



ENGINEERING SERVICES GROUP, INC.
CONSULTING ENGINEERS
MECHANICAL • ELECTRICAL

ROANE COUNTY COURTHOUSE
CHILLER REPLACEMENT
ADDENDUM NO.2
ESG Project No.21738

The following items shall be as noted below:

A. See attached Revised Sheets M1, M2 & E1.

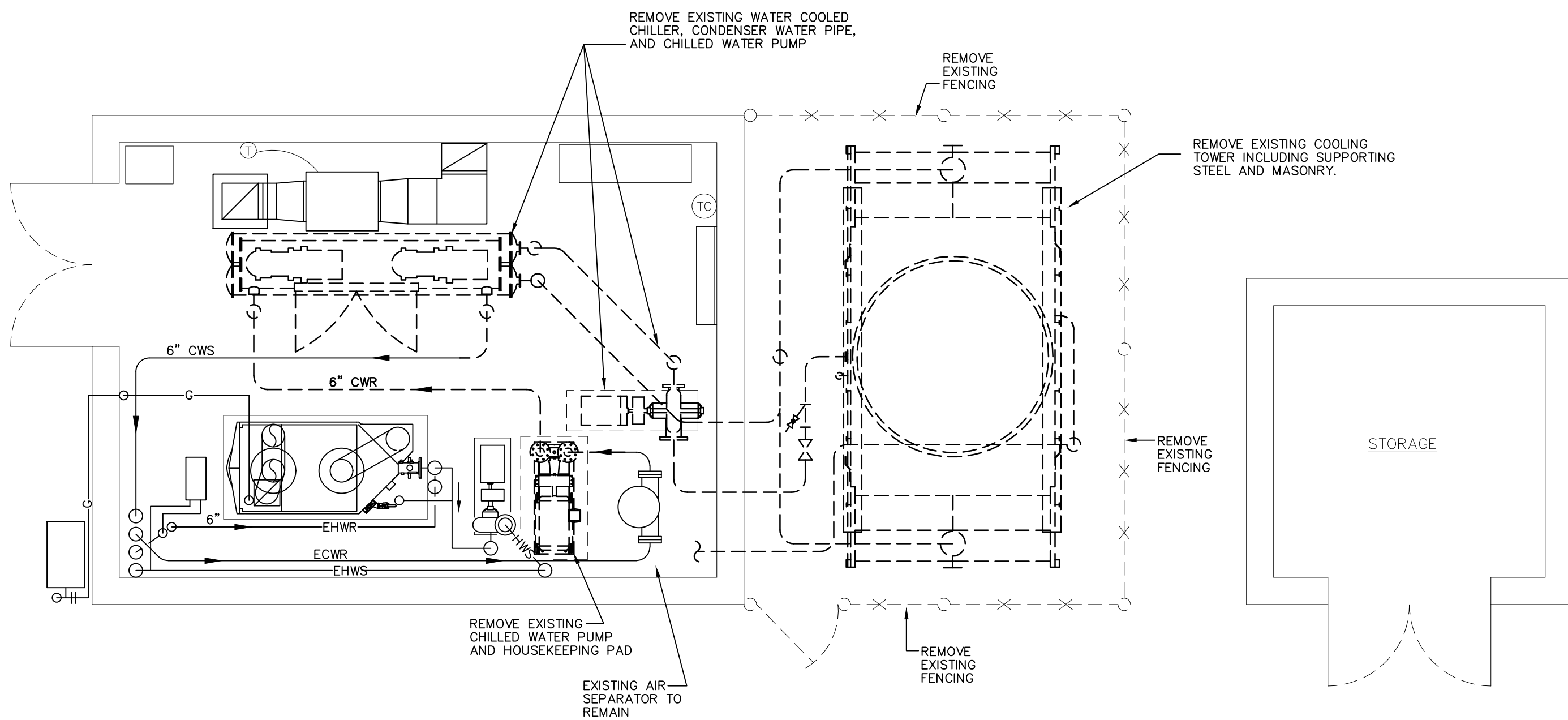
Engineering Services Group, Inc.

Prepared by: Jeffrey R. Whillock, P.E.

Reviewed by: Jeffrey R. Whillock, P.E.

