



November 14, 2023

ADDENDUM NO. TWO (2)

11/14/2023

IHL #208-358
COOLING TOWER UPGRADES FY24
UNIVERSITY OF SOUTHERN MISSISSIPPI
HATTIESBURG, MS
ERG P.N. 23.119

- I. Bidder acknowledges that it is Bidder’s responsibility to ascertain whether any Addenda have been issued and if so, to obtain copies of such Addenda. Bidder therefore agrees to be bound by all Addenda that have been issued for this Bid.

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents and consists of 1 page (plus 14 attachment pages). The following clarifications, changes, additions, or deletions shall be made to the following documents as indicated, and all other conditions shall remain the same.

II. PERTAINING TO THE SPECIFICATIONS

Item 1.	Reference:	236514.14 – Open-Circuit, Induced-Draft, Cooling Tower
	Scope:	Paragraph 1.6 C. – Delete entire paragraph.
Item 2.	Reference:	230719 – Piping and Equipment Insulation
	Scope:	Replace entire specification section with the attached 230719 – Piping and Equipment Insulation specification section.

III. PERTAINING TO THE DRAWINGS

Item 1.	Reference:	Drawing E-100
	Scope:	Replace Drawing E-100 with the attached revised drawing E-100. Additional Electrical work for temporary relocation of existing cooling tower at Forrest County Hall.

END OF ADDENDUM NO. 2

SECTION 230719 – PIPING AND EQUIPMENT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included in This Section: Materials, equipment, fabrication, installation, and tests in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. Piping insulation.
 - 2. Pipe insulation jacket.

1.3 REFERENCE STANDARDS

- A. ASTM B209 – Aluminum and Aluminum-Alloy Sheet and Plate.
- B. ASTM C177 – Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- C. ASTM C335 – Steady-State Heat Transfer Properties of Horizontal Pipe Insulation.
- D. ASTM C585 – Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe.
- E. ASTM C921 – Properties of Jacketing Materials for Thermal Insulation.
- F. ASTM E84 – Surface Burning Characteristics of Building Materials.
- G. ASTM E96 – Water Vapor Transmission of Materials.
- H. NFPA 255 – Surface Burning Characteristics of Building Materials.
- I. SMACNA – HVAC Duct Construction Standards - Metal and Flexible.
- J. UL 723 – Surface Burning Characteristics of Building Materials.
- K. ASTM E 814 – Standard Test Method for Fire Tests of Through-Penetration Fire Stops.

1.4 QUALITY ASSURANCE

- A. Source Quality Control.
 - 1. Service: Use insulation specifically manufactured for service specified.
 - 2. Labeling: Insulation labeled or stamped with brand name and number.

- B. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

1.5 SUBMITTALS

- A. See Section 230010 – Mechanical General Provisions.
- B. Submit product data, O&M data, and samples and show item on shop drawings (where shop drawings are required) according to the following table.
 - 1. “R” means required.
 - 2. “R2” means required only for products and equipment differing for the specified manufacturer and model and for “or equals” where specified.

Item	Product Data	O&M Manual	Samples	Shop Drawing
Piping insulation	R			
Jackets	R			
Adhesives and coatings	R			
Mechanical fasteners	R			
Installer qualifications	R			

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Named manufacturer model numbers used as example of item and establish minimum level of quality and minimum standard options. Equivalent models of listed manufacturers are acceptable.
- B. Insulation: Cellular glass.
 - 1. Pittsburg-Corning
 - 2. Or equal.
- C. Insulation: fiberglass.
 - 1. Owens-Corning Fiberglass Corporation.
 - 2. Manville.
 - 3. Certainteed Corporation.
 - 4. Knauf.
 - 5. Or equal.
- D. Insulation: Elastomeric Closed Cell.
 - 1. Armstrong World Industries, Inc.
 - 2. Rubatex Corporation.
 - 3. Or equal.

- E. Weatherproof Aluminum Jacket.
 - 1. Childers Products Company.
 - 2. Insul-Coustic/Birma Corporation.
 - 3. Or equal.

- F. Pre-molded pipe fitting covers and Jacketing.
 - 1. Manville: Zeston.
 - 2. Childers Products Company.
 - 3. Proto Corporation.
 - 4. Insul-Coustic/Birma Corporation.
 - 5. Or equal.

