



322 S. State Street, Ste 201  
Little Rock, AR 72201  
501.237.3077

## Addendum #01

Project Name: West Campus Chilled Water Loop  
Facility Name: Arkansas Tech University  
Russellville, Arkansas

Insight Project Number: 24-006  
Date: 11/22/2024

### **Procurement and Contracting Requirements:**

1. Updated Bid form – indicating that work must be substantially completed by 104 calendar days.

### **Specifications:**

1. Refer to Section 23 65 00 – Cooling Tower, Part 2, paragraphs 2.02.A, E.2,2.03:
  - A. Cold Water Basin should be made from 301 SS.
  - B. Paragraph E2 added.
  - C. All Accessories updated

### **Drawings:**

#### **Mechanical:**

1. Refer to Sheet M201 – MECHANICAL PLAN – POWER PLANT BUILDING
  - A. Adjusted cooling tower piping.
  - B. Shifted VFD-DWCP-2 plan north.
  - C. Added keyed note 12 to the exterior piping.
  - D. Added keyed note 18 for the equalizing piping.
2. Refer to Sheet M302 – MECHANICAL DETAILS
  - A. Adjusted cooling tower piping on condenser water piping diagram detail.
3. Refer to Sheet M303 – MECHANICAL DETAILS
  - A. Adjusted cooling tower piping.



4. Refer to Sheet M401 – MECHANICAL SCHEDULES
  - A. Edited Pumps schedule notes.
5. Refer to Sheet M502 – MECHANICAL CONTROLS WEST LOOP
  - A. Edited piping diagrams to include notes about the bypass valves.

**Electrical:**

1. Refer to Sheet 201 – POWER PLANT BUILDING - LIGHTING
  - A. Added area lights and pole base detail
2. Refer to Sheet E302 – DETAILS AND SCHEDULES
  - A. Removed 2 breakers from MDP.
  - B. Added lighting circuit to MDP.

**End of Addendum # 01**



**FORM OF BID PROPOSAL**

**BID TIME/DATE:** 2:00 p.m., November 26, 2024  
**BID PLACE:** ATU Procurement  
**404 N El Paso**  
**Russellville, AR 72802**

**BID FROM:** \_\_\_\_\_

**BID TO:** **ARKANSAS TECH UNIVERSITY – ATTN: JENNIFER WARREN**  
**PROJECT:** **WEST CAMPUS CHILLED WATER LOOP**  
**INCLUDE BID #B024048 ON PACKAGE LABEL**

**ALL BLANKS ON THIS FORM MUST BE COMPLETED IN INK OR TYPE. ANY COST ITEMS MUST BE STATED NUMERICALLY AND IN WRITTEN FORM. IN CASE OF CONFLICT, WORD WILL TAKE PRECEDENT.**

1. **Base Bid:** Having carefully examined the Contract Documents for this project, as well as the premises and all conditions affecting the proposed construction, the undersigned proposes to provide all labor, materials, services, and equipment necessary for, or incidental to, the construction of the project in accordance with the Contract Documents within the time set forth, for the lump sum base bid of:

\$

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*Dollar Amount Is To Be Shown Numerically and in Written Form*

2. **Deductive Alternate:** Fan Coil Units indicated by X. List credit for removing the furnishment and installation of the fan coil units indicated by an X on the Fan Coil Unit schedule on sheet M402 and M403

\$

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*Dollar Amount Is To Be Shown Numerically and in Written Form*

5. It is the Owner's intent to sign the contract by as soon as possible upon providing required proof of insurance to allow ordering of equipment and begin work. Bidder hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" by the Owner.
6. **Completion Date:** Bidder agrees that the work will be substantially complete and ready for final payment excluding retainage in accordance with the Contract Documents **by January, 01, 2026**. The Bidder further agrees to increase the size of the work force, increase daily or weekly work hours, increase the work week, increase shift sizes and/or any other necessary measures to achieve Substantial Completion of the work by the above established date.
7. The undersigned, in compliance with the Contract Documents for the construction of the above named project, does hereby declare:
- That the undersigned understands that the Owner reserves the right to reject any and all bids and to waive any formality.
  - That if awarded the Contract, the undersigned will enter into Agreement and execute required performance and payment bonds and proof of insurance within **10** days after receipt of the Intent to Award, **will commence work as described in Specification Section 01010 - Summary of Work**, and will achieve Substantial Completion within the time indicated.
  - Should the undersigned fail to fully complete the work within the above stated date, or any agreed extension

thereof, he shall pay the Owner as fixed, agreed and not as a penalty, liquidated damages in the sum of **\$500 Dollars (zero)** for each calendar day of delay until the work is completed or accepted. The said sum shall be withheld by the owner from payments due to be made to the Contractor by the Owner under the terms of the contract.

- d. The undersigned further agrees that the bid security payable to Owner and accompanying this proposal shall become the property of the Owner as liquidated damages if the undersigned fails to execute the Contract or to deliver the required bonds and proof of insurance to the Owner within the time frame as stated in paragraph 6(b) from receipt of the Intent to Award as these acts constitute a breach of the Contractor's duties.
- e. That this bid may not be withdrawn for a period of 30 calendar days after the bid opening.
- f. The undersigned understands that the Owner's intent is to construct all facilities proposed within the limits established by the funds appropriated for the project.
- g. The names of subcontractors and the nature of the work to be performed by each one have been included on the Bid Form.
- h. Bids submitted by a "Joint Venture/Joint Adventure" shall be signed by representatives of *each component part* of the Joint Venture. The licenses of *each component part* of the Joint Venture shall also be listed in the bid submittal. Therefore, joint venture bidders shall indicate at least two (2) signatures and two (2) licenses numbers on the Bid Form. Exception: Joint Ventures who have been properly licensed with the Arkansas Contractors Licensing Board as a "Joint Venture" need only to indicate the joint venture license number on the Bid Form. Joint Venture Bidders shall indicate at least two (2) signatures on the bid form even if they are licensed as a joint venture.
- i. The Illegal Immigration Certification Form - the undersigned understands Act 157 of 2007 **requires** the Contractor to submit certification on line prior to award of contract and attach the Certification Confirmation Sheet to this bid. <https://www.ark.org/dfa/immigrant/index.php/disclosure/submit/new>
- j. The Contract and Grant Disclosure and Certification Form will be required from the successful Bidder before a Contract can be issued.

8. **The following documents are attached to the bid form and made a part of this Bid.**

- a. **Bid Security**
- b. **Contract and Grant Disclosure Certification Form**
- c. **Equal Opportunity Disclosure Form**
- d. **Combined Boycotts and Illegal Immigrant Certification Form**
- e. **Certificate of Commercial Liability Insurance**

9. The undersigned acknowledges receipt of and inclusion as a part of the Contract Documents the following addenda. **Failure to acknowledge all addenda may result in rejection of bid.**

Addendum #1	Dated:	Received:
Addendum #2	Dated:	Received:
Addendum #3	Dated:	Received:
Addendum #4	Dated:	Received:

10. LISTING OF MECHANICAL, PLUMBING, ELECTRICAL AND ROOFING SUBCONTRACTORS. ALL MECHANICAL, PLUMBING, ELECTRICAL, AND ROOFING SUBCONTRACTORS SHALL BE LISTED REGARDLESS OF QUALIFICATIONS, LICENSURE OR WORK AMOUNT FAILURE TO NAME THE SUBCONTRACTOR IN THE SPACE PROVIDED SHALL CAUSE THE BID TO BE DECLARED NON-RESPONSIVE AND THE BID WILL NOT RECEIVE CONSIDERATION. Indicate the Name(s), of each entity performing the listed work:

- a. **MECHANICAL (Indicative of HVAC)**

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Is the amount of work \$50,000.00 or over?: Yes  No



b. **STRUCTURAL**

Is the amount of work \$50,000.00 or over?: Yes  No

c. **ELECTRICAL**(Indicative of wiring and illuminating fixtures)

Is the amount of work \$50,000.00 or over?: Yes  No

d. **CIVIL**

Is the amount of work \$50,000.00 or over?: Yes  No

Respectfully Submitted,

\_\_\_\_\_  
**Name of Bidder (Typed or Printed)**

\_\_\_\_\_  
**Address**

\_\_\_\_\_  
**BY: (Signature and Title)**

\_\_\_\_\_  
**Contractor's License Number or Contractor's (Joint Venture) License Number(s)**

\_\_\_\_\_  
**Telephone No.**

\_\_\_\_\_  
**Fax No.**

\_\_\_\_\_  
**Federal ID Number or SSN#**

**SECTION 23 65 00  
COOLING TOWERS****PART 1 GENERAL****1.01 REFERENCE STANDARDS**

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings.
- B. ABMA STD 11 - Load Ratings and Fatigue Life for Roller Bearings.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- E. CTI STD-111 - Gear Speed Reducers for Application on Industrial Water Cooling Towers; 2009.

**1.02 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, dimensions, weights and point loadings, accessories, required clearances, electrical requirements and wiring diagrams, and location and size of field connections. Submit schematic indicating capacity controls.
- C. Shop Drawings: Indicate suggested structural steel supports including dimensions, sizes, and locations for mounting bolt holes.