Date: October 7, 2021





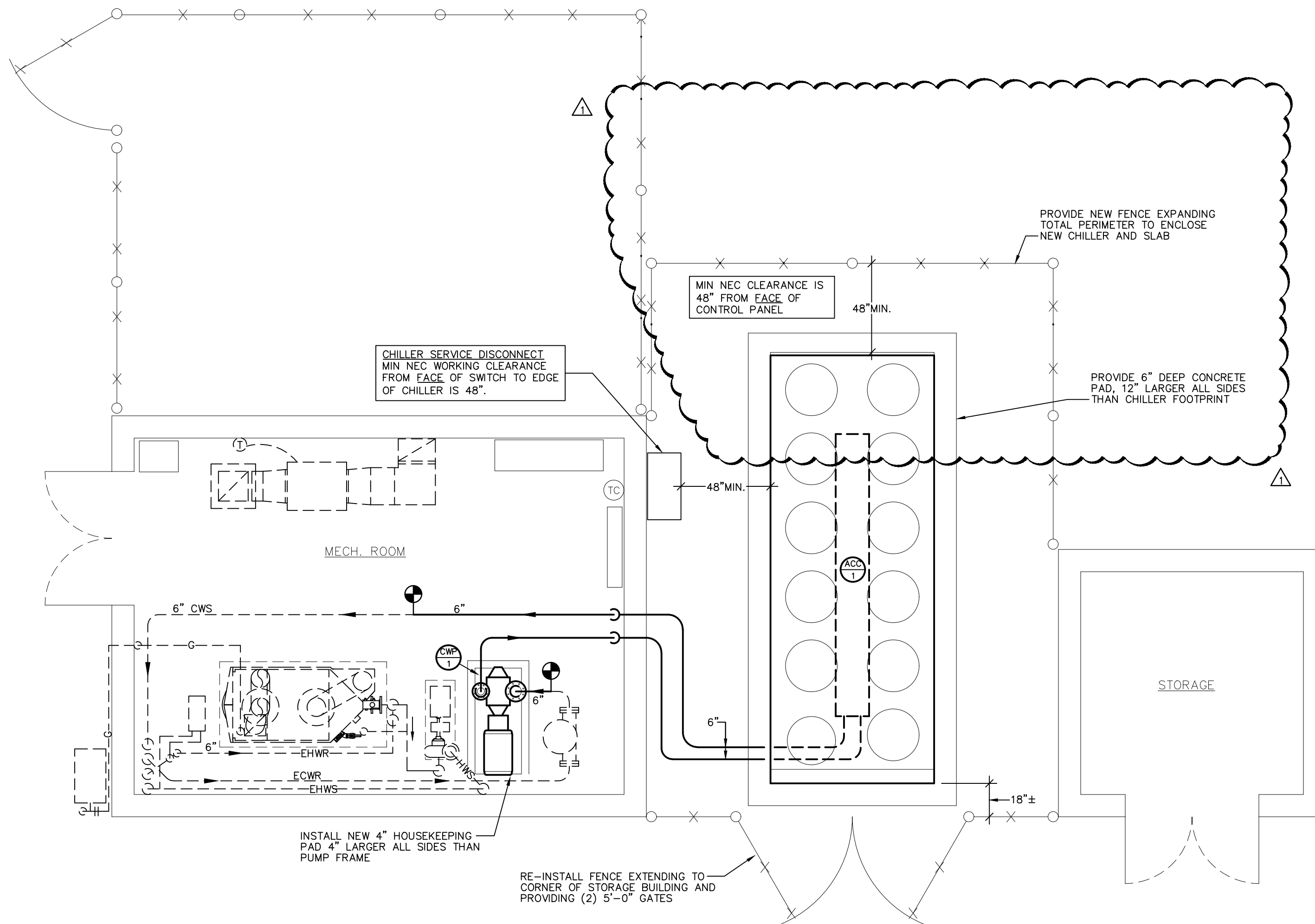
DEMOLITION LEGEND

- EQUIPMENT, PIPING, UNITS TO BE REMOVED
- EQUIPMENT, PIPING, UNITS TO REMAIN



DEMOLITION PLAN – HVAC AND ELECTRICAL

SCALE: 1/4"=1'-0"



