

COOLING TOWER SCHEDULE (COOLING TOWER IS OWNER SUPPLIED)															
UNIT NO.	MANUFACTURER AND MODEL NO.	SERVICE	LOCATION	TYPE	WET BULB (F)	NO. OF CELLS	CONDENSER DATA			FAN MOTOR DATA				OPERATING WEIGHT (LBS)	NOTES
							EWT (F)	LWT (F)	GPM	HP	RPM	VOLTS	PH		
CT 3	EVAPCO AT-112-018	CONDENSER WATER	PENTHOUSE LEVEL	INDUCED DRAFT CROSSFLOW	67	1	90	80	1950	25	-	460	3	19,640	① ② ③ ④ ⑤

NOTES:

① PROVIDE ELECTRIC WATER LEVEL CONTROL SYSTEM AND 1/2" SLOW OPENING/CLOSING FILL BALL VALVE.

② PROVIDE (1) 18KW HEATER PACKAGE

③ REBALANCE PUMP to 1950 GPM AS REQUIRED.

④ CONTRACTOR TO INSTALL TOWER INCLUDING ALL ACCESSORIES AS PER SPECIFICATIONS.

⑤ VFD TO BE MANUFACTURED BY ABB ONLY.

APPROVED ALTERNATES TO SCHEDULED COOLING TOWER:

- BAC MODEL PT2-1009A-2M2
- MARLEY MODEL MD5016TAF1LGBF

NOTE: CONTRACTOR RESPONSIBLE FOR ANY ADDITIONAL WORK AND COORDINATION REQUIRED BY OTHER TRADES ASSOCIATED WITH INSTALLATION OF ALTERNATE COOLING TOWER.

COOLING TOWER SEQUENCE OF OPERATION

START/STOP- THE START ENABLE COMMAND WILL BE SET TO ON WHEN COOLING TOWER IS OPERATING AS EITHER LEAD OR LAG OPERATION, THE ISOLATION VALVE STATUS IS ON, AND THE SUMP TEMPERATURE IS GREATER THAN OR EQUAL TO THE SUMP TEMPERATURE SET POINT. THE START ENABLE COMMAND WILL BE SET TO OFF IF THE SUMP TEMPERATURE IS LESS THAN THE SUMP TEMPERATURE SET POINT -2, THE COOLING TOWER VFD SPEED IS 0% AND FREE COOLING IS ON OR IF THE ISOLATION VALVE IS OFF. THERE WILL BE A MAINTENANCE POINT TO LOCK BOTH THE COOLING TOWER AND THE SUPPLY/RETURN ISOLATION VALVES IN THE OFF POSITION AND TAKES THE COOLING TOWER OUT OF OPERATIONAL ROTATION.

COOLING TOWER VFD SPEED- WHEN OPERATING AS THE LEAD COOLING TOWER, MODULATE THE VFD SPEED TO MAINTAIN THE SUMP TEMPERATURE TO THE SUMP TEMPERATURE SET POINT WITH A MINIMUM VFD SET POINT OF 0%(FA). WHEN OPERATING AS THE LAG COOLING TOWER, MODULATE THE VFD SPEED TO MAINTAIN THE SUMP TEMPERATURE TO THE SUMP TEMPERATURE SET POINT. WHEN OPERATING AS THE LAG COOLING TOWER, THE START ENABLE COMMAND WILL BE SET TO ON IF THE LEAD COOLING TOWER HAS BEEN OPERATIONAL FOR GREATER THAN 10 MINUTES. THE SUMP TEMPERATURE IS GREAT THAN 2F ABOVE THE SUMP TEMPERATURE SET POINT, AND THE LEAD COOLING TOWER FAN SPEED IS AT 100%. THE LAG COOLING TOWER START ENABLE COMMAND WILL BE SET TO OFF WHEN 10 MINUTES OF OPERATIONAL TIME HAS ELAPSED, THE SUMP TEMPERATURE IS LESS THAN OR EQUAL TO SUMP TEMPERATURE SET POINT, AND THE VFD SPEED IS LESS THAN 30%(FA) AND THE LEAD COOLING TOWER WILL THEN RESUME NORMAL OPERATION.

COOLING TOWER FAIL OVER- PROVIDE A COOLING TOWER FAILURE SWITCH OVER CONTROL THAT IS BASED ON THE ISOLATION VALVE STATUS, FAN STATUS, OR A VFD FAULT.