**1.03 QUALITY ASSURANCE****1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.

**1.05 WARRANTY**

- A. Provide a one year warranty to include coverage for defects in material and workmanship labor only. All work done by contractor, including tower installation shall be covered once substantial completion is issued.
- B. Fans, fan shafts, bearings, sheaves, gearboxes, drive shafts, couplings, and mechanical equipment support must be warranted against defects in materials and workmanship for a period of five (5) years; or seven (7) if motor space heater is properly wired.

**PART 2 PRODUCTS****2.01 MANUFACTURERS**

- A. Open-Circuit, Induced-Draft, Cross-Flow Cooling Towers:
  - 1. Marley NC Steel Cooling Tower
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.

**2.02 COMPONENTS**

- A. Cold Water Basin:
  - 1. Fabrication consisting of 301 SS Stainless Steel galvanized steel, a thermosetting hybrid polymer, and a polyurethane liner factory applied to all submerged surfaces. A welded Type 316 stainless steel basin is an acceptable alternative.
  - 2. ----- ALTERNATE for 304 Stainless Steel (All products but Series V open and closed) -----
  - 3. ----- ALTERNATE for 316 Stainless Steel (All products but Series V open and closed) -----
- B. Casing panels and framework will be constructed of G235 galvanized steel.
- C. Casing panels, framework, and fasteners can be constructed of Type 304 stainless steel. Type 301 stainless steel is not an acceptable alternative.
- D. Fans: \_\_\_\_propellor type, with belt drive, bearings with 100,000 hours or greater and the gear sets shall have AGMA Quality Class of 9 or greater. The gearbox shall include any modifications to enable operation down to 10%. All fan blades shall be individually adjustable.

**E. Motors and Drives:**

- 1.
2. Each cell of the cooling tower shall be equipped with a UL/CUL 508 listed SPPC (Single Point Power Connection) control panel in a NEMA 3R or 4X outdoor enclosure. The SPPC panel shall include a main circuit breaker with an external operating handle, lockable in the off position for safety. The SPPC main circuit breaker will feed various control circuits integrated into the SPPC panel including but not limited to: Fan motor starter, basin heater controls and water level controls. In the event a VFD is furnished for the cooling tower fan, a feeder breaker in the SPPC panel shall be provided to feed power to a remote mounted VFD. Provide operational status contacts wired to user terminal points.
3. Fan Drive System:
  - a. Gear Drive with Internal Motor: Single-speed motor(s) shall be 40 maximum, NEMA Premium Efficiency, TEFC, 1.15 service factor, inverter duty, variable torque, and specially insulated for cooling tower duty (Class F). Speed and electrical characteristics shall be 1800, single-winding, 3-phase, 60 Hz, \_\_\_\_ volts. Motor shall operate in the shaft-horizontal position for geardrive towers and shaft-down position for belt drive towers. Nameplate horsepower shall not be exceeded at design operation.
  - b. The motor to gearbox close coupling shall be a tire-type, single piece, flexible element design to accommodate frequent speed changes that are inherent with VFD applications.
  - c. The complete mechanical equipment assembly for each cell shall be supported by two horizontal steel beams that resist misalignment between the motor and the gear reducer/belt drive system. The mechanical equipment assembly shall be warranted against any failure caused by defects in materials and workmanship for no less than five (5) years following the date of tower shipment. This warranty shall cover the fan, speed reducer, drive shaft and couplings, and the mechanical equipment support. The electric motor shall carry a manufacturer's warranty of at least one year.

**F. Fill:**

1. Fill shall be film type, thermoformed of PVC, with louvers and eliminators formed as part of each fill sheet. Fill shall be suspended from hot dip galvanized structural tubing supported from the tower structure, and shall be elevated above the floor of the cold-water basin to facilitate cleaning. Air inlet faces of the tower shall be free of water splash out.
2. Fungal Resistance: No growth when tested according to ASTM G21.

**G. Drift Eliminators:** Three pass PVC, drift loss limited to 0.005 percent of total water circulated.**H. Hot Water Distribution System:** Two open galvanized steel basins (one above each bank of fill) shall receive hot water piped to each cell of the tower. These basin components shall be installed and sealed at the factory and assembled with bolted connections. Tap screws shall not be allowed due to their potential to develop leaks. The basins shall be equipped with removable, galvanized steel covers capable of withstanding the loads described in paragraph 4.1. The water distribution system shall be accessible and maintainable during tower fan and water operation.**I.****2.03 ACCESSORIES**

- A. Access Packages:** See submittal documents for access package requirements. Platforms and ladders must ship assembled from cooling tower manufacturer.
1. The top of the tower shall be equipped with a guardrail complete with kneerail and toeboard, designed according to OSHA guidelines and factory welded into subassemblies for ease of field installation. Posts, top rails and kneerails shall be 1.5" square tubing. The guardrail assembly shall be hot dipped galvanized after welding and capable of withstanding a 200 pound concentrated live load in any direction. Posts shall be spaced on centers of 8'-0" or less. A 1'-6" wide aluminum ladder with 3" I-beam side rails and 1.25" diameter rungs shall be permanently attached to the endwall casing of the tower,

- rising from the base of the tower to the top of the guardrail.
2. Provide a ladder extension for connection to the foot of the ladder attached to the tower casing. This extension shall be long enough to rise from the roof (grade) level to the base of the tower. The installing contractor shall be responsible for cutting the ladder to length; attaching it to the foot of the tower ladder; and anchoring it at its base.
  3. A steel, self-closing gate shall be provided at the guardrail level of the ladder
  4. There shall be an access platform at the base of the tower extending from the vertical ladder to the access door. The platform shall be surrounded by an OSHA compliant guardrail system welded into subassemblies for ease of installation. The walking surface of the platform shall be perforated to provide a non-slip surface for personnel safety.
  5. Provide a factory-installed, walkway extending from one cased-face access door to the other cased face. A steel framework shall support the walkway and the top of the walkway shall be at or above the cold-water basin overflow level. The walkway and framework to be equivalent material as the tower basin and have a minimum width of 36".
- B. Cold Water Collection Basin
1. The collection basin shall be welded 301L stainless steel construction. Only low-carbon stainless steel alloys will be accepted in order to minimize the risk of intergranular corrosion in the weld zones. The basin shall include the number and type of suction connections required to accommodate the outflow piping system shown on the plans. Suction connections shall be equipped with stainless steel debris screens. A factory-installed, float-operated, mechanical make-up valve shall be included. An overflow and drain connection shall be provided in each cell of the cooling tower. The basin floor shall slope toward the drain to allow complete flush out of debris and silt that may accumulate. Towers of more than one cell shall include a method for flow and equalization between cells. The basin shall be accessible and maintainable while water is circulating. All steel items that project into the basin shall also be made of stainless steel.
  2. A hole and bolt circle shall be provided in the depressed section of the basin for equalizer piping between cells. A full-face, .25" thick, 50 durometer gasket shall be provided at each equalizer location.
  3. Provide a system of electric immersion heaters and controls for each cell of the tower to prevent freezing of water in the collection basin during periods of shutdown. The system shall consist of one or more stainless steel electric immersion heaters installed in threaded couplings provided in the side of the basin. A NEMA 4 control panel and associated temperature probe shall include circuitry to monitor cold water temperature and low water level, providing ON OFF thermostatic like control. The temperature probe shall be located in the cold-water basin.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Provide the services of the manufacturer's field representative to supervise rigging, hoisting, and installation, allowing for minimum of one eight hour day per tower.
- C. Install tower on structural steel beams as instructed by manufacturer.
- D. Connect condenser water piping with flanged connections to tower. Pitch condenser water supply to tower and condenser water suction away from tower.
- E. Connect make-up water piping with flanged or union connections to tower. Pitch to tower.

### **3.02 FIELD QUALITY CONTROL**

- A. Test for capacity under actual operating conditions in accordance with CTI ATC-105 and verify specified performance.