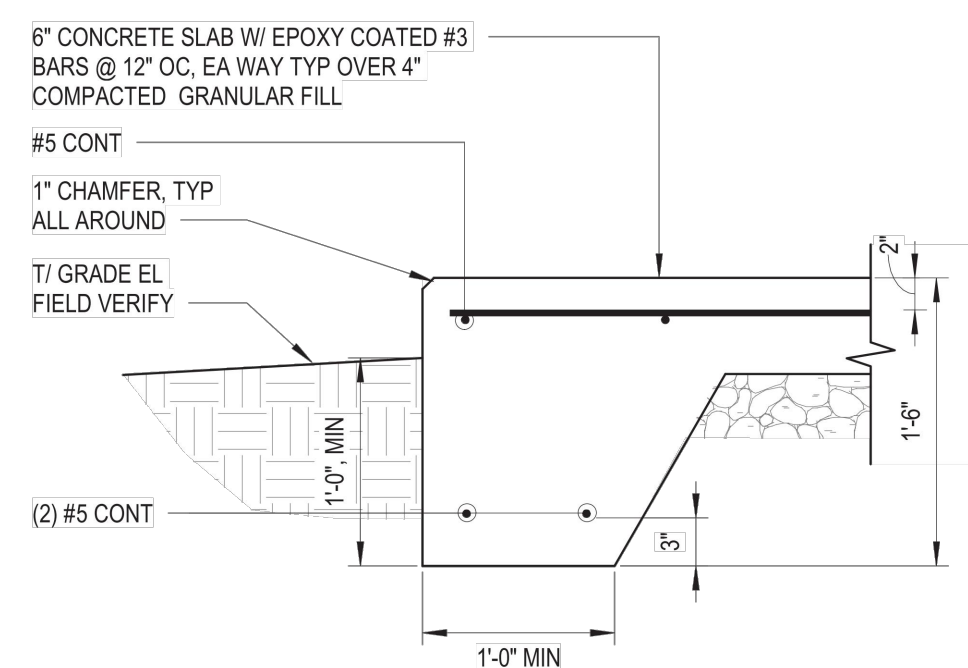
NEW WORK LEGEND

- EXISTING EQUIPMENT, PIPING, UNITS TO REMAIN
- NEW EQUIPMENT, PIPING, UNITS



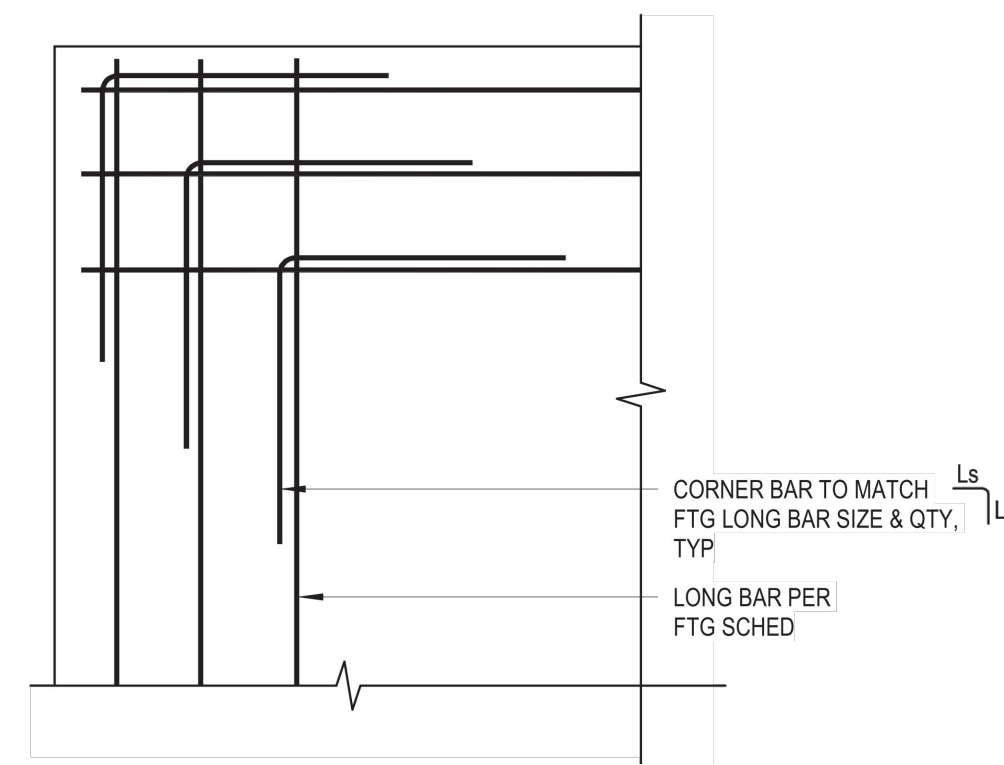
FLOOR PLAN – NEW HVAC AND ELECTRICAL

SCALE: 1/4"=1'-0"



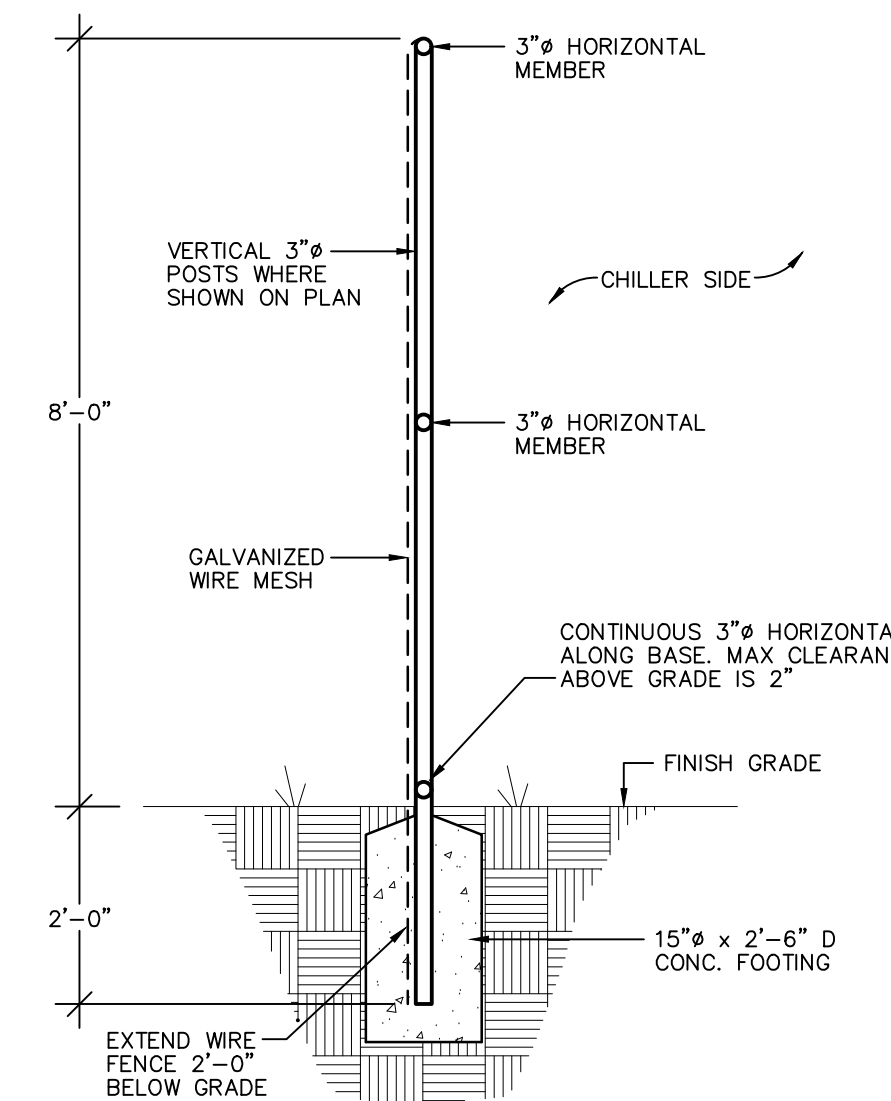
TYPICAL MECH PAD

N.T.S.



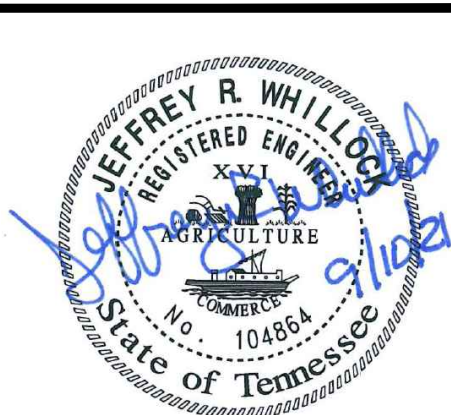
TYPICAL MECH PAD BARS

N.T.S.



