

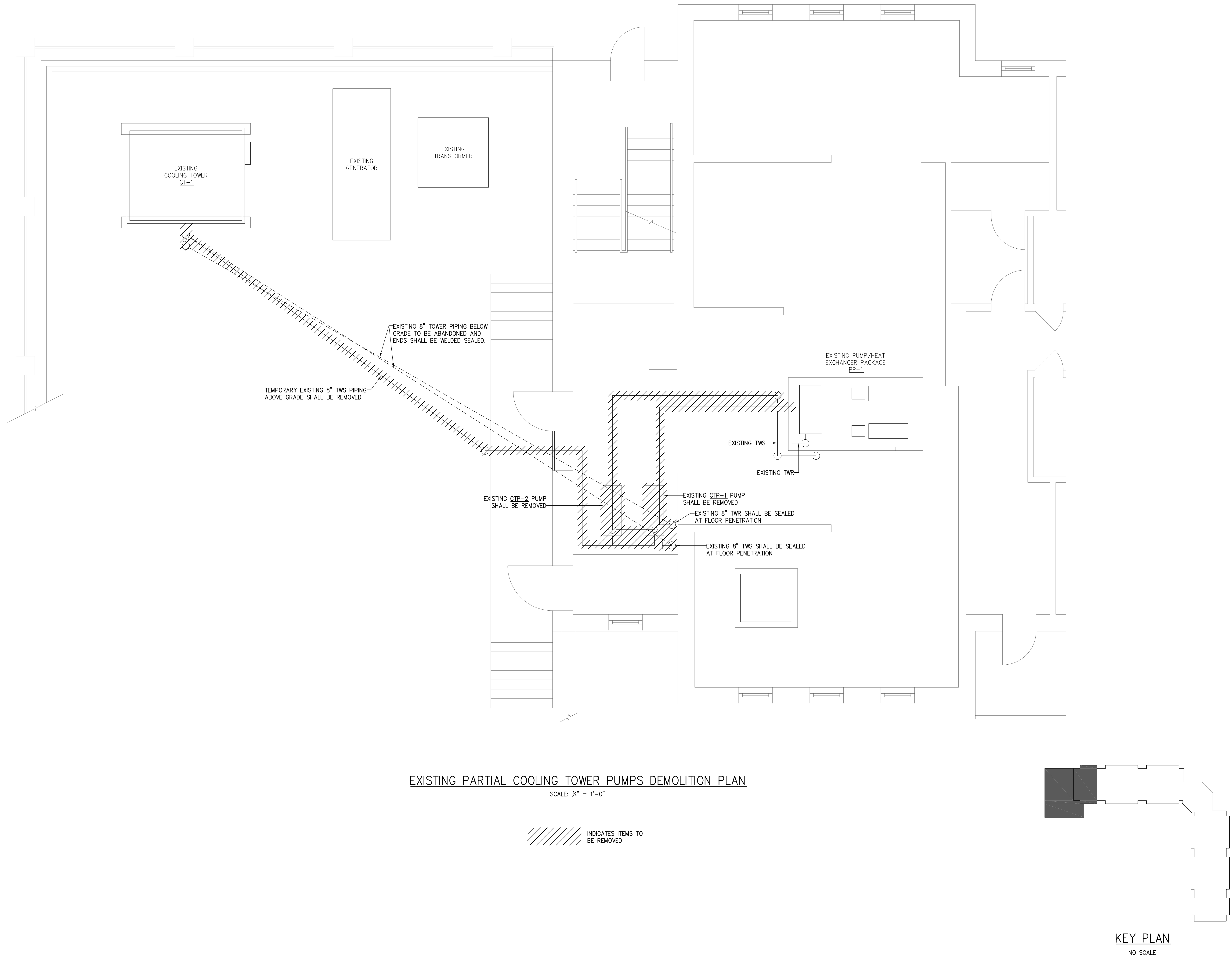
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OF - SHEETS

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EXISTING PARTIAL COOLING TOWER PUMPS DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

INDICATES ITEMS TO
BE REMOVED

KEY PLAN
NO SCALE

Delivery Order No. P014-001

Cooling Tower Pumps & Piping Relocation

CENTENNIAL HALL - LANDER UNIVERSITY

Greenwood, South Carolina

EXISTING PARTIAL COOLING TOWER PUMPS DEMOLITION PLAN

DESIGN SEM	/	DRAWN TCM
CHECKED JCP		
DATE 3/14/22		
JOB NO. PERITUS #211105		
SHEET DM-1		

1 OF 1 SHEETS



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ENGINEERS & ASSOCIATES, INC.

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PERITUS ENGINEERS & ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER

STATE OF SOUTH CAROLINA

NO. 005593

CERTIFICATE OF AUTHORITY

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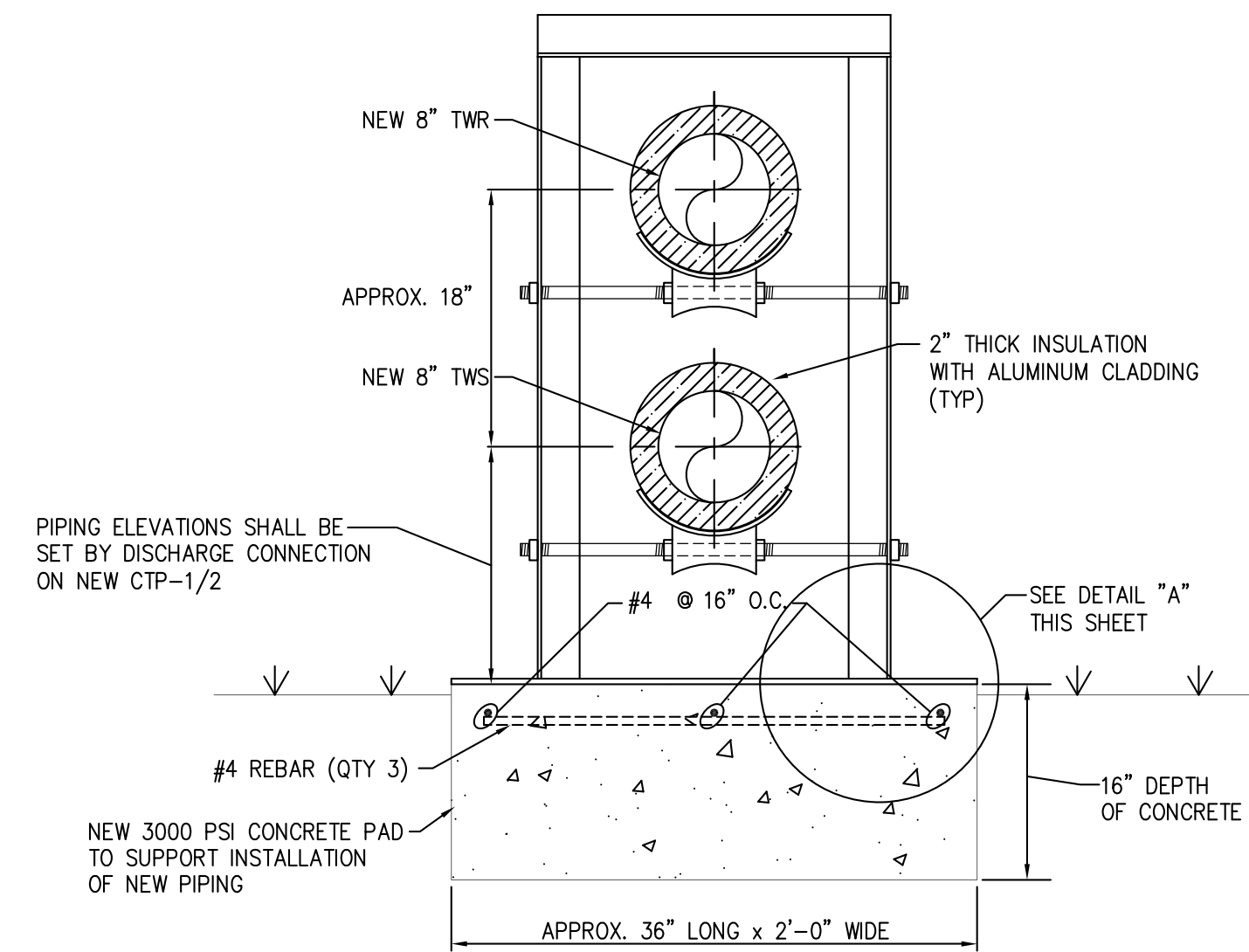
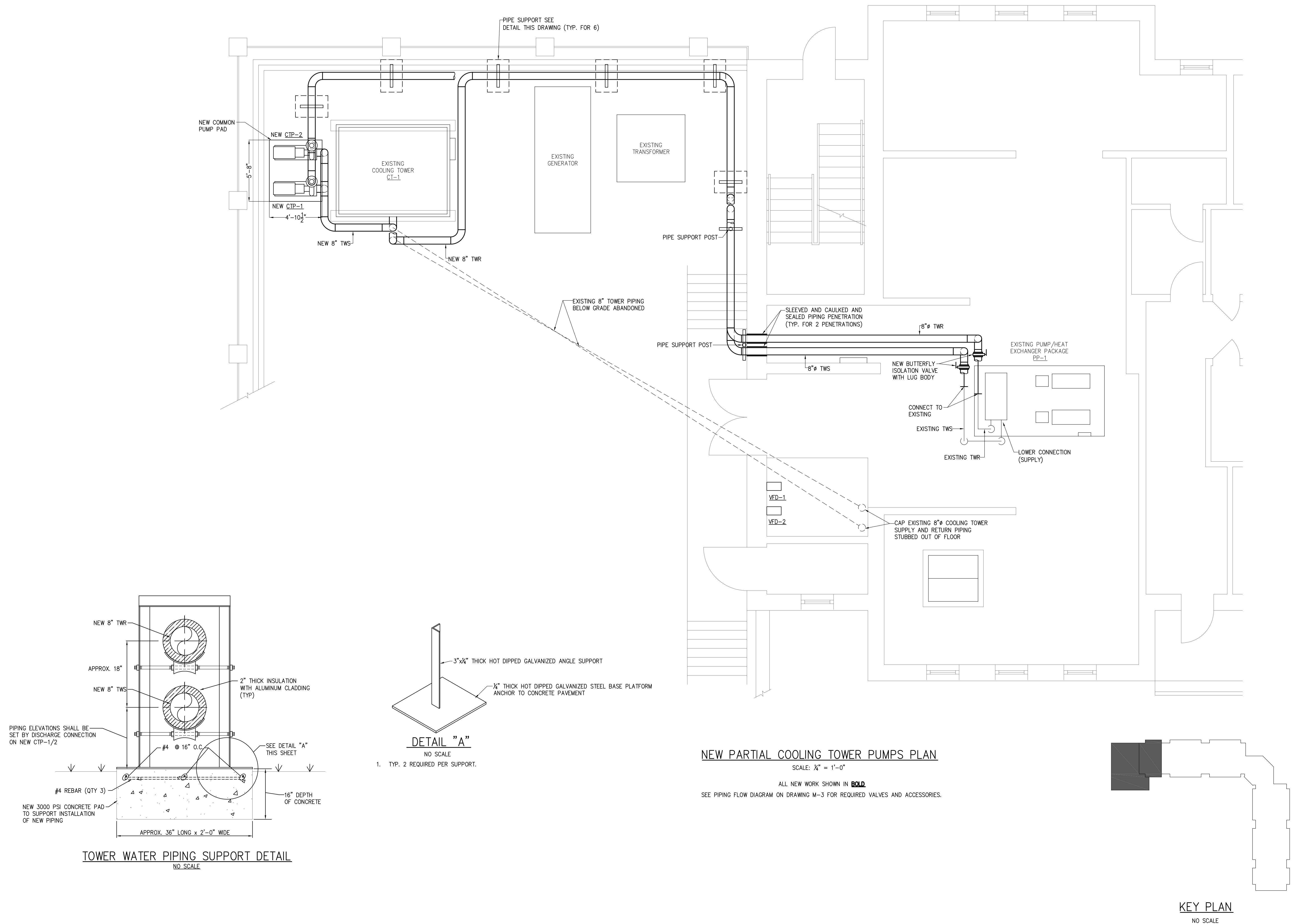
STATE OF SOUTH CAROLINA