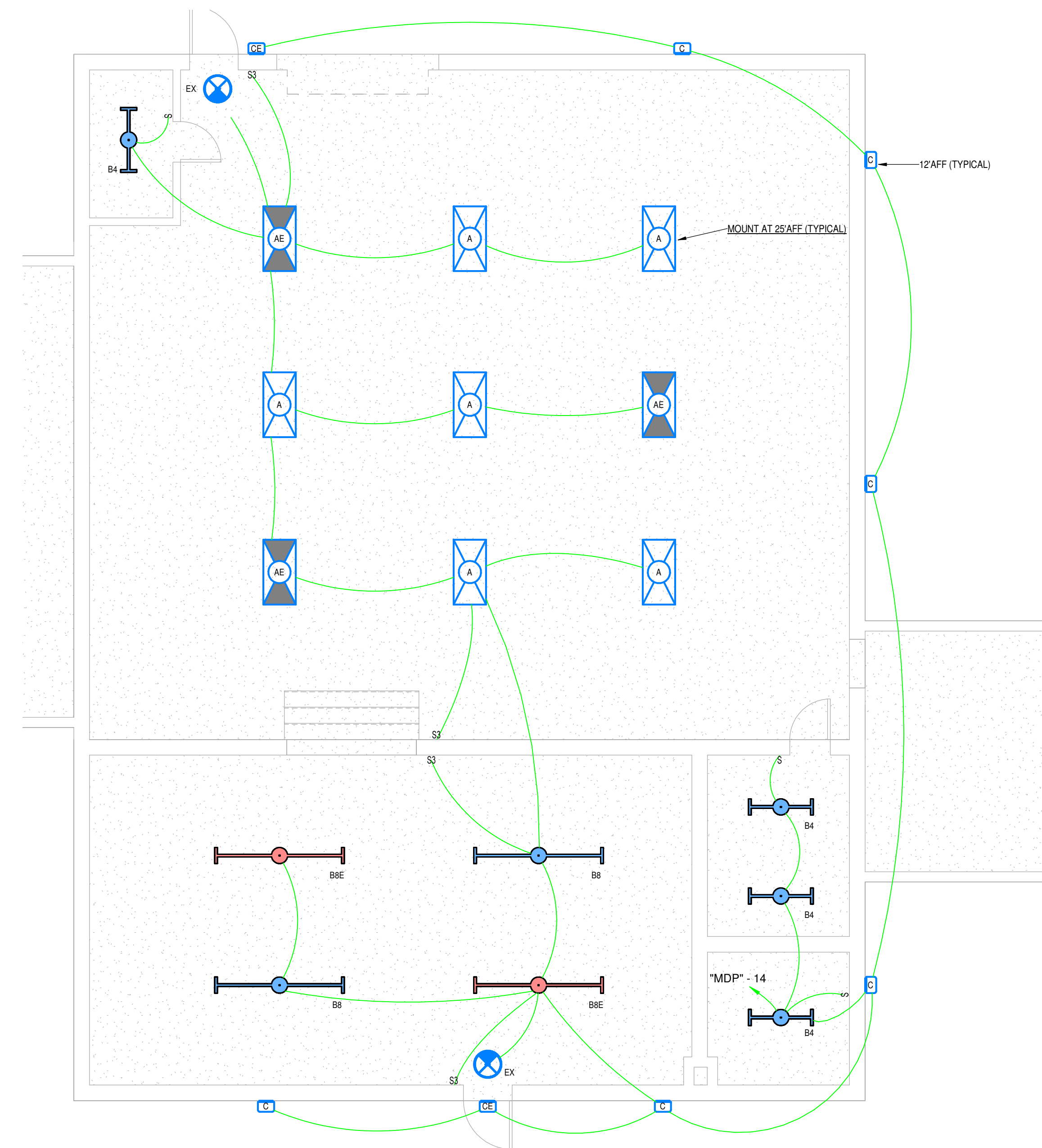
### **3.03 SYSTEM STARTUP**

- A. Start-up tower in presence of and instruct Owner's operating personnel.

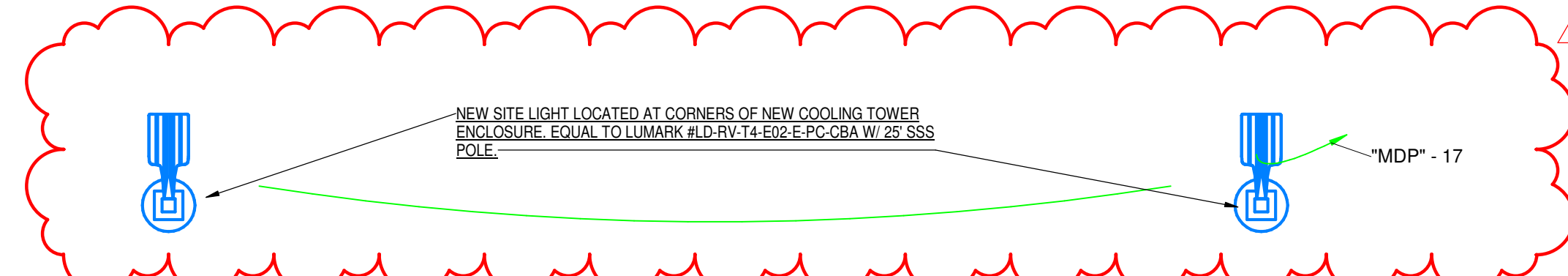
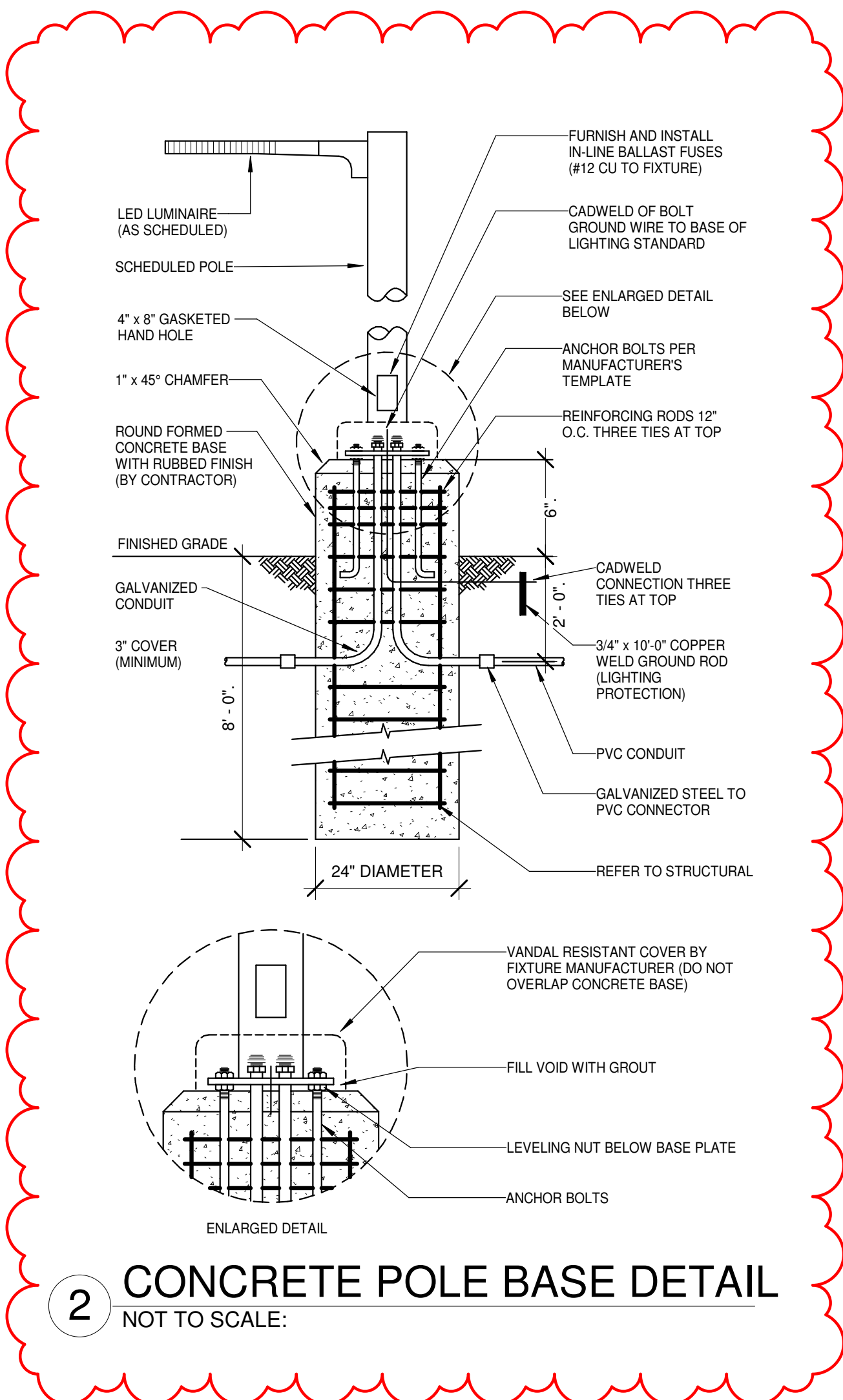
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**ATU WEST CAMPUS CHILLED  
WATER LOOP**  
RUSSELLVILLE, AR



PHASING SUMMARY	
1.	EXISTING 208/120V ELECTRICAL SERVICE SWITCHBOARDS/PANELS TO REMAIN UNTIL NEW 480/277V SERVICE SWITCHBOARDS/PANELS ARE INSTALLED.
2.	EXISTING (X)CT-1, (X)CH-2, (X)CHWP-1, (X)JP-2, (X)P-1, (X)CH-1 TO REMAIN IN OPERATION.
3.	480/277V ELECTRICAL SERVICE SWITCHBOARDS/PANELS TO BE INSTALLED. NEW MECHANICAL EQUIPMENT CONNECTED TO NEW 480/277V SERVICE.
4.	POWER SWITCHOVER COORDINATED WITH OWNER AND MECHANICAL CONTRACTOR.
5.	EXISTING 208/120V ELECTRICAL SERVICE SWITCHBOARDS/PANELS, LIGHTING, RECEPTACLES, AND REMAINING (X)CT-1, (X)CH-2, (X)CHWP-1, (X)CWP-1, (X)JP-2, (X)JP-1, (X)CH-1 TO BE DEMOLISHED.



