS OF DUCTWORK WITH EACH BRANCH AND/OR RISER SERVING TWO OR MORE HYDROLOGICAL OR EQUIPMENT CONNECTIONS. INSTALL VALVES ADJACENT TO MAIN.
- T. INSTALL SHUTOFF VALVES ON INLET AND OUTLET OF EACH MECHANICAL EQUIPMENT ITEM AND/OR EACH HYDROLOGICAL TERMINAL.
- U. SIZE PIPING TIGHT TO DRAIN VALVES. PROVIDE MANUAL AIR VENTS AT HIGH POINTS AND AT TOP OF RISERS.
- V. SEAL ALL HVAC PENETRATIONS. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS OR CEILINGS WITH MATERIALS APPROPRIATE FOR RATING.
- W. PIPING IN EXTERIOR WALLS SHALL BE LOCATED ON THE INTERIOR SIDE OF BUILDING INSULATION AND VENT OUTSIDE.
- X. COORDINATE INSTALLATION OF BUILDING INSULATION TO RUN CONTINUOUS BETWEEN PIPING AND EXTERIOR WALL SURFACE.
- Y. PVC PIPING SHALL NOT BE INSTALLED IN ANY RETURN AIR PLENUM UNLESS THE PIPING IS INSTALLED IN A PRE-APPROVED RATED ASSEMBLY.
- Z. CROSS BRACING DUCTWORK WITH STRUCTURAL BRANCH OR RISER SERVING TWO OR MORE BRIDGING BETWEEN JOISTS WHERE DUCTWORK IS TO BE INSTALLED BETWEEN THE JOISTS COORDINATE WITH ALL TRADES.

NOTICE: DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SHOP AND OTHER APPROPRIATE DRAWINGS OR AT SITE. LAY OUT AND COORDINATE ALL WORK PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, AND CODES. VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF CLEARANCES FOR ALL TRADES. THIS NOTICE APPLIES TO ALL MECHANICAL / PLUMBING PLANS.

MECHANICAL

Sheet Number	Sheet Name
MECHANICAL	
M0.0	MECHANICAL SYMBOLS LEGEND AND GENERAL NOTES
M0.1	MECHANICAL DEMOLITION PLAN
M1.1	MECHANICAL PLAN
M6.1	MECHANICAL ISO
M7.1	MECHANICAL DETAILS AND SCHEDULES
Grand total: 5	

GENERAL PLUMBING NOTES

APPLY TO ALL PLUMBING SHEETS

- A. LIGHT LINE WEIGHT INDICATES EXISTING ITEMS AND ASSOCIATED MATERIALS TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED UNDER THIS CONTRACT.
- B. ROUTING INDICATED ON DRAWINGS IS APPROXIMATE AND DOES NOT INCLUDE ALL OFFSETS, FITTINGS, VALVES, ETC. CONTRACTOR TO FIELD VERIFY PIPE SIZE AND SERVICE PRIOR TO FINAL CONNECTION. COORDINATE LOCATION OF PLUMBING PIPING WORK WITH LIGHTING, STRUCTURAL MEMBERS, HVAC, PIPING SYSTEMS, ETC. PROVIDE OFFSETS AND CLEARANCES OR RELOCATE PLUMBING WORK AS REQUIRED TO AVOID CONFLICTS WITH WORK OF ALL OTHER TRADES.
- C. PLUMBING WORK SHALL NOT BE LOCATED OVER ELECTRICAL, DATA OR COMMUNICATION EQUIPMENT ROOMS. PLUMBING WORK SHALL NOT BE LOCATED ABOVE ELECTRICAL / DATA / COMMUNICATION EQUIPMENT OR PANELS.
- D. SUPPORT ALL PLUMBING PIPING, EQUIPMENT, ETC. FROM BUILDING STRUCTURE. HOLD PIPING TIGHT TO BOTTOM OF STRUCTURAL MEMBERS OR RUN THROUGH JOIST WEBS IF POSSIBLE. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING. DO NOT SUPPORT PIPING FROM OTHER PIPING. DO NOT USE ELECTRICAL CONDUITS. DO NOT SUPPORT FROM BOTTOM OF CHORD OF BAR JOIST OR FROM METAL ROOF DECK.
- E. ROUTE ABOVE GRADE DRAINAGE PIPING AS HIGH AS POSSIBLE AND COORDINATE WITH OTHER TRADES.
- F. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SEALING PENETRATIONS THROUGH A FIRE RATED, SMOKE RATED OR COMBINATION FIRE & SMOKE RATED SEPARATIONS. SEE SPECIFICATIONS FOR FIRE & SMOKE RATED SEALANTS. SEE ARCHITECTURAL PLANS FOR RATED SEPARATIONS.
- G. INSTALL ESCUTCHEON PLATES ON ALL WALL AND FLOOR PENETRATIONS SERVING EXPOSED PLUMBING PIPING PLUMBERATIONS.
- H. ALL OPENINGS IN WALLS AND FLOORS FOR PIPING SHALL BE CORE DRILLED OR SAW CUT, UNLESS OTHERWISE NOTED.
- I. LOCATE AND INSTALL EQUIPMENT TO PROVIDE ALL CODE AND MANUFACTURER'S RECOMMENDED CLEARANCES. KEEP HVAC PIPING, DUCTWORK, ETC. OUT OF CLEARANCE AREAS.
- J. ALL PLUMBING PIPING WORK SHALL BE LOCATED ABOVE CEILINGS, IN A PIPE CHASE, OR OTHER CONCEALED LOCATIONS UNLESS OTHERWISE NOTED. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE ACCESS PANEL OR ACCESS DOOR FOR ALL VALVES, DRAIN FITTINGS, ETC. AT NON-ACCESSIBLE LOCATIONS.
- K. INSTALL SECTORIAL VALVES ON EACH BRANCH AND/OR RISER SERVING TWO OR MORE PLUMBING FIXTURES AT OTHER THAN CONJUNCTION LOCATIONS. INSTALL VALVES ADJACENT TO MAIN.
- L. INSTALL SHUTOFF VALVES ON INLET AND OUTLET OF PLUMBING EQUIPMENT.
- M. INSTALL STOPS AT EACH PLUMBING FIXTURE EXCEPT AT FLUSHMETER LOCATIONS.
- N. SEAL ALL PLUMBING PIPING PENETRATIONS. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS OR CEILINGS WITH MATERIALS APPROPRIATE FOR RATING.
- O. PIPING IN EXTERIOR WALLS SHALL BE LOCATED ON THE INTERIOR SIDE OF BUILDING INSULATION AND VAPOR BARRIER.
- P. COORDINATE INSTALLATION OF BUILDING INSULATION TO RUN CONTINUOUS BETWEEN PIPING AND EXTERIOR WALL SURFACE.
- Q. COORDINATE EXACT LOCATION OF FLOOR DRAINS AND FLOOR SINKS. TOP OF GRATE SHALL BE 1/8" BELOW FINISHED FLOOR ELEVATION.
- R. COORDINATE EXACT LOCATION OF COMPANY GAS LINES AND REGULATIONS FOR ALL GAS METER INSTALLATIONS. COORDINATE EXACT LOCATION OF GAS CONNECTIONS WITH EQUIPMENT SUPPLIED.
- S. COPPER PIPING LOCATED ABOVE GRADE SHALL BE TYPE "L". COPPER PIPING LOCATED BELOW GRADE SHALL BE TYPE "K" AND RUN CONTINUOUS WITHOUT JOINTS BELOW GRADE. TYPE "K" COPPER SHALL BE 1/2" THICK WELDED OR PRESSURE RIVETED PIPING SYSTEMS.
- T. DRAINAGE PIPING 3 INCHES AND SMALLER SHALL SLOPE NO LESS THAN 1/4 INCH PER FOOT.
- U. DRAINAGE PIPING 4 INCHES AND LARGER SHALL SLOPE NO LESS THAN 1/8 INCH PER FOOT.
- V. INSTALL WALL CLEAN OUTS (WCO) WHEN LOCATED BEHIND A WATER CLOSET AT 30" A.F.F. OR AT 42" A.F.F. ABOVE CABINETY ON ALL SANITARY & STORM STACKS.
- W. COORDINATE EXACT STORM PIPE CONNECTIONS WITH STORM DRAIN LOCATIONS SHOWN ON ARCHITECTURAL PLANS.
- X. INSTALL VENT-THRU-ROOF (VTR) A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE. REMOVE, REPAIR AND REPLACE WALLS, FLOORS, ROOFS AND CEILINGS TO MATCH EXISTING, WHERE NECESSARY FOR PIPING AND FIXTURE REMOVAL & INSTALLATION.
- Y. KITCHEN EQUIPMENT FURNISHED BY KITCHEN EQUIPMENT CONTRACTOR - PLUMBING CONTRACTOR TO PROVIDE ALL NECESSARY GAS AND MAKE FIRE CODE CONNECTIONS TO UTILITIES REQUIRED AND PROVIDE PIPING, STOPS, WATER HAMMER ARRESTERS, TRAPS AND FITTINGS FOR EQUIPMENT TO BE IN OPERATIONAL ORDER. COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER FOR CONNECTIONS AND LOCATIONS. SEE KITCHEN EQUIPMENT CONNECTION SCHEDULE FOR RESPONSIBILITY OF WHO FURNISHES VACUUM BREAKERS AND PRESSURE REGULATING VALVES.
- Z. PVC PIPING SHALL NOT BE INSTALLED IN ANY RETURN AIR PLENUM UNLESS THE PIPING IS INSTALLED IN A PRE-APPROVED RATED ASSEMBLY.
- AA. PROVIDE ACCESSIBLE SHUTOFF VALVE INSIDE THE BUILDING FOR EACH WALL HYDRANT.
- BB. CONTRACTOR SHALL COORDINATE ALL CONNECTIONS OF PLUMBING SYSTEMS WITH ELECTRICAL UTILITIES AND SERVICES PRIOR TO INSTALLING ANY PIPING ON THE INTERIOR. CONTRACTOR SHALL LOCATE ALL INTERIOR PIPE INVERTS AND PIPE INVERTS AT THE 5' LINE MATCH EXTERIOR PIPE INVERTS, PRIOR TO INSTALLING ANY INTERIOR PIPING BELOW FLOOR.