ISOLATION VALVES- THE ISOLATION VALVES NEED TO BE SET TO ON WHENEVER THE COOLING TOWER IS OPERATIONAL. - THE ISOLATION VALVES NEED TO BE SET TO OFF WHENEVER THE START ENABLE COMMAND IS OFF, MAINTENANCE IS ON, OR COOLING TOWER FAILURE HAS OCCURRED.

SUMP HEATER- MODULATE THE SUMP HEATER TO MAINTAIN SUMP TEMPERATURE SET POINT WHENEVER THE SUMP TEMPERATURE IS BELOW 39 DEGREES F. AND THE LOW LEVEL IS OFF.

HEAT TRACE- ENABLE THE HEAT TRACE WHENEVER THE OUTSIDE AMBIENT TEMPERATURE IS BELOW 44 DEGREES F.


THE CURRENT CONFIGURATION IS CALLING FOR COOLING TOWER #3 TO BE THE LEAD COOLING TOWER WITH ONE OF THE OTHER TWO AS LAG. THE CONTROL SEQUENCE SHALL BE CORRECTED AT ALL THREE COOLING TOWERS. CONTROLS CONTRACTOR RESPONSIBLE TO PROVIDE NECESSARY CONTROLS TO ACCOMPLISH SEQUENCE OF OPERATION FOR NEW AND EXISTING COOLING TOWERS.

BASE BID:
PROVIDE FIELD-ADJUSTABLE-PITCH FAN WITH BELT DRIVE AND VFD.