**1 POWER PLANT BUILDING - LIGHTING**  
3/16" = 1'-0"

REVISIONS:

No.	Description	Date
1	Addendum 1	11-22-24

100% CONSTRUCTION DOCUMENTS

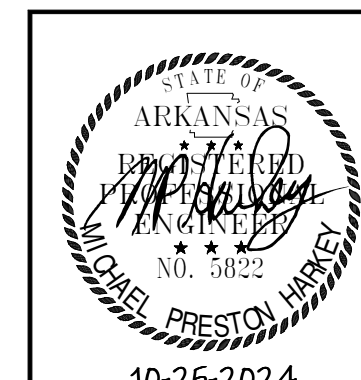
ISSUE DATE: 10-25-2024

PROJECT NUMBER: 24-006

SHEET TITLE:  
ELECTRICAL PLAN - POWER PLANT - LIGHTING

SHEET NUMBER:

**E201**



10-25-2024





**ATU WEST CAMPUS CHILLED  
WATER LOOP**  
 RUSSELLVILLE, AR

REVISIONS:

No.	Description	Date
1	Addendum 1	11-22-24

100% CONSTRUCTION DOCUMENTS

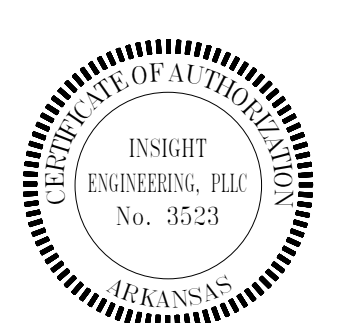
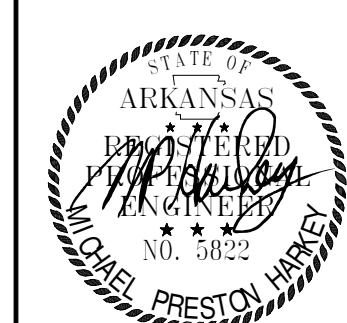
ISSUE DATE: 10-25-2024

PROJECT NUMBER: 24-006

SHEET TITLE:  
ELECTRICAL DETAILS AND  
SCHEDULES

SHEET NUMBER:

**E302**



10-25-2024

Switchboard: "MDP"									
Location:			Volts: 480/277 Wye			A.I.C. Rating: 65k			
Supply From:			Phases: 3			Mains Type: MLO			
Mounting: PAD			Wires: 4			Mains Rating: 2000 A			
Enclosure: NEMA 1			MCB Rating: 2000 A						
Notes									
CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	A	B	C	Remarks	
1	CH-1	3	800 A	800 A	147364 VA	147364 VA	147364 VA		
2	CH-2	3	800 A	800 A	147364 VA	147364 VA	147364 VA		
3	DCHP-1	3	200 A	175 A	18005 VA	18005 VA	18005 VA		
4	DCHP-2	3	200 A	175 A	18005 VA	18005 VA	18005 VA		
5	DCWP-1	3	100 A	100 A	11080 VA	11080 VA	11080 VA		
6	DCWP-2	3	100 A	100 A	11080 VA	11080 VA	11080 VA		
7	CT-1	3	150 A	125 A	26350 VA	26350 VA	26350 VA		
8	CT-2	3	150 A	125 A	26350 VA	26350 VA	26350 VA		
9	EUH-1	3	20 A	15 A	1108 VA	1108 VA	1108 VA		
10	EUH-2	3	20 A	15 A	1108 VA	1108 VA	1108 VA		
11	EUH-3	3	20 A	15 A	1108 VA	1108 VA	1108 VA		
12	EUH-4	3	20 A	15 A	1108 VA	1108 VA	1108 VA		
13	75 kVA, TRANSFORMER	3	150 A	150 A	1180 VA	2440 VA	2080 VA		
14	LIGHTING	1	20 A	20 A	901 VA				
15	HEAT TAPE	1	20 A	20 A	4000 VA				
16	EP-1	3	20 A	15 A	388 VA	388 VA	388 VA		
17	SITE LIGHTING	1	20 A	20 A	110 VA				
18									
19									
20	TVSS 240kA	3	60 A	60 A	0 VA	0 VA	0 VA		
					<b>Total Conn. Load:</b>	416609 VA	412858 VA	412498 VA	
					<b>Total Amps:</b>	1504 A	412858 VA	1489 A	
<b>Legend:</b>									
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals					
Lighting	270 VA	100.00%	270 VA						
Other	4741 VA	100.00%	4741 VA	<b>Total Conn. Load:</b> 1241966 VA					
Power	1232255 VA	100.00%	1232255 VA	<b>Total Est. Demand:</b> 1241966 VA					
				<b>Total Conn. Current:</b> 1494 A					
				<b>Total Est. Demand Current:</b> 1494 A					

Branch Panel: "A"													
Panel Location:				Volts: 120/208 Wye				A.I.C. Rating: 10KAIC					
Supply From:				Phases: 3				Bus Rating: 225 A					
Mounting: SURFACE				Wires: 4				MCB Rating: 225 MCB					
Enclosure: NEMA 1													
Notes:													
CKT	Circuit Description	Trip (A)	Poles	"A"	"B"	"C"	Poles	Trip (A)	Circuit Description	CKT			
1	CHILLER CONTROL	20	1	500	500		1	20	CHILLER CONTROL	2			
3	Receptacle	20	1		900	540		1	20	Receptacle			
5	Receptacle	20	1			1080	0	1	20	SPARE			
7	SPARE	20	1	0	0			1	20	SPARE			
9	SPARE	20	1		0	1000		1	20	Receptacle			
11	SPARE	20	1			0	1000	1	20	Receptacle			
13	SPARE	20	1	0	0			1	20	SPARE			
15	SPARE	20	1		0	0		1	20	SPARE			
17	SPARE	20	1			0	0	1	20	SPARE			
19	SPARE	20	1	0	0			1	20	SPARE			
21	SPARE	20	1		0	0		1	20	SPARE			
23	SPARE	20	1			0	0	1	20	SPARE			
25	SPARE	20	1	0	0			1	20	SPARE			
27	SPARE	20	1		0	0		1	20	SPARE			
29	SPARE	20	1			0	0	1	20	SPARE			
31	SPARE	20	1	0	0			1	20	SPARE			
33	SPARE	20	1		0	0		1	20	SPARE			
35	SPARE	20	1			0	0	1	20	SPARE			
37	SPARE	20	1	0	0			1	20	SPARE			
39	SPARE	20	1		0	0		1	20	SPARE			
41	SPARE	20	1			0	0	1	20	SPARE			
				<b>Total Load:</b>	1180 VA	2440 VA			2080 VA				
				<b>Total Amps:</b>	10 A	21 A			18 A				
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals									
Power	1000 VA	100.00%	1000 VA										
Receptacle	4700 VA	100.00%	4700 VA	<b>Total Conn. Load:</b> 5700 VA									
				<b>Total Est. Demand:</b> 5700 VA									
				<b>Total Conn. Current:</b> 17 A									
				<b>Total Est. Demand Current:</b> 16 A									

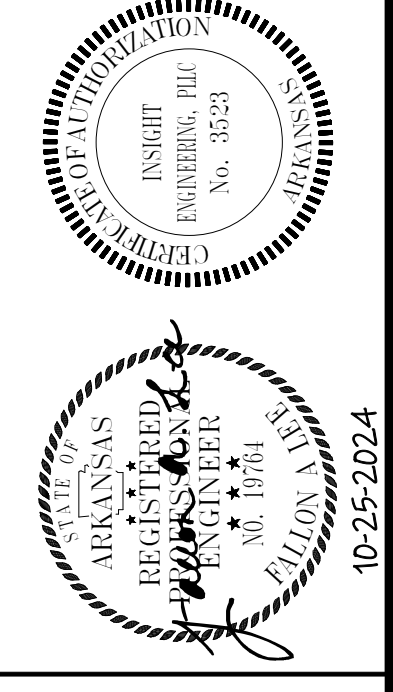
LIGHT FIXTURE SCHEDULE							
TYPE	MANUFACTURER	CATALOG NUMBER	VOLTAGE	LAMP	COLOR	MOUNTING	NOTES
A	ALPHALITE	HBDC-(215/180/135)-S-A-ACC	UNV	LED	35K	AIRCRAFT CABLE	LED HIGH BAY FIXTURE
AE	ALPHALITE	HBDC-(215/180/135)-S-A-ACC-EM25W-HBDC-EM-MK	UNV	LED	35K	AIRCRAFT CABLE	LED HIGH BAY FIXTURE WITH EMERGENCY BATTERY
B4	ALPHALITE	HL-S-4-S-A-ACC	UNV	LED	35K	AIRCRAFT CABLE	LED STRIP
B5	ALPHALITE	HL-S-4-S-A-ACC	UNV	LED	35K	AIRCRAFT CABLE	LED STRIP
C	ALPHALITE	WPA-42B-40K-PS	UNV	LED	40K	WALL	LED WALL PACK
CE	ALPHALITE	WPA-42B-40K-PS-EM700	UNV	LED	40K	WALL	LED WALL PACK WITH EMERGENCY BATTERY
EX	ALPHALITE	NCLB2RW-S0	UNV	LED	NA	WALL	EXIT SIGN WITH EMERGENCY BATTERY