TYPICAL FENCE SECTION

N.T.S.



ES&S

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Project No. 21738

PROJECT...

**ROANE COUNTY COURTHOUSE
CHILLER REPLACEMENT**

KINGSTON, TENNESSEE

DRAWING TITLE...

**DEMOLITION AND
NEW WORK PLANS
- HVAC**

REVISIONS

NO.	DATE
1	10-05-21

DRAWN BY: JDG

CHECKED BY: JRW

APPROVED BY: JRW

DATE: 09-10-2021

PROJECT NO. 21738

DRAWING NO.

M1

CONTROLS

CHILLER PLANT

GENERAL:

THE SYSTEM CONSISTS OF ONE AIR--COOLED CHILLER AND MAIN CHILLED WATER LOOP PUMP. THE NEW CHILLER SHALL BE CONNECTED TO THE EXISTING ALERTON CONTROL SYSTEM ON SITE.

THE CHILLED WATER SUPPLY AND RETURN TEMPERATURES SHALL BE MONITORED BY THE BAS. IF THE SUPPLY TEMPERATURE INCREASE OR DECREASE BEYOND THE NORMAL OPERATING PARAMETERS WHEN THE SYSTEM IS COMMANDED TO OPERATE, AN ALARM SHALL BE GENERATED AND REPORTED AT THE OPERATOR'S WORKSTATION.

START/STOP:

THE SYSTEM SHALL BE ACTIVATED MANUALLY THROUGH A MANUAL START COMMAND ON THE GRAPHICS AT THE OPERATOR'S WORKSTATION, ANYTIME THE OUTSIDE AIR TEMPERATURE IS ABOVE THE COOLING PLANT START SET POINT OR ON A CALL FOR CHILLED WATER COOLING FROM ANY CHILLED WATER AIR HANDLING UNIT OR FAN COIL UNIT.

ON A CALL FOR THE CHILLER PLANT, THE PUMP SHALL START AND ONCE CHILLED WATER FLOW IS PROVEN THE CHILLER SHALL START.

CHILLER CAPACITY CONTROL:

WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 50° (ADJUSTABLE) THE CHILLER WILL BE ALLOWED TO OPERATE. ON A CALL FOR COOLING, THE CHILLER AND ASSOCIATED PUMP SHALL RECEIVE A START COMMAND FROM THE BAS. ONCE FLOW IS PROVEN BY THE FLOW SWITCH THE CHILLER CAPACITY SHALL BE STAGED AS REQUIRED TO SATISFY THE SUPPLY TEMPERATURE CHILLED WATER SET POINT. CHILLER CAPACITY CONTROL SHALL BE BY FACTORY CONTROLS SUPPLIED BY THE CHILLER MANUFACTURER.

CHILLED WATER PUMP CONTROL:

ON A CALL FOR PUMP OPERATION, THE PUMP SHALL BE ACTIVATED. IF THE PUMP IS COMMANDED TO START AND THE PUMP DIFFERENTIAL PRESSURE SENSOR DOES NOT SENSE FLOW, A PUMP ALARM SHALL BE GENERATED AND REPORTED AT THE OPERATOR'S WORKSTATION.

THE CHILLED WATER PUMP SHALL ALSO START ANYTIME THE OUTSIDE AIR TEMPERATURE IS BELOW 40° (ADJUSTABLE) TO CIRCULATE WATER THROUGH THE CHILLED WATER SYSTEM WITH THE CHILLER DE--ENERGIZED TO PREVENT FREEZING.

THE BAS MINIMUM POINTS OF CONTROL ARE:

- CHILLED WATER PUMP A START/STOP AND STATUS
- CHILLED WATER PUMP B START/STOP AND STATUS
- CHILLER PERMISSIVE START/STOP
- CHILLER STATUS
- CHILLED WATER SUPPLY TEMPERATURE
- CHILLED WATER RETURN TEMPERATURE
- OUTSIDE AIR TEMPERATURE (GLOBAL POINT MONITORED AT ONE LOCATION).

AIR COOLED WATER CHILLER SCHEDULE

MARK	NOMINAL CAPACITY (TONS)	CHILLED WATER DATA				CONDENSER AIR DATA (°F)			CHILLER FOULING FACTOR	MINIMUM COMPR. NUMBER	ELECTRICAL DATA		WEIGHT (LBS)	DESIGN BASIS	
		EWT (°F)	LWT (°F)	GPM	P.D. (FEET)	AMBIENT		CONDENSER TEMPERATURE			VOLTS/ PHASE	F.L.A.			MOPC (AMPS)
						MIN.	MAX.								
ACC-1	200	54	44	490	15.4	15.0	95.0	—	0.00010	2	460/3	368.4	500	13,000	TRANE RTAC2004U