NO. 25120

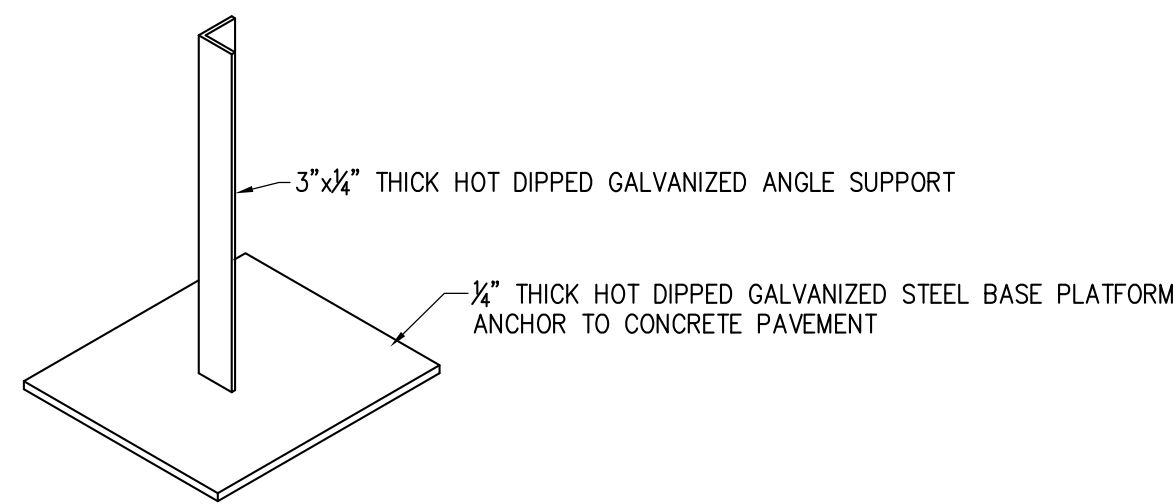
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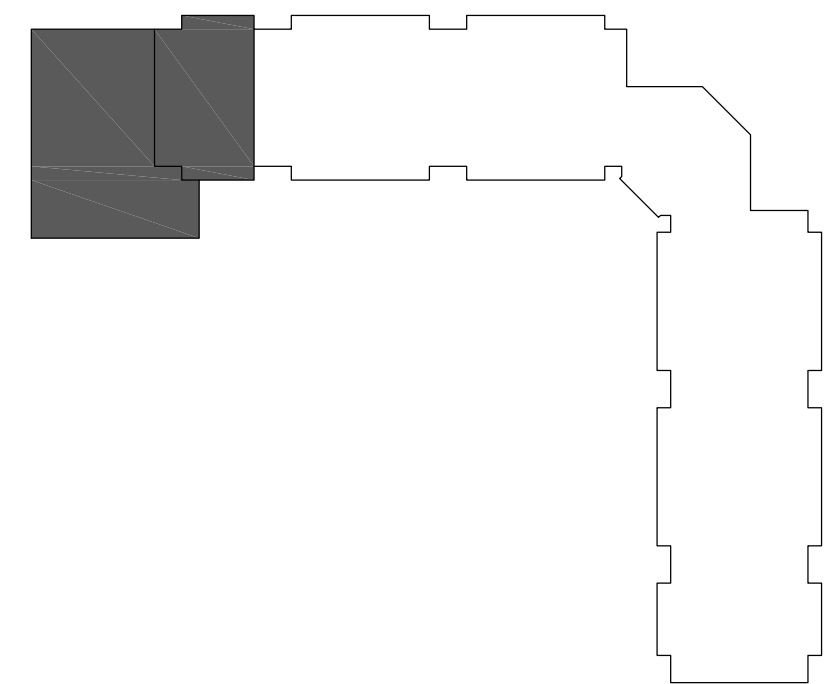
TOWER WATER PIPING SUPPORT DETAIL
NO SCALE



DETAIL "A"
NO SCALE
1. TYP. 2 REQUIRED PER SUPPORT.

NEW PARTIAL COOLING TOWER PUMPS PLAN
SCALE: 1/4" = 1'-0"

ALL NEW WORK SHOWN IN **BOLD**
SEE PIPING FLOW DIAGRAM ON DRAWING M-3 FOR REQUIRED VALVES AND ACCESSORIES.