REVISIONS:		No.	Description	Date
1	Addressum 1	1		11-22-24

100% CONSTRUCTION DOCUMENTS  
ISSUE DATE: 10-25-2024  
PROJECT NUMBER: 24-006

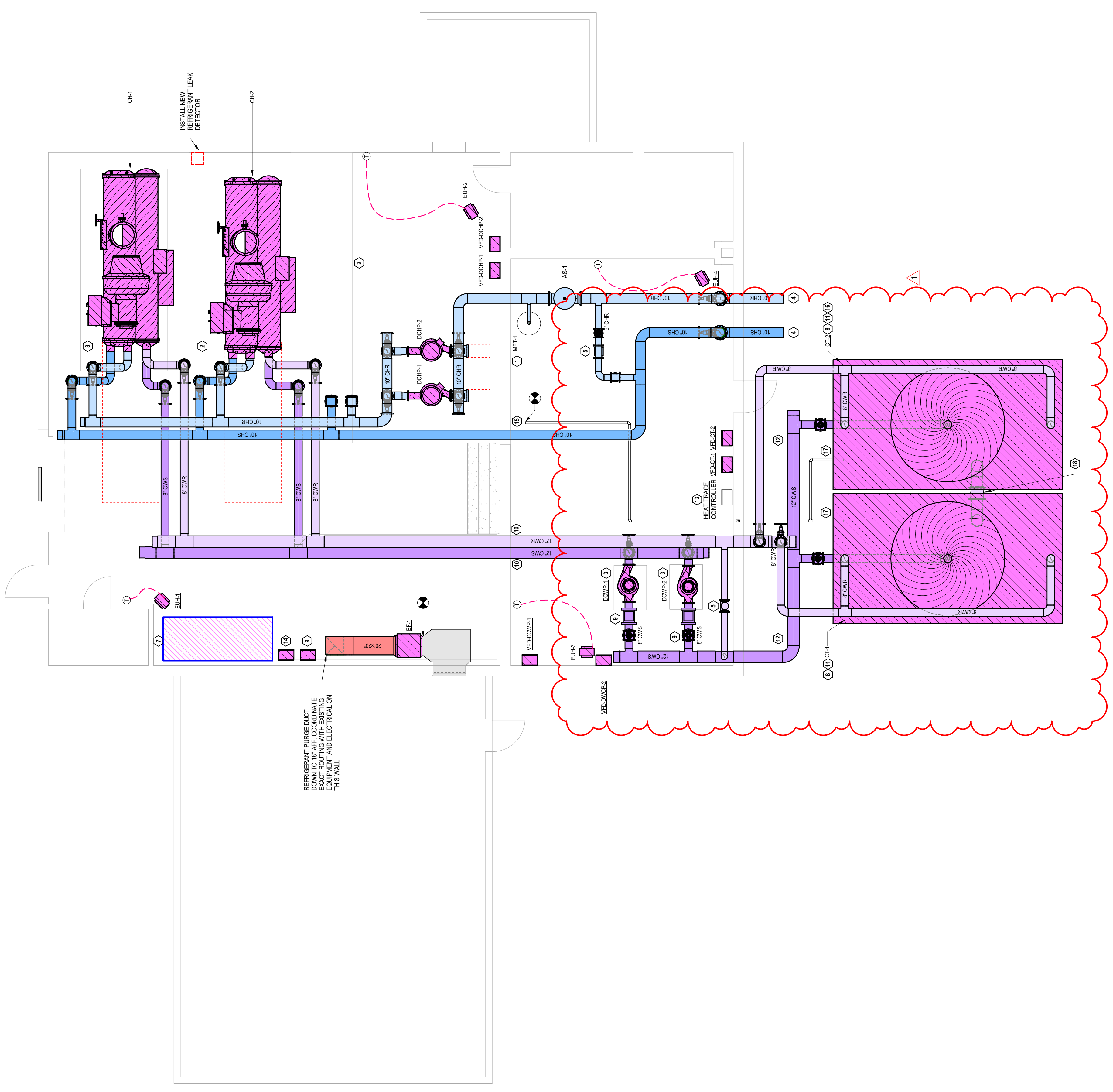
SHEET TITLE:  
MECHANICAL PLAN - POWER  
PLANT BUILDING

SHEET NUMBER:  
**M201**



- GENERAL NOTES**
1. ALL EXPOSED PIPING INSIDE THE BUILDING SHALL BE IN PVC. EXPOSED PIPING OUTSIDE THE BUILDING SHALL BE IN GALV. STEEL. ALL PIPING SHALL BE CLEARLY LABELED AND HAVE DIRECTION ARROWS.
  2. ALL WALL AND FLOOR PENETRATIONS SHOULD BE SEALED.
  3. PROVIDE ALUMINUM JACKETING ON ALL EXTERIOR PIPING.
  4. PROVIDE PVC JACKETING ON ALL INTERIOR PIPING.
  5. ALL EXPOSED PIPING INSIDE THE BUILDING SHALL BE 303 SS. EXPOSED PIPING OUTSIDE THE BUILDING SHALL BE 304 SS. ALL JACKETING SYSTEMS SHALL BE SELECTED DURING SUBMITTAL PROCESS. ALL PIPING SHALL BE LABELED AND HAVE DIRECTION ARROWS AS PER THE SPECIFICATIONS.

- KEYED NOTES**
1. CONNECT 1" MAKE-UP WATER LINE FROM EXISTING RPZ.
  2. UTILIZE EXISTING CONCRETE EQUIPMENT PAD.
  3. PROVIDE 4" CONCRETE EQUIPMENT PAD.
  4. ROUTE 10" CHILLED WATER LINES BELOW GRADE. SEE CIVIL FOR LOOP CONTINUATION.
  5. BYPASS CONTROL VALVE.
  6. BASKET STRAINER.
  7. WATER TREATMENT SYSTEM BY CHEM AQUA.
  8. COOLING TOWER SUPPORTS BY STRUCTURAL.
  9. CHILLER PLANT CONTROLLER.
  10. EXPAND OPENING IN WALL TO INCLUDE CONDENSER WATER PIPES.
  11. ROUTE COOLING TOWER DRAIN TO AREA DRAIN BELOW TOWER. REFER TO CIVIL.
  12. PROVIDE 8" WET HEAT TRACE EQUAL TO RAN/CHEM/RED CR AT 277V. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
  13. PROVIDE WET HEAT TRACE EQUAL TO RAN/CHEM/RED CR AT 277V. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
  14. PROVIDE REFRIGERANT MONITORING SYSTEM EQUAL TO CHILLERS AND SDR.
  15. ROUTE EXISTING 3/4" MAKE UP WATER TO EXPANSION TANK.
  16. ROUTE 4" COOLING TOWER DRAIN TO AREA DRAIN BELOW. SEE CIVIL FOR CONTINUATION.
  17. PROVIDE 2" MAKE UP WATER LINE TO BASIN OF COOLING TOWER. TO EACH BASIN. PROVIDE HEAT TRACE EQUAL TO SWIFT ON EXTERIOR MAKE-UP WATER LINE.
  18. 12" EQUALIZER PIPING WITH ISOLATION VALVE. PROVIDE 8" WET HEAT TRACE EQUAL TO RAN/CHEM/RED CR AT 277V. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

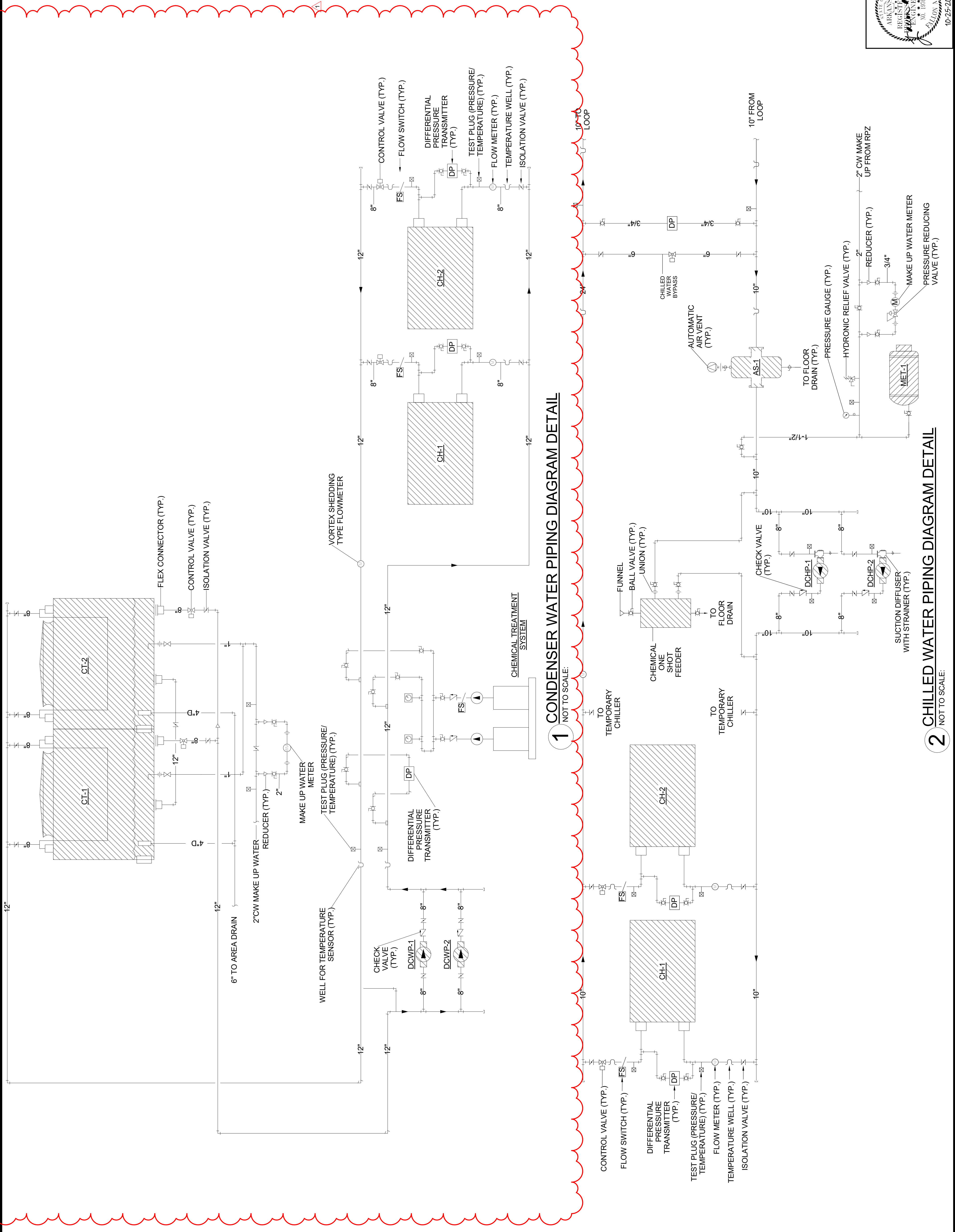
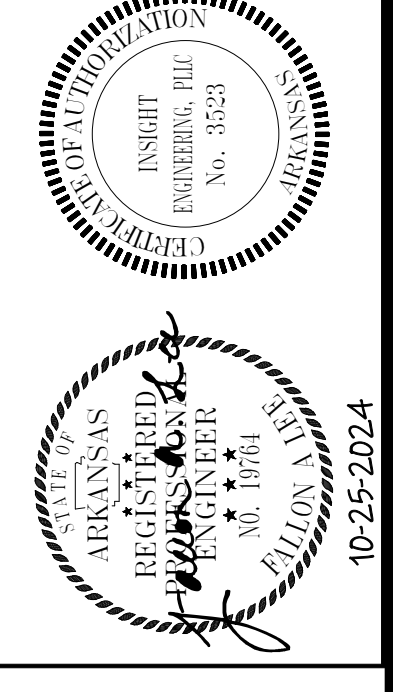