OPS MARRS COOLING TOWER REPLACEMENT

OMAHA, NE

MECHANICAL SYMBOLS LEGEND AND GENERAL NOTES

BDH
ENGINEERING

BDH Engineering
10250 Regency Circle,
Suite 225
Omaha, NE 68114
bdhengineer.com
CA-4258

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PROJECT: 26064

DATE: 10/09/2026

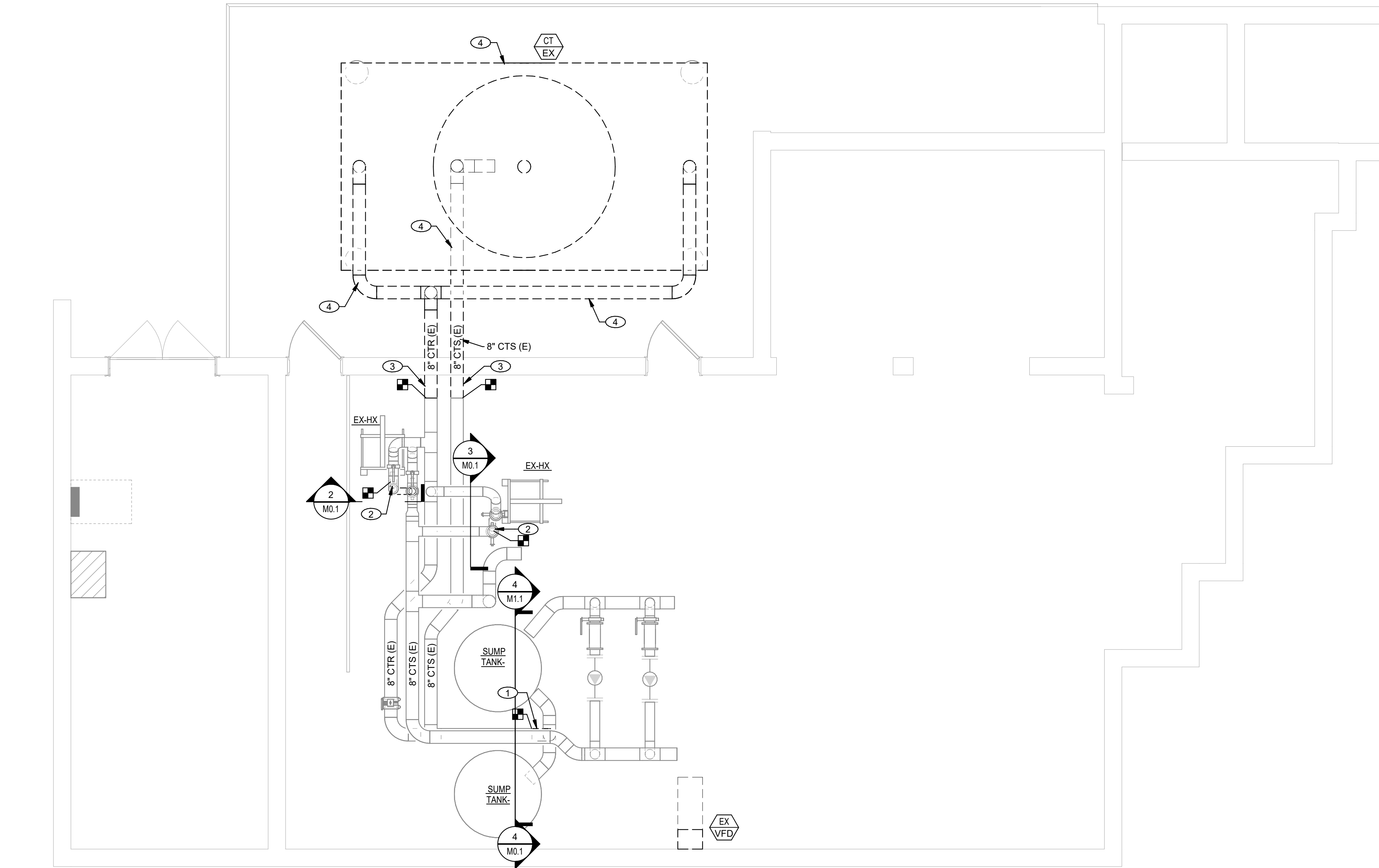
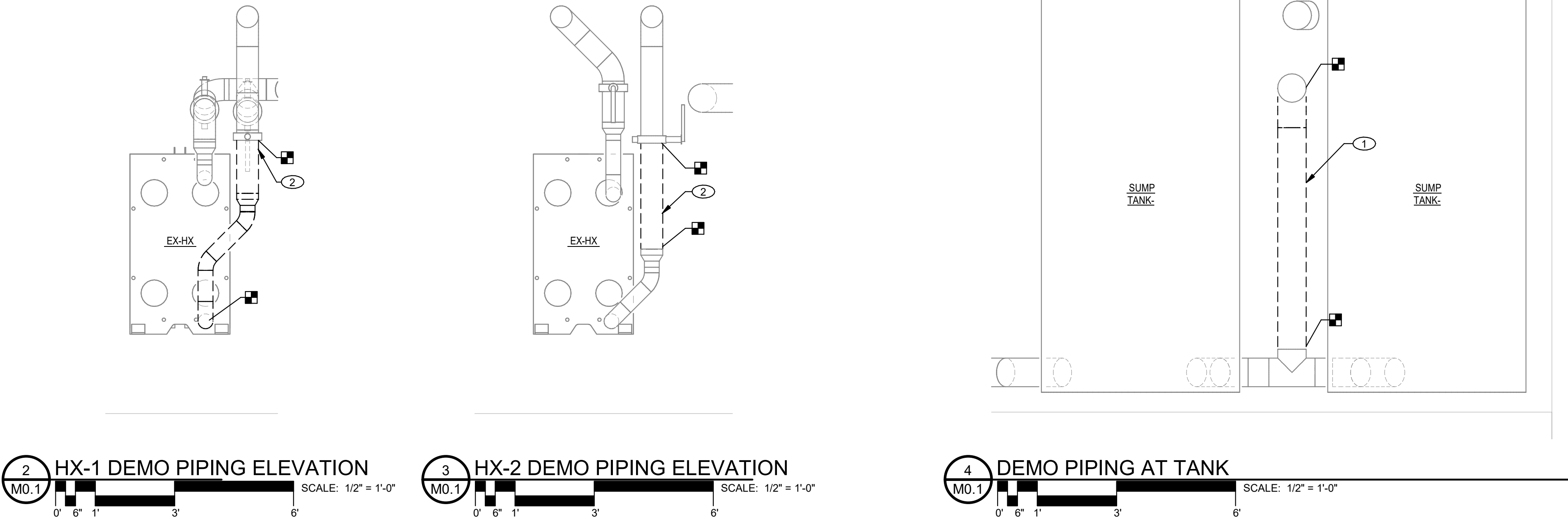
SHEET

M0.0

MECHANICAL DEMOLITION NOTES:

A. SEE SHEET M0.0 FOR MECHANICAL SYMBOLS LEGEND AND GENERAL PLUMBING DEMOLITION NOTES.

KEYNOTES	
1	REMOVE DOWN SECTION OF PIPE AT SUMP TANK. PREPARE TOP PIPE FOR RECONNECTION AND PREPARE BOTTOM PIPE FOR CAP.
2	REMOVE SECTION OF PIPE FOR COOLING TOWER WATER SUPPLY TO HEAT EXCHANGER.
3	REMOVE STEEL PIPING BACK TO INSIDE MECHANICAL ROOM. PREPARE FOR STEEL TO CPVC FLANGE INSIDE MECHANICAL ROOM.
4	REMOVE EXISTING COOLING TOWER AND ASSOCIATED PIPING AND COMPONENTS. EXISTING STRUCTURAL STEEL TO REMAIN. PREPARE STEEL FOR CONNECTION TO NEW TOWER.



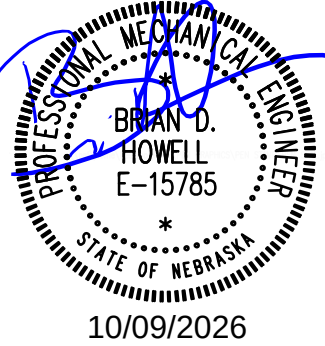
OPS MARRS COOLING
TOWER REPLACEMENT

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MECHANICAL DEMOLITION
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BDH Engineering
10250 Regency Circle,
Suite 225
Omaha, NE 68114
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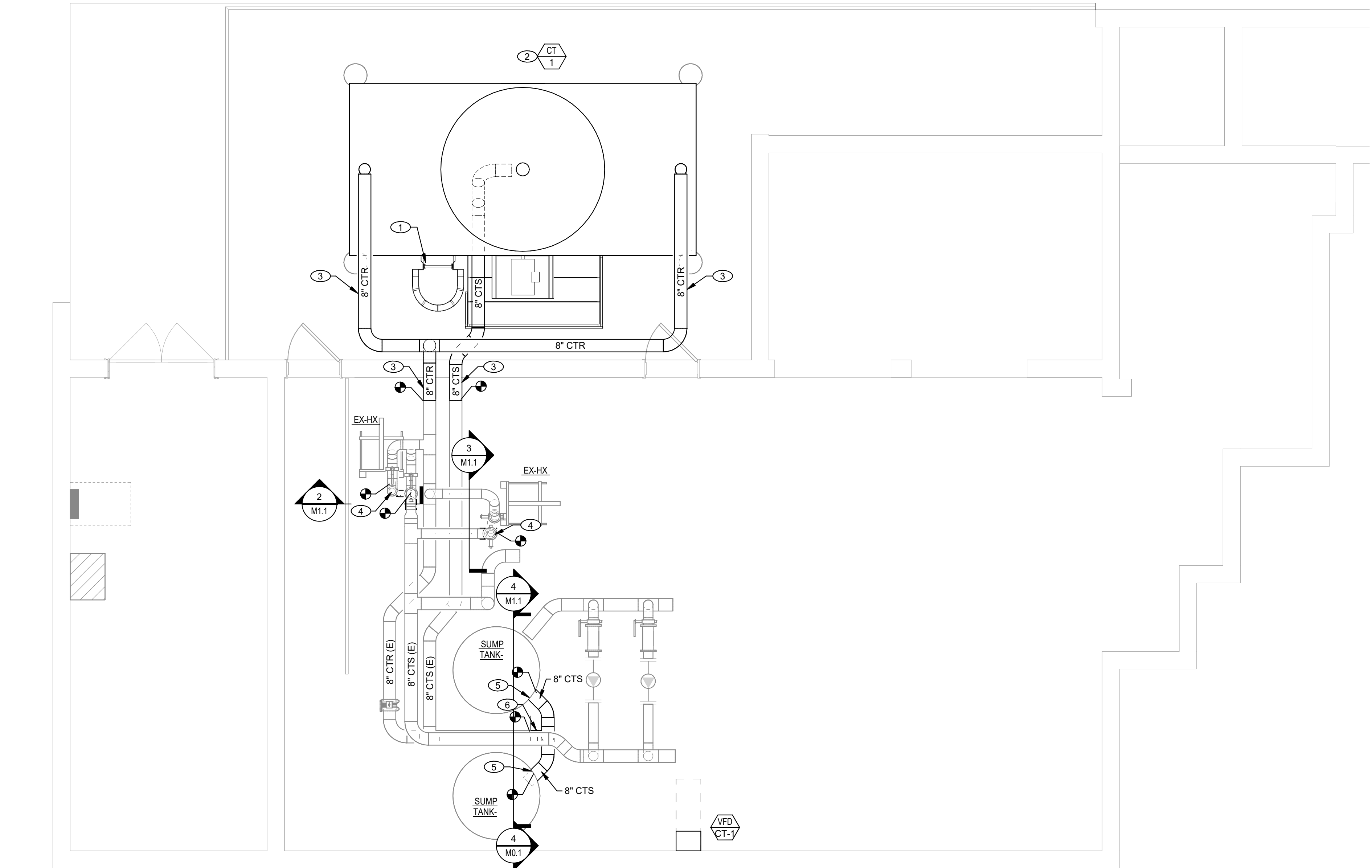
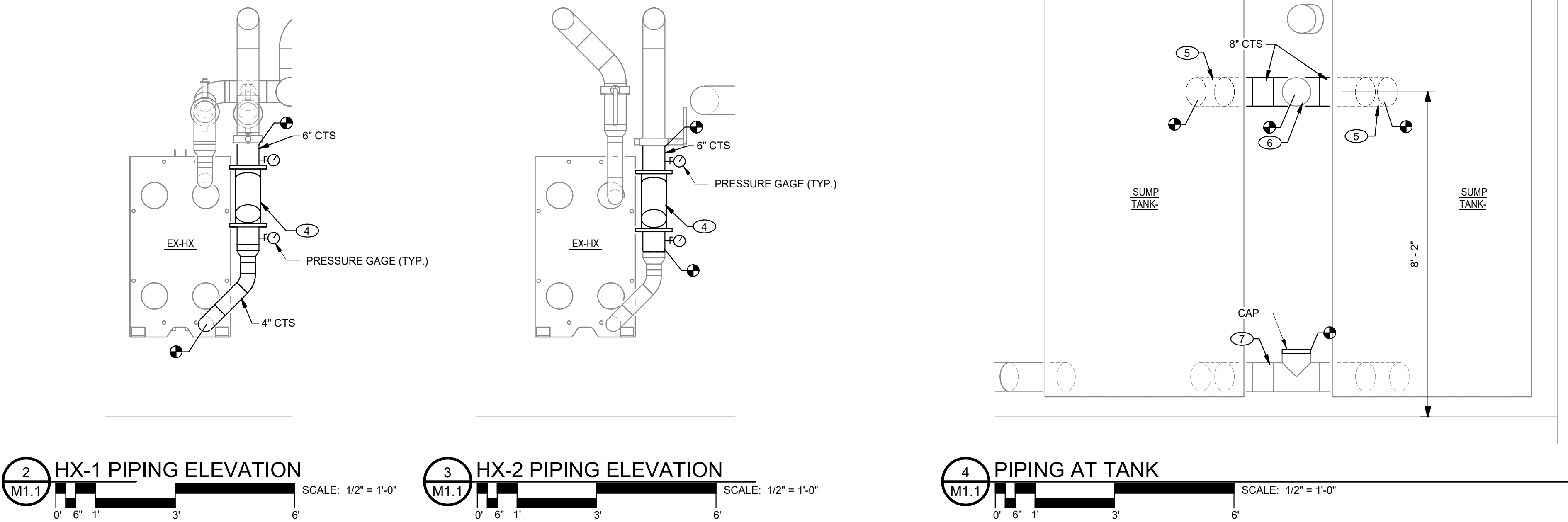
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SHEET **M0.1**

MECHANICAL PIPING NOTES:

- A. SEE SHEET M0.0 FOR MECHANICAL SYMBOLS LEGEND AND GENERAL MECHANICAL NOTES.
B. SUPPORT PIPING FROM STRUCTURE AS REQUIRED. SEE PIPE SUPPORT DETAIL FOR ADDITIONAL INFORMATION.