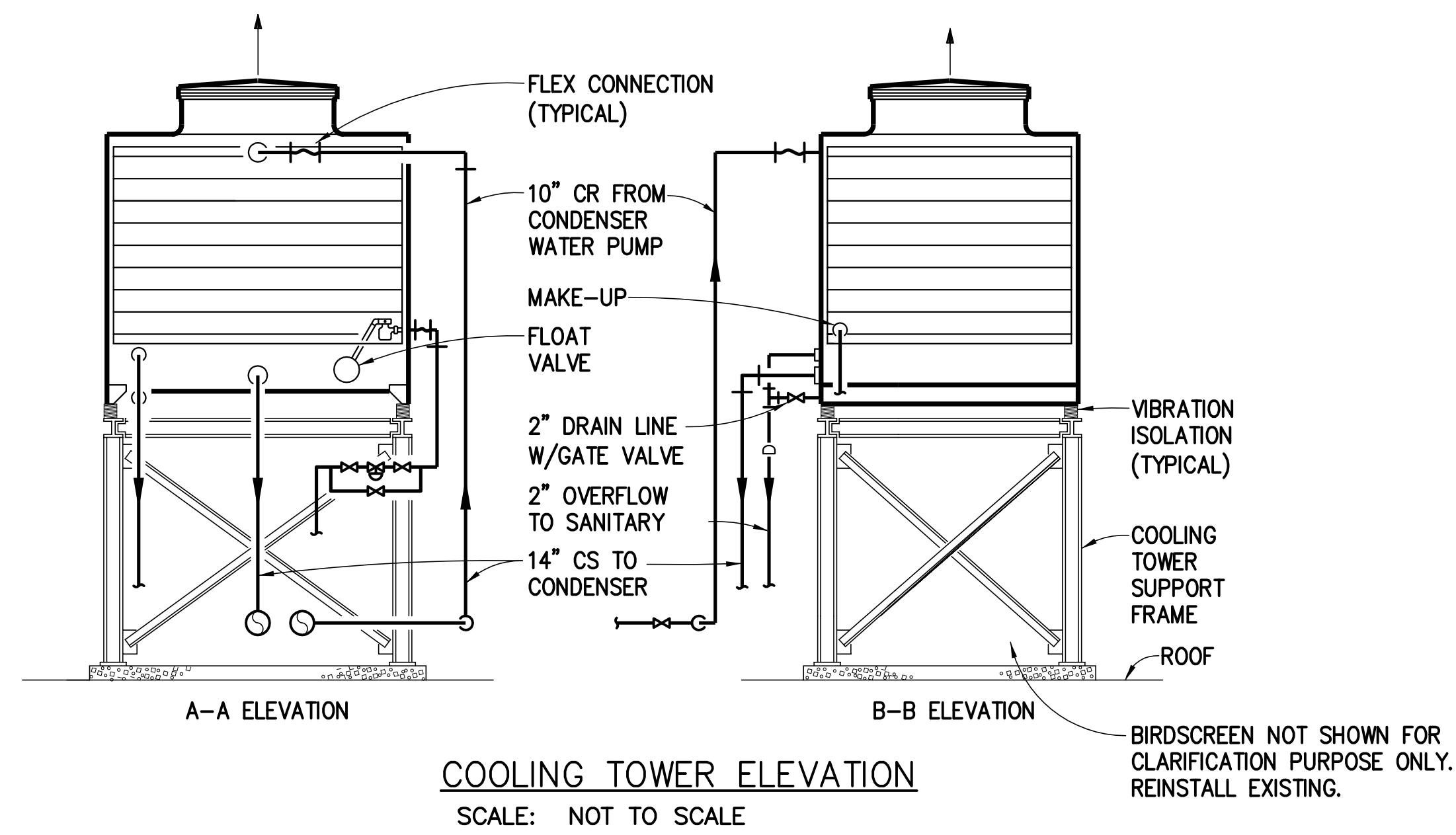
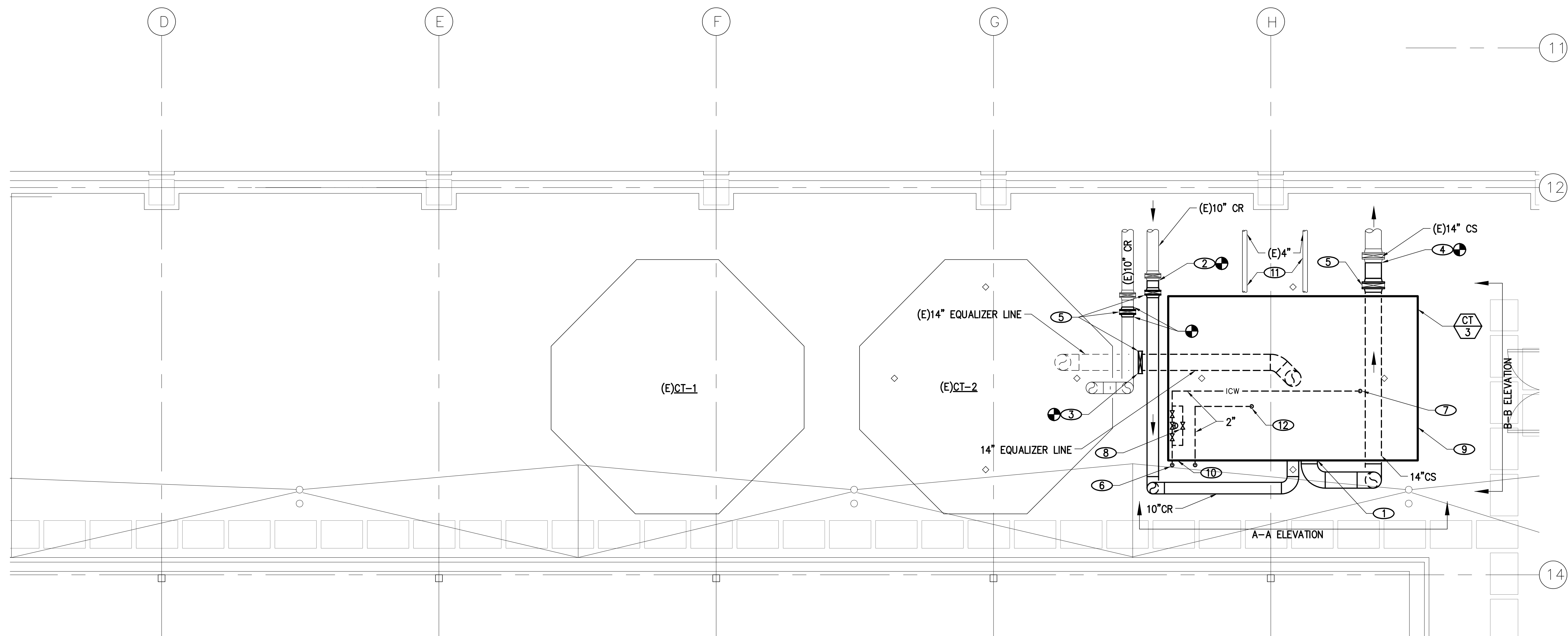
ALTERNATE BID:
PROVIDE LOW-SOUND FIXED-PITCH FAN AND BELT DRIVE WITH VFD.