KEY PLAN
NO SCALE

Delivery Order No. P014-001

Cooling Tower Pumps & Piping Relocation
CENTENNIAL HALL - LANDER UNIVERSITY
Greenwood, South Carolina

NEW PARTIAL COOLING TOWER PUMPS PLAN

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MATERIALS SPECIFICATIONS

PIPE AND TUBE

- A. STEEL PIPE: BLACK STEEL PIPE SCHEDULE 40 ASTM A53, A106 OR A120; ALL FLANGES 150 LB. STEEL CONFORMING TO ASTM NO. 181.
- B. GENERAL: PROVIDE DOMESTIC MANUFACTURED PIPE AND TUBE OF THE TYPE, JOINT TYPE, GRADE, SIZE AND WEIGHT (WALL THICKNESS OR CLASS) INDICATED FOR EACH SERVICE. WHERE TYPE, GRADE OR CLASS IS NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER FOR INSTALLATION REQUIREMENTS, AND COMPLY WITH GOVERNING REGULATIONS AND INDUSTRY STANDARDS.
- C. JOINTS IN STEEL PIPE SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
1. WELDED PIPING – JOINTS SHALL BE MADE AS SPECIFIED WITHIN.
- D. WELD PIPE JOINTS IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE AND AS FOLLOWS:
1. BLACK STEEL PIPE AND FITTINGS 2" & LARGER, EXCEPT CONNECTIONS TO EQUIPMENT, SHALL HAVE WELDED OR FLANGED JOINTS; PIPE SIZES 1-1/2" AND BELOW SHALL HAVE SCREWED JOINTS. WELDED FITTINGS SHALL BE USED IN ALL LINES 2" AND ABOVE.
 2. THE ELECTRIC WELDING PROCESS SHALL BE USED, AND ALL WELDING MUST BE DONE IN ACCORDANCE WITH THE LATEST ACCEPTED STANDARDS.
 3. ALL JOINTS MUST BE ABSOLUTELY TIGHT UNDER TEST AND OPERATING CONDITIONS; DEFECTIVE JOINTS MUST BE REMADE. AFTER COMPLETING A WELDED JOINT, IT SHALL BE MANDATORY FOR THE WELDER TO STAMP OR OTHERWISE IDENTIFY IT AS HIS WORK BY NUMBER, LETTER OR SYMBOL ASSIGNED TO HIM.
 4. WELD PIPE JOINTS ONLY WHEN AMBIENT TEMPERATURE IS ABOVE 0 DEGREES F WHERE POSSIBLE.
 5. BEVEL PIPE ENDS AT A 37.5-DEGREE ANGLE WHERE POSSIBLE, SMOOTH ROUGH CUTS, AND CLEAN TO REMOVE SLAG, METAL PARTICLES AND DIRT.
 6. INSTALL WELDING RINGS FOR BUTTWELDED JOINTS.
 7. USE PIPE CLAMPS OR TACK-WELD JOINTS WITH 1.0" LONG WELDS; 4 WELDS FOR PIPE SIZES TO 12".
 8. BUILD UP WELDS WITH A STRINGER-BEAD PASS, FOLLOWED BY A HOT PASS, FOLLOWED BY A COVER OR FILLER PASS. ELIMINATE VALLEYS AT CENTER AND EDGES OF EACH WELD. WELD BY PROCEDURES WHICH WILL ENSURE ELIMINATION OF UNSOUND OR UNFUSED METAL, CRACKS, OXIDATION, BLOW-HOLES AND NON-METALLIC INCLUSIONS.
 9. DO NOT WELD-OUT PIPING SYSTEM IMPERFECTIONS BY TACKWELDING PROCEDURES; RE-FABRICATE TO COMPLY WITH REQUIREMENTS.
 10. INSTALL FORGED BRANCH-CONNECTION FITTINGS WHEREVER BRANCH PIPE IS INDICATED OR INSTALL REGULAR "T" FITTING (AT CONTRACTOR'S OPTION).
 11. SPRAY PAINT ALL WELDED CONNECTIONS WITH BLACK RUST PREVENTATIVE PAINT.
- E. FLANGED JOINTS: MATCH FLANGES WITHIN PIPING SYSTEM AND AT CONNECTIONS WITH VALVES AND EQUIPMENT. CLEAN FLANGE FACES AND INSTALL GASKETS. TIGHTEN BOLTS TO PROVIDE UNIFORM COMPRESSION OF GASKETS.
- F. COPPER TUBE: ASTM B88, TYPE (L) HARD-DRAWN TEMPER.
- G. FITTINGS FOR COPPER TUBE:
1. CAST-BRONZE SOLDER-JOINT FITTINGS: ANSI NO. B16.18.
 2. WROUGHT-COPPER/BRONZE SOLDER-JOINT FITTINGS: ANSI NO. B16.22.
 3. COPPER-TUBE UNIONS: PROVIDE STANDARD PRODUCTS RECOMMENDED BY THE MANUFACTURER FOR USE IN THE SERVICE INDICATED.
 4. SOLDERED JOINTS IN COPPER TUBING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
 - a. PIPE SIZES 1-1/2" AND SMALLER – JOINTS SHALL BE MADE WITH A NON-CORROSIVE FLUX AND SOLDER COMPOSED OF 95% TIN AND 5% ANTIMONY. FLUX AND SOLDER TO BE LEAD FREE.
 - b. PIPE SIZES 2" AND LARGER – JOINTS SHALL BE MADE WITH A NON-CORROSIVE FLUX AND EITHER "SIL-PHOS", "EASY-FLO" OR "PHOS-COPPER". FLUX AND SOLDER TO BE LEAD FREE.
- H. SOLDER COPPER TUBE AND FITTING JOINTS WHERE INDICATED, IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE. CUT TUBE ENDS SQUARELY, REAM TO FULL INSIDE DIAMETER, AND CLEAN OUTSIDE OF TUBE ENDS AND INSIDE OF FITTINGS. APPLY SOLDER FLUX TO JOINT AREAS OF BOTH TUBES AND FITTINGS. INSERT TUBE FULL DEPTH INTO FITTINGS, AND SOLDER IN A MANNER WHICH WILL DRAW SOLDERED FULL DEPTH AND CIRCUMFERENCE OF JOINT. WIPE EXCESS SOLDER FROM JOINT BEFORE IT HARDENS.
- I. QUALITY ASSURANCE:
1. WELDING: QUALIFY WELDING PROCEDURES, WELDERS AND OPERATORS IN ACCORDANCE WITH ANSI B 31.1, PARAGRAPH 127.5, FOR SHOP AND PROJECT SITE WELDING OF PIPING WORK. CERTIFY WELDING OF PIPING WORK USING THE STANDARD PROCEDURE SPECIFICATIONS BY, AND WELDERS TESTED UNDER SUPERVISION OF, THE NATIONAL CERTIFIED PIPE WELDING BUREAU.
 2. WELDING CERTIFICATIONS, PIPING WORK: SUBMIT WELDING CERTIFICATIONS TO ENGINEER OF RECORD PRIOR TO PERFORMING WORK.

PIPING HANGERS AND SUPPORTS

- A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY-FABRICATED HORIZONTAL PIPING HANGERS AND SUPPORTS OF MSS TYPE AND SIZE INDICATED, BOLTS (IF ANY) AND WASHERS; COMPLY WITH MSS SP-58.
1. ADJUSTABLE CLEVIS HANGER: MSS TYPE 1, FABRICATED FROM STEEL. HANGER TO BE LARGE ENOUGH TO BE ON OUTSIDE OF PIPE INSULATION.
- B. VERTICAL-PIPING AND CLAMPS – GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY-FABRICATED VERTICAL PIPING CLAMPS OF MSS TYPE AND SIZE INDICATED; COMPLY WITH MSS SP-58 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION.
1. TWO-BOLT RISER CLAMP: MSS TYPE 8.