- G. Adhesives.
 - 1. Foster Div. Amchem Products Inc.
 - 2. Childers Products Company.
 - 3. Epolux Mfg. Corporation.
 - 4. Insul-Coustic/Birma Corporation.
 - 5. Armstrong 520 Adhesive.
 - 6. Or equal.

- H. Mechanical Fasteners.
 - 1. AGM Industries, Inc.
 - 2. Miracle Adhesives Corporation.
 - 3. Grip-Nail.
 - 4. Or equal.

2.2 GENERAL

- A. Energy Codes: The current versions of ASHRAE 90.1 shall govern where requirements for thickness exceeds thickness specified.

- B. All insulation materials, including jackets, facings, adhesives, coatings, and accessories are to be fire hazard rated and listed by Underwriters' Laboratories, Inc., using Standard UL 723 (ASTM E-84), (NFPA-255), (ASA A2.5-1963).
 - 1. Flamespread: maximum 25.
 - 2. Fuel contributed, and smoke developed: maximum 50.
 - 3. Flameproofing treatments subject to deterioration from moisture or humidity are not acceptable.

- C. Insulation and accessories shall not provide any nutritional or bodily use to fungi, bacteria, insects, rats, mice, or other vermin, shall not react corrosively with equipment, piping or ductwork, and shall be asbestos free: Duct lining shall meet ASTM C1136 and ASTM C665 for biological growth in insulation.

- D. Provide a continuous vapor seal for any service piping that carries liquid below 60 degrees Fahrenheit.

2.3 PIPE INSULATION

- A. Cellular Glass.
 - 1. Insulation (without jacket) ASTM C 552, Type II, Class 1.
 - 2. Insulation (with jacket) ASTM C552, Class 2.
 - 3. Sectional.
 - 4. 0.32 maximum K-factor at 75 degrees Fahrenheit mean temperature.
 - 5. Pittsburg-Corning or equal.
- B. Fiberglass.
 - 1. Molded: one piece, with factory-applied, all purpose, vapor retarder jacket, maximum 0.26 K factor at 75 degrees Fahrenheit mean temperature: Owens-Corning ASJ/SSL-II Pipe Insulation or equal.
- C. Flexible, closed cell elastomeric thermal insulation.
 - 1. Insulation ASTM C534.
 - 2. Service rating of 220 degrees Fahrenheit.
 - 3. Density 6.0 pounds per cubic foot.
 - 4. Closed cell foam: Vapor permeability ASTM E96 0.2 perm.
 - 5. Max moisture absorption: 1.0 percent by volume, 10 percent by weight.
 - 6. Molded pipe insulation.
 - a. Maximum 0.27 K factor at 75 degrees Fahrenheit mean temperature
 - b. Maximum water vapor transmission rating of 0.17 perm-inches,
 - 7. Sheet insulation.
 - a. Maximum 0.28 K factor at 75 degrees Fahrenheit mean temperature.
 - b. Maximum water vapor transmission rating of 0.17 perm-inches.
 - 8. Seal with Rubatex adhesive or equal: Armstrong Armaflex II or equal.

2.4 EQUIPMENT INSULATION

- A. Flexible, closed cell elastomeric thermal insulation.
 - 1. Insulation ASTM C534, Type II sheet material.
 - 2. Service rating of 220 degrees Fahrenheit.
 - 3. Density 6.0 pounds per cubic foot.
 - 4. Closed cell foam: Vapor permeability ASTM E96 0.2 perm.
 - 5. Max moisture absorption: 1.0 percent by volume, 10 percent by weight.
 - 6. Sheet insulation.
 - a. Maximum 0.28 K factor at 75 degrees Fahrenheit mean temperature.
 - b. Maximum water vapor transmission rating of 0.17 perm-inches.
 - 7. Seal with Rubatex adhesive or equal: Armstrong Armaflex II or equal.

2.5 JACKETS

- A. Factory Applied Vapor Barrier All Service Jacket (ASJ).
 - 1. ASTM C921, White kraft paper bonded to aluminum foil and reinforced with glass fiber yarn.
 - 2. Moisture Vapor Transmission: ASTM E96; 0.02 perm inches.
 - 3. Secure with self-sealing longitudinal laps and butt strips.
 - 4. Secure vapor barrier mastic.
 - 5. Metal Jacket Bands: 3/8 inch wide; 0.015-inch-thick aluminum or 0.010-inch-thick stainless steel.
 - 6. Vapor Barrier Lap Adhesive: Compatible with insulation.

- B. Aluminum Jacket: ASTM B209.
 - 1. Use for weatherproof jacket.
 - 2. Thickness: 0.016-inch sheet.
 - 3. Finish: Embossed.
 - 4. Joining: Longitudinal slip joints and 2-inch laps.
 - 5. Fittings: 0.016-inch-thick die shaped fitting covers with factory attached protective liner.
 - 6. Metal Jacket Bands: 3/8 inch wide; 0.015-inch-thick aluminum or 0.010-inch-thick stainless steel.

- C. Equipment insulation facings: Foil-scrim-kraft laminate of aluminum foil facing, glass scrim reinforcing, kraft paper backing.

- D. Preformed Pipe Fitting Covers:
 - 1. Aluminum.
 - a. Factory fabricated formed covers.
 - b. General Aluminum Supply Corporation GASCO or equal.

 - 2. PVC.
 - a. Factory fabricated formed covers.
 - b. Manville Zeston or equal.

2.6 ADHESIVES AND COATINGS

- A. Foster product names and figure numbers or equal.
 - 1. Lagging adhesive: 30-36.
 - 2. Fiberglass: Zeston Z-Glu.
 - 3. Vapor barrier coating: Tite-fit 30-80, UP Label, comply with MIL-C-19565C, Type II; fire and water resistant.
 - 4. Vaporseal adhesive: 85-60.
 - 5. Cellular glass bedding and sealing compound adhesive: Foamseal 30-45.
 - 6. Outdoor mastic: 30-90.
 - 7. Asphalt mastic: C.I. Mastic 60-25.
 - 8. For elastomeric insulation: 520 contact, adhesive.

2.7 WIRE, BANDING AND FASTENING DEVICES

- A. Wire: minimum 16-gauge copper clad annealed steel wire
- B. Bands: 3/4 inches nominal width with wing seals, of minimum thickness as follows:
 - 1. Aluminum: 0.007 inches. Except where exposed to weather, 0.020 inches.
 - 2. Stainless steel: 0.010 inches.
- C. Staples: outward clinching type of corrosion resistant steel.

2.8 MECHANICAL FASTENERS

- A. Mild steel, copper plated.
- B. AGM Industries Power Base insulation pins or equal.
- C. Insulation washers:
 - 1. Galvanized steel.
 - 2. 1-1/2-inch diameter.
 - 3. AGM Industries SLW-1 or equal.

2.9 PRE-INSULATED PIPE SUPPORT AND SHIELDS

- A. Provide insulated pipe supports for all insulated pipe and tubing. Insulated pipe supports shall be Pipe Shields, Inc. or equal.
- B. All insulated pipe supports shall be load rated. Load ratings shall be established by pipe support manufacturer based upon testing and analysis in conformance with the latest edition of the following codes: ASME B31.1, MSS SP-58, MSS SP-69, and MSS SP-89.
- C. All insulated pipe supports shall have cellular glass insulation and galvanized steel jackets. Pipe supports for use on flat surfaces shall have integral load distribution plates coated with zinc primer minimum 3 mils thick.
- D. See Section 230529 – Hangers and Supports.
- E. Hangers and supports shall fit outside of all pipe insulation and insulation inserts. Provide pre-insulated pipe supports as specified and install per manufacturer's installation instructions. Shield lengths and gauges shall also be per manufacturer's recommendations.
- F. Tape all butt joints where pipe insulation butts up against hanger shield.
 - 1. On hot pipe, apply three-inch-wide vapor barrier tape or band over the butt joint.
 - 2. On chilled water piping, apply a wet coat vapor barrier lap cement on all butt joints and seal the joints with a minimum of three-inch-wide vapor tape or band.

2.10 FIRESTOPPING

- A. At pipe penetrations through rated assemblies.

- B. Commercial pipe sleeve assemblies that are UL listed and that have been approved by the fire marshal for this purpose.
- C. Insulation shall be continuous through penetration.

2.11 ACCESSORIES

- A. Insulation Protection Saddles: 12-inch long, 16-gauge steel.
- B. Paint: Ultraviolet resistant latex paint with special adherence capabilities to the fitting covers, elastomeric, aluminum facing, Kraft paper, tapes, and adhesives.

PART 3 - EXECUTION

3.1 PIPE & EQUIPMENT INSULATION SCHEDULE

- A. Type P-1.
 - 1. Molded fiberglass.
 - 2. All-service jacket (ASJ).
 - 3. Vapor sealed.
- B. Type P-1A.
 - 1. Molded fiberglass.
 - 2. All-service jacket (ASJ).
 - 3. Vapor sealed.
 - 4. PVC jacket.
- C. Type P-1B.
 - 1. Molded fiberglass.
 - 2. All-service jacket (ASJ).
 - 3. Vapor sealed.
 - 4. Metal jacket.
- D. Type P-1C
 - 1. Molded fiberglass
 - 2. All-service jacket with a polymer film exterior surface (ASJ-MAX)
 - 3. Vapor sealed
 - 4. Temperature Rating 0-1000°F
 - 5. ASTM E84 tested as an assembly
- E. Type P-2.
 - 1. Flexible elastomeric insulation.
- F. Type P-3.
 - 1. Cellular glass insulation.
 - 2. All service jacket (ASJ).

- 3. Vapor sealed.
- G. Type P-3A.
 - 1. Cellular glass insulation.
 - 2. All service jacket (ASJ).
 - 3. Vapor sealed.
 - 4. PVC jacket.
- H. Type P-3B.
 - 1. Cellular glass insulation.
 - 2. All service jacket (ASJ).
 - 3. Vapor sealed.
 - 4. Metal jacket.
- I. Type E-1.
 - 1. Flexible elastomeric insulation.
- J. Application Schedule.

Piping Systems	Location	Type	Pipe Size	Insulation Thickness	Freeze Protection
Domestic cold water makeup piping – existing and new	Exterior exposed	P-1B	All Sizes	3/4"	Yes
					-
Condenser Water	Exterior	P-3B	4" and Smaller	2"	Yes
			6" and Larger	3-1/2"	Yes

- K. Non-insulated piping and equipment.
 - 1. Pneumatic tubing.
 - 2. Condenser water piping and condenser water pumps (indoors).
 - 3. Hot water expansion tanks and piping to them other than the first 3 feet from the point of connection at piping mains.
 - 4. Pot feeders and piping to them other than the first 3 feet from the point of connection at piping mains.
 - 5. Vent, overflow, drain and relief, except as noted otherwise.
 - 6. Hot water control valves. (Note: this exclusion applies only to the valves themselves; all other hot water piping and accessories, including that between isolation valves and coils, shall be insulated.)

3.2 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Coordinate with work of other trades.
- C. Deliver material to job site in original non-broken factory packaging, labeled with manufacturer's density and thickness.

- D. Install insulation where it cannot become wet. If insulation becomes wet, remove, and dispose of properly and replace with new, dry insulation. Wetted insulation is not acceptable. Ensure insulation is dry before and during installation.
- E. Insulate all piping, valves, fittings, flanges, and accessories.
- F. On piping exposed to public view, locate insulation and cover seams in least visible locations.
- G. Insulate fittings, joints, and valves with insulation of same material and thickness as adjoining pipe. Use pre-molded fiberglass fittings. For strainers, expansion joints, fittings and accessories requiring servicing or inspection insulation shall be removable and replaceable without damage. Enclose within two-piece no. 15 gauge aluminum covers fastened with cadmium-plated bolts and nuts.
- H. Insulate flanges with insulation sleeve of same material as pipe insulation to cover flange and overlap insulation on adjacent piping.
- I. Continue insulation through walls, sleeves, pipe hangers and other pipe penetrations.
- J. Finish insulation at supports, protrusions, and interruptions. No hangers or supports shall be embedded in insulation. Do not insulate expansion bellows.
- K. Fiberglass insulation.
 - 1. Provide insulation with factory applied vapor barrier jackets.
 - 2. Butt edges neatly. ASJ with 3-inch minimum butt strips.
 - 3. Longitudinal overlaps: Minimum 2-inch self-sealing, double adhesive.
 - 4. Apply additional jacket as specified.
 - 5. For insulation with factory-applied jackets, secure laps with aluminum or stainless steel, bands at 18 inches o.c.
 - 6. For piping conveying fluids below, ambient temperature finish with vapor barrier adhesive.
- L. Cellular glass insulation.
 - 1. Provide insulation with factory applied vapor barrier jackets.
 - 2. Butt edges neatly. Seal longitudinal and transverse joints with adhesive to maintain minimum vapor permeance. Adhesive shall be selected and applied in accordance with insulation manufacturer's recommendations.
 - 3. Secure insulation sections with bands without deforming insulation materials.
 - 4. Build up coating of insulating and finishing cement.
 - 5. For insulation with factory-applied jackets, secure laps with aluminum or stainless steel, bands at 18 inches o.c.
 - 6. For piping conveying fluids below, ambient temperature finish with vapor barrier adhesive.
 - 7. Apply additional jacket as specified. If no additional jacket specified apply skim coat of finishing cement to smooth out surface of fitting insulation.
- M. Elastomeric Tubing.
 - 1. Butt edges neatly. Seal longitudinal and transverse joints with adhesive to maintain minimum vapor permeance. Adhesive shall be selected and applied in accordance with insulation manufacturer's recommendations.
 - 2. Apply additional jacket as specified.

- N. For all pipe systems exposed in the mechanical equipment rooms, finish with an all service PVC jacket.
- O. For exterior applications, provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
- P. For buried piping, provide factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with one mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with a polyester film.
- Q. Perform work at ambient and equipment temperatures as recommended by adhesive manufacturer.
- R. Protection: Protect against dirt, water, chemical, or mechanical damage before, during, and after installation. Repair or replace damaged insulation at no additional cost.
- S. Paint all insulation exposed to ultraviolet light (sunlight).
- T. All vapor barriers shall be continuous. Tears, holes, staples, etc. shall be coated with vapor barrier mastic and patch with facing or tape.
- U. Joints between insulation and access shall be sealed with vapor barrier mastic.

3.3 PIPE INSULATION APPLICATION

- A. General.
 - 1. Before applying insulation.
 - a. Test piping for tightness and obtain approval.
 - b. Dry pipe thoroughly.
 - c. Clean surfaces to be insulated of dust, grease, and foreign matter.
 - 2. Butt edges neatly.
 - 3. Fill voids with insulating cement.
 - 4. Longitudinal overlaps.
 - a. 2 inches minimum.
 - b. For exposed work: toward ceiling or wall.
 - c. For weatherproof aluminum jackets: on side to shed water.
 - 5. Circumferential overlaps on weatherproof aluminum jackets: 2 inches minimum.
 - 6. Continuous insulation passing through sleeves or other openings.
 - 7. Oversize insulation to accommodate heat tracing on piping.
- B. Valves, fittings, flanges, and accessory insulation.
 - 1. Unless otherwise noted, insulate:
 - a. Valves including bonnets.
 - b. Flanges.

- c. Fittings.
 - d. Strainers.
 - e. Expansion joints.
 - f. Specialties.
2. Insulation for strainers, expansion joints, fittings and accessories requiring servicing or inspection.
 - a. Insulation removable and replaceable without damage.
 - b. Enclosed within two-piece, No. 18 gauge aluminum covers fastened with cadmium plated bolts and nuts.
 3. Insulation of same thickness as adjacent piping insulation.
 4. For piping systems insulated with fiberglass.
 - a. Apply pre-molded insulation sections of the same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.
 - b. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
 5. For piping systems insulated with cellular glass.
 - a. Apply pre-molded insulation sections of the same material as straight segments of pipe when available. Secure according to manufacturer's written instructions.
 - b. When pre-molded insulation elbows and fittings are not available, apply mitered sections of pipe insulation (blanket insulation is not acceptable) to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire, tape, or bands.
 - c. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
 6. For piping systems insulated with elastomeric thermal insulation.
 - a. Apply mitered sