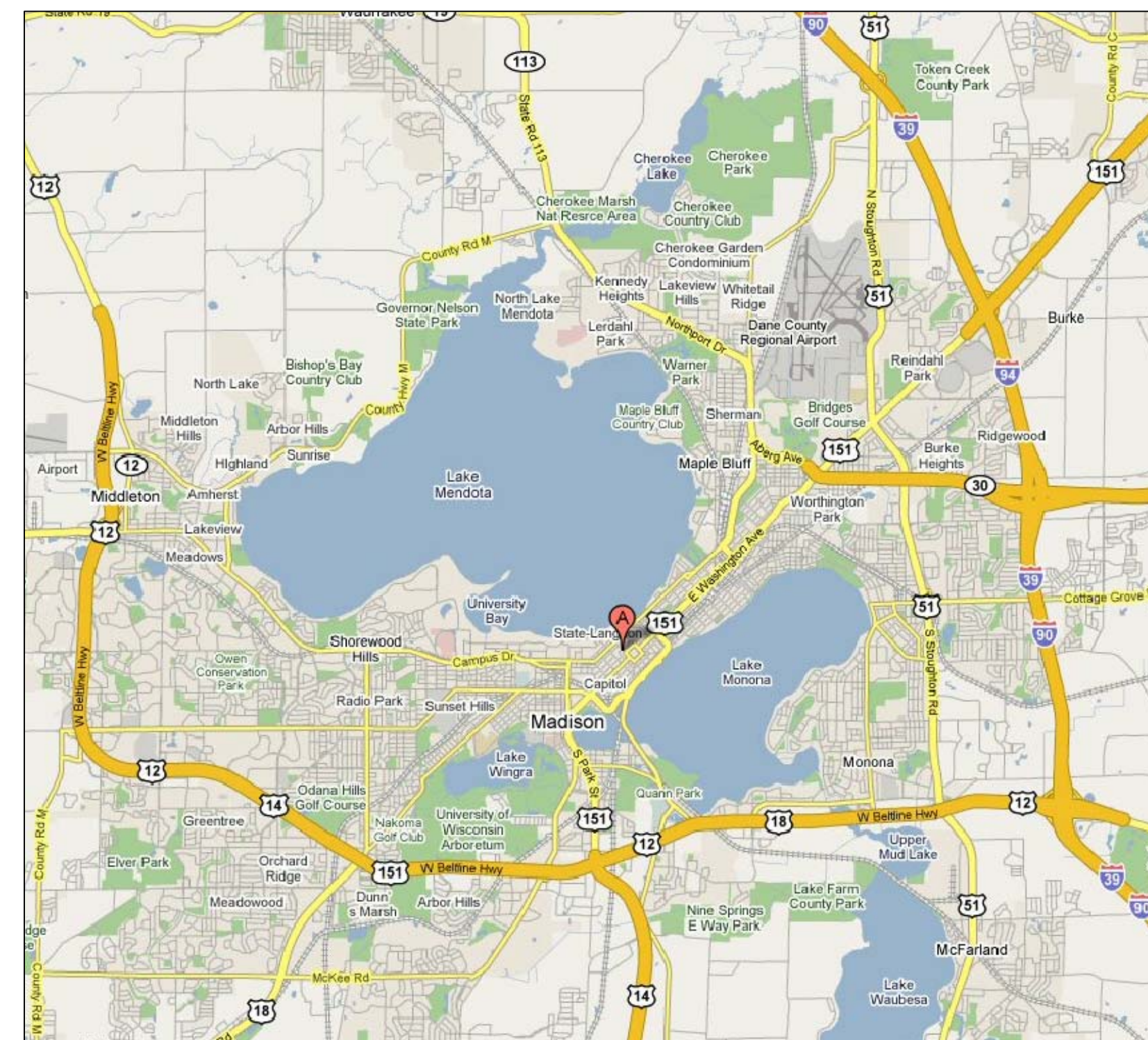


# COUNTY OF DANE CITY COUNTY BUILDING COOLING TOWER REPLACEMENT PROJECT MADISON, WISCONSIN BID DOCUMENT PACKAGE NOVEMBER 15, 2016

COUNTY OF DANE RFB NO 316047



**CITY COUNTY BUILDING  
210 MARTIN LUTHER KING JR. BLVD  
MADISON, WISCONSIN 53703**

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CONSULTANTS

ISSUED

REVISIONS / ADDENDA

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PROJECT  
DANE COUNTY  
CITY COUNTY  
BUILDING

COOLING TOWER  
REPLACEMENT PROJECT

TITLE SHEET

T100

**PIPING SYSTEMS**

	BALL VALVE
	GAUGE VALVE
	BUTTERFLY VALVE
	GATE VALVE
	GATE, ANGLE VALVE
	GLOBE VALVE
	GLOBE, ANGLE VALVE
	PLUG VALVE (GAS)
	GENERAL SHUTOFF VALVE SEE SPECIFICATIONS FOR TYPE
	CALIBRATED BALANCE/SHUTOFF VALVE (FLOW MEASURING)
	OS & Y GATE VALVE
	OS & Y GLOBE VALVE
	2-WAY TEMPERATURE CONTROL VALVE (ELECTRIC)
	3-WAY TEMPERATURE CONTROL VALVE (ELECTRIC)
	CHECK VALVE
	DRAIN VALVE (W/ HOSE CONNECTION & BRASS CAP)
	LOCK SHIELD VALVE
	NEEDLE VALVE
	PRESSURE REDUCING VALVE
	RELIEF (R) OR SAFETY (S) VALVE
	SOLENOID VALVE
	BLIND FLANGE
	CAP
	CONNECTION, BOTTOM
	CONNECTION, TOP
	ELBOW, TURNED UP
	ELBOW, TURNED DOWN
	REDUCER, CONCENTRIC
	REDUCER, ECCENTRIC - STRAIGHT INVERT
	REDUCER, ECCENTRIC - STRAIGHT CROWN

	AIR VENT
	VACUUM BREAKER
	AIR SEPARATOR
	PIPE ALIGNMENT GUIDE
	PIPE ANCHOR
	BALL JOINT
	EXPANSION JOINT
	EXPANSION LOOP
	FLEXIBLE CONNECTOR
	STEAM TRAP
	FLOW METER
	FLOW SWITCH
	TEMPERATURE SENSOR
	PITCH OF PIPE
	PRESSURE GAUGE AND COCK
	PRESSURE SWITCH
	PUMP
	PUMP IN VERTICAL
	STRAINER
	STRAINER, W/ BLOW DOWN VALVE
	THERMOMETER
	THERMOMETER WELL, ONLY
	PETES PLUG
	BACKFLOW PREVENTER
	FLOW DIRECTION IN PIPES
	HANGERS
	UNION
	PIPE FLANGE
	WATER METER
	FLOW REGULATOR

	—HPS XX PSIG—	HIGH-PRESSURE STEAM
	—LPS—	LOW-PRESSURE STEAM
	—HPC—	HIGH-PRESSURE CONDENSATE
	—LPC—	LOW-PRESSURE CONDENSATE
	—BBD—	BOILER BLOWDOWN
	—FD—	PUMP DISCHARGE CONDENSATE
	—VAC—	VACUUM PUMP CONDENSATE
	—CW—	COLD WATER (DOMESTIC)
	—MU—	MAKEUP WATER
	—V—	ATMOSPHERIC VENT
	—FOO—	FUEL OIL OVERFLOW
	—FOS—	FUEL OIL SUPPLY
	—FOR—	FUEL OIL RETURN
	—FOV—	FUEL OIL TANK VENT
	—FOF—	FUEL OIL FILL
	—G XXX PSIG—	GAS
	—LP—	LIQUID PROPANE
	—HWS—	HOT WATER SUPPLY
	—HWR—	HOT WATER RETURN
	—A—	COMPRESSED AIR
	—VAC—	VACUUM (AIR)
	—RHG—	REFRIGERANT HOT GAS
	—RS—	REFRIGERANT SUCTION
	—RL—	REFRIGERANT LIQUID
	—BS—	BRINE SUPPLY
	—BR—	BRINE RETURN
	—CS—	CONDENSER WATER SUPPLY
	—CR—	CONDENSER WATER RETURN
	—CWS—	CHILLED WATER SUPPLY
	—CWR—	CHILLED WATER RETURN
	—H—	HUMIDIFICATION LINE
	—D—	DRAIN

**ABBREVIATIONS**

A	COMPRESSED AIR	E	EXISTING	HW	HOT WATER	RF	RETURN FAN
ACC	AIR COOLED CONDENSER	EAT	ENTERING AIR TEMPERATURE	HWR	HOT WATER RETURN	RG	RETURN GRILLE
ACU	AIR COOLED CONDENSING UNIT	EC	ELECTRICAL CONTRACTOR	HWS	HOT WATER SUPPLY	RH	RELIEF HOOD
AD	AIR CONDITIONING UNIT	EF	EXHAUST FAN	HX	HEAT EXCHANGER	RL	REFRIGERANT HOT GAS
ADJ	ADJUSTABLE	EER	ENERGY EFFICIENCY RATIO	HYD	HYDRANT	RPM	REVOLUTIONS PER MINUTE
A/E	ARCHITECT/ENGINEER	ETBP	EXTERNAL FACE & BYPASS	HZ	HERTZ	RS	REFRIGERANT SUCTION
AF	AIR FOIL	EC	EXHAUST GRILLE	H	INTAKE HOOD	RR	RETURN REGISTER
AFI	ABOVE FINISHED FLOOR	EJ	EXPANSION JOINT	IFBP	INTERNAL FACE & BYPASS	RTU	ROOF TOP UNIT
AFMS	AIR FLOW MEASURING STATION	EL	ELEVATION	I	INCH	S	SUPPLY
AHU	AIR HANDLING UNIT	ELEC	ELECTRICAL	IN	INCH	SA	SUPPLY AIR
AL	ALUMINUM	EQUIP	EQUIPMENT	INW	INWEIT	SCR	SILICONE CONTROLLED RECTIFIERS
AMP	AMPERE	ER	EXHAUST REGISTER	IPLV	INTEGRATED PART LOAD VALUE	SD	SLOT DIFFUSER
AP	ACCESS PANEL	ERU	ENERGY RECOVERY UNIT	JWR	JACKET WATER RETURN	SEER	SEASONAL ENERGY EFFICIENCY RATIO
APD	AIR PRESSURE DROP	ETR	EXISTING TO REMAIN	JWS	JACKET WATER SUPPLY	SEG	SECURITY EXHAUST GRILLE
ASC	ABOVE SUSPENDED CEILING	EMH	ELECTRIC WALL HEATER	KW	KILOWATT	SF	SUPPLY FAN
ATR	AIR TROFFER - RETURN	EW	ENTERING WATER TEMPERATURE	LAT	LEAVING AIR TEMPERATURE	SG	SUPPLY GRILLE
ATS	AIR TROFFER - SUPPLY	EXH	EXHAUST	LBS	POUNDS	SM	SHEET METAL
AUTO	AUTOMATIC	EXT	EXTERIOR OR EXTERNAL	LTD	LEAVING AIR TEMPERATURE	SQ FT	SQUARE FEET
B	BOILER	F	FURNACE	LPC	LOW PRESSURE CONDENSATE	SR	SUPPLY REGISTER
BB	BASEBOARD	F	FURNACE	LPS	LOW PRESSURE STEAM	SRV	SECURITY RETURN GRILLE
BC	BOOSTER COIL	'F	DEGREES FAHRENHEIT	LP	LINEAR RETURN	SS	SAFETY RELIEF VALVE
BDD	BACK DRAFT DAMPER	F&B	FACE & BYPASS	LT	LIGHT TROFFER	SSC	STAINLESS STEEL
BFP	BACKFLOW PREVENTER	FA	FREE AREA	LW	LEAVING WATER TEMPERATURE	SSG	SECURITY SUPPLY GRILLE
BHP	BRAKE HORSEPOWER	FC	FORWARD CURVED	M	MOTOR OPERATED DAMPER	STG	SECURITY TRANSFER GRILLE
BI	BACKWARD INCLINED	FCU	FAN COIL UNIT	MAT	MAKED AIR TEMPERATURE	SWG	SINGLE WALL DUCTWORK
BOD	BOTTOM OF DUCT	FD	FLOOR DRAIN OR FIRE DAMPER	MA	MIXED AIR	SWG	SINGLE WIDTH SINGLE INLET
BOP	BOTTOM OF PIPE	FFA	FROM FLOOR ABOVE	MAU	MAKES-UP AIR UNIT	T	THERMOSTAT/TEMPERATURE SENSOR
BOS	BOTTOM OF STRUCTURE	FFB	FROM FLOOR BELOW	MB	MAXIMUM	TA	THROWAWAY
BR	BRINE RETURN	FILL	FILL LINE	MAU	MAKES-UP AIR UNIT	TCAC	TEMPERATURE CONTROL AIR COMPRESSOR
BRC	BEARING	FLA	FULL LOAD AMPS	MAX	MAXIMUM	TCB	TEMPERATURE CONTROL CONTRACTOR
BRS	BRINE RETURN	FLEX	FLEXIBLE	MBH	1000 BRITISH THERMAL UNITS/HOUR	TCP	TEMPERATURE CONTROL PANEL
BSW	BSIN SWEEPER	FM	FLOW METER	MCA	MINIMUM CIRCUIT AMPS	TCV	TEMPERATURE CONTROL VALVE
BSMT	BASINMENT	FO	FUEL OIL OVERFLOW	MCC	MOTOR CONTROL CENTER	TEMP	TEMPORARY
BTU	BRITISH THERMAL UNIT	FOR	FUEL OIL RETURN	MECH	MECHANICAL	TF	TRANSFER FAN
C	CONVECTOR	FOS	FUEL OIL SUPPLY	MEZZ	MEZZANINE	TFB	TO FLOOR ABOVE
CA	COMBUSTION AIR	FOV	FUEL OIL VENT	MFS	MAXIMUM FUSE SIZE	TFB	TO FLOOR BELOW
CAB	CABINET	FPC	FIRE PROTECTION CONTRACTOR	MIN	MINIMUM	TFD	TRANSFER GRILLE
CCC	COOLING COIL CONDENSATE	FPM	FEET PER MINUTE	MOC	MAXIMUM OVERCURRENT PROTECTION	TO	TEST OPENINGS
CD	CEILING DIFFUSER	FS	FLOW SENSOR	FT	FOOT OR FEET	TS	TIP SPEED
CDR	CONDENSER WATER RETURN	FT	FOOT OR FEET	G	GAS	TYP	TYPICAL
CDS	CONDENSER WATER SUPPLY	G	GAS	GA	GAUGE	UH	UNIT HEATER
CFM	CUBIC FEET PER MINUTE	GAL	GALLON	NC	NOISE CRITERIA	UL	UNDERGROUND STORAGE TANK
CH	CHILLER	GALV	GALVANIZED	NC	NORMALLY CLOSED	UV	UNIT VENTILATOR
CWR	CHILLED WATER RETURN	GC	GENERAL CONTRACTOR	NO	NORMALLY OPEN	UNEX	UNEXCAVATED
CWS	CHILLED WATER SUPPLY	GLYR	GLYCOL RETURN	GLYR	GLYCOL SUPPLY	V	VENT
CI	CAST IRON OR CUBIC INCH	GRH	GAS FIRED RADIANT HEAT	NTS	NOT TO SCALE	VAC	VACUUM
CL	CENTERLINE	GRM	GALLONS PER MINUTE	O	OXYGEN	VAV	VARIABLE AIR VOLUME
CLG	CEILING	GUH	GAS FIRED UNIT HEATER	OA	OUTDOOR AIR	VB	VACUUM BREAKER
CMU	CONCRETE MASONRY UNIT	GV	GAS VENT	OAT	OUTDOOR AIR TEMPERATURE	VD	VOLUME DAMPER
COMB	COMBINATION OR COMBUSTION	H	HUMIDIFIER	OC	ON CENTER	VDT	VERTICAL DRAW THRU
CONC	CONCRETE	HB	HOSE BIBB	OPD	OPPOSED BLADE DAMPER	VEL	VELOCITY
COND	CONDENSATE	HC	HEATING CONTRACTOR	P	PUMP	VERT	VERTICAL
CONTR	CONTRACTOR	HCR	HOT/CHILLED WATER RETURN	PC	PLUMBING CONTRACTOR	VFD	VARIABLE FREQUENCY DRIVE
COP	COEFFICIENT OF PERFORMANCE	HCS	HOT/CHILLED WATER SUPPLY	PD	PUMP DISCHARGE	VSC	VARIABLE SPEED CONTROL
CP	CONDENSATE PUMP	HD	HUB DRAIN	PLBG	PLUMBING	W TO W	WALL TO WALL
CRU	COMPUTER ROOM UNIT	HOT	HORIZONTAL DRAW THRU	POC	POINT OF CONNECTION	WB	WET BULB
CT	COOLING TOWER	HRE	MERCURY	PRE	POWER ROOF EXHAUST FAN	WC	WATER COLUMN
CU	COPPER	HGT	HEIGHT	PRELIM	PRELIMINARY	WF	WALL FIN
CUH	CABINET UNIT HEATER	HP	HORSEPOWER	PRESS	PRESSURE REDUCING VALVE	WP	WEATHER PROOF
D	DRAIN	HPC	HIGH PRESSURE CONDENSATE	PRV	PRESSURE REDUCING VALVE	WPD	WATER PRESSURE DROP
DB	DRY BALL	HPS	HIGH PRESSURE STEAM	PS	PRESSURE SWITCH	YH	YARD HYDRANT
DC	DRY COOLER	HPU	HEAT PUMP UNIT	PSD	PUMP Suction DIFFUSER		
DCO	DOOR CUTOFF BY GC	HPWR	HEAT PUMP WATER RETURN	PSI	POUNDS PER SQUARE INCH		
DDC	DIRECT DIGITAL CONTROL	HS	HOUR	PTAC	PACKAGED TERMINAL AIR CONDITIONER		
DEPT	DEPARTMENT	HRU	HEAT RECOVERY UNIT	PVC	POLYVINYL CHLORIDE		
DG	DOOR GRILLE BY GC	HSR	HEAT SINK RETURN	R	REFRIGERANT		
DA	DIAMETER	HSS	HEAT SINK SUPPLY	RA	RETURN AIR		
DN	DOWN	HTWR	HIGH TEMPERATURE HOT WATER RETURN	RCP	RADIANT CEILING PANEL		
DSA	DUCT SOUND ATTENUATOR	HVAC	HEATING VENTILATING AND AIR CONDITIONING	RD	ROOF DRAIN		
DSF	DESTRATIFICATION FAN			RECD	REQUIRED		
DWD	DUAL WALL DUCTWORK						
DWDI	DOUBLE WALL DUCTWORK WITH DOUBLE INLET						
DWC	DRAINAGE						