C. REFER TO DRAWING DETAILS FOR PIPING SUPPORTS.

PIPING VALVES

- A. GATE, BALL, BUTTERFLY AND CHECK VALVES TO BE INSTALLED AT ALL POINTS SPECIFIED AND INDICATED ON THE DRAWINGS. VALVES IN STEEL PIPE SIZE 2" AND UNDER SHALL BE SCREWED TYPE; SIZE 2-1/2" AND ABOVE, FLANGED TYPE.
- B. VALVES IN WATER (STEEL PIPE) SHALL BE RATED NO LESS THAN 150 POUNDS WORKING PRESSURE. VALVES SHALL BE STOCKHAM, MILWAUKEE OR HAMMOND IN ACCORDANCE WITH THE FOLLOWING TABLES:
- C. VALVES IN WATER LINES (COPPER PIPE) SHALL BE RATED NO LESS THAN 125 POUNDS WORKING PRESSURE. VALVES SHALL BE STOCKHAM, NIBCO, MILWAUKEE OR HAMMOND.
- D. BUTTERFLY VALVES: TO BE MILWAUKEE VALVE SERIES ML FOR "ON-OFF" OPERATION. VALVES SHALL BE CONSTRUCTED FOR A WORKING PRESSURE OF 150 PSI WITH BODIES OF CAST IRON, DISCS OF DUCTILE IRON, SHAFTS OF 17-4PH STAINLESS STEEL, SEATS AND O-RINGS TYPE E.P.D.M. ALL VALVES 6" AND GREATER TO HAVE GEAR DRIVE OPERATOR. ALL VALVES LOCATED 7'-0" ABOVE FINISH FLOOR TO HAVE GEAR DRIVE WITH CHAIN OPERATOR. CHAINS TO HAVE LENGTHS THAT WILL ALLOW OPERATION 6'-0" ABOVE FINISHED FLOOR. VALVES OF SIMILAR DESIGN AND EQUIVALENT CONSTRUCTION AS MANUFACTURED BY DEMCO, KEYSTONE OR NORRIS WILL BE ACCEPTABLE. ANY VALVE OFFERED SHALL BE LUG-BODY-DRILLED AND TAPPED.
- E. BALL VALVES:
1. FOR PIPE SIZES 1" TO 3": THREE PIECE CARBON STEEL WITH SWING OUT ACCESSIBILITY, 150 PSI WORKING PRESSURE. SIMILAR TO APOLLO SERIES 82-100, THREADED FULL PORT.
 2. FOR PIPE SIZED LESS THAN 1": USE SERIES 70-100.
 3. COMPARABLE VALVES AS MANUFACTURED BY FLOWSET WILL BE ACCEPTABLE.
- F. DRAIN COCKS: TO BE WOLVERINE 1/2" NO. 667 U.S.A. WITH STUFFING BOX. COMPARABLE COCKS AS MANUFACTURED BY NIBCO OR CHICAGO FAUCET WILL BE ACCEPTABLE.

PIPE INSULATION

- A. AS DESIGNED BELOW SHALL BE INSULATED WITH ONE-PIECE MOLDED FIBROUS GLASS INSULATION (-60 TO 850 DEGREES F.) WITH PAPER FREE "ASJ MAX" JACKET DOUBLE SELF-SEALING LAP AND THICKNESS AS FOLLOWS:
1. TOWER WATER SUPPLY AND RETURN PIPING OUTSIDE BUILDING.
 - a. ALL SIZES – 2" THICK

B. INSULATION SHALL BE OWENS CORNING FIBERGLASS WITH PAPER-FREE JACKETING (ASJ MAX). SIMILAR INSULATION FROM LISTED MANUFACTURERS WILL BE CONSIDERED. INSULATION PROPERTIES TO INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

1. REINFORCED FOIL VAPOR BARRIER JACKETING.
2. JACKET TO HAVE FACTORY APPLIED DOUBLE PRESSURE SENSITIVE ADHESIVE.
3. SELF-SEALING BUTT STRIPS FOR CIRCUMFERENTIAL JOINTS.
4. UL LISTED.
5. PERMEANCE: 0.02 PERM/IN.
6. PUNCTURE RESISTANCE: 50 UNITS (ASTM D781)
7. THERMAL CONDUCTIVITY: 0.27 BTU .IN/HR ./FT. 2 DEG. F @ 150 DEG. F MEAN TEMPERATURE

C. ON ALL PIPING EXPOSED OUTDOORS FINISH WITH ALUMINUM JACKET AS SPECIFIED HEREIN MAY BE USED.

1. INSULATION SHALL BE PROTECTED WITH AN ALUMINUM WEATHERPROOF JACKET. THE MATERIAL SHALL BE "CHILDERS" ALUMINUM WEATHERPROOF JACKETING WITH LAP-SEAL AND WITH FACTORY ATTACHED MOISTURE BARRIER. THE JACKETING SHALL BE .020" THICKNESS (3003-H14 ALLOY) AND SHALL BE 3/16" CROSS CRIMP FOR RIGIDITY. THE JACKETING SHALL BE APPLIED WITH 2" CIRCUMFERENTIAL AND 1-1/2" LONGITUDINAL LAPS AND SHALL BE SECURED WITH 3/8" ALUMINUM STRAPPING AND SEALS SPACED 8" O.C. ALL ELBOWS IN ALUMINUM JACKET LINES SHALL BE COVERED WITH .020" ALUMINUM (3003-H14 ALLOY) WITH FACTORY APPLIED MOISTURE BARRIER.
2. ALL PIPING ABOVE GROUND OUTSIDE AT COOLING TOWER SHALL HAVE ELECTRIC TRACE UNDER INSULATION.

TESTS

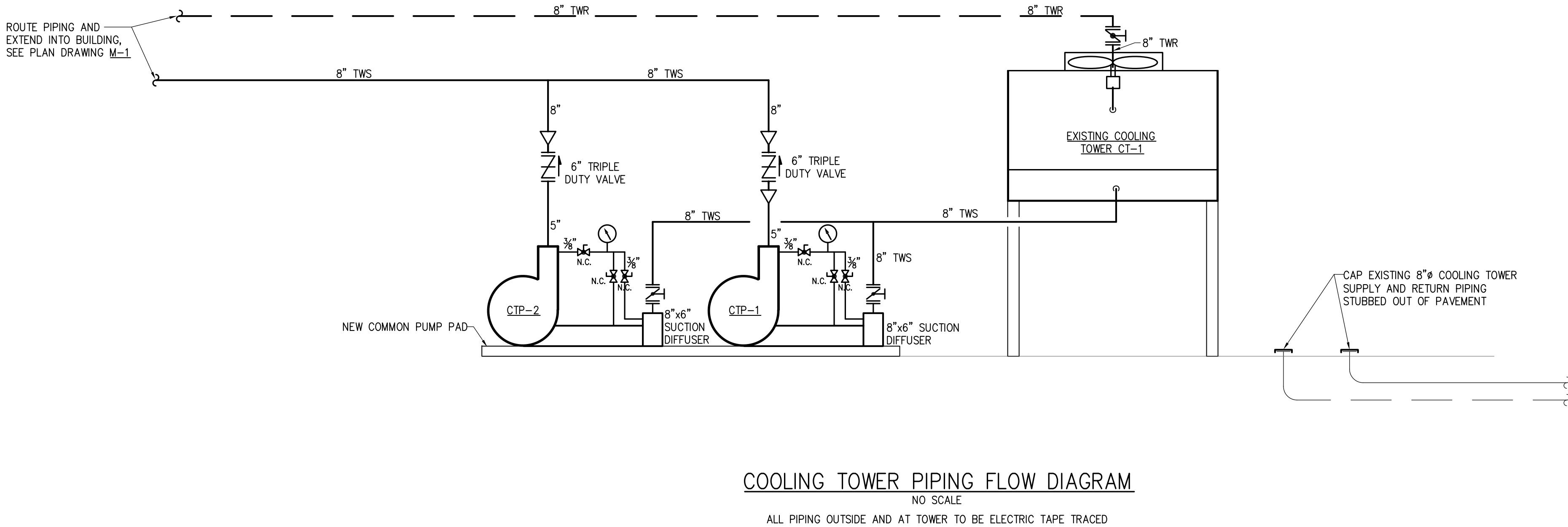
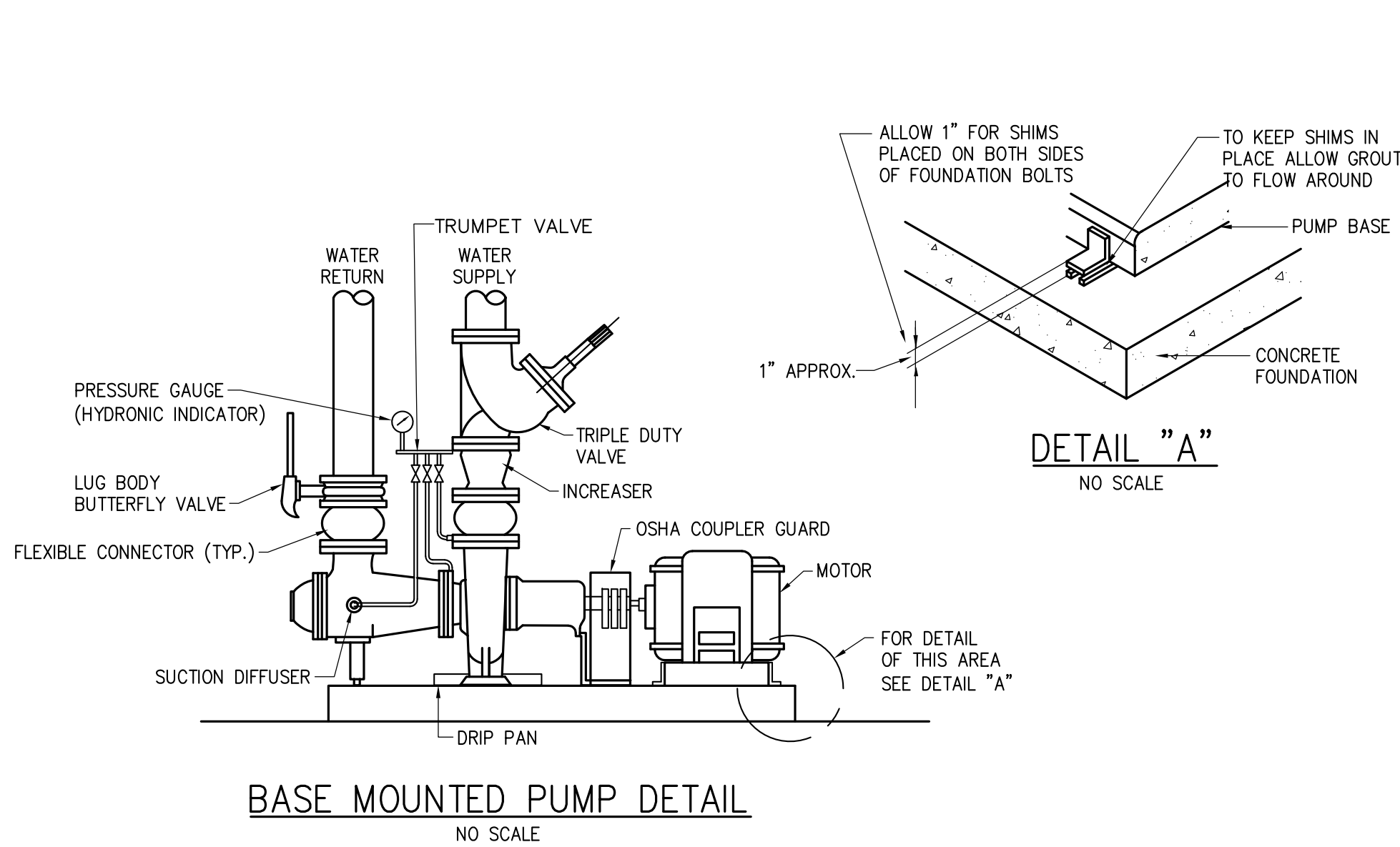
COOLING TOWER WATER PIPING SHALL BE HYDROSTATICALLY TESTED WITH WATER PRESSURE OF NOT LESS THAN 100 PSIG. CARE SHALL BE TAKEN TO AVOID PUTTING EXCESSIVE PRESSURES ON MECHANICAL SEALS, ACCESSORIES, SPECIALTIES, SAFETY DEVICES, ETC. WATER SYSTEM SHALL BE FILLED AND ALL AIR VENTED AT LEAST 24 HOURS BEFORE THE ACTUAL TEST PRESSURE IS APPLIED. TEST PRESSURE SHALL BE APPLIED, IF PRACTICAL, WHEN WATER AND AVERAGE AMBIENT TEMPERATURES ARE APPROXIMATELY EQUAL AND CONSTANT. TEST PRESSURE SHALL BE MAINTAINED FOR NOT LESS THAN TWO HOURS WITHOUT APPRECIABLE DROP AFTER THE FORCE PUMP HAS BEEN DISCONNECTED. LEAKS IN SCREWED FITTINGS SHALL BE CORRECTED BY REMAKING THE JOINTS. LEAKS IN WELDED JOINTS SHALL BE CUT OUT AND REWELDED.