- NOTES:
1. UNIT SHALL BE U.L. LISTED AND HAVE A 5 YEAR WARRANTY COVERING ALL COMPRESSORS.
 2. SHORT CIRCUIT CURRENT RATING (SCCR) AND/OR AMPERE INTERRUPTING RATING (AIC) SHALL BE NOT LESS THAN 42,000 AMPERES.
 3. PROVIDE INSULATION PER SPECIFICATIONS AND HEAT TRACE TAPE FOR ALL CHILLER PIPING OUTDOORS. HEAT TRACE TAPE SHALL PROVIDE FREEZE PROTECTION TO ~20° FAHRENHEIT FOR PIPING AND CHILLER BARREL. PROVIDE INSULATION ABOVE GRADE WITH AN ALUMINUM JACKET AS REQUIRED BY SPECIFICATIONS. HEAT TRACE TAPE SHALL BE SUITABLE FOR DIRECT ELECTRICAL CONNECTION - NOT COND AND PLUG CONNECTION.
 4. PROVIDE WITH A 6" DEEP CONCRETE PAD FOR SUPPORT. PAD SHALL BE A MINIMUM OF 12" LARGER THAN UNIT ON EACH SIDE.
 5. PROVIDE EACH UNIT COMPLETE WITH CONTROL POWER TRANSFORMER, SINGLE POINT ELECTRICAL CONNECTION, FACTORY INSTALLED CONDENSER COIL PROTECTION, FACTORY INSTALLED SERVICE ACCESS AREA WIRE MESH GUARDS, FACTORY INSTALLED NON-FUSED ELECTRICAL DISCONNECT SWITCH, AND STAINLESS STEEL FLEXIBLE CONNECTIONS IN BOTH SUPPLY AND RETURN PIPING.
 6. UNIT SHALL UTILIZE R-410A REFRIGERANT.
 7. REFER TO THE CONTROLS DESCRIPTIONS FOR UNIT CONTROLS REQUIREMENTS.
 8. REFERENCE SPECIFICATIONS SECTION 23 FOR ADDITIONAL UNIT REQUIREMENTS.

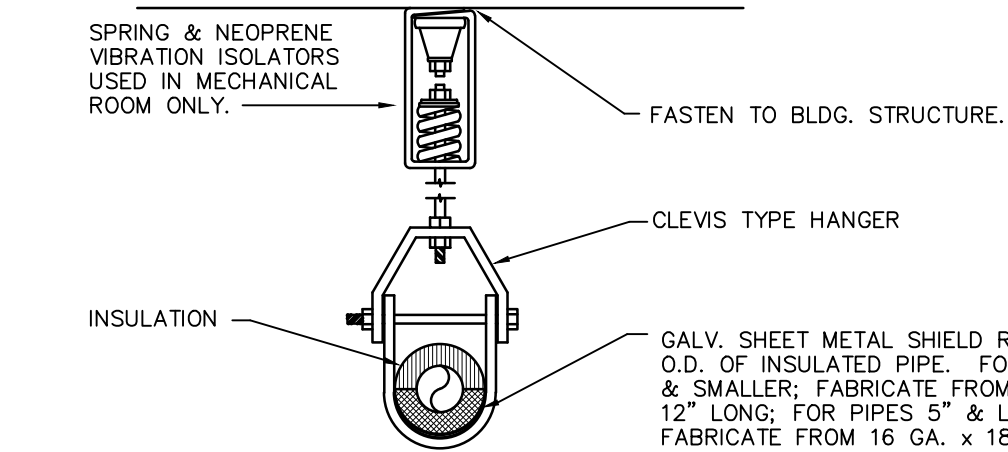
CIRCULATING WATER PUMP SCHEDULE

MARK	GPM	HP	HEAD (FT.)	EFF. %	RPM	TYPE	CONTROL	VOLTS/ø	MFG. & MODEL NO.
CWP-1	490	25	105	71.2	1780	VERTICAL SPLIT-CASE	HAND-OFF-AUTO	460/3ø	BELL & GOSSETT MODEL VSX 4x6x10.5B

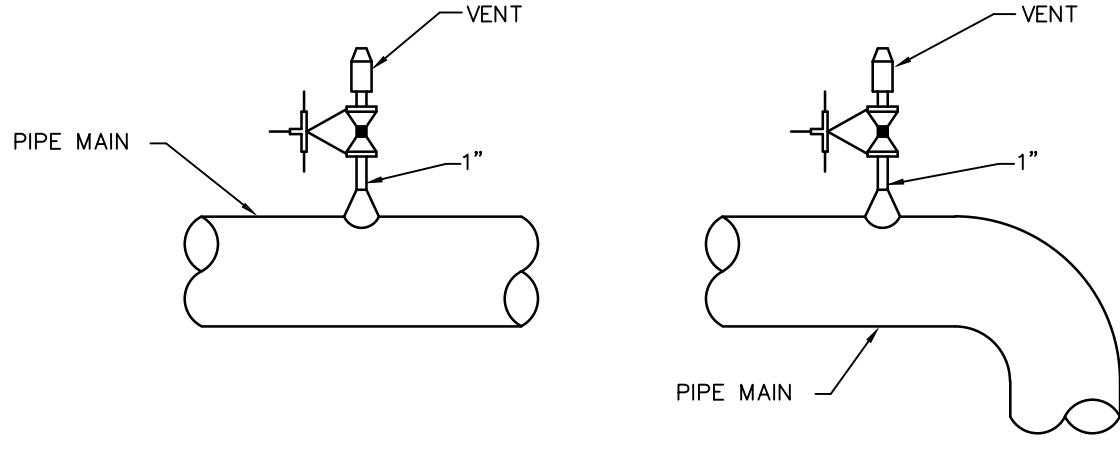
- NOTES:
1. ALL CHILLED WATER PUMPS OR PUMPS FOR WATER WITH TEMPERATURE BELOW 55° TO HAVE DRIP PAN.
 2. PUMPS TO BE NON--OVERLOADING.