**1 POWER PLANT BUILDING - HVAC PLAN**  
3/16" = 1'-0"



No.	Description	Date
1	Addendum 1	11-22-24

100% CONSTRUCTION DOCUMENTS  
ISSUE DATE: 10-25-2024  
PROJECT NUMBER: 24-006  
SHEET TITLE: MECHANICAL DETAILS  
SHEET NUMBER: M302

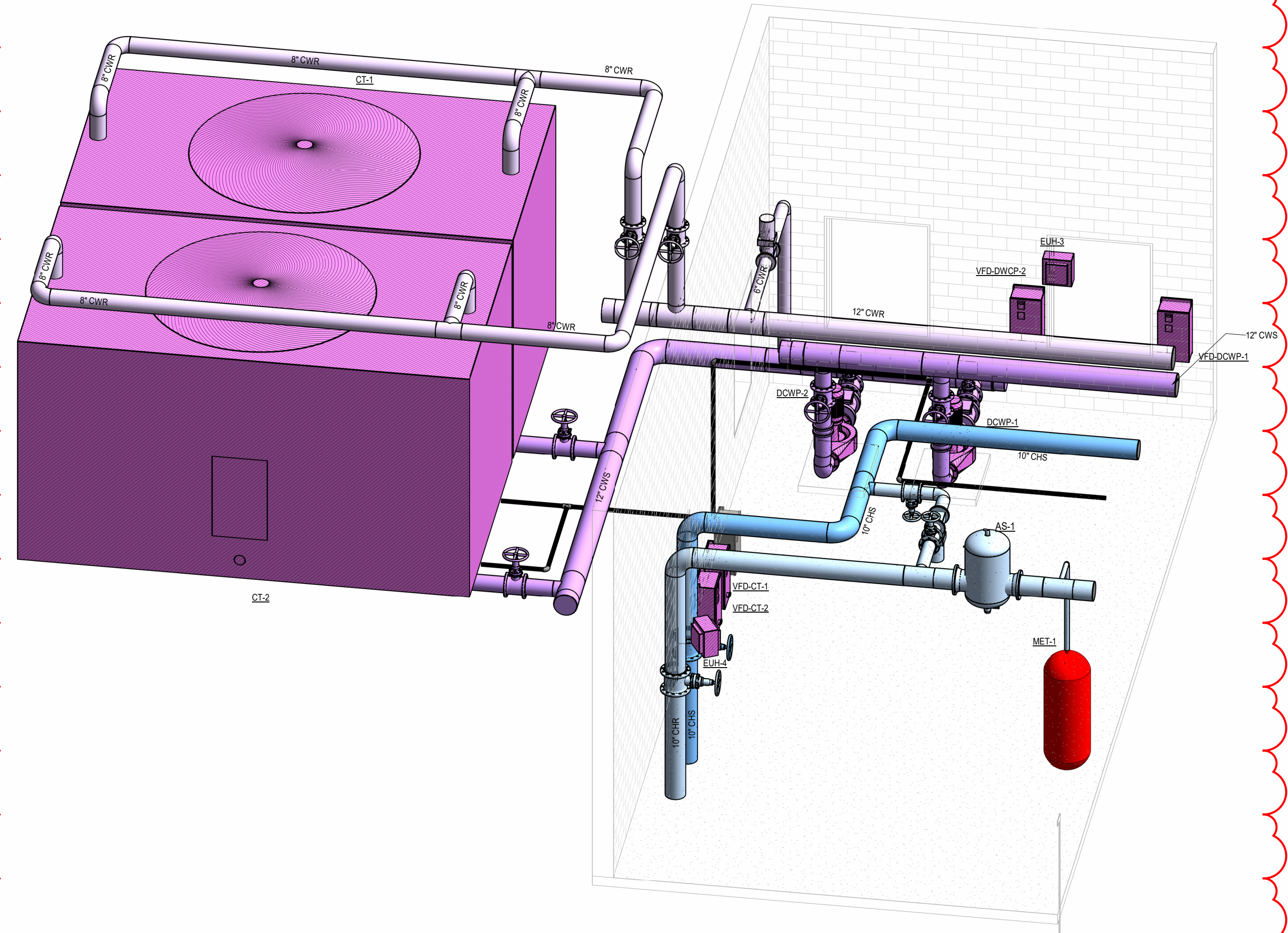


**1** CONDENSER WATER PIPING DIAGRAM DETAIL  
NOT TO SCALE.

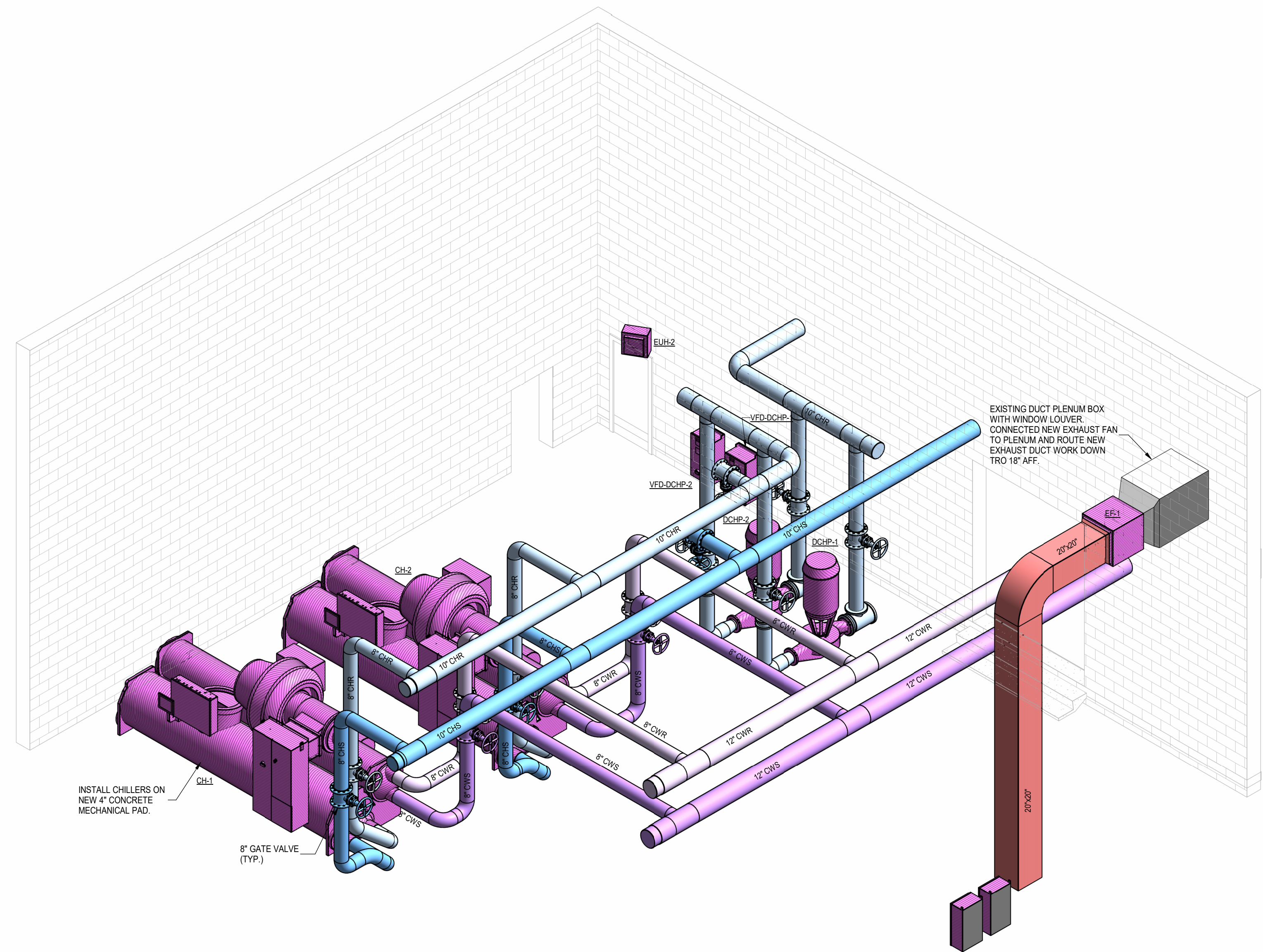
**2** CHILLED WATER PIPING DIAGRAM DETAIL  
NOT TO SCALE.