**GENERAL SYMBOLS**

	①	THERMOSTAT OR TEMPERATURE SENSOR
		TEMPERATURE SENSOR WITH SECURITY COVER
	②	HUMIDISTAT OR HUMIDITY SENSOR
		HUMIDISTAT OR HUMIDITY SENSOR WITH SECURITY COVER
		MOTOR STARTER
	③	SPEED CONTROLLER
	\$	START/STOP SWITCH
	---	EXISTING TO REMAIN (DUCTWORK, PIPING, & EQUIPMENT)
	---	EXISTING TO BE REMOVED (DUCTWORK, PIPING, & EQUIPMENT)
	---	NEW DUCTWORK/PIPING
	---	NEW EQUIPMENT

**CONSULTANTS**

**ISSUED**

**REVISIONS / ADDENDA**

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PROJECT  
DANE COUNTY  
CITY COUNTY  
BUILDING

COOLING TOWER  
REPLACEMENT PROJECT

ABBREVIATIONS  
AND SYMBOLS

ME000

**GENERAL NOTES:**

1. CONTRACTOR RESPONSIBLE FOR ALL ASPECTS AND LOGISTICS OF REMOVAL OF EXISTING COOLING TOWERS FROM ROOF AND INSTALLATION OF NEW COOLING TOWERS AT SAME LOCATION INCLUDING CRANING, RIGGING, STREET CLOSURE, PERMITS, ETC.
2. ALL ASPECTS OF COOLING TOWER REMOVAL AND INSTALLATION SHALL BE FULLY COORDINATED WITH CITY COUNTY BUILDING FACILITY ENGINEERING, DANE COUNTY PUBLIC WORKS AND CITY OF MADISON PUBLIC WORKS AND CITY OF MADISON POLICE DEPARTMENT.

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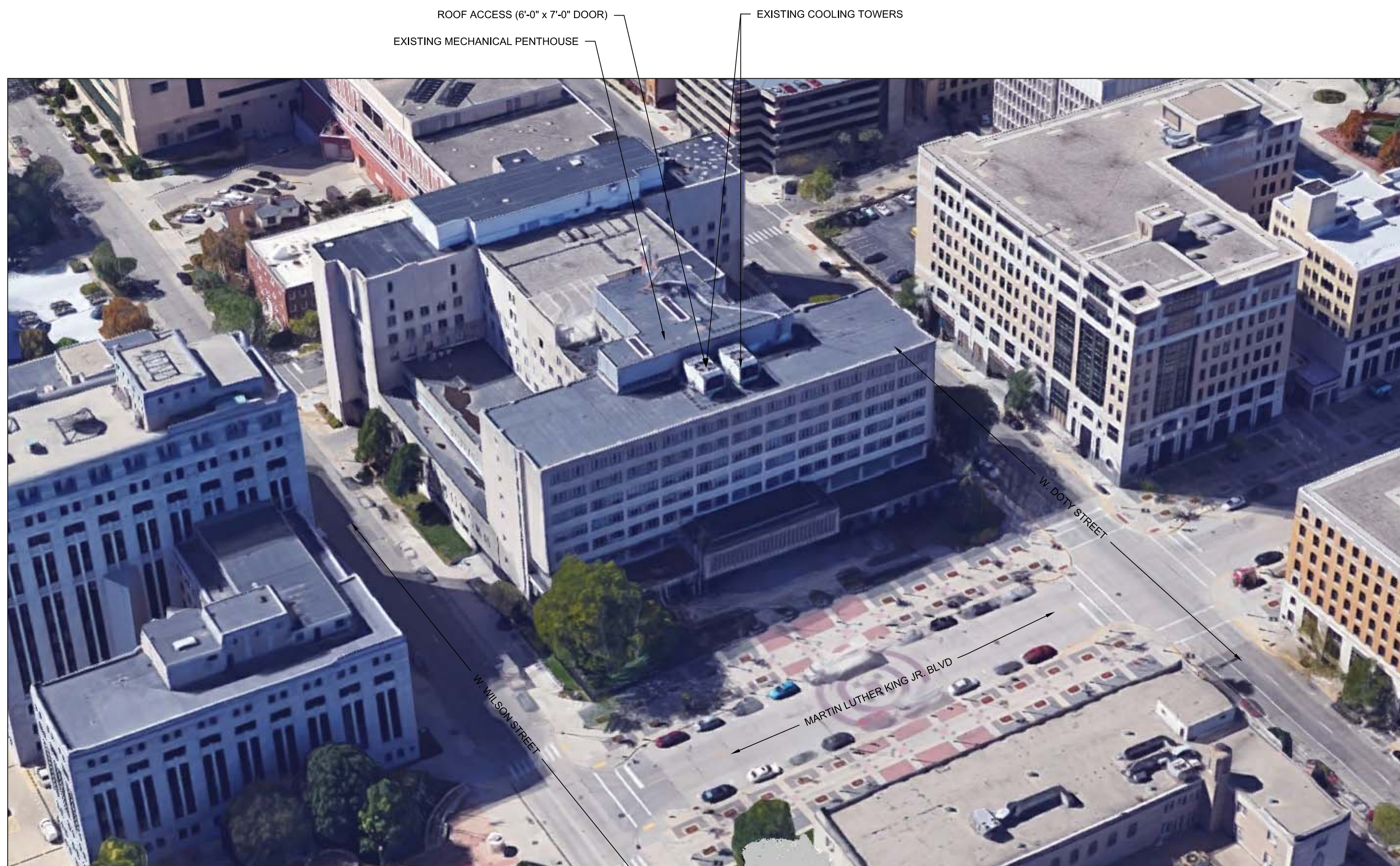
COOLING TOWER  
REPLACEMENT PROJECT