TEST AND BALANCE

EXISTING COOLING TOWER WATERSIDE SYSTEM SHALL BE FLOW TESTED AND BALANCED BY NEBB CERTIFIED TEST AND BALANCE SUBCONTRACTOR. THIS INCLUDES NEW COOLING TOWER PUMPS SERVING EXISTING COOLING TOWER.

BUILDING AUTOMATION SYSTEM AND CONTROLS

THE EXISTING COOLING TOWER AND NEW TOWER PUMPS SHALL BE ENERGIZED, START/STOP, AND SEQUENCED BY THE EXISTING JOHNSON CONTROLS "JCI" BUILDING AUTOMATION SYSTEM. THE CONTROLS SUBCONTRACTOR SHALL UTILIZE THE EXISTING BUILDING AUTOMATION SYSTEM INFRASTRUCTURE. THE EXISTING CONTROL SIGNAL FROM THE EXISTING SKID PUMP PACKAGE SHALL BE USED TO START/STOP NEW OUTDOOR COOLING TOWER PUMPS. EACH NEW PUMP SHALL BE OPERATED WEEKLY ON A ROTATIONAL BASIS, IN ORDER TO ACHIEVE EQUAL OPERATING HOURS ON THE PUMPS.



Delivery Order No. P014-001

Cooling Tower Pumps & Piping Relocation
CENTENNIAL HALL - LANDER UNIVERSITY
Greenwood, South Carolina

SCHEDULES AND DETAILS

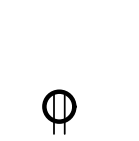
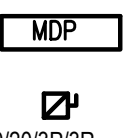
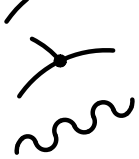
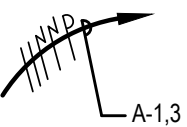
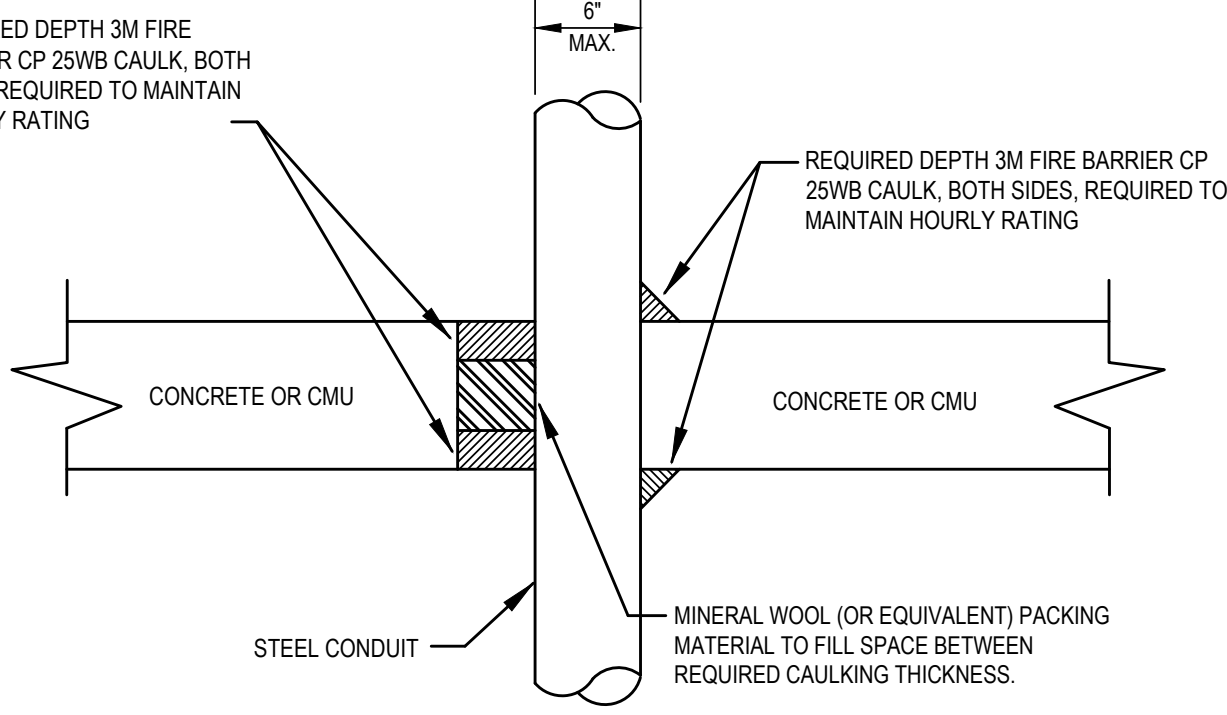
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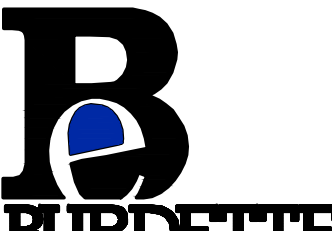
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2 OF 2 SHEETS