**ATU WEST CAMPUS CHILLED  
WATER LOOP**  
RUSSELLVILLE, AR



**1 ISOMETRIC COOLING TOWER VIEW**  
NOT TO SCALE:



**2 ISOMETRIC CHILLER ROOM VIEW**  
NOT TO SCALE:

REVISIONS:

No.	Description	Date
1	Addendum 1	11-22-24

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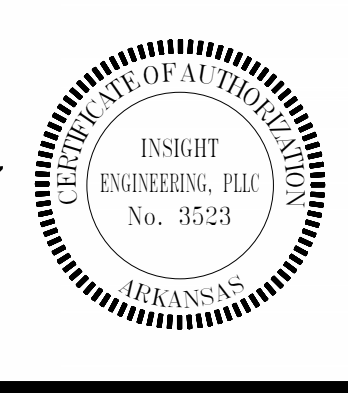
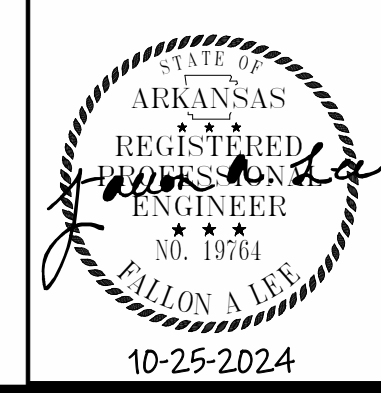
ISSUE DATE: 10-25-2024

PROJECT NUMBER: 24-006

SHEET TITLE:  
MECHANICAL DETAILS

SHEET NUMBER:

**M303**



10-25-2024





**ATU WEST CAMPUS CHILLED  
WATER LOOP  
RUSSELLVILLE, AR**

PUMPS														
DESIGNATION	SERVES	REFERENCE PRODUCT		TYPE	ACTUAL FLOW RATE (GPM)	TOTAL HEAD (FT. WATER)	ROTATION (RPM)	IMPELLER DIAMETER (INCHES)	EFFICIENCY (%)	MOTOR SIZE		ELECTRICAL		REMARKS
		MANUFACTURER	MODEL							BHP	MHP	VOLTS	PHASE	
DCHP-1 & 2	DISTRICT CHILLED WATER LOOP	ARMSTRONG	4300-5x5x13	VERTICAL INLINE	860	150	1,247	13.2	80	40.7	50	480	3	PROVIDE SUCTION GUIDE.
DCWP-1 & 2	COOLING TOWER	ARMSTRONG	4300-8x8x13	VERTICAL INLINE	1,500	60	806	13.2	86	24.8	30	480	3	PROVIDE SUCTION GUIDE.

COOLING TOWERS															
DESIGNATION	REFERENCE PRODUCT		NO. OF CELLS	DESIGN CONDITIONS			FANS					BASIN HEATER		OPERATING WEIGHT (LBS)	REMARKS
	MANUFACTURER	MODEL		DESIGN WET BULB (°F)	EWL / LWT (°F)	FLOW RATE (GPM)	NO.	FAN HP (EACH)	RPM	AIRFLOW (CFM)	VOLTS / PH	KW	VOLTS / PH		
CT-1	MARLEY	NC8407TAN2	1	80	95.0 / 85.0	1,500	1	40	1,800	165,300	480 / 3	(2) 15	480 / 3	53,374	PROVIDE MECHANICAL VIBRATION SWITCH, COOLING TOWER CONTROL PANEL, ALUMINUM LADDER WITH STEP PLATFORM AND RAILING, & FLOAT SWITCH. PROVIDE SINGLE POINT POWER OPTION PACKAGE WITH INTEGRAL VFD, AND INTERNAL MECHANICAL PLATFORM
CT-2	MARLEY	NC8407TAN2	1	80	95.0 / 85.0	1,500	1	40	1,800	165,300	480 / 3	(2) 15	480 / 3	53,374	PROVIDE MECHANICAL VIBRATION SWITCH, COOLING TOWER CONTROL PANEL, ALUMINUM LADDER WITH STEP PLATFORM AND RAILING, & FLOAT SWITCH. PROVIDE SINGLE POINT POWER OPTION PACKAGE WITH INTEGRAL VFD, AND INTERNAL MECHANICAL PLATFORM

CHILLERS - WATER COOLED																			
DESIGNATION	REFERENCE PRODUCT		TOTAL CAPACITY (TONS)	EVAPORATOR					CONDENSER					ELECTRICAL			FULL LOAD EFF. KW/TON	REFRIGERANT	WEIGHT
	MANUFACTURER	MODEL		WATER FLOW RATE (GPM)	EWL / LWT (°F)	PD (FT. HD.)	NO. OF PASSES	FOULING FACTOR	WATER FLOW RATE (GPM)	EWL / LWT (°F)	PD (FT. HD.)	NO. OF PASSES	FOULING FACTOR	MCA	MOCP	VOLTS / PH.			
CH-1	TRANE	CVHF	500	853	56 / 42	10.6	2	0.0001	1,410	95 / 85	35.3	2	0.00025	532	800	460 / 3	0.585	R-514A	20,498
CH-2	TRANE	CVHF	500	853	56 / 42	10.6	2	0.0001	1,410	95 / 85	35.3	2	0.00025	532	800	460 / 3	0.585	R-514A	20,498

VARIABLE FREQUENCY DRIVES						
DESIGNATION	MANUFACTURER	SERVES	RATED HP	VOLTS	PHASE	REMARKS
VFD-DCHP-1	ABB	DCHP-1	50	480	3	PROVIDE WITH INPUT LINE REACTORS.
VFD-DCHP-2	ABB	DCHP-2	50	480	3	PROVIDE WITH INPUT LINE REACTORS.
VFD-DCWP-1	ABB	DCWP-1	30	480	3	PROVIDE WITH INPUT LINE REACTORS.
VFD-DCWP-2	ABB	DCWP-2	30	480	3	PROVIDE WITH INPUT LINE REACTORS.
VFD-CT-1	ABB	CT-1 FAN	40	480	3	PROVIDE WITH INPUT LINE REACTORS.
VFD-CT-2	ABB	CT-2 FAN	40	480	3	PROVIDE WITH INPUT LINE REACTORS.

AIR SEPARATORS											
DESIGNATION	REFERENCE PRODUCT		SERVES	PIPE CONNECTION SIZE (INCHES)	MAXIMUM HEIGHT (INCHES)	MAXIMUM FLOW RATE (GPM)	WATER VOLUME (GALLONS)	MAXIMUM WORKING PRESSURE (PSI)	MAX VELOCITY (FT/SEC)	MAX WEIGHT (LBS.)	REMARKS
	MANUFACTURER	MODEL									
AS-1	SPIROTERM	VSR 1200	CHILLERS	12	56.3	1700	93	2.0	10.0	1050	PROVIDE DRAIN PORT WITH BALL VALVE.

EXPANSION TANKS													
DESIGNATION	REFERENCE PRODUCT		SERVES	TYPE	TANK VOLUME (GALLONS)	MAXIMUM ACCEPTANCE (GALLONS)	MINIMUM TEMP. (°F)	MAXIMUM TEMP. (°F)	INITIAL TANK AIR PRESSURE (PSIG)	MAXIMUM PRESSURE (PSIG)	TANK DIAMETER (INCHES)	TANK LENGTH (INCHES)	REMARKS
	MANUFACTURER	MODEL											
ET-1	ELBI	WTL-600	CHILLERS	BLADDER	160	160	40	95	15	150	25.6	85.0	CARBON STEEL SHEEL WITH PRECHARGED BLADDER.

EXHAUST FANS														
DESIGNATION	REFERENCE PRODUCT		TYPE	AIRFLOW RATE (CFM)	ESP (IN. WC)	ROTATION (RPM)	DRIVE	SONES	ELECTRICAL					REMARKS
	MANUFACTURER	MODEL							MCA	MOCP	MHP	VOLTS	PHASE	
EF-1	GREENHECK	SQ-160	INLINE	2,900	0.12	1140	DIRECT	9.0	1.4	15.0	1/2	480	3	PROVIDE BACKDRAFT DAMPER.

UNIT HEATERS - ELECTRIC									
DESIGNATION	REFERENCE PRODUCT	SERVES	HEATING CAPACITY (KW)	HEATING CAPACITY (MBH)	AIR FLOW RATE (CFM)	ELECTRICAL			REMARKS
						VOLTS	PHASE	AMPS	
UH-1 THRU 4	MARKEL HLA 12-480360-3.0-24	POWER PLANT	3	10.2	580	460	3	4	PROVIDE WITH DISCONNECT, WALL MOUNTED BRACKET, AND REMOTE MOUNTED THERMOSTAT.