OVERALL EXISTING SITE  
PHOTOS

**ME100**



1 EXISTING OVERALL SITE PLAN PHOTO  
SCALE: N.T.S.

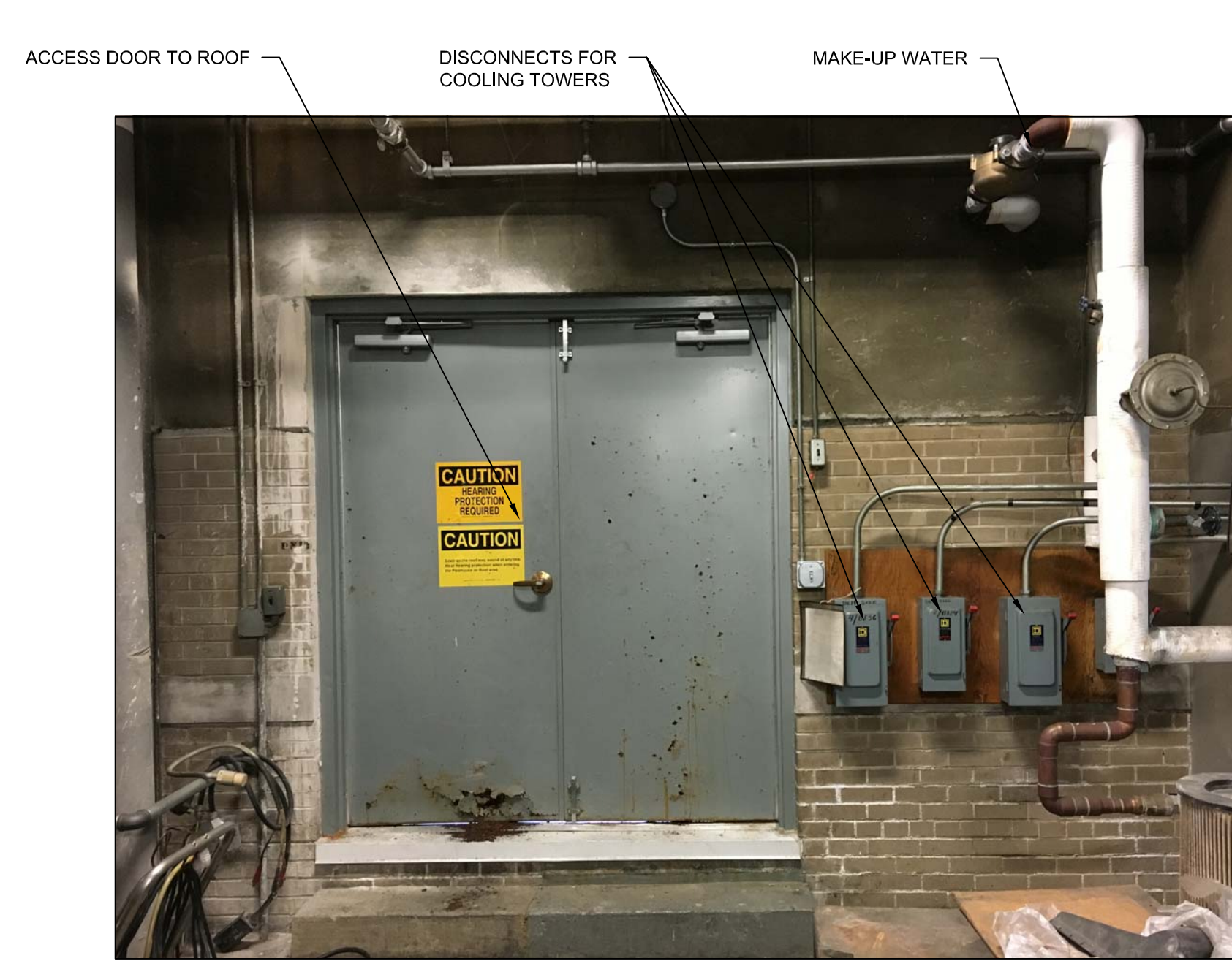


3 EXISTING OVERALL PERSPECTIVE PHOTO  
SCALE: N.T.S.



2 EXISTING OVERALL BUILDING PHOTO  
SCALE: N.T.S.





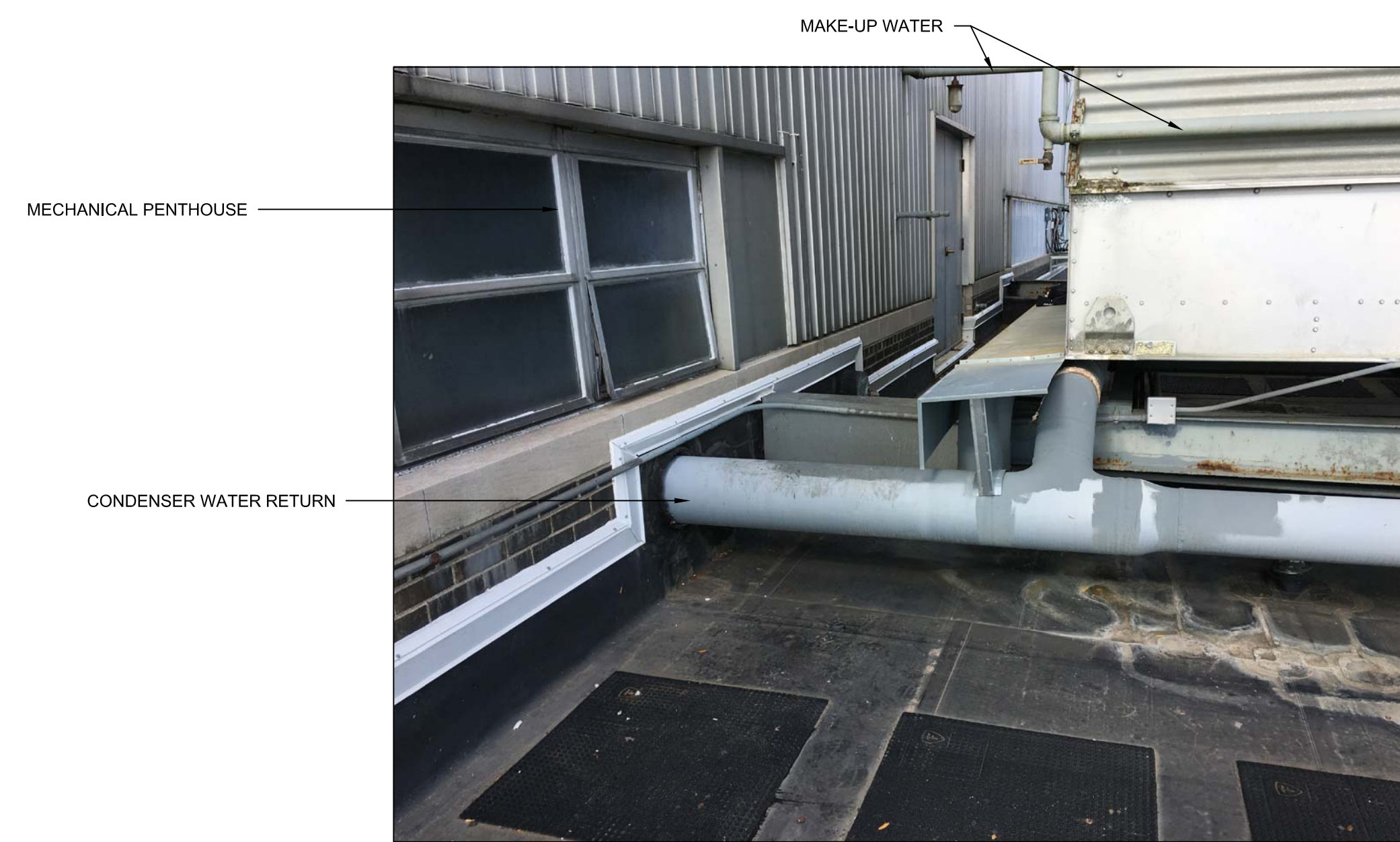
7 PHOTO - INTERIOR OF MECHANICAL PENTHOUSE  
ME101 SCALE: N.T.S.



4 PHOTO - WEST SIDE OF COOLING TOWER  
ME101 SCALE: N.T.S.



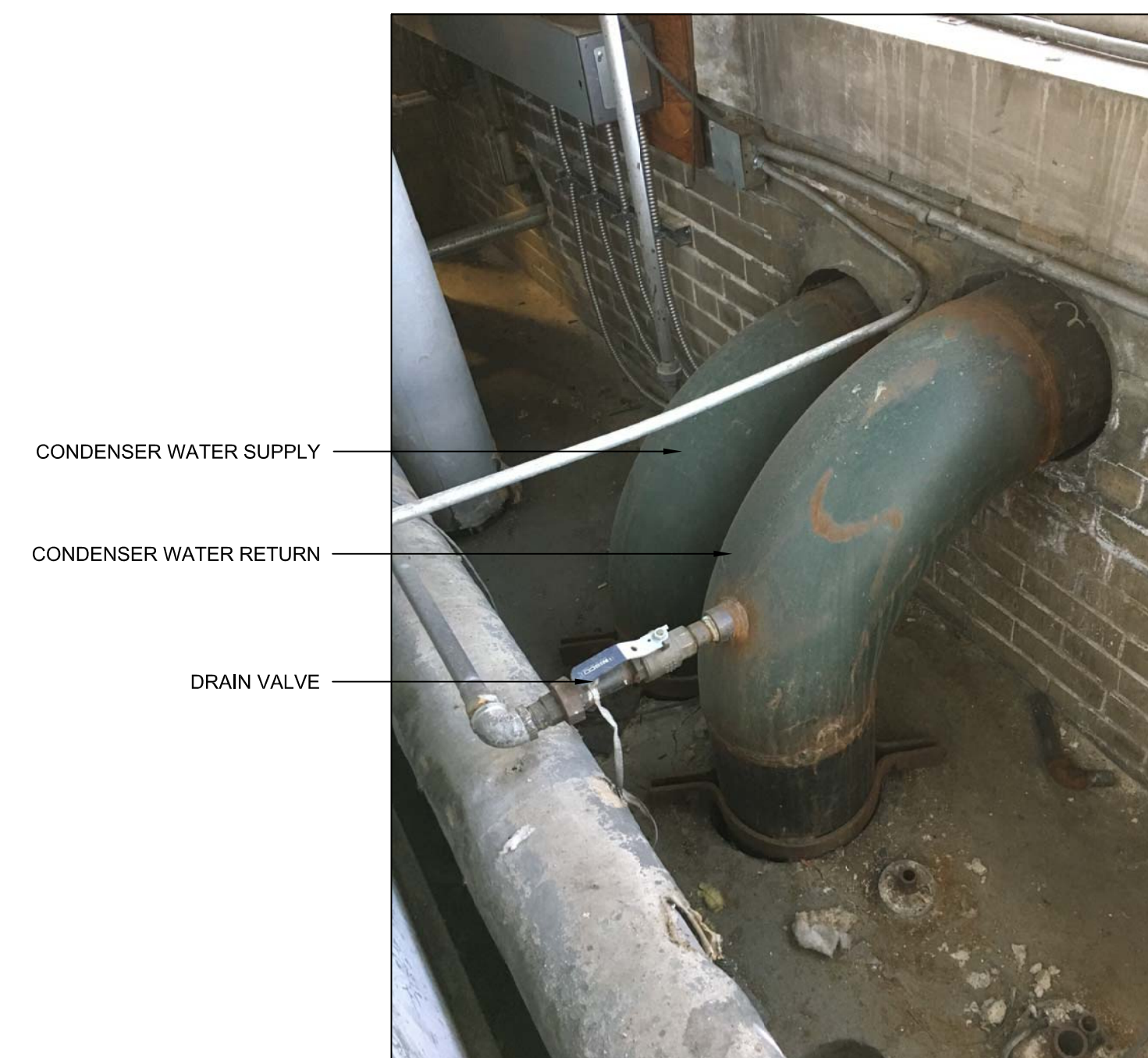
1 PHOTO - COOLING TOWER - LOOKING WEST  
ME101 SCALE: N.T.S.