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SYMBOL	DESCRIPTION	ELECTRICAL GENERAL NOTES:	ABBREVIATIONS:	
	<u>CIRCUITS AND CONDUIT</u> HOME RUN TO LIGHTING/SERVICE PANEL. HASH MARKS, WHEN SHOWN, INDICATE NUMBERS OF CONDUCTORS. "/*" INDICATES HOT WIRE. "N/*" INDICATES NEUTRAL CONDUCTOR. "F/*" INDICATES GROUND CONDUCTOR. HOME RUN NOTE INDICATES PANEL NAME AND CIRCUIT NAME OR FEEDER TAG. CONDUCTORS SHALL BE #12 AWG IN 3/4" CONDUIT UNLESS NOTED OTHERWISE. ANY HOME RUN OR CONDUIT WITHOUT HASH MARKS IS TO CONTAIN 3 CONDUCTORS; 1 HOT, 1 NEUTRAL, AND 1 EQUIPMENT GROUND. EACH HOT CIRCUIT SHALL BE PAIRED WITH A SEPARATE NEUTRAL CONDUCTOR. SHARING OF NEUTRAL CONDUCTORS BETWEEN CIRCUITS IS NOT ALLOWED. EXPOSED CONDUIT CONDUIT RUN IN SLAB OR UNDERGROUND. CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS, UNLESS NOTED OTHERWISE. 0-10V LOW VOLTAGE DIMMER CABLE STRAPPED TO LIGHTING CONDUIT; BELDEN # 2179LP. CONDUIT JUNCTION IN CONDULET OR JUNCTION BOX. FLEXIBLE CONDUIT CONDUIT TURNING UP CONDUIT TURNING DOWN <u>EQUIPMENT</u> LIGHTING OR SERVICE PANEL, SURFACE MOUNTED (208V) LIGHTING OR SERVICE PANEL, SURFACE MOUNTED (480V) MAIN DISTRIBUTION PANEL. SAFETY DISCONNECT SWITCH. "30" INDICATES AMP RATING, "20" INDICATES FUSE SIZES, "3P" INDICATES NUMBER OF POLES. ENCLOSURE TO BE NEMA 1 UNLESS NOTED OTHERWISE (3R, 4X, ETC.) SQUARE D H300 SERIES HEAVY DUTY SAFETY SWITCH CONNECTION TO A SPECIFIC PIECE OF EQUIPMENT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH PROVIDER / INSTALLER OF THE EQUIPMENT. <u>WIRING DEVICES</u> NOTE: ALL WIRING DEVICES TO BE IVORY, WITH #302 STAINLESS STEEL COVERPLATE (FLUSH MOUNTED) UNLESS NOTED OTHERWISE ON THE DRAWING OR SPECIFICATIONS. <u>STRAIGHT BLADE DEVICE SYMBOLS</u> 20A, 125V, 2P, 3W, NEMA 5-20R, DUPLEX RECEPTACLE, HUBBELL 5362-1 OR EQUAL. STANDARD POWER. "WP" DENOTES WEATHER RESISTANT TYPE RECEPTACLE WITH CAST IN-USE COVER. "GFI" DENOTES GFCI TYPE. "C" DENOTES RECEPTACLE TO BE FLUSH MOUNTED IN CEILING.	- INSPECT SITE PRIOR TO SUBMITTING BID. DRAWINGS ARE INTENDED TO COVER THE REQUIRED ELECTRICAL SYSTEMS. DRAWINGS MAY NOT SHOW COMPLETE OR ACCURATE DETAILS OF THE BUILDING OR SYSTEM IN EVERY RESPECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY ADDITIONAL INFORMATION AS REQUIRED. - CONFORM TO THE NATIONAL ELECTRICAL CODE (2017), IBC (2018), IECC (2009), APPLICABLE NEMA, ANSI AND IEEE PUBLICATIONS, U.L. AND ADA STANDARDS AND OSHA REQUIREMENTS. COMPLY WITH LOCAL, COUNTY, STATE AND NATIONAL CODES HAVING JURISDICTION. - FURNISH AND INSTALL ALL MATERIALS IN A NEAT AND WORKMANLIKE FASHION. ALL MATERIALS SHALL BE NEW, WITH FIRST QUALITY AND UL LABEL. - VERIFY ALL DIMENSIONS AND CLEARANCES PRIOR TO INSTALLATION OF EQUIPMENT AND RACEWAYS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK WITH THAT OF ALL OTHER TRADES AS REQUIRED. - CONDUIT SHALL BE RIGID GALVANIZED STEEL. MINIMUM CONDUIT SIZE SHALL BE 3/4". ALL CONDUCTORS SHALL BE TYPE THHN/THWN, STRANDED 600V COPPER BUILDING WIRE. MINIMUM SIZE SHALL BE #12 AWG COPPER UNLESS NOTED. PROVIDE PULL BOXES WHERE REQUIRED TO HAVE NO MORE THAN 4 - 90 DEGREE BENDS - PROVIDE GROUNDING FOR ALL EQUIPMENT IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE. GROUND SERVICE TO BUILDING STEEL, DRIVEN GROUND ROD AND COLD WATER PIPE. - ALL ENCLOSURES SHALL BE OF THE NEMA TYPE WHICH IS SUITABLE FOR THE APPLICATION. - SEAL ALL CONDUIT PENETRATIONS TO MATCH RATING OF WALL BEING PENETRATED. - ALL WORK SHALL HAVE PROPER LABELING AND NAMEPLATES. ALL CIRCUITS SHALL BE LABELED AT PANELS AND BOXES AS INDICATED. ALL PANELS AND DISCONNECTS ARE TO BE PERMANENTLY MARKED WITH NAME OR EQUIPMENT SERVED. ALL PANELS ARE TO BE PROVIDED WITH TYPEWRITTEN PANEL SCHEDULES. - THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS BEFORE PLACING IN OPERATION. RESTORE FINISHED SURFACES IF DAMAGED AND DELIVER THE ENTIRE INSTALLATION IN AN APPROVED CONDITION. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS. FURNISH TO THE OWNER THREE SETS OF OPERATION AND MAINTENANCE MANUALS FOR EACH SYSTEM. - GARANTEE THE WORK INSTALLED FOR A PERIOD OF ONE YEAR AFTER DATE OF FINAL ACCEPTANCE. DEFECTS WHICH APPEAR AS A RESULT OF NORMAL USAGE SHALL BE REMEDIED BY THE CONTRACTOR TO THE COMPLETE SATISFACTION OF THE OWNER WITHOUT COST TO THE OWNER. - CONTRACTOR SHALL KEEP CURRENT A SET OF PLANS FOR THE DURATION OF CONSTRUCTION WITH ALL CHANGES TO WORK NEATLY AND ACCURATELY MARKED IN RED AND SHALL TURN OVER TO OWNER AT COMPLETION OF PROJECT. - ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED TO MEET SEISMIC REQUIREMENTS OF 2018 IBC FOR SEISMIC RISK CATEGORY 'C'. COMPONENT IMPORTANCE FACTOR TO BE 1.5 FOR LIFE SAFETY RELATED ITEMS AND 1.0 FOR ALL OTHER ITEMS. - SUBMITTALS: PROVIDE SHOP DRAWINGS FOR APPROVAL FOR THE FOLLOWING: - CONDUIT - DRIVE CABLE - CONDUCTORS - DISCONNECTS - CIRCUIT BREAKERS	ACH ABOVE COUNTER HEIGHT AFF ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE BKR BREAKER CU COPPER CKT CIRCUIT D DEDICATED OUTLET DWG DRAWING EC ELECTRICAL CONTRACTOR EMT ELECTRICAL METALLIC TUBING EWC ELECTRIC WATER COOLER FU FUSE FWE FURNISHED WITH EQUIPMENT GFI GROUND FAULT INTERRUPTER DEVICE IMC INTERMEDIATE METAL CONDUIT LTG LIGHTING (L.) MLO MAIN LUGS ONLY MCB MAIN CIRCUIT BREAKER MFR MANUFACTURER MDP MAIN DISTRIBUTION PANEL NTS NOT TO SCALE PH PHASE PNL PANEL PVC POLYVINYL CHLORIDE CONDUIT RECPT RECEPTACLE (R.) REQD REQUIRED RGS RIGID GALVANIZED STEEL SPD SURGE PROTECTIVE DEVICE SW SWITCH TYP TYPICAL UNO UNLESS NOTED OTHERWISE UGND UNDERGROUND W/ WITH WP WEATHER PROOF	PROVIDE FIRESTOPPING THRU ALL RATED (1 HOUR AND ABOVE) WALLS. FIRESTOPPING SHALL BE 3M CP 25WB CAULK OR FIREHAM 150 CAULK OR EQUAL. FIRESTOPPING SHALL BE AS REQUIRED TO MAINTAIN A U.L. SYSTEM CLOSURE. PROVIDE U.L. NO. AND MANUFACTURER'S SPECIFICATION AND INSTALLATION DRAWING FOR ALL SUBSTITUTION REQUESTS.  * SEE ARCHITECTURAL DRAWINGS FOR FIRE WALLS. 1 TYPICAL CONDUIT SLEEVE DETAIL SCALE: NTS