REVISIONS:

No.	Description	Date
1	Addendum 1	11-22-24

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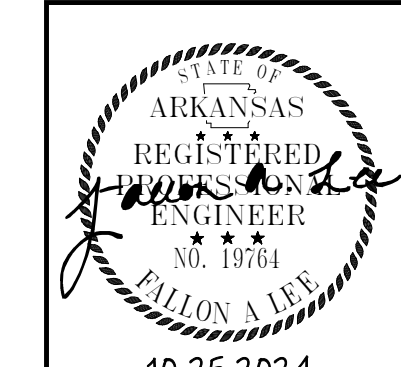
ISSUE DATE: 10-25-2024

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SHEET TITLE:  
MECHANICAL SCHEDULES

SHEET NUMBER:

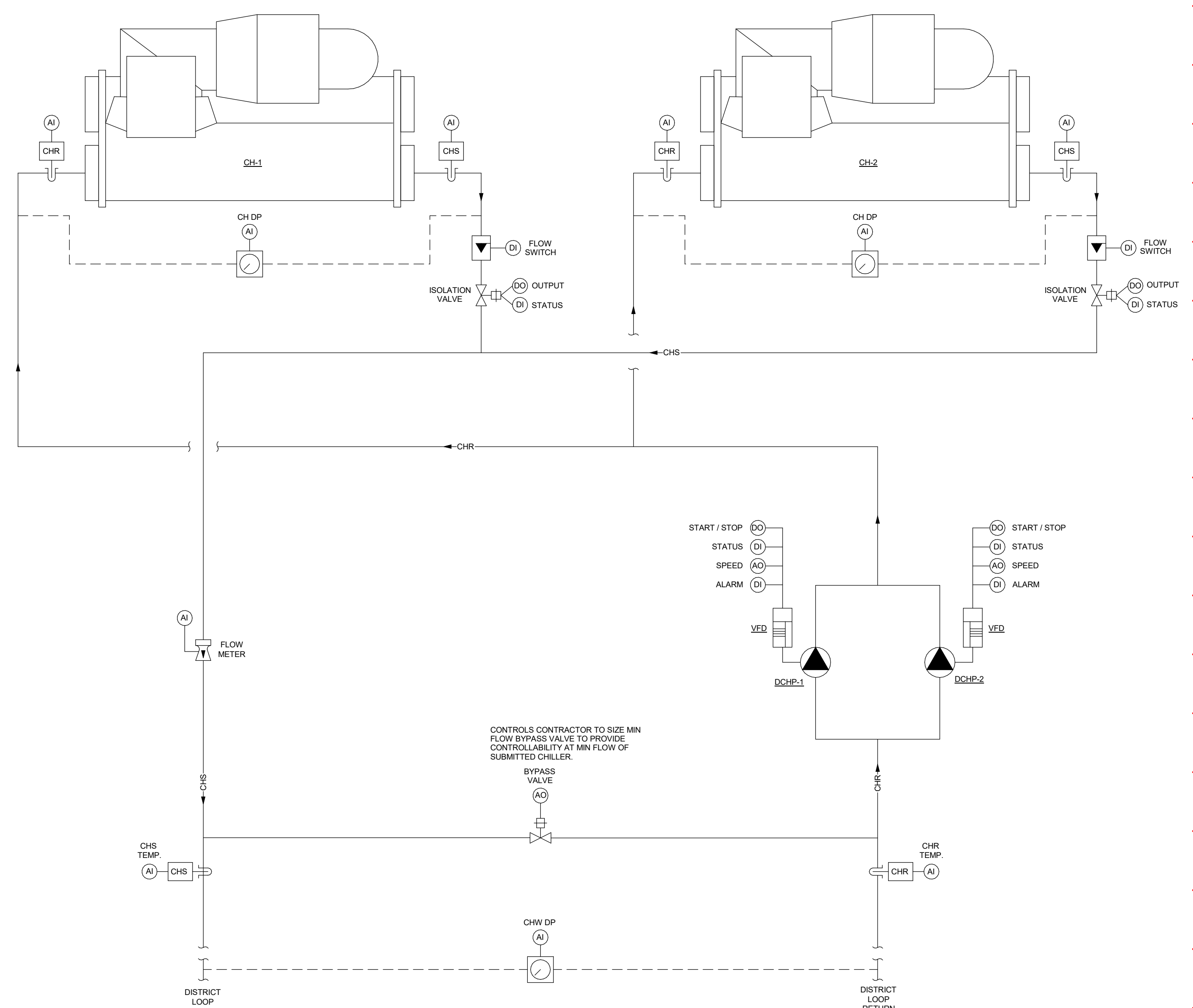
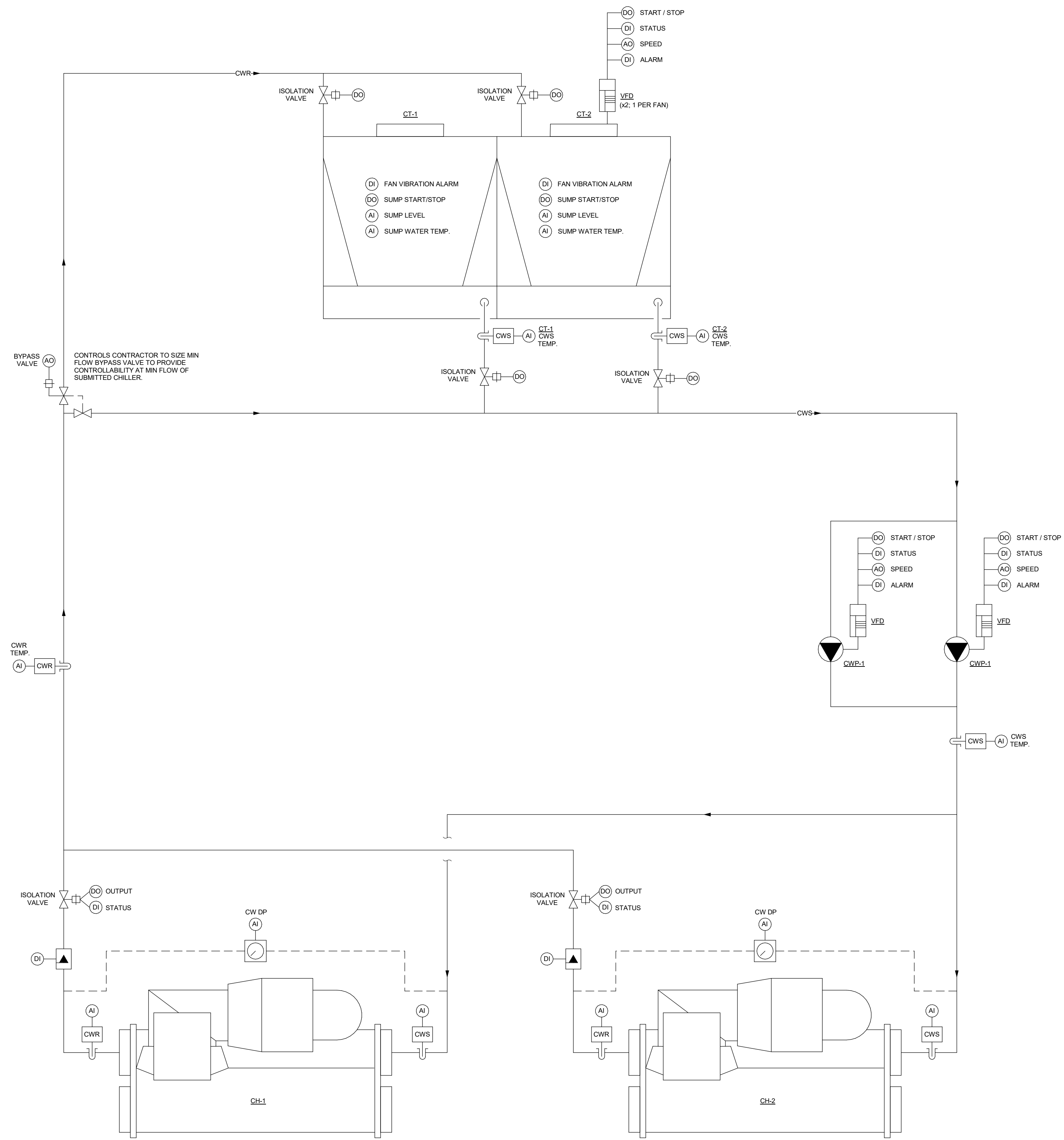
**M401**



10-25-2024

# ATU WEST CAMPUS CHILLED WATER LOOP

RUSSELLVILLE, AR



CONDENSING WATER DIAGRAM

CHILLED WATER DIAGRAM

## 1 WEST LOOP CHILLED WATER CONTROL DIAGRAM

NOT TO SCALE:

REVISIONS:

No.	Description	Date
1	Addendum 1	11-22-24

100% CONSTRUCTION DOCUMENTS

ISSUE DATE: 10-25-2024

PROJECT NUMBER: 24-006

SHEET TITLE:  
MECHANICAL CONTROLS WEST LOOP

SHEET NUMBER:

**M502**

10-25-2024