PIPING LEGEND

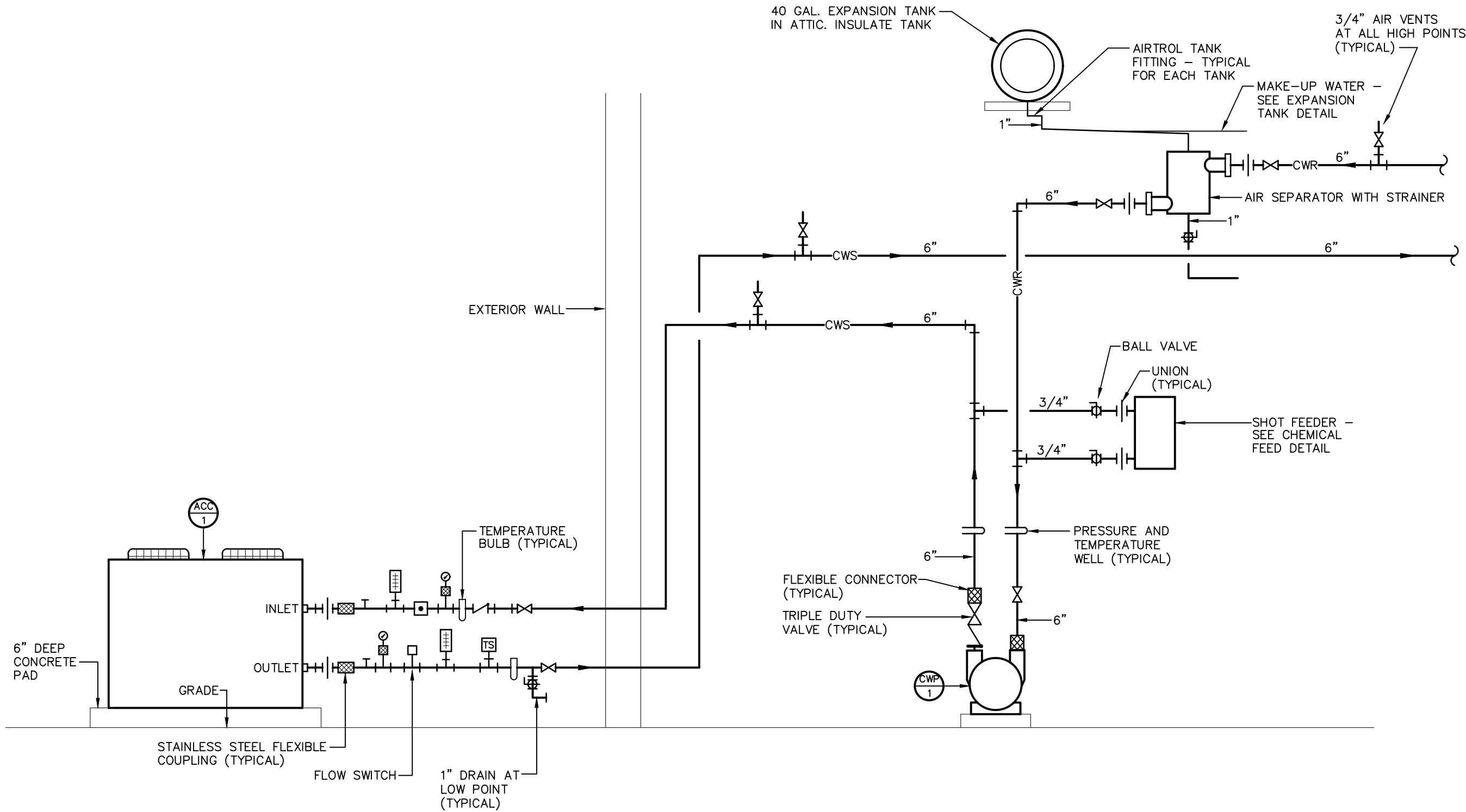
SYMBOL	DESCRIPTION
	BALL VALVE
	BUTTERFLY VALVE
	COMBINATION BALANCING & CUTOFF VALVE
	TRIPLE DUTY VALVE
	STRAINER
	THERMOMETER
	PRESSURE GAUGE
	TEMPERATURE & PRESSURE WELL
	FLANGED CONNECTION
	UNION
	TEMPERATURE & PRESSURE RELIEF VALVE
	NEW CHILLED WATER SUPPLY
	NEW CHILLED WATER RETURN
	NEW TOWER WATER SUPPLY
	NEW TOWER WATER RETURN
	EXISTING CHILLED WATER SUPPLY
	EXISTING CHILLED WATER RETURN
	EXISTING TOWER WATER SUPPLY
	EXISTING TOWER WATER RETURN
	DIRECTION OF FLOW
	POINT OF CONNECTION NEW TO EXISTING



OVERHEAD PIPE SUPPORT HANGER DETAIL
N.T.S.