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Delivery Order No. P014-001

Cooling Tower Pumps & Piping Relocation

CENTENNIAL HALL - LANDER UNIVERSITY

Greenwood, South Carolina

ELECTRICAL LEGEND AND SCHEDULES

DESIGN
DJB

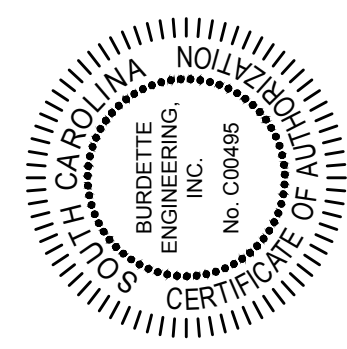
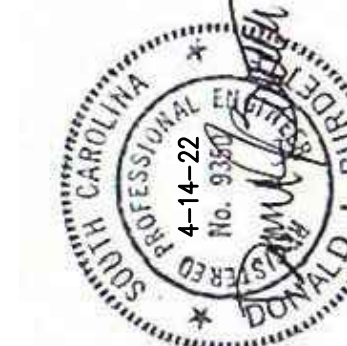
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JOB NO.
PERITUS #211105

SHEET
E-1

1 OF - SHEETS



ISSUE FOR PRICING

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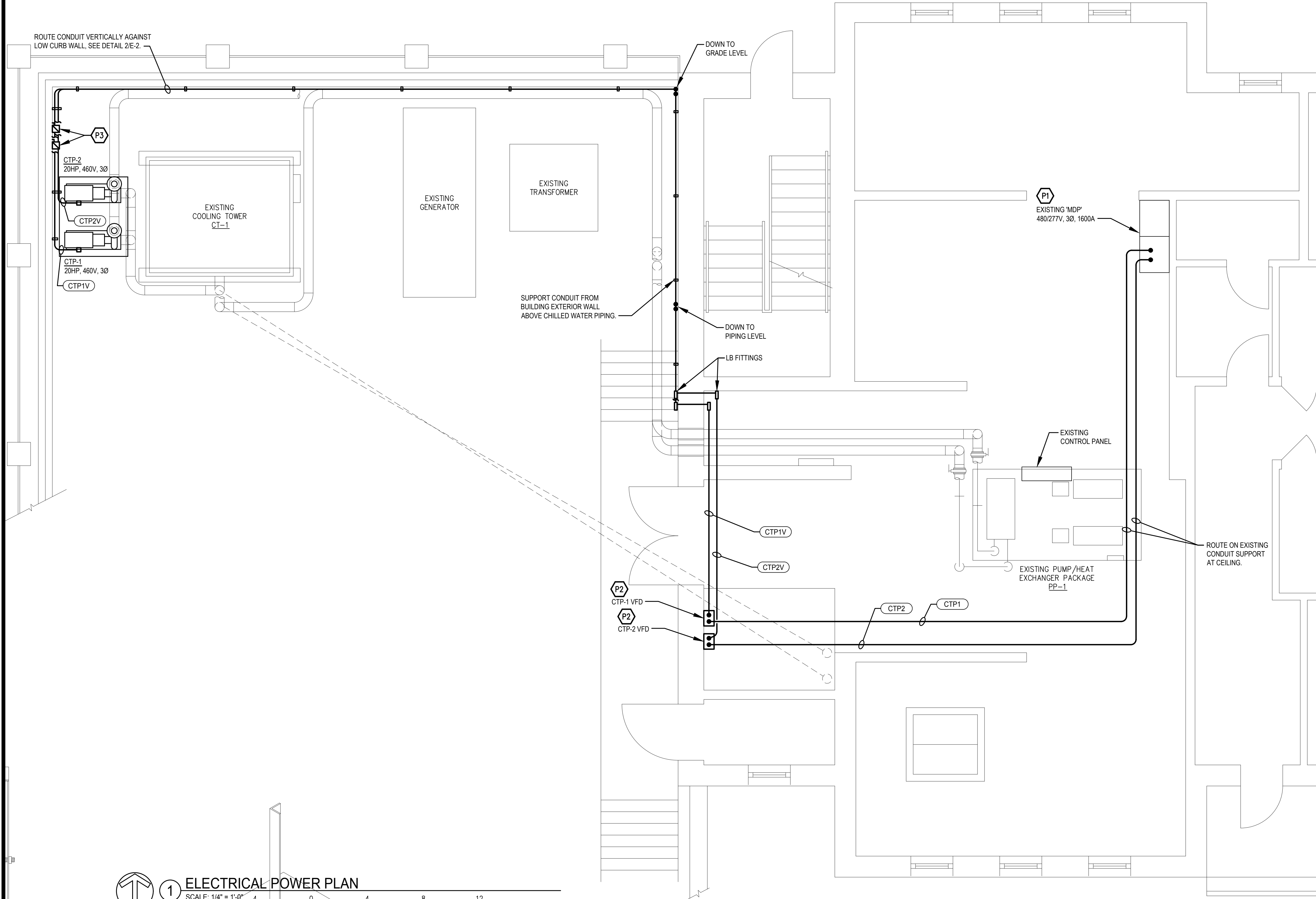
DESCRIPTION

REVISIONS

P:\V\CA0\22725 LANDER UNIVERSITY (BEI) (DO #21-P015-JW)\22725A LAND - CENTENNIAL HALL - COOL TOWER PUMPS AND PIPING RELOCATION GREENWOOD SC\22725A\002.dwg, 4/13/2022 10:28:36 AM, AutoCAD PDF (General Documentation).pc3

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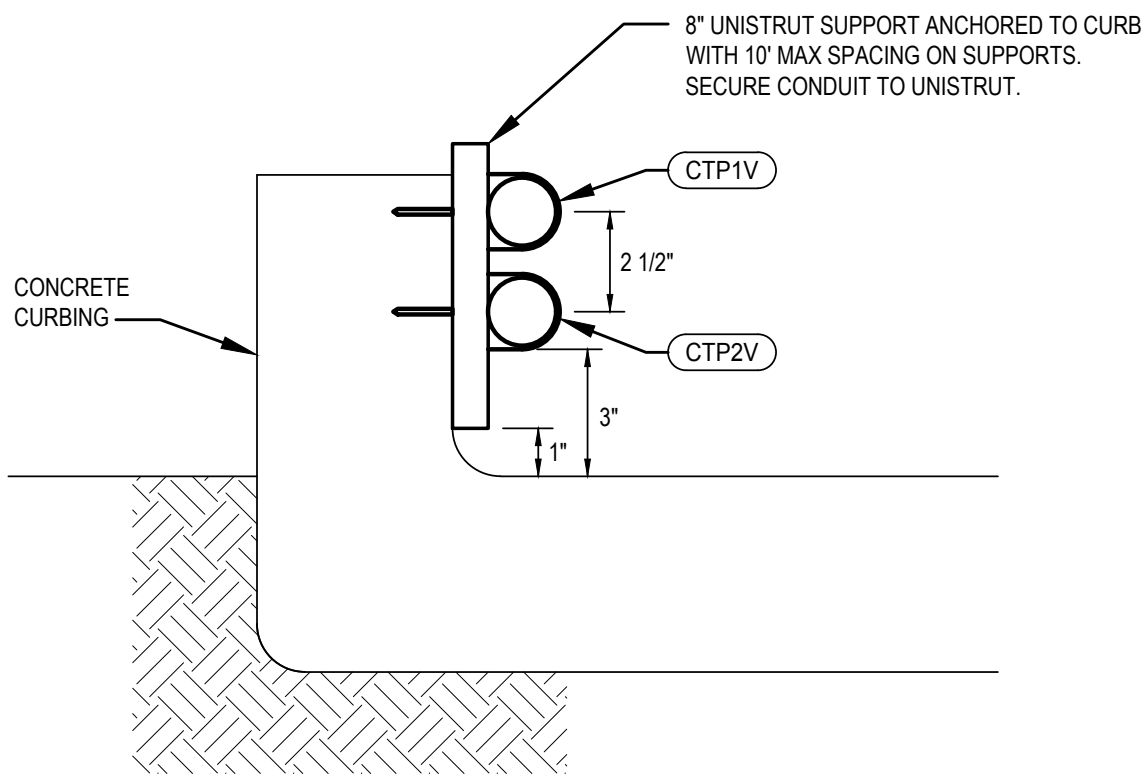


GENERAL SHEET NOTES

- SEE MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT.