5 PHOTO - CONDENSER WATER PIPING AT PENTHOUSE  
ME101 SCALE: N.T.S.



2 PHOTO - COOLING TOWER - LOOKING WEST  
ME101 SCALE: N.T.S.



6 PHOTO - CONDENSER WATER PIPING INSIDE PENTHOUSE  
ME101 SCALE: N.T.S.



3 PHOTO - LOOKING BETWEEN COOLING TOWERS  
ME101 SCALE: N.T.S.

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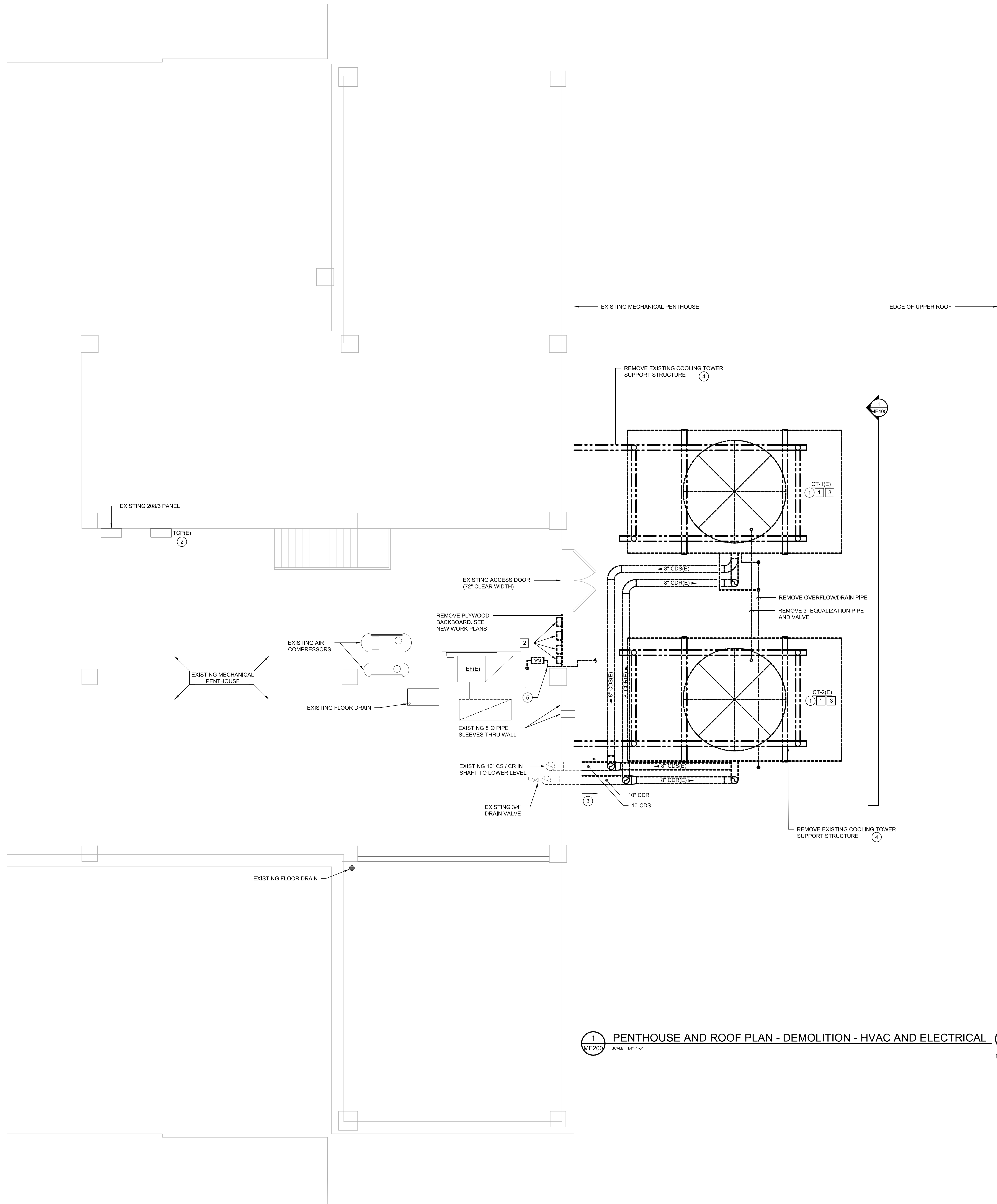
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PROJECT  
DANE COUNTY  
CITY COUNTY  
BUILDING

COOLING TOWER  
REPLACEMENT PROJECT

EXISTING COOLING  
TOWER PHOTOS

ME101



1 PENTHOUSE AND ROOF PLAN - DEMOLITION - HVAC AND ELECTRICAL  
 ME200 SCALE: 1/8"=1'-0" NORTH

**GENERAL NOTES:**

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING WORK. REPORT ANY DISCREPANCIES TO THE A/E IMMEDIATELY.
2. CONTRACTOR RESPONSIBLE FOR ALL ASPECTS AND LOGISTICS OF REMOVAL OF EXISTING COOLING TOWERS, STRUCTURE AND PIPING FROM ROOF AND INSTALLATION OF NEW STRUCTURE, COOLING TOWERS AND PIPING AT SAME LOCATION INCLUDING CRANING, RIGGING, STREET CLOSURE, PERMITS, ETC.
3. ALL ASPECTS OF COOLING TOWER REMOVAL AND REINSTALLATION SHALL BE FULLY COORDINATED WITH CITY COUNTY BUILDING FACILITY ENGINEERING, DANE COUNTY PUBLIC WORKS, CITY OF MADISON PUBLIC WORKS AND CITY OF MADISON POLICE DEPARTMENT.
4. COORDINATE ALL INTERRUPTIONS WITH OWNERS AND FACILITY ENGINEERING PRIOR TO STARTING WORK.
5. ALL DUCTWORK, PIPING, CONDUIT, EQUIPMENT, ETC. NOTED FOR DEMOLITION SHALL BE REMOVED COMPLETE.
6. ALL EXISTING ABANDONED CONDUIT, PIPING, EQUIPMENT, ETC. SHALL BE REMOVED COMPLETE.
7. ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL AND STATE CODES.
8. ALL CONDUCTORS SHALL BE COPPER.
9. ALL WIRING SHALL BE ROUTED IN EMT CONDUIT AT A MINIMUM.
10. ALL EQUIPMENT SHALL BE LABELED TO MATCH THE BUILDING STANDARDS.
11. ALL ELECTRICAL BOXES SHALL BE LABELED WITH THE PANEL AND CIRCUIT NUMBER TO MATCH THE BUILDING STANDARDS.

**KEYED NOTES (HVAC):**

1. REMOVE EXISTING COOLING TOWER COMPLETE. INCLUDING:
  - REMOVE EXISTING COOLING TOWER.
  - REMOVE ALL EXISTING CONDENSER WATER PIPING BACK TO POINT SHOWN. REMOVE ALL EXISTING VALVES. REMOVE ALL PIPING AND VALVES FROM ROOF.
  - REMOVE ALL MAKE-UP WATER PIPING BACK TO POINT SHOWN.
  - REMOVE ALL DRAIN PIPING.
  - REMOVE ALL EQUALIZATION PIPING BETWEEN TOWERS.
2. LOCATION OF EXISTING DDC CONTROL PANEL TO REMAIN.
3. REMOVE ALL EXISTING 8" AND 10" CONDENSER WATER SUPPLY AND RETURN PIPING ON ROOF FROM THIS POINT. SEE NEW WORK PLAN FOR CONNECTION OF NEW PIPING TO EXISTING PIPING.
4. REMOVE EXISTING COOLING TOWER SUPPORT STRUCTURE. STRUCTURE SHALL BE REPLACED. SEE DETAILS FOR ADDITIONAL INFORMATION.
5. REMOVE MAKE-UP WATER PIPING FROM THIS POINT TO EACH EXISTING COOLING TOWER. EXISTING MAKE-UP WATER BACKFLOW PREVENTER AND METER TO BE RELOCATED BY THE COUNTY.

**KEYED NOTES (ELECTRICAL):**

1. DISCONNECT POWER TO EXISTING COOLING TOWER (20HP, 460V). REMOVE WIRE AND CONDUIT FROM COOLING TOWER BACK TO DISCONNECT IN PENTHOUSE. SEE NEW WORK PLAN FOR LOCATION OF NEW VARIABLE FREQUENCY DRIVES ASSOCIATED WITH NEW COOLING TOWERS.
2. REMOVE EXISTING DISCONNECTS ASSOCIATED WITH EXISTING COOLING TOWERS BEING REMOVED. REMOVE CONDUIT AND FEEDERS AS REQUIRED. SEE NEW WORK PLAN FOR NEW CONNECTIONS.
3. DISCONNECT 120V /1P POWER TO COOLING TOWER WATER LEVEL / WATER FILL CONTROLLER. SEE NEW PLAN FOR CONNECTION TO NEW COOLING TOWER WATER LEVEL / WATER FILL CONTROLLER.