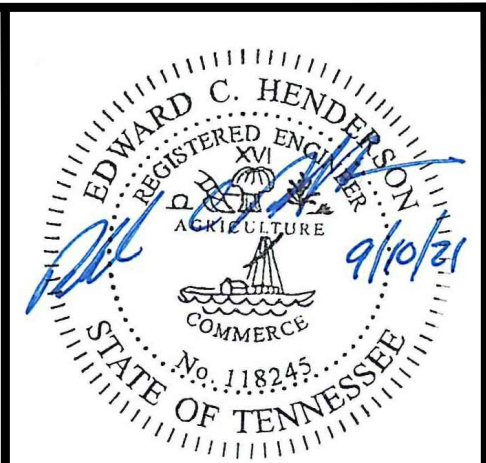
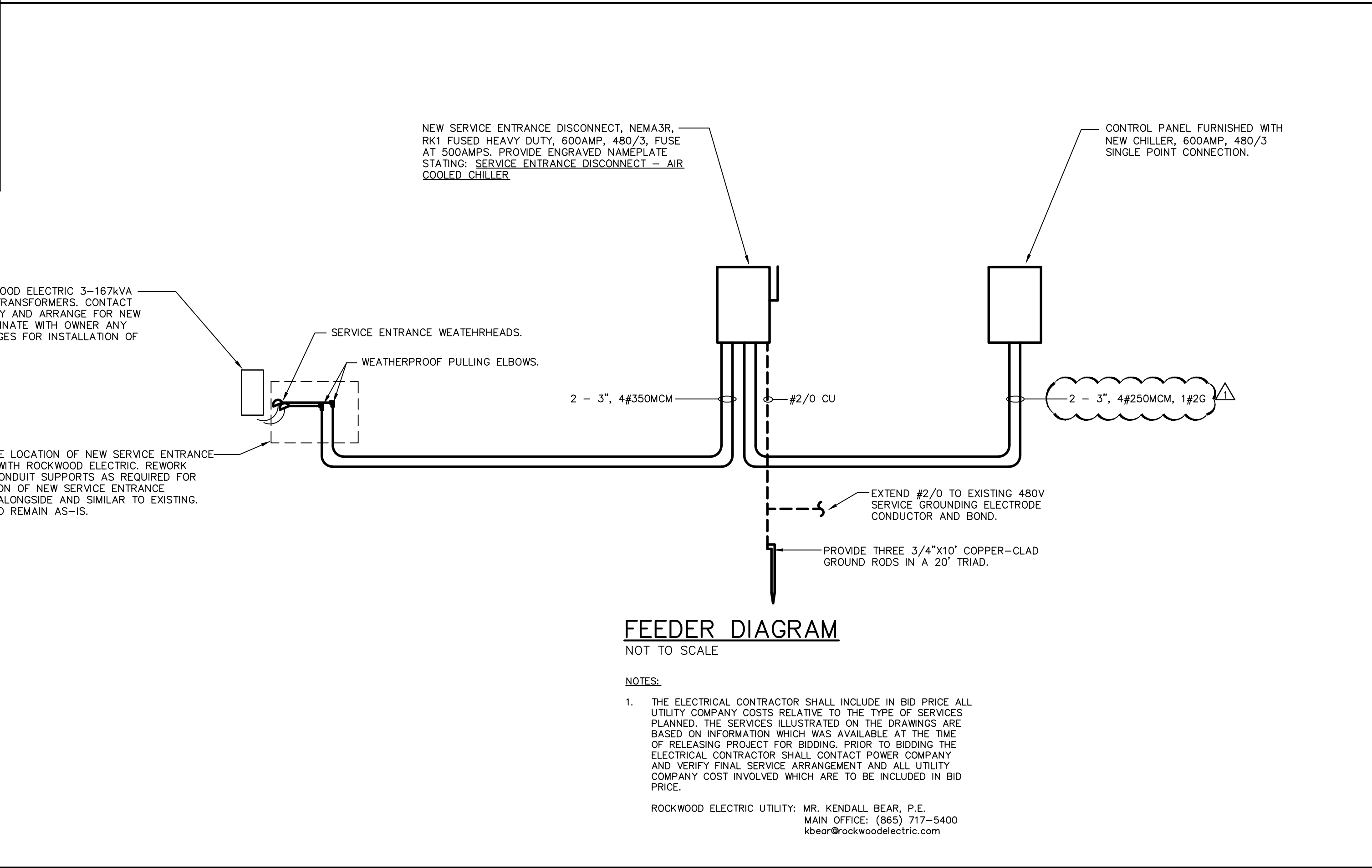
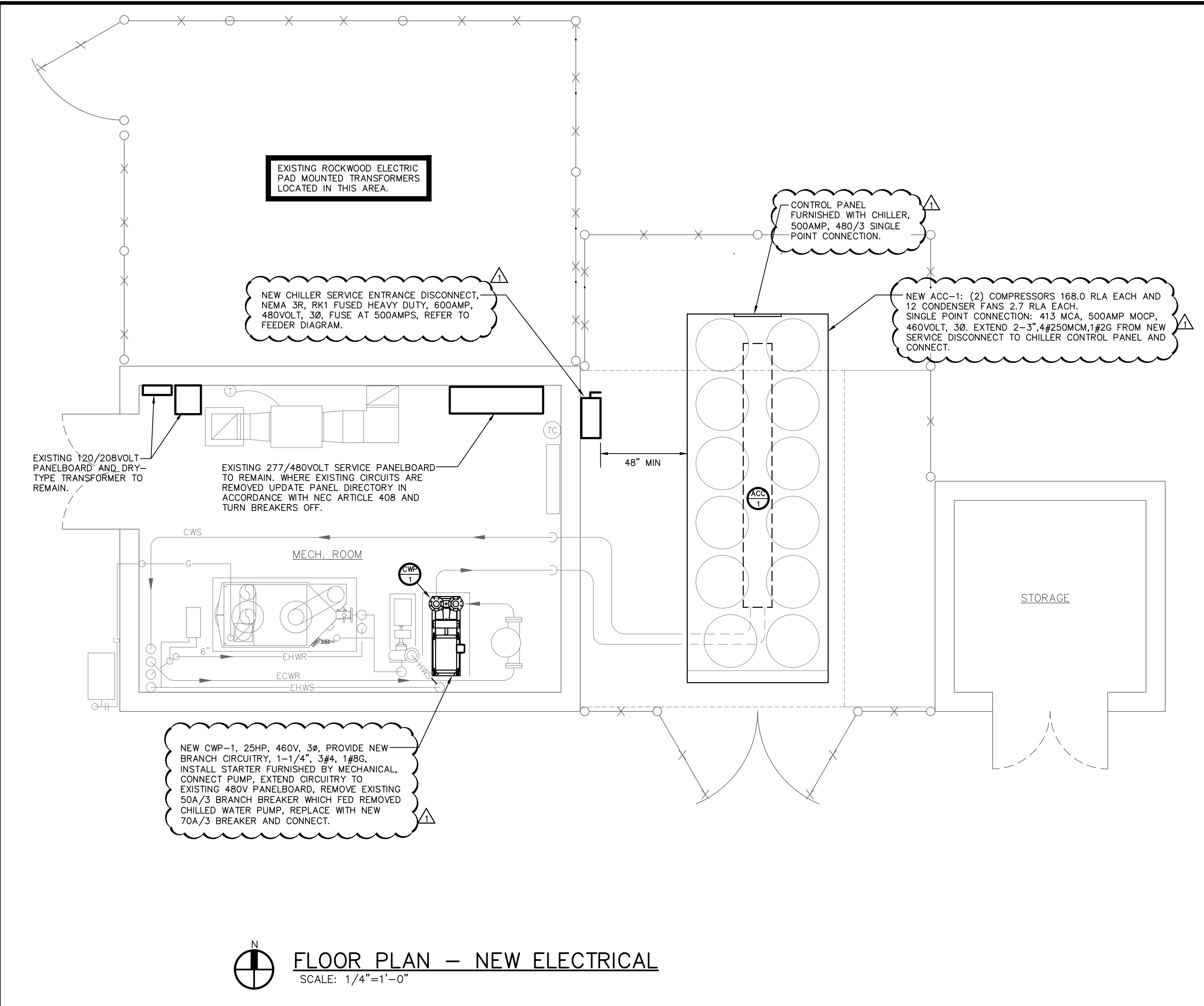
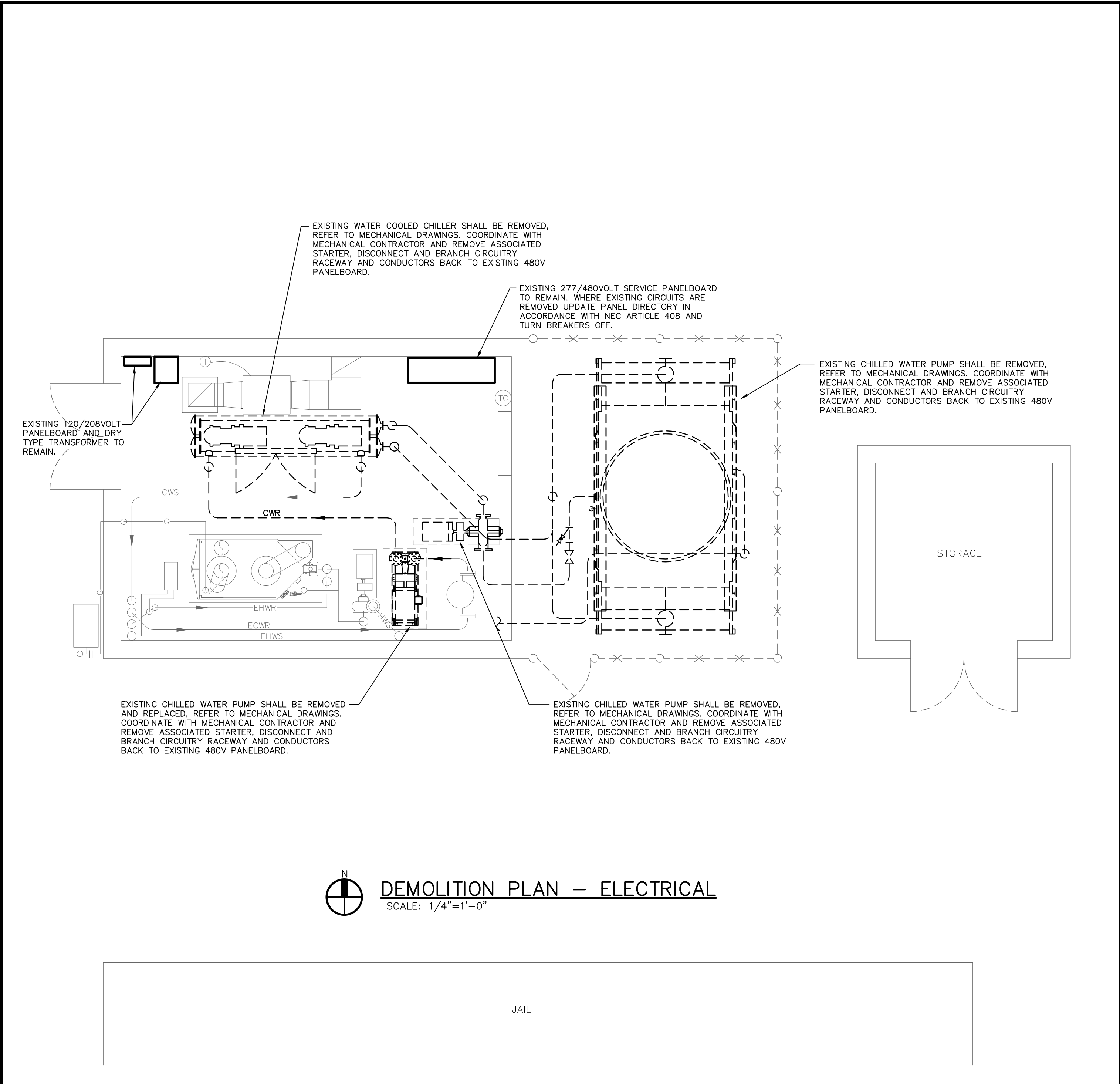
MANUAL AIR VENT DETAILS
N.T.S.



WATER COOLED CHILLER PIPING SCHEMATIC -- HVAC
N.T.S.



PROJECT...
DRAWING TITLE...
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10-05-21
DRAWN BY: JDG
CHECKED BY: JRW
APPROVED BY: JRW
DATE: 09-10-2021
PROJECT NO. 21738
DRAWING NO. M2



PROJECT: ROANE COUNTY COURTHOUSE
CHILLER REPLACEMENT
KINGSTON, TENNESSEE

DRAWING TITLE: DEMOLITION AND NEW WORK PLANS - ELECTRICAL

REVISIONS	
NO.	DATE
1	10-06-21
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DRAWING NO. E1