KEYNOTES	
1	EXTEND LADDER DOWN TO GROUND LEVEL AND ANCHOR LADDER SECURELY TO GROUND BELOW TOWER. PROVIDE STAINLESS STEEL LOCKED HINGED SECURITY COVER OVER BOTTOM 8' OF LADDER.
2	INSTALL NEW COOLING TOWER ON EXISTING STRUCTURAL FRAME. DRILL NEW ANCHOR LOCATIONS BASED ON NEW TOWER DIMENSIONS.
3	PROVIDE NEW CPVC PIPING FROM POINT INDICATED TO NEW TOWER CONNECTIONS.
4	PROVIDE 20 MESH 6" STRAINER ON COOLING TOWER WATER INLET TO HEAT EXCHANGER. STRAINER TO INCLUDE BLOW DOWN AND PRESSURE GAUGES.
5	CUT NEW WATER CONNECTION PORT INTO EXISTING SUMP TANK. FOLLOW ALL MANUFACTURER INSTRUCTIONS ON FIELD MODIFICATIONS FOR THIS TANK TO ENSURE A CLEAN CUT WITH NO LEAKS. INSTALL FLANGE CONNECTION FOR NEW PIPE CONNECTION.
6	MAINTAIN EXISTING HEIGHT OF PIPE AND CONNECT TO NEW TANK FLANGED CONNECTION.
7	LOWER PIPE ON TANKS IS TO REMAIN AND ACT AS EQUALIZER PIPE FOR TANKS. CAP TOP CONNECTION.



OPS MARRS COOLING
TOWER REPLACEMENT

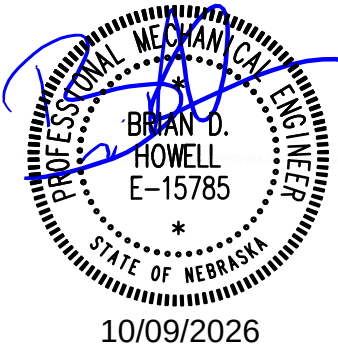
OMAHA, NE

MECHANICAL PLAN

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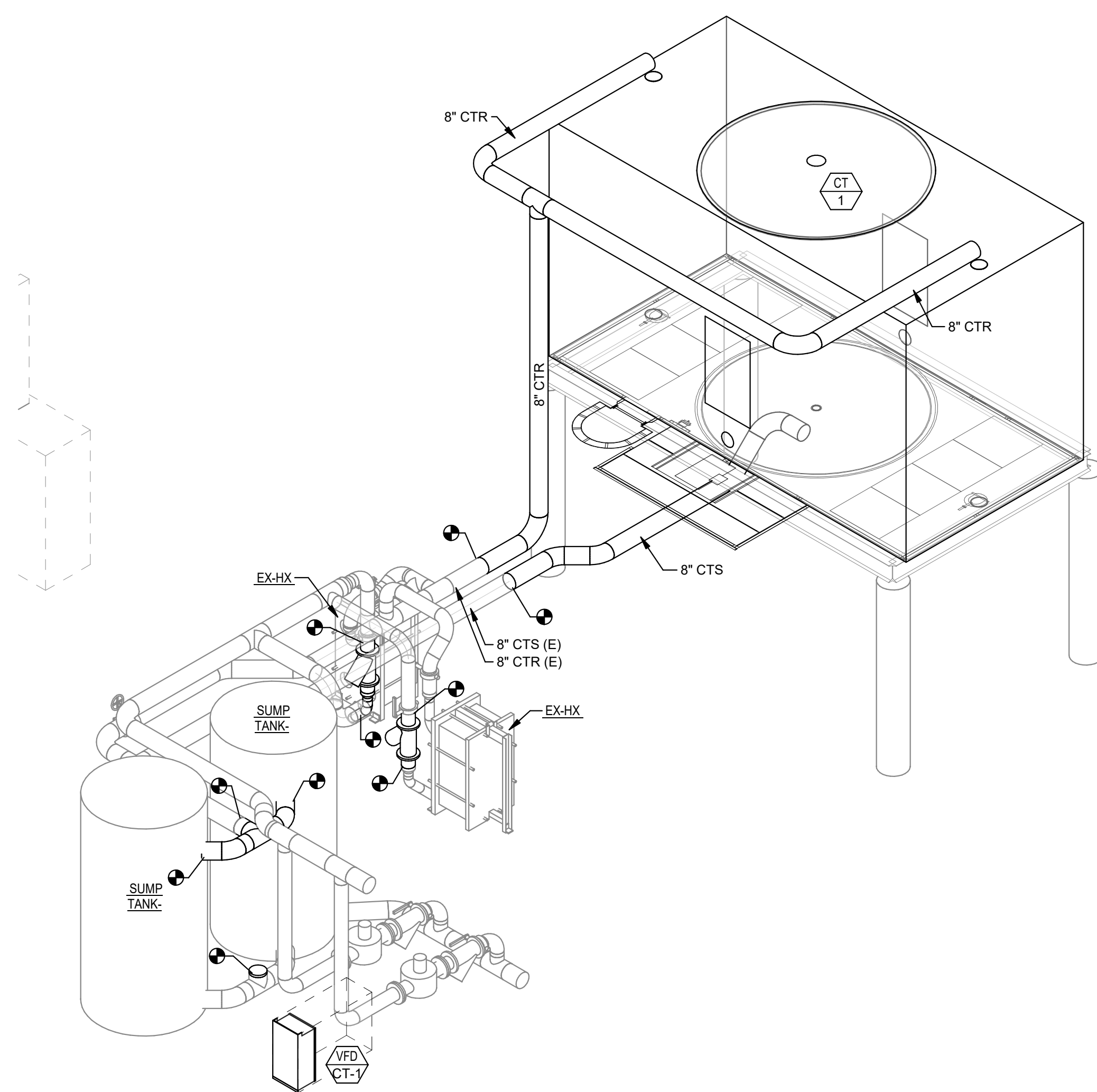


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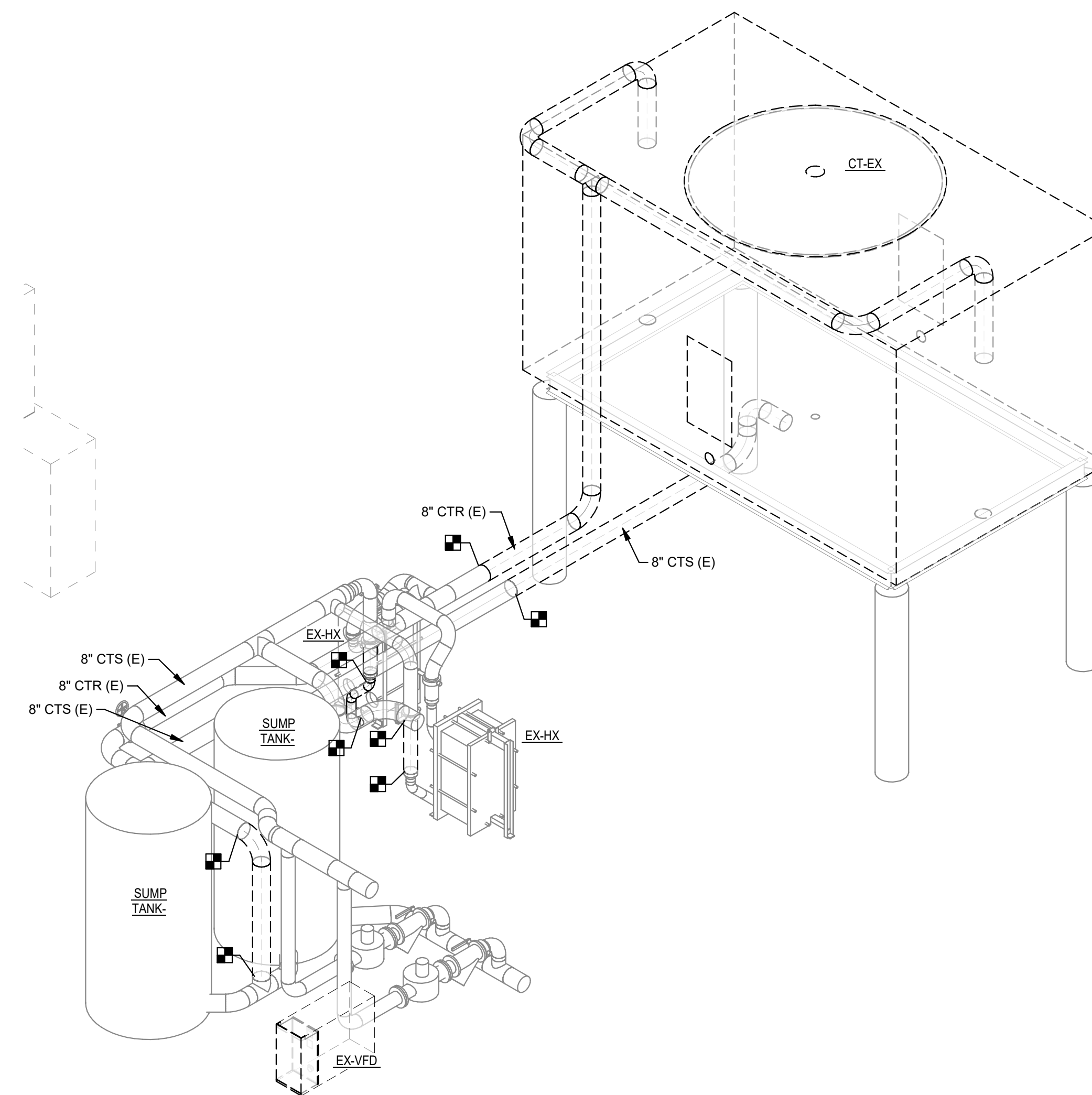
DATE: 10/09/2026