CONTACTS FOR LOCAL REPRESENTATIVES:

- MARLEY**
REPRESENTATIVE: J.L. HERMON & ASSOCIATES INC.
CONTACT: JIM HAEDRICH
EMAIL: JHAEDRICH@JLHERMON.COM
- BALTIMORE AIRCOIL**
REPRESENTATIVE: CFM COMPANY
CONTACT: JUSTIN DUNCAN
EMAIL: JUSTIND@CFMCOMPANY.COM
- EVAPCO**
REPRESENTATIVE: SYS-KOOL, LLC
CONTACT: RICK STOUGHTON
EMAIL: RICKSTOUGHTON@SYS-KOOL.COM

DATE 02-01-2011	CHECKED BY JFH	DATE 02/01/11	DRAWN BY HAK	REVISIONS
100% BID DOCUMENTS				
				
JCAA 13772 Denver W Pkwy Suite 200 Lakewood, CO 80401 p 303.985.3260				

MCDB - NORTH COOLING TOWER REPLACEMENT - CU PR005187 <h1 style="margin: 0;">SCHEDULE AND SEQUENCE</h1>	SHEET NO. <h1 style="margin: 0;">M-002</h1>
JOB NO. # 09.1131	



PENTHOUSE NORTH – NEW WORK MECHANICAL PLAN →
SCALE: 1/4" = 1'-0"

NOTES

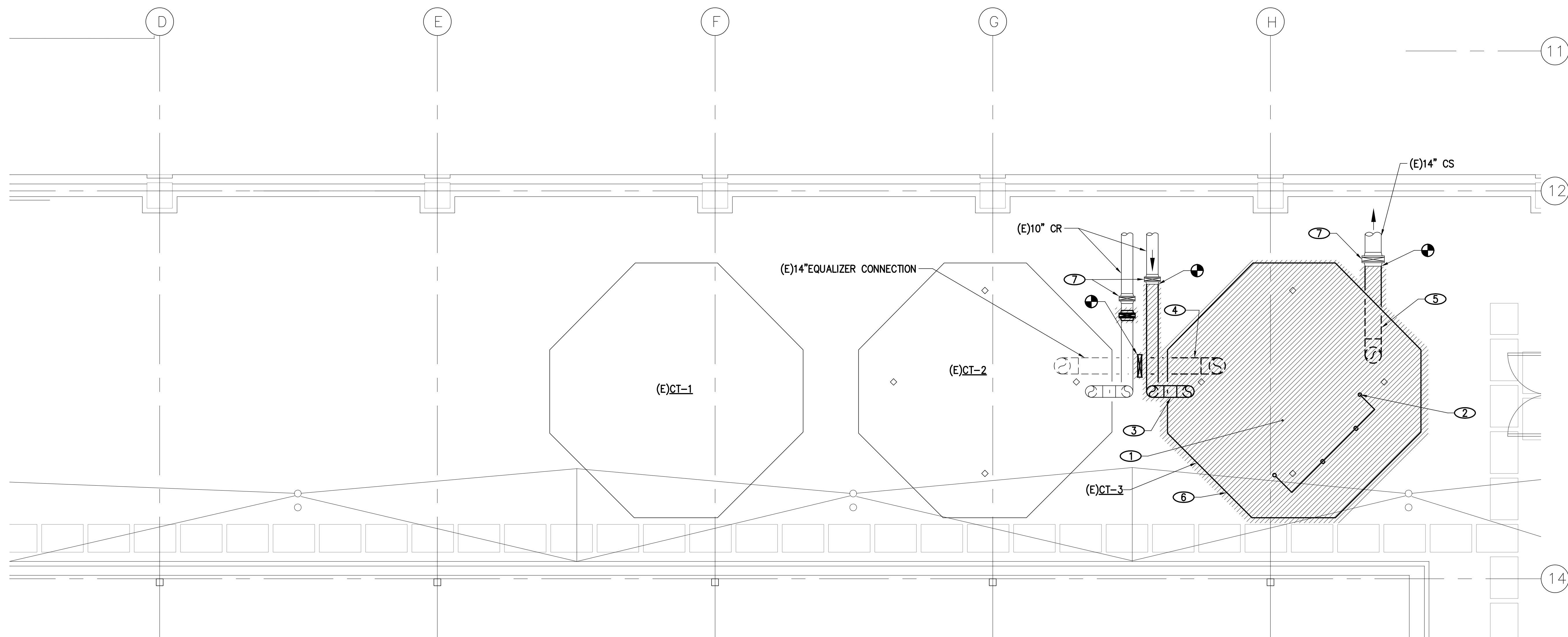
- ① TRANSITION PIPE TO COOLING TOWER INLET/OUTLET AS NECESSARY. (TYP)
- ② POC OF 10" CR PIPING TO EXISTING PNEUMATIC CONTROL VALVE.
- ③ POC OF 14" EQUALIZER LINE PIPING.
- ④ POC OF 14" CS PIPING TO EXISTING PNEUMATIC CONTROL VALVE.
- ⑤ NEW MANUAL WHEEL SHUT-OFF VALVE.
- ⑥ 2" ICW DOWN FROM MAKE-UP WATER CONNECTION.
- ⑦ CONNECT NEW 2" ICW WITH EXISTING.
- ⑧ NC SHUTOFF BALL VALVE.
- ⑨ COOLING TOWER SHALL BE INSTALLED SO THAT RECOMMENDED OPERATING LEVEL IN BASIN IS AT SAME HEIGHT AS OTHER TWO EXISTING TOWERS.
- ⑩ CONNECT DRAIN TO EXISTING. ROUTE OVERFLOW DRAIN AND COOLING TOWER DRAIN TO NEAREST SANITARY PIPING DRAIN.
- ⑪ RECONNECT COOLING TOWER FILTRATION SYSTEM AS REQUIRED. COORDINATE WITH COOLING TOWER MANUFACTURER FOR EXACT CONNECTION LOCATION.
- ⑫ 2" OVERFLOW DRAIN ROUTED AND INDIRECTLY CONNECTED TO NEAREST SANITARY DRAIN BELOW DRAIN AS REQUIRED.