POWER PLAN KEYNOTES

- EXISTING 'MDP' IS SQUARE D QED SWITCHBOARD; 480/277V, 3Ø WITH 1600A BUS AND MAIN, CAT NO. 19865944-001, PLANT CODE 44. PROVIDE AND INSTALL TWO (2) TYPE FC, 65K AIC AT 480V, 40A, 3 POLE BREAKERS. PROVIDE NAMEPLATES, "COOLING TOWER PUMP CTP-1" AND "COOLING TOWER PUMP CTP-2". BREAKERS TO BE LOCKABLE WITH PADLOCKS.
- VFD'S FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED AS SHOWN BY ELECTRICAL CONTRACTOR. ALL CONTROLS BY MECHANICAL CONTRACTOR.
- PROVIDE MOTOR DISCONNECTS AS 600V, 60A, NF, 3 POLE, NEMA 3R. PROVIDE MAKE-BEFORE-BREAK AUXILIARY CONTACT AND ROUTE CONTROL WIRES TO VFD FOR PRE-SIGNAL TO OPENING MOTOR CIRCUIT. LABEL EACH DISCONNECT WITH MOTOR SERVED WITH NAMEPLATE.



2 CONDUIT SUPPORTS TO CHILLER

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

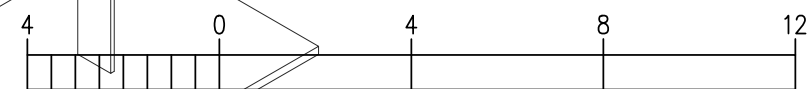
FEEDER SCHEDULE

TAG	V/P	SOURCE PANEL	WIRE/COND.
CTP1	480/3	MDP	3 #8, 1 #10G; 1" C RGS
CTP2	480/3	MDP	3 #8, 1 #10G; 1" C RGS
CTP1V	480/3	VFD1	3 #8, 1 #10G; DRIVE CABLE, 2 #14 CONTROL; 1 1/2" C RGS
CTP2V	480/3	VFD2	3 #8, 1 #10G; DRIVE CABLE, 2 #14 CONTROL; 1 1/2" C RGS



1 ELECTRICAL POWER PLAN

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



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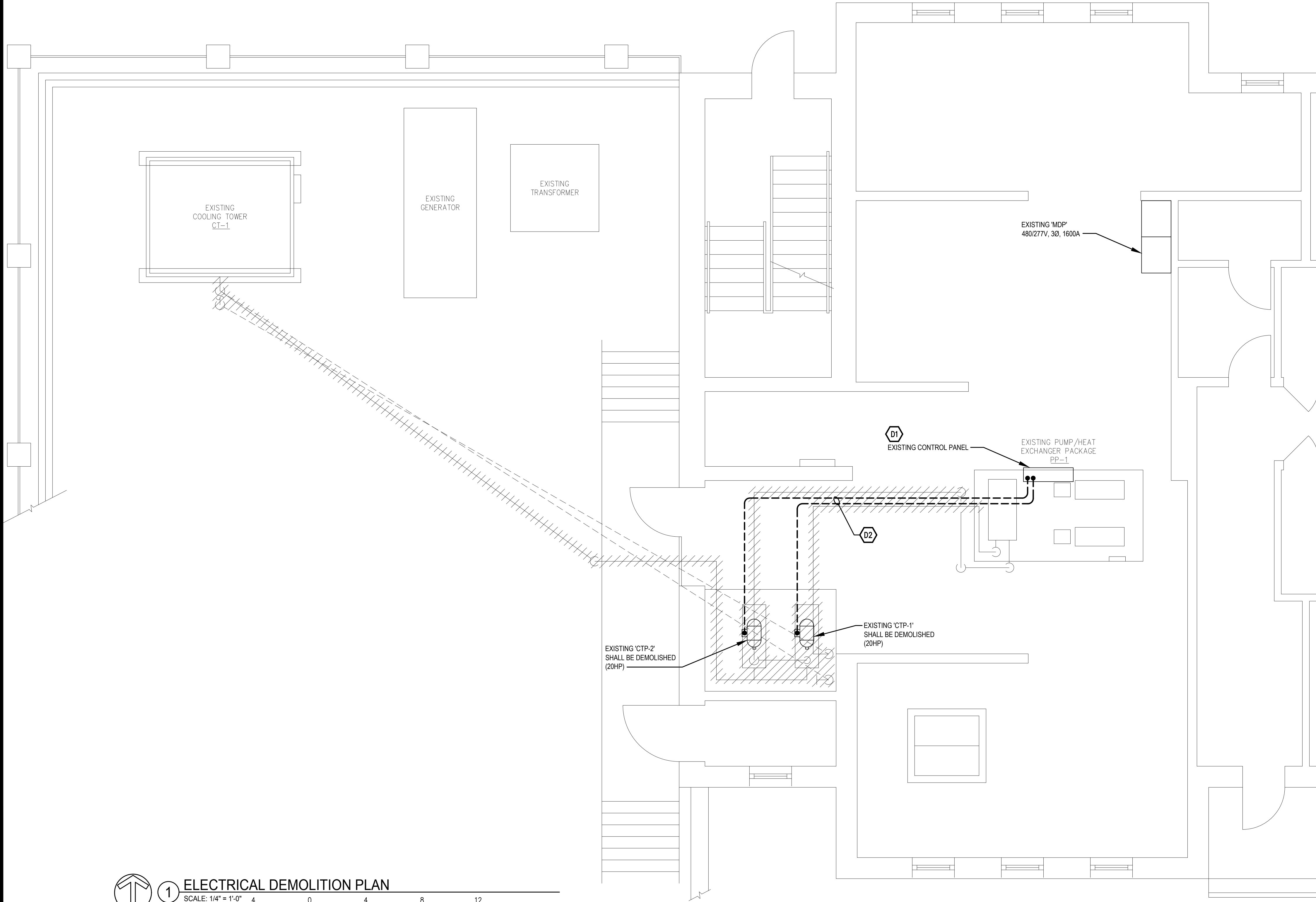
Cooling Tower Pumps & Piping Relocation
CENTENNIAL HALL - LANDER UNIVERSITY
Greenwood, South Carolina

ELECTRICAL POWER PLAN

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CHECKED DJB		
DATE 3/14/22		
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**PROJECT NORTH**

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ELECTRICAL DEMOLITION PLAN

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

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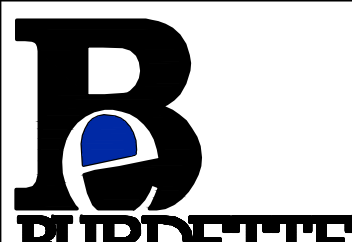
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GENERAL SHEET NOTES

1. SEE MECHANICAL FOR DEMOLITION OF EXISTING PUMPS AND ASSOCIATED PIPING SHOWN LIGHTWEIGHT.

DEMOLITION PLAN KEYNOTES

- D1. REMOVE CONDUIT AND MOTOR FEEDERS FROM THE EXISTING CONTROL PANEL AND LABEL EXISTING PUMP MOTOR STARTERS AS 'SPARE' WITH NAMEPLATE. COORDINATE WITH CONTROLS CONTRACTOR TO LEAVE HOA AND RUN LIGHT ON CONTROL PANEL FRONT. IF NOT PLANNED FOR CONTROL OF NEW COOLING TOWER PUMPS, REPLACE NAMEPLATE OVER ASSOCIATED SWITCHES AND LABEL AS 'SPARE'. PLUG HOLES WHERE CONDUIT IS REMOVED.
- D2. REMOVE EXISTING CONDUITS AND FEEDERS FROM CONTROL PANEL TO DEMOLISHED PUMPS.

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BEI JOB NO. 22725A

Delivery Order No. P014-001

Cooling Tower Pumps & Piping Relocation

CENTENNIAL HALL - LANDER UNIVERSITY

Greenwood, South Carolina

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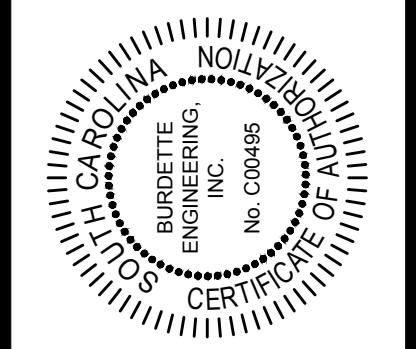
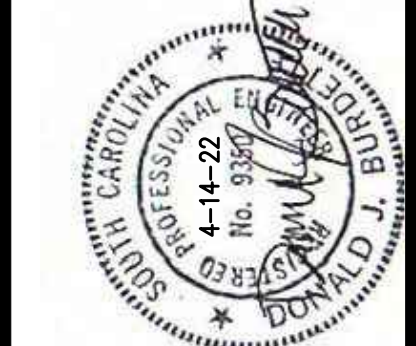
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