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 DANE COUNTY  
 CITY COUNTY  
 BUILDING

COOLING TOWER  
 REPLACEMENT PROJECT

PENTHOUSE AND ROOF  
 PLAN - DEMOLITION -  
 HVAC & ELECTRICAL

**ME200**

CONSULTANTS

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PROJECT

DANE COUNTY  
CITY COUNTY  
BUILDING

COOLING TOWER  
REPLACEMENT PROJECT

PENTHOUSE AND ROOF  
PLAN - NEW WORK -  
HVAC & ELECTRICAL

ME300

**GENERAL NOTES:**

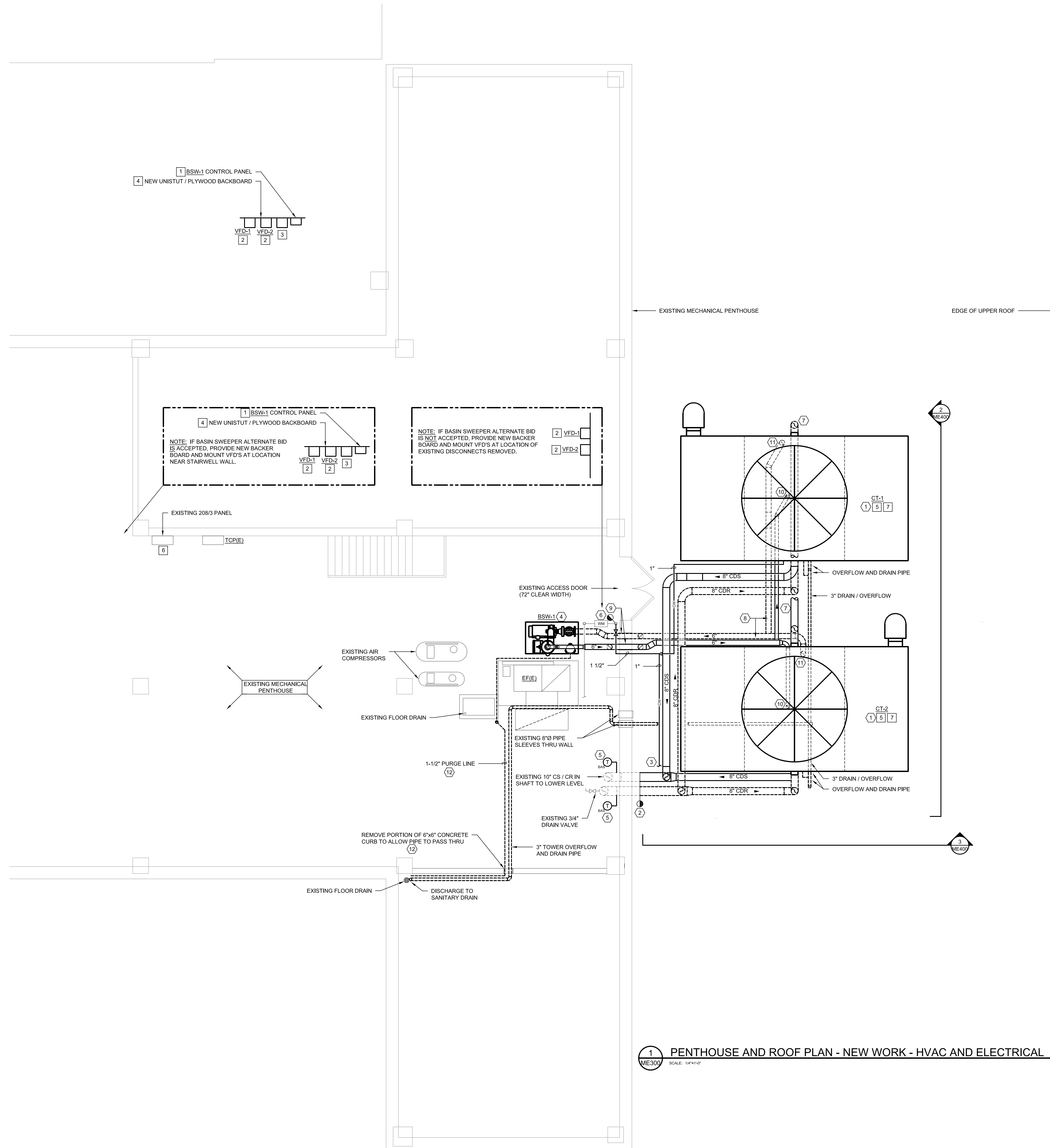
- CONTRACTOR RESPONSIBLE FOR ALL ASPECTS AND LOGISTICS OF REMOVAL OF EXISTING COOLING TOWERS, STRUCTURE AND PIPING FROM ROOF AND INSTALLATION OF NEW COOLING TOWERS, STRUCTURE AND PIPING AT SAME LOCATION INCLUDING CRANING, RIGGING, STREET CLOSURE, PERMITS, ETC.
- ALL ASPECTS OF COOLING TOWER REMOVAL AND REINSTALLATION SHALL BE FULLY COORDINATED WITH CITY COUNTY BUILDING FACILITY ENGINEERING, DANE COUNTY PUBLIC WORKS, CITY OF MADISON PUBLIC WORKS AND CITY OF MADISON POLICE DEPARTMENT.
- COORDINATE ALL INTERRUPTIONS WITH OWNERS AND FACILITY ENGINEERING PRIOR TO STARTING WORK.
- COOLING TOWERS ARE SHUTDOWN AND NOT USED DURING THE HEATING SEASON. ALL PIPING ON THE EXTERIOR SHALL HAVE PROVISIONS FOR COMPLETE DRAIN DOWN OR PITCH BACK TO BUILDING WITH INTERIOR DRAIN.
- ALL NEW CONDENSER WATER SUPPLY AND RETURN PIPING SHALL PITCH BACK TO THE INTERIOR OF THE EXISTING MECHANICAL PENTHOUSE.
- ALL NEW MAKE-UP WATER PIPING SHALL BE PITCHED FROM THE EXISTING MECHANICAL PENTHOUSE TO EACH COOLING TOWER.
- PITCH ALL OVERFLOW AND DRAIN PIPING FROM TOWER BASINS TO MECHANICAL PENTHOUSE.
- PROVIDE ALL REQUIRED HANGERS, SUPPORTS, SADDLES, MISC. STEEL, ETC. FOR PROPER SUPPORT OF ALL PIPING PER MANUFACTURERS RECOMMENDATIONS AND INDUSTRY STANDARDS.
- SEE DETAILS AND SCHEMATICS FOR ADDITIONAL INFORMATION ON PIPE SIZING, REQUIRED VALVES, PIPING AND ACCESSORIES.
- PROVIDE ALL REQUIRED OPENINGS IN PENTHOUSE WALL FOR PIPING AND STRUCTURAL STEEL.
- SEE SPECIFICATION FOR PIPE MATERIALS.
- ALL ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL AND STATE CODES.
- ALL CONDUCTORS SHALL BE COPPER.
- ALL INTERIOR WIRING SHALL BE ROUTED IN EMT CONDUIT AT A MINIMUM.
- ALL EXTERIOR PIPING SHALL BE ROUTED IN PVC CONDUIT.
- ALL EQUIPMENT SHALL BE LABELED TO MATCH THE BUILDING STANDARDS.
- ALL ELECTRICAL BOXES SHALL BE LABELED WITH THE PANEL AND CIRCUIT NUMBER TO MATCH THE BUILDING STANDARDS.

**KEYED NOTES (HVAC):**

- NEW COOLING TOWER. PROVIDE NEW STRUCTURAL STEEL FOR NEW COOLING TOWERS. SEE DETAILS.
- NEW 10" CDS AND CDS TO CONNECT TO EXISTING PIPING AT THIS LOCATION. ALL NEW PIPING FROM THIS POINT TO NEW COOLING TOWERS.
- EXTEND 1" COLD WATER MAKE-UP TO CT-2.
- BASIN SWEEPER IS PART OF ALTERNATE BID. SEE DETAILS FOR ADDITIONAL INFORMATION. PROVIDE PIPE VIBRATION ISOLATION ON INLET AND OUTLET. SECURE UNIT TO FLOOR.
- NEW TAPS AND DDC CDS AND CDR TEMPERATURE SENSORS IN EXISTING 10" PIPING.
- DANE COUNTY TO RELOCATE AND REPIPE EXISTING MAKE-UP WATER METER AND BACKFLOW PREVENTOR. COORDINATE ALL PIPING AND EQUIPMENT WITH DANE COUNTY FOR PROPER LOCATION OF MAKE-UP WATER METER AND BACKFLOW PREVENTOR.
- 8"Ø TOWER EQUALIZER PIPING.
- 6"Ø BASIN SWEEPER INTAKE PIPING.
- PROVIDE NEW OPENING IN PENTHOUSE WALL FOR 6"Ø BASIN SWEEPER INTAKE AND DISCHARGE PIPING.
- 4" TOWER BASIN CONNECTION FOR BASIN SWEEPER DISCHARGE PIPING.
- 6" TOWER BASIN CONNECTION FOR BASIN SWEEPER INTAKE PIPING.
- PIPING ROUTED ALONG FLOOR. SECURE PIPING TO FLOOR AND PITCH PIPING TO EXISTING FLOOR DRAIN.

**KEYED NOTES (ELECTRICAL):**

- PROVIDE 120V / 1P (15AMP) FEED FROM NEAREST PANEL FOR CONNECTION TO BSW-1 CONTROL PANEL.
- CONNECT EXISTING FEEDERS TO NEW VARIABLE FREQUENCY DRIVE (VFD). PROVIDE FEEDERS FROM VFD TO COOLING TOWER FAN MOTOR.
- DISCONNECT FOR BSW-1. FEED FROM EXISTING PANEL WITH (3)Ø3 & (1)Ø8 GROUND IN A 1-1/4" CONDUIT. PROVIDE DISCONNECT NEAR UNIT. PROVIDE 3 POLE 100 AMP BREAKER IN EXISTING PANEL. EXTEND FEED TO BSW-1.
- PROVIDE UNISTRUT / PLYWOOD MOUNTING BOARD FOR NEW VFD'S AND DISCONNECT.
- PROVIDE NEMA 3R DISCONNECT AT COOLING TOWER IN CODE COMPLIANT LOCATION.
- PROVIDE NEW 100A / 3 POLE BREAKER IN PANEL TO FEED BSW-1.
- PROVIDE 120V / 1P (15 AMP) FEED FROM NEAREST PANEL FOR CT-1 AND CT-2 WATER LEVEL / WATER FILL CONTROLLERS.



**1** PENTHOUSE AND ROOF PLAN - NEW WORK - HVAC AND ELECTRICAL  
SCALE: 1/8"=1'-0"  
NORTH

CONSULTANTS

ISSUED

REVISIONS / ADDENDA

PROJECT # : 16.0206

DRAWN : AGM

CHECKED : TDM

DATE : 11/15/2016

PHASE : BIDDING

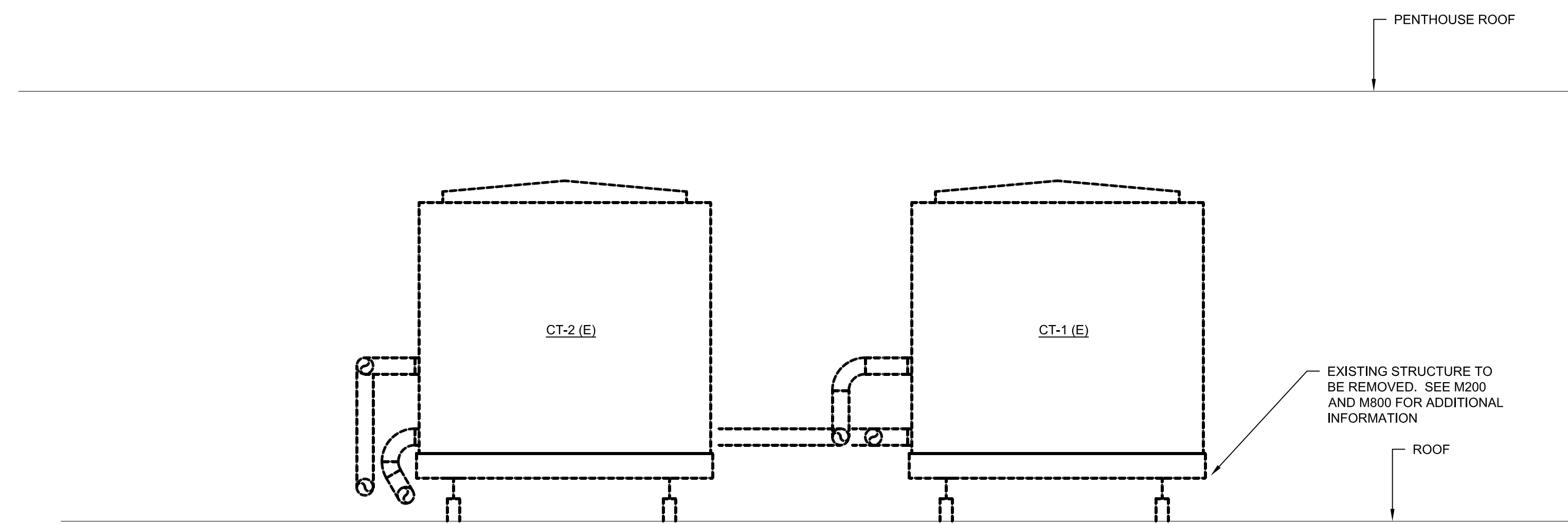
PROJECT

DANE COUNTY  
CITY COUNTY  
BUILDING

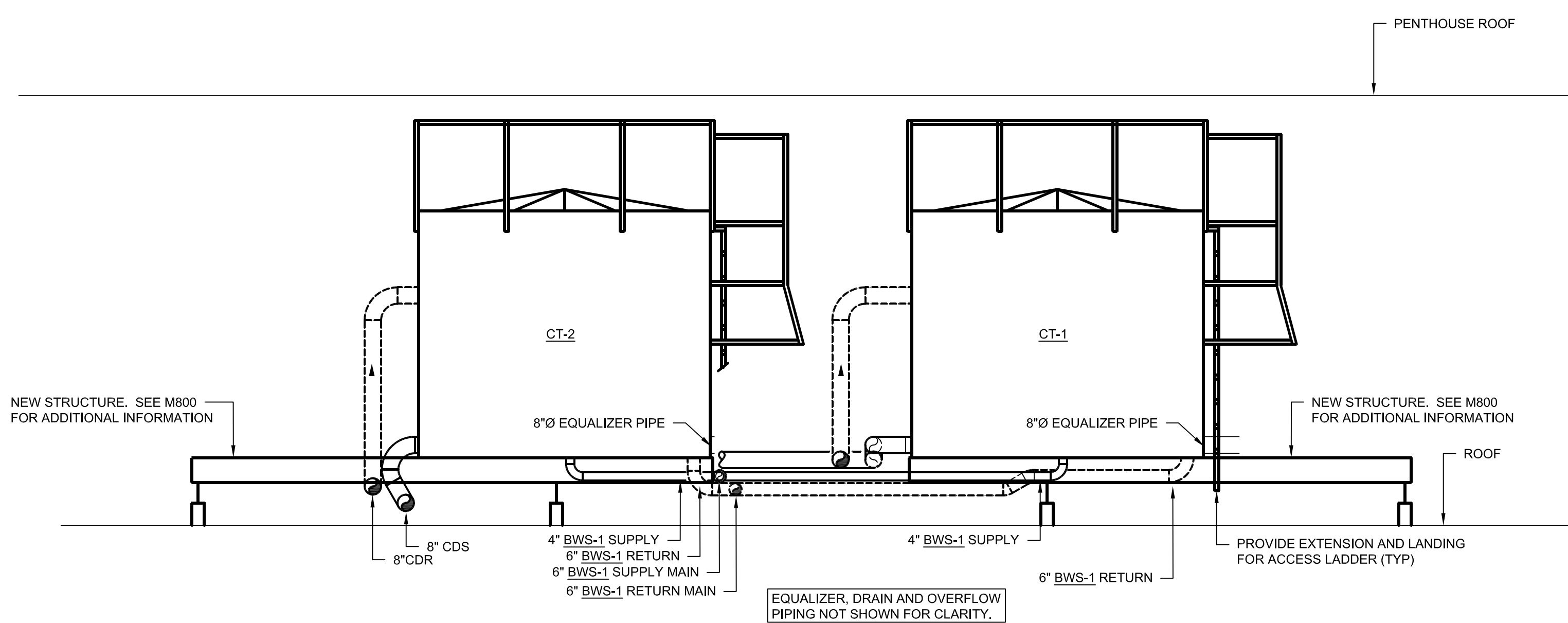
COOLING TOWER  
REPLACEMENT PROJECT

ELEVATIONS AND DETAILS  
HVAC AND STRUCTURAL

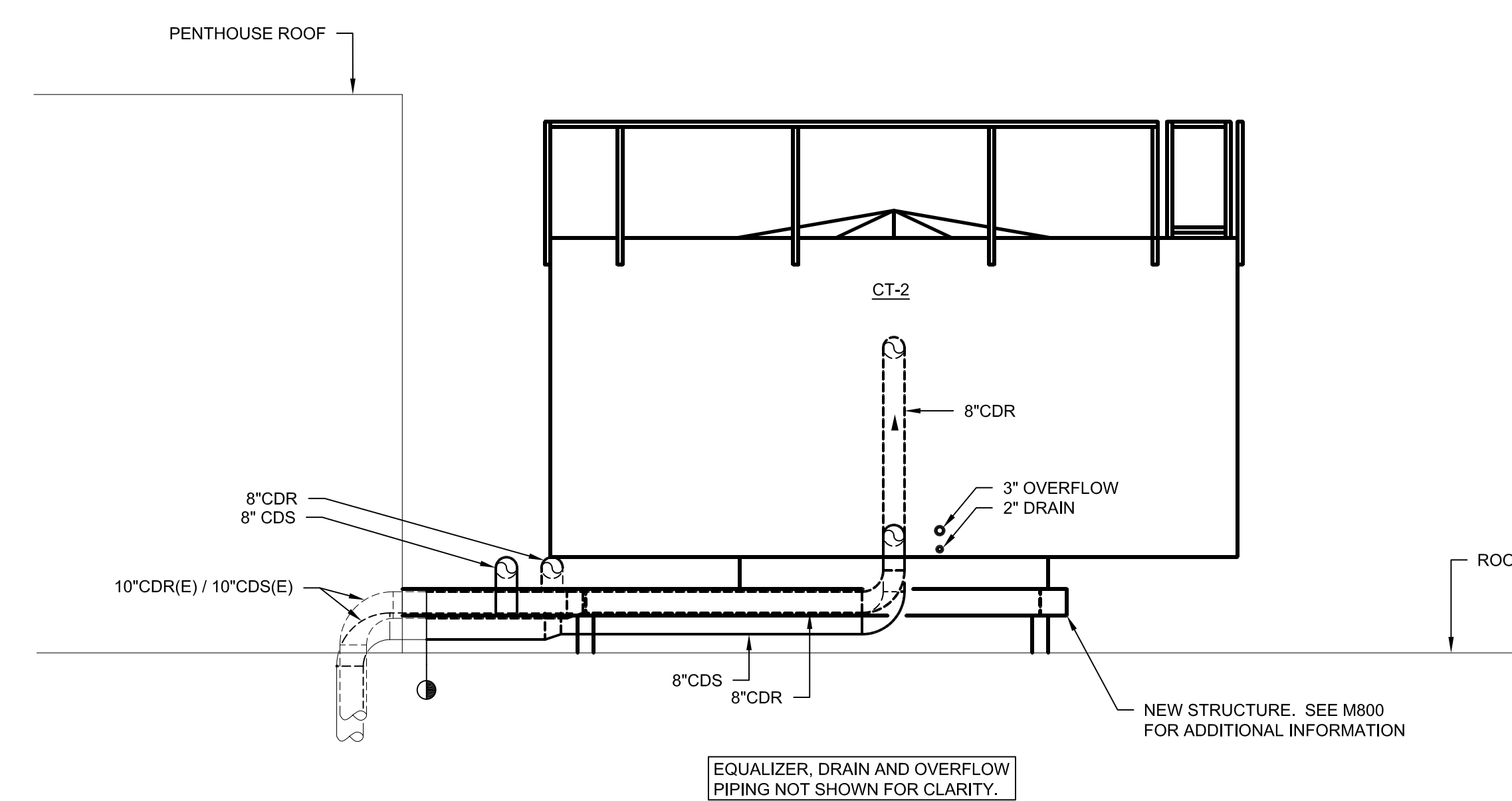
**ME400**



**1 ELEVATION - DEMOLITION**  
SCALE: 1/4"=1'-0"



**2 ELEVATION - NEW WORK**  
SCALE: 1/4"=1'-0"



**3 ELEVATION - NEW WORK**  
SCALE: 1/4"=1'-0"

BASIN SWEEPER SCHEDULE	
UNIT NO.	BSW-1
SERVICE	CT-1 & CT-2
MANUFACTURER	LAKOS
MODEL NO.	TCX-0600-ABV
LOCATION	ROOF
FLOW (GPM)	600
HP	20
VOLTS	208
PHASE	3
SHIPPING WEIGHT (LBS)	1,600
OPERATING WEIGHT (LBS)	-
REMARKS	①②

**KEYED NOTES:**

- ① SYSTEM SHALL HAVE CAPACITY FOR SWEEPING BOTH TOWERS SIMULTANEOUSLY.
- ② BASIN SWEEPING SYSTEM BY ALTERNATE BID.

VARIABLE FREQUENCY DRIVE SCHEDULE			
UNIT NO.	VFD-1	VFD-2	
SERVICE	CT-1	CT-2	
MANUFACTURER	ABB	ABB	
MODEL NO.	ACH550	ACH550	
LOCATION	PENTHOUSE	PENTHOUSE	
HP	15	15	
VOLTS	480	480	
PHASE	3	3	
REMARKS			

COOLING TOWER SCHEDULE			
UNIT NO.	CT-1	CT-2	
SERVICE	EXISTING CHILLER	EXISTING CHILLER	
MANUFACTURER	BAC	BAC	
MODEL NO.	3000	3000	
TYPE	INDUCED DRAFT	INDUCED DRAFT	
AIRFLOW PATTERN	CROSS FLOW	CROSS FLOW	
TOTAL CAPACITY (MBH)	-	-	