GENERAL NOTES

1. ALL NEW PIPING AND VALVES SHALL BE HEAT TRACED AND INSULATED. SLOPE PIPE BACK TO BUILDING.
2. EXISTING TO REMAIN IS SHOWN LIGHT.
3. POC = POINT OF CONNECTION

DRAWN BY: HAK CHECKED BY: JEH DATE: 02/01/11	DATE: 02-01-2011 REVISIONS: 0 100% BID DOCUMENTS	<p>JCAA 13772 Denver W Pkwy Suite 200 Lakewood, CO 80401 p.303.985.3260</p>
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MCDB – NORTH COOLING TOWER REPLACEMENT – CU PR005187	<h1 style="margin: 0;">PENTHOUSE NORTH MECHANICAL PLAN</h1>
SHEET NO. M-101	
JOB NO. # 09.1131	



- NOTES**
- ① REMOVE AND CAP ALL EXISTING STEAM PIPING.
 - ② REMOVE ALL MAKE-UP WATER PIPING AND CAP FOR FUTURE CONNECTION FOR NEW COOLING TOWER.
 - ③ DISCONNECT AND REMOVE EXISTING 10" CR PIPING TO THE SHUTOFF VALVE.
 - ④ DISCONNECT AND REMOVE EXISTING 14" EQUALIZER LINE PIPING TO THE SHUTOFF VALVE.
 - ⑤ DISCONNECT AND REMOVE EXISTING 14" CS PIPING TO SHUTOFF VALVE.
 - ⑥ DISCONNECT AND REMOVE ALL PIPING FROM EXISTING COOLING TOWER FOR PROPER REMOVAL AND INSTALLATION OF NEW TOWER.
 - ⑦ EXISTING PNEUMATIC CONTROL VALVE TO BE REPLACED WITH ELECTRONIC TYPE.

- GENERAL NOTES**
1. EXISTING TO REMAIN, SHOWN LIGHT.
 2. WORK TO BE REMOVED, SHOWN HATCHED.

DRAWN BY HAK	CHECKED BY JEH	DATE	02-01-2011
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MCDB - NORTH COOLING TOWER REPLACEMENT - CU PR005187

**PENTHOUSE NORTH
MECHANICAL DEMO PLAN**

SHEET NO.
MD-101

JOB NO. # 09.1131

PENTHOUSE NORTH - MECHANICAL DEMO PLAN →
SCALE: 1/4" = 1'-0"