SHEET

M1.1



2 MECHANICAL NEW ISO
M6.1



1 MECHANICAL DEMO ISO
M6.1



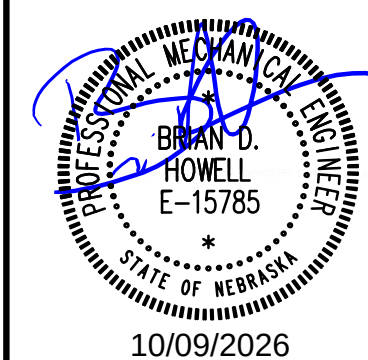
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SHEET

M6.1

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Alameda County 26064 - OPS MARRS Cooling Tower 26064 - OPS MARRS Cooling Tower - BDH - 26064

COOLING TOWER																								
MARK	SERVES	TOWER CONFIGURATION	NUMBER OF CELLS	CAPACITY (TONS)	AMBIENT TEMP DB/WB (°F)	MAX FLOWRATE (GPM)	EWT (° F)	LWT (°F)	PRESS DROP (FT)	INLET CONNECTION (IN)	INLET HEIGHT (IN)	OUTLET CONNECTION (IN)	FAN DATA				ELECTRICAL			BASIN HEAT	OPERATING WEIGHT (LBS)	MANUFACTURER & MODEL NO.	REMARKS	
													NO.	TYPE	FAN SPEED (RPM)	AIRFLOW (CFM)	HP	V	PH	SCCR (A)				CAPACITY
CT-1	HP LOOP	CROSSFLOW	1	480	96/78	1460	95	85	10	(2) @ 6"	145-1/2"	(1) @ 8"	1	GEAR	433	146,000	50	480	3	5000	NONE	22,060	MARLEY NC8405UAN	1-8

- REMARKS:
- 301L STAINLESS STEEL COLLECTION AND DISTRIBUTION BASINS, GALVANIZED STEEL STRUCTURE AND CASING, GEAR DRIVE WITH MOTOR MOUNTED OUTSIDE THE AIRSTREAM, EXTENDED LUBE LINE, ENHANCED ACCOUSTICAL PERFORMANCE QUIET FAN
 - 15 MIL PVC FILL WITH INTEGRAL LOUVERS AND DRIFT ELIMINATORS, GALVANIZED AIR INLET SCREENS, TWO 6" TOP HOT WATER INLETS WITH HORIZONTAL FLOW CONTROL VALVES FOR BALANCED DISTRIBUTION PER CELL
 - ACCESS DOOR PLATFORM ON BUILDING SIDE FACE, FAN DECK LADDER WITH SAFETY CAGE ON BUILDING SIDE FACE, LADDER EXTENTIONS TO GRADE, FAN DECK GUARDRAIL, FIBERGLASS VELOCITY RECOVERY STACK, AND STAINLESS STEEL PLENUM WALKWAY
 - REMOTE VARIABLE FREQUENCY DRIVE WITH SHAFT GROUNDING RING AND EXTERNALLY MOUNTED MANUAL RESET VIBRATION SWITCH
 - 8" DEPRESSED SIDE SUMP OUTLET WITH TRASH SCREEN AND ANTI VORTEX PLATE.
 - CTI CERTIFIED PER STD-201
 - 5-YEAR WHOLE UNIT PARTS ONLY WARRANTY
 - ALTERNATE TOWER MANUFACTURERS ARE ALLOWED. CONTRACTOR RESPONSIBLE FOR ANY MODIFICATIONS FOR ALTERNATE TOWER SELECTIONS.

COOLING TOWER CONTROL SEQUENCE

GENERAL: COOLING TOWER SEQUENCE OF OPERATION IS NOT INTENDED TO MODIFY OR OVERRIDE THE EXISTING HEAT PUMP SEQUENCE OF OPERATION. EXISTING HEAT PUMP SYSTEM CONTROL POINTS LISTED IN THIS SEQUENCE ARE APPROXIMATE.

COOLING TOWER ENABLE: UPON CHILLER ENABLE SIGNAL THE BMS SHALL ENABLE COOLING TOWER SYSTEM AND CLOSE THE COOLING TOWER BYPASS VALVE.

COOLING TOWER OPERATION: BMS SHALL MONITOR THE CONDENSER WATER SUPPLY TEMPERATURE. UPON RISE IN SUPPLY TEMPERATURE ABOVE 75 DEG F THE COOLING TOWER FAN SHALL START. BMS SHALL MODULATE THE COOLING TOWER FAN VFD TO MAINTAIN CONDENSER WATER SETPOINT.

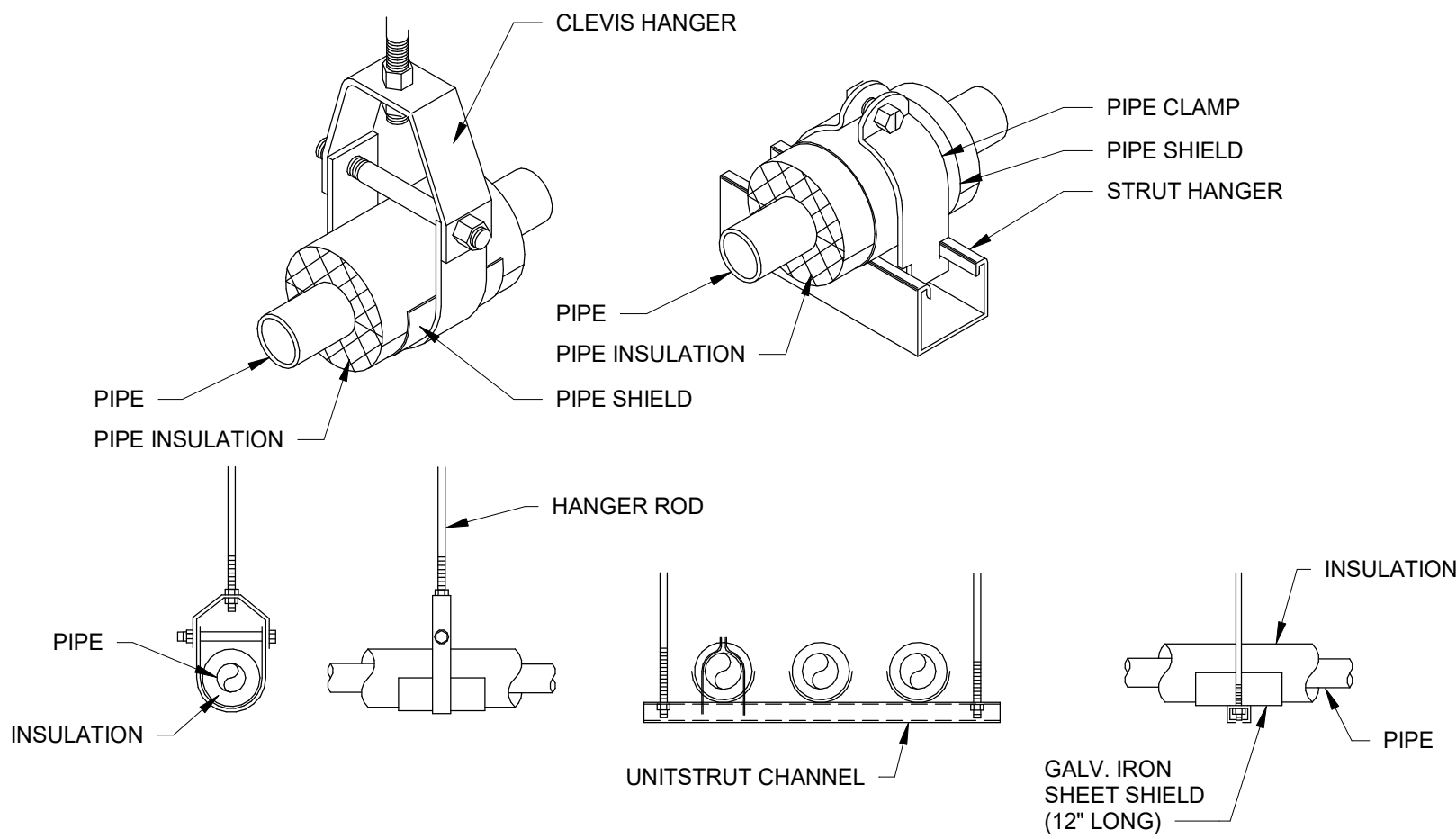
CONDENSER WATER SETPOINT: CONDENSER WATER SETPOINT SHALL BE SET BY THE BMS. BMS SHALL MONITOR THE OUTDOOR WET BULB TEMPERATURE AND SET THE CONDENSER WATER SUPPLY TEMPERATURE TO 7 DEG F HIGHER THAN THE ACTUAL OUTDOOR WETBULB TEMPERATURE.

FAULT DETECTION: BMS SHALL MONITOR THE COOLING TOWER STATUS AND FAN VIBRATION. UPON LOSS OF STATUS BMS SHALL SIGNAL AN ALARM. UPON DETECTION OF FAN VIBRATION THE BMS SHALL DISABLE THE COOLING TOWER AND SIGNAL AN ALARM AT THE BMS TERMINAL.

VARIABLE FREQUENCY DRIVE SCHEDULE						
MARK	SERVES	LOCATED	MOTOR SIZE (HP)	ELECTRICAL		MANUFACTURER & MODEL NO.
				V	PH	
VFD-CT-1	COOLING TOWER CT-1	MECH ROOM	50	480.0	3	YASKAWA

- REMARKS:
-

PIPING APPLICATION SCHEDULE						
SYSTEM DESCRIPTION	SIZE	MATERIAL	JOINTS	INSULATION		NOTES
				TYPE	THICKNESS	
CONDENSER WATER OUTDOOR	ALL	CPVC	SOLVENT	NONE	-	A
NOTES: A)						



- NOTES:
- ATTACH SUPPORTS FOR ALL PIPING SUSPENDED FROM THE STEEL STRUCTURE TO THE TOP CORD OF JOISTS OF BEAMS.
 - PROVIDE COPPER OR PLASTIC COATED HANGERS FOR NON-INSULATED COPPER PIPE.
 - PROVIDE AND INSTALL B-LINE OR ACCEPTABLE INSULATED GALVANIZED STEEL JACKET AND HANGER, STRUT MOUNTED CLAMP AND PIPE SUPPORT LOCATIONS.

1 PIPE SUPPORT DETAIL
M7.1 NOT TO SCALE

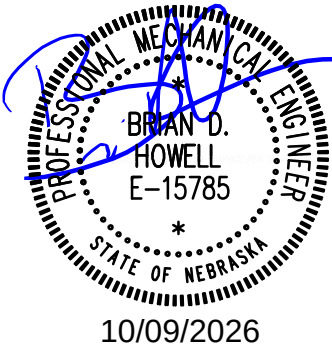
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MECHANICAL DETAILS AND SCHEDULES

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SHEET M7.1

(AS APPLICABLE)

APPLY TO ALL ELECTRICAL SHEETS

- APPLY TO ALL ELECTRICAL SHEETS

- A. MOUNTING HEIGHTS INDICATED ARE TO CENTER OF ROUGH-IN ABOVE FINISHED FLOOR (AFF).
- B. INSTALL ALL CONDUCTORS IN CONTINUOUS RACEWAY. PROVIDE INSULATED EQUIPMENT GROUNDING CONDUCTOR.
- C. PROVIDE DEDICATED NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT PHASE CONDUCTOR. EXCEPTION: WHERE AN EQUIPMENT MANUFACTURER REQUIRES A MULTIWIRE BRANCH CIRCUIT FOR ONLY ONE UTILIZATION EQUIPMENT AND WHERE ALL UNGROUNDED CONDUCTORS OF THAT CIRCUIT ARE OPENED SIMULTANEOUSLY BY THE BRANCH CIRCUIT OVERCURRENT DEVICE.
- D. CONCEAL ALL CONDUITS IN NEW WALLS, EXISTING STUD WALLS, OR ABOVE SUSPENDED CEILINGS.
- E. WHERE CONDUIT CANNOT BE CONCEALED IN EXISTING WALL OR CEILING CAVITIES, INSTALL CONDUCTORS IN SURFACE METAL RACEWAYS; SURFACE CONDUIT OR METAL SURFACE RACEWAY AT ENGINEER'S DISCRETION.
- F. PAINT SURFACE CONDUIT IN FINISHED AREAS, WHEN ALLOWED, TO MATCH SURROUNDING SURFACES. COORDINATE FINISHES WITH ARCHITECT.
- G. METAL SURFACE RACEWAYS SHALL BE WIREMOLD #V500, #V700, OR #V2400 SERIES WITH FACTORY IVORY FINISH OR APPROVED EQUIVALENT. METAL SURFACE RACEWAYS FOR TELECOMMUNICATIONS CABLES SHALL BE #V2400 OR LARGER. COMPLY WITH EIA/TIA STANDARDS FOR CABLE BENDING RADIUS.
- H. INSTALL EXPOSED OR CONCEALED RACEWAY NEAR METAL CORRUGATED SHEET ROOF DECKING SO NEAREST OUTER RACEWAY SURFACE IS NOT LESS THAN 6 INCHES FROM THE NEAREST SURFACE OF THE ROOF DECKING. EXCEPTION: RIGID METAL CONDUIT AND INTERMEDIATE METAL CONDUIT SHALL NOT BE REQUIRED TO MAINTAIN THIS CLEARANCE.
- I. PATCH, PAINT, REPAIR OR REPLACE ALL WALLS, CEILINGS, OR OTHER BUILDING ELEMENTS DISTURBED DURING INSTALLATION OF ELECTRICAL WORK.
- J. USE ROOM NUMBERS ASSIGNED BY OWNER AND NOT ROOM NUMBERS LISTED ON DRAWINGS FOR LABELING OF PANELBOARD DIRECTORIES, FIRE ALARM PANEL PROGRAMMING, ETC. INCLUDE A DESCRIPTION OF LOAD SUCH AS LIGHTS, RECEPTACLES, MECHANICAL UNIT LOCATIONS, ETC. ON TYPED PANELBOARD DIRECTORIES.
- K. REFER TO MECHANICAL/ELECTRICAL COORDINATION SCHEDULE SHEET FOR ADDITIONAL REQUIREMENTS ON DISCONNECTS, MOTOR STARTERS, ETC.

NOTICE:
DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SHOP AND OTHER APPROPRIATE DRAWINGS OR AT SITE. LAY OUT AND COORDINATE ALL WORK PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, AND CODES. VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF CLEARANCES FOR ALL TRADES. THIS NOTICE APPLIES TO ALL ELECTRICAL PLANS.

ELECTRICAL	
Sheet Number	Sheet Name
ELECTRICAL	
E0.0	ELECTRICAL SYMBOLS LEGEND AND GENERAL NOTES
E0.1	ELECTRICAL DEMOLITION PLAN
E1.1	ELECTRICAL PLAN
E2.1	ELECTRICAL ONE-LINE DIAGRAMS
Grand total: 4	

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ELECTRICAL SYMBOLS LEGEND AND GENERAL NOTES



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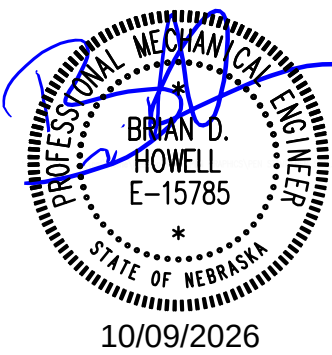
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SHEET

E0.0

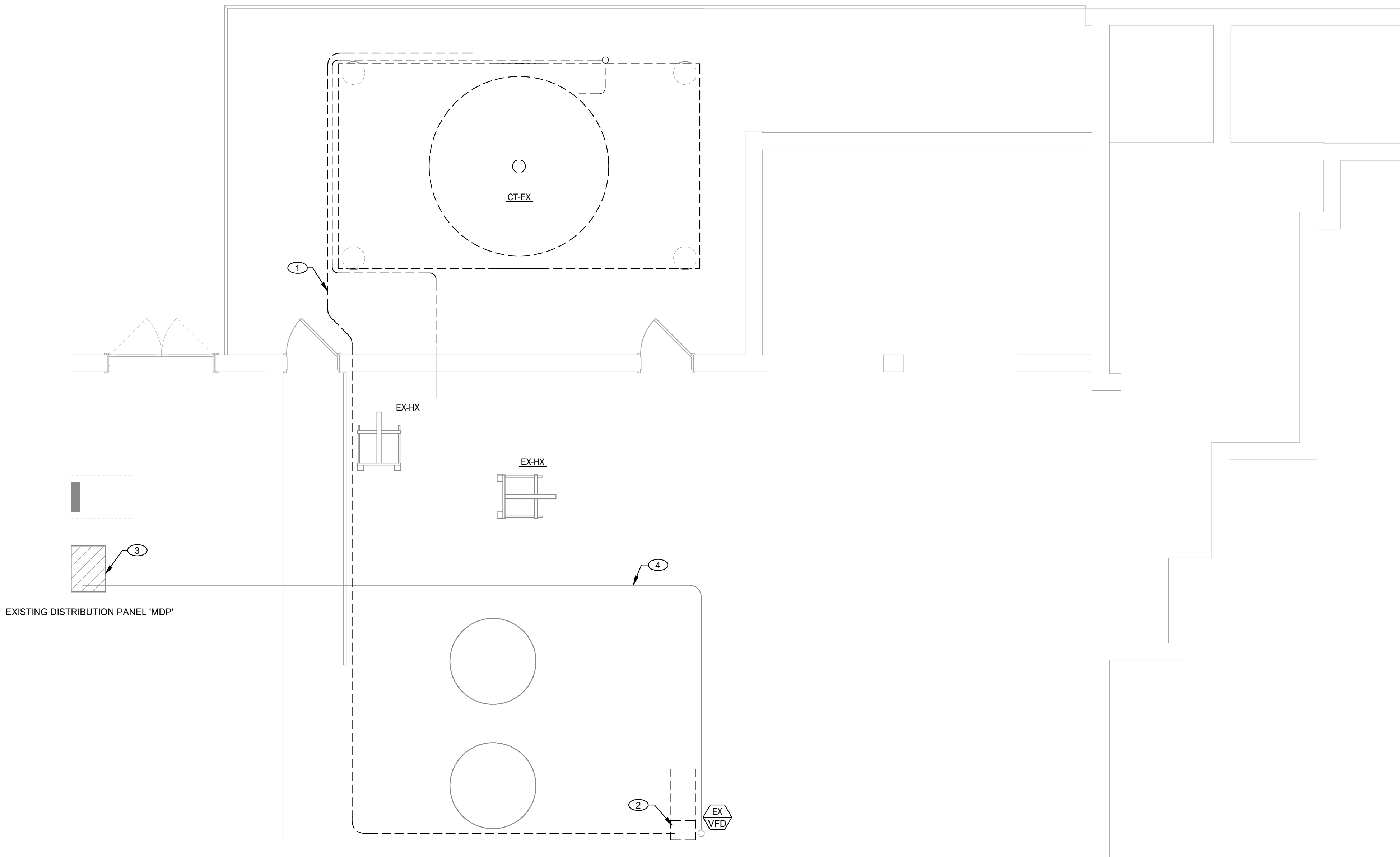


10/09/2026

ELECTRICAL DEMOLITION NOTES:

A. SEE SHEET E0.0 FOR ELECTRICAL SYMBOLS LEGEND AND GENERAL ELECTRICAL DEMOLITION NOTES.

KEYNOTES	
1	REMOVE EXISTING CONDUIT AND CONDUCTORS TO DEMOLISHED COOLING TOWER. PATCH WALL TO MATCH EXISTING.
2	REMOVE EXISTING VFD.
3	REMOVE EXISTING BREAKER IN MDP AND PREPARE FOR NEW BREAKER.
4	REMOVE CONDUCTORS FROM EXISTING 1-1/2" CONDUIT AND PREPARE FOR NEW CONDUCTORS.



3 ELECTRICAL DEMOLITION PLAN
E0.1
SCALE: 1/4" = 1'-0"



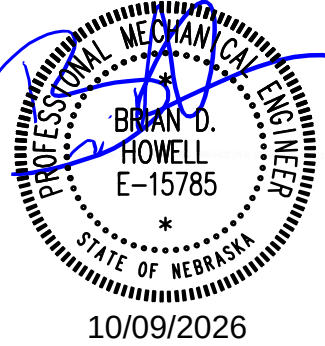
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ELECTRICAL DEMOLITION
PLAN

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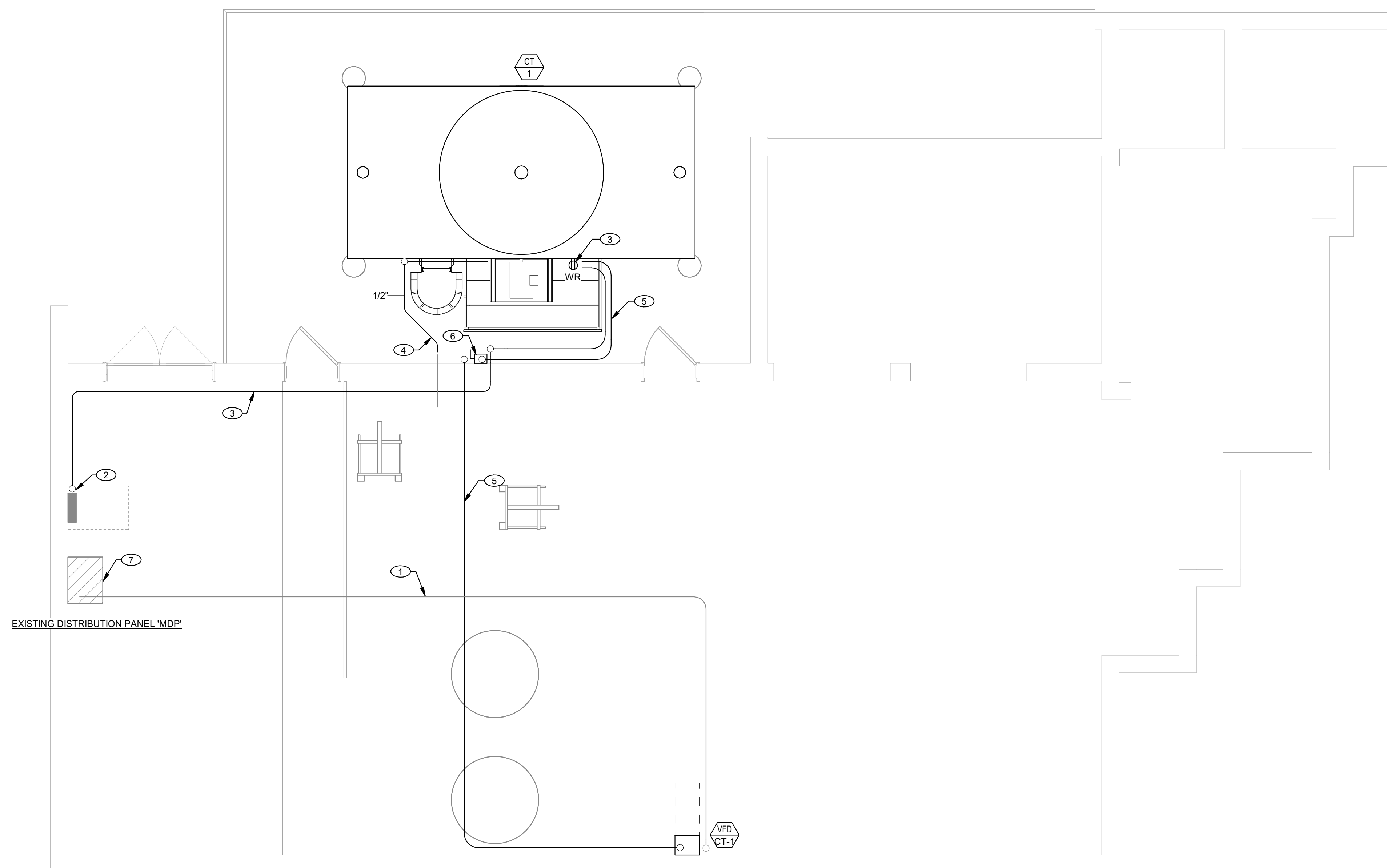
SHEET