AMBIENT TEMP. DB/WB	95 / 78	95 / 78	
CONDENSER WATER (EWT °F)	95.0	95.0	
CONDENSER WATER (LWT °F)	85.0	85.0	
CONDENSER WATER FLOW (GPM)	1,150	1,150	
CONNECTION SIZES			
CONDENSER WATER INLET (IN)	8	8	
CONDENSER WATER OUTLET (IN)	8	8	
EQUALIZER PIPE (IN)	8	8	
DRAIN PIPE (IN)	2	2	
OVERFLOW (IN)	3	3	
BASIN SWEEPER OUTLET (IN)	6	6	
BASIN SWEEPER INLET (IN)	4	4	
VIBRATION ISOLATOR TYPE	-	-	
VIBRATION TYPE DEFLECTION	-	-	
MOTOR HP	15.0	15.0	
MOTOR VFD	YES	YES	
VOLTAGE	480	480	
PHASE	3	3	
SHIPPING WEIGHT (LBS)	12,000	12,000	
OPERATING WEIGHT (LBS)	24,000	24,000	
REMARKS	①②	①②	

**KEYED NOTES:**

- ① PROVIDE COOLING TOWER WITH THE FOLLOWING ACCESSORIES (ALSO SEE SPECIFICATION):  
STAINLESS STEEL ALL WELDED UPPER AND LOWER WATER BASINS.  
ACCESS LADDER (WITH SAFETY CAGE), PERIMETER HANDRAILS AND SAFETY GATE.  
INTERNAL WALKWAY  
BASIN TO INCLUDE FACTORY PROVISION FOR BASIN SWEEPING (ALTERNATE BID)
- ② CONTRACTOR TO CONFIRM SHIPPING WEIGHT (AND HOIST WEIGHT) WITH COOLING TOWER MANUFACTURER PRIOR TO SECURING OR SCHEDULING CRANE / RIGGING OF UNIT.

CONSULTANTS

ISSUED

REVISIONS / ADDENDA

PROJECT #: 16.0206

DRAWN: AGM

CHECKED: TDM

DATE: 11/15/2016

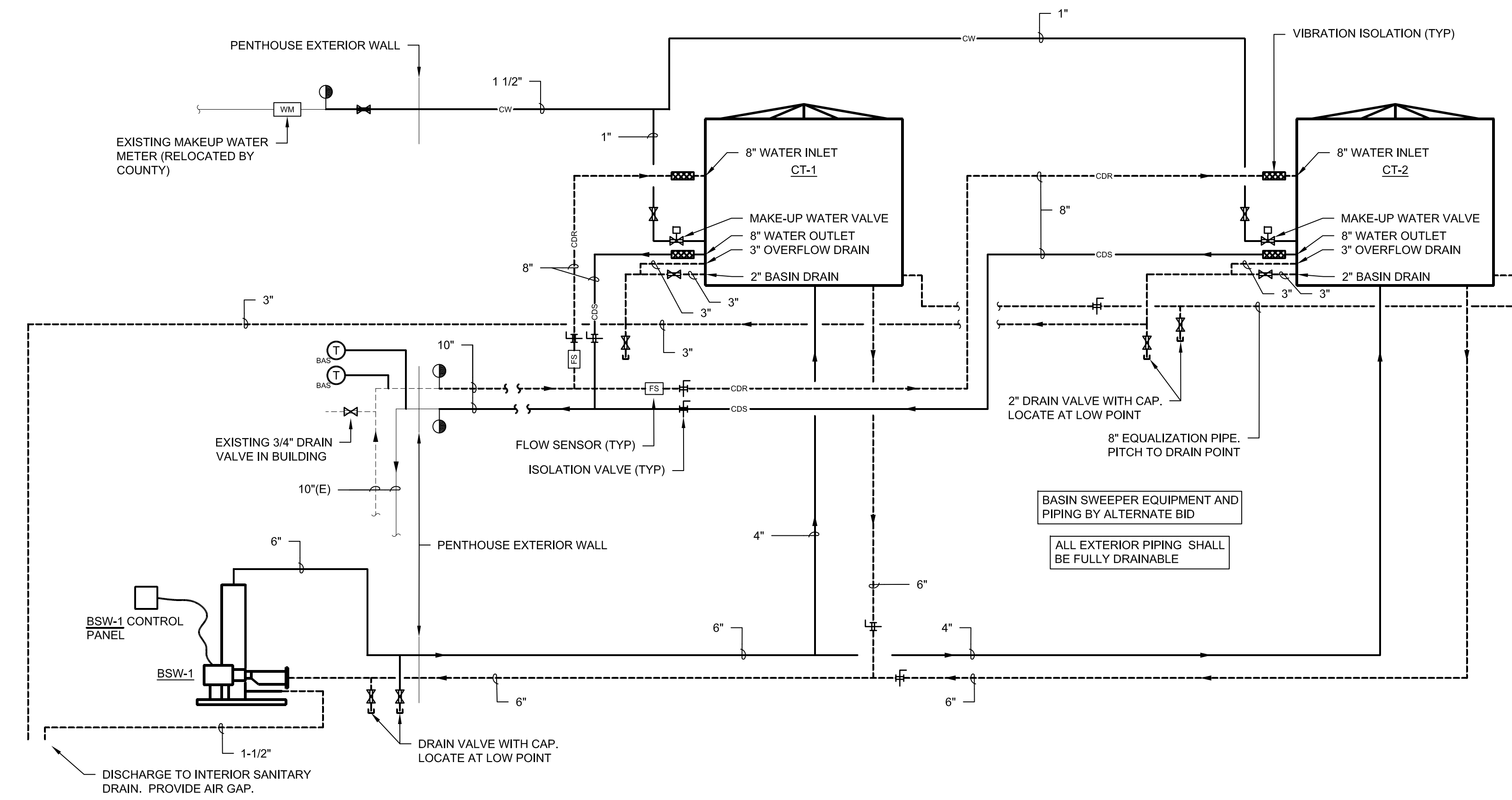
PHASE: BIDDING

PROJECT  
DANE COUNTY  
CITY COUNTY  
BUILDING

COOLING TOWER  
REPLACEMENT PROJECT

DETAILS AND SCHEDULES  
- HVAC & ELECTRICAL

**ME800**



1 SYSTEM PIPING SCHEMATIC - NEW WORK  
ME800 SCALE: 1/4"=1'-0"