E0.1

A. SEE SHEET E0.0 FOR ELECTRICAL SYMBOLS LEGEND AND GENERAL ELECTRICAL NOTES.

B. SEE MECHANICAL AND ELECTRICAL SCHEDULE ON M7.1 FOR ADDITIONAL INFORMATION ON MECHANICAL EQUIPMENT REQUIRING POWER.

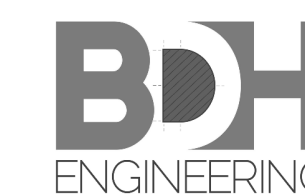
KEYNOTES	
1	EXISTING 1 1/2" EMT CONDUIT FROM EXISTING MDP TO COOLING TOWER VFD LOCATION. REMOVE EXISTING CONDUCTORS AND PROVIDE WITH (3) #4 AWG, CU, THWN, (1) #6 AWG GRND IN EXISTING 1 1/2" CONDUIT.
2	TERMINATE CONDUIT IN EXISTING 208/120 PANEL WITH SPACE. PROVIDE 120V 20A 1P BREAKER IN AVAILABLE SPACES IN PANEL.
3	ROUTE 3/4" CONDUIT FROM EXISTING PANEL TO NEW WEATHERPROOF GF RECEPTACLE. MOUNT RECEPTACLE ON WALL OF COOLING TOWER FOR FUTURE COOLING TOWER TREATMENT SYSTEM.
4	EXTEND EXISTING 1/2" CONDUIT TO NEW TOWER VIBRATION SWITCH.
5	PROVIDE 1 1/2" CONDUIT WITH 3-#4 AWG, CU, THWN, (1) #6 AWG, CU, THWN, GRND FROM NEW VFD TO DISCONNECT THEN TO COOLING TOWER FAN MOTOR.
6	PROVIDE NEW NEMA 4X, 100A, 480V, 3P, NON-FUSED DISCONNECT.
7	PROVIDE NEW 100A BREAKER IN EXISTING MDP. REFER TO E2.1 FOR MORE INFORMATION.



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ELECTRICAL PLAN



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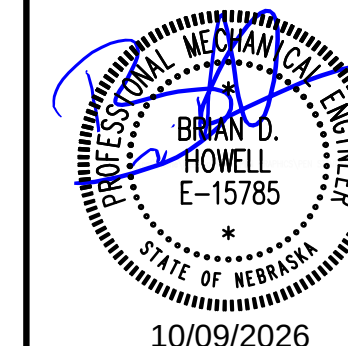
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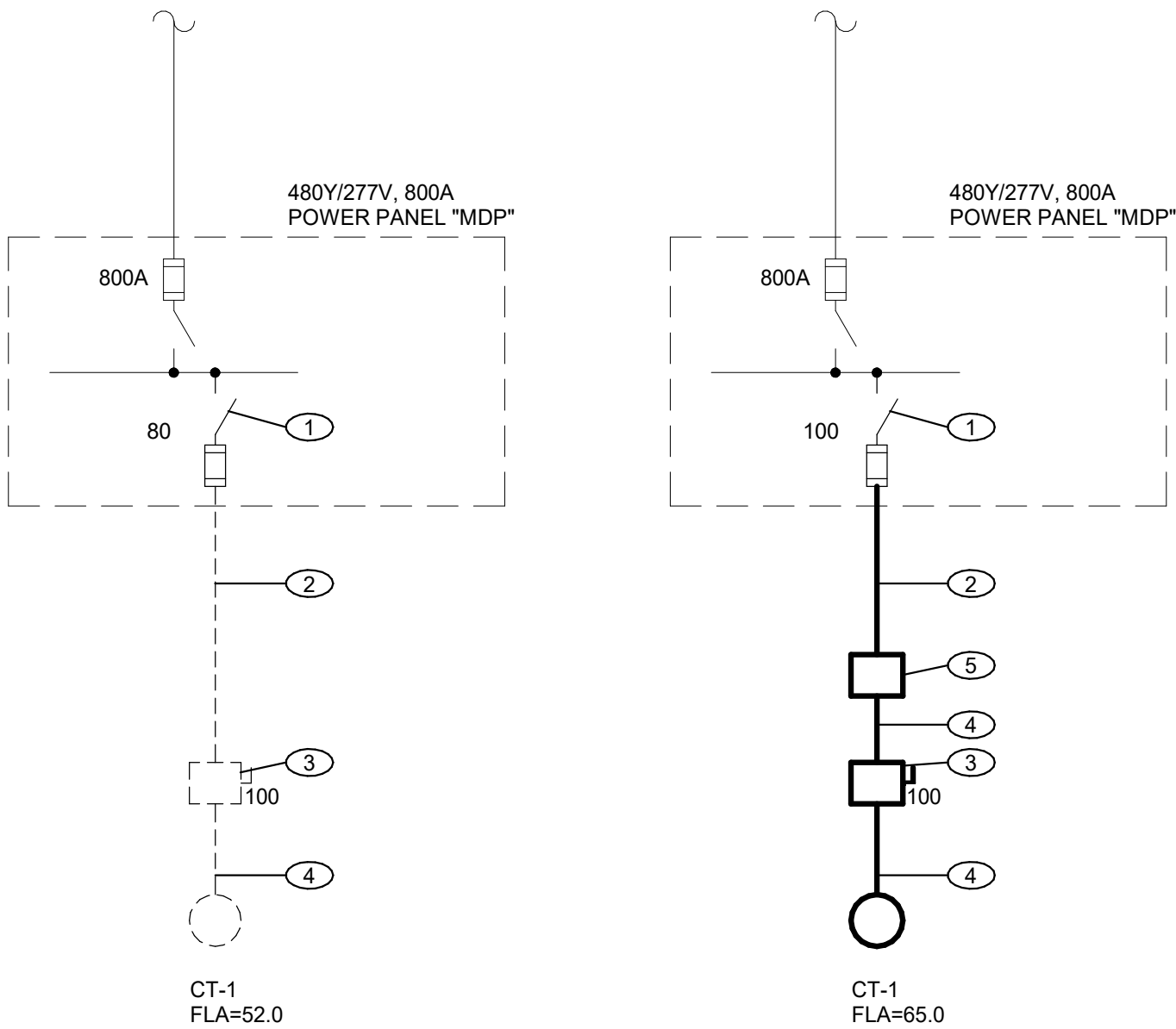
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SHEET

E1.1



10/09/2024



- DEMO KEYED NOTES:
1. REMOVE 80A FUSED SWITCH.
 2. REMOVE CONDUCTORS, EXISTING 1-1/2" EMT CONDUIT TO REMAIN.
 3. REMOVE DISCONNECT SWITCH.
 4. REMOVE CONDUIT AND CONDUCTORS.

COOLING TOWER
DEMO ONE-LINE DIAGRAM

- KEYED NOTES:
1. PROVIDE 480V, 3-POLE, 100A THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER.
 2. PROVIDE 3-#4, 1-#8 GROUND IN EXISTING 1-1/2" CONDUIT.
 3. PROVIDE 480V, 100A, NEMA 4X NON-FUSED DISCONNECT SWITCH.
 4. PROVIDE 3-#4, 1-#8 GROUND IN NEW 1-1/2" CONDUIT.
 5. NEW 50 HP VFD.

COOLING TOWER
ONE-LINE DIAGRAM

ONE LINE DIAGRAM

NOT TO SCALE

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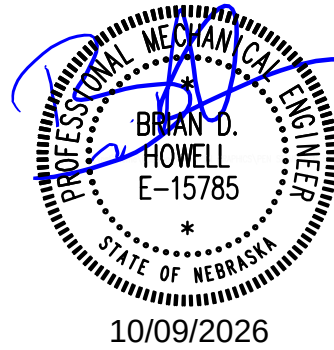
ELECTRICAL ONE-LINE DIAGRAMS

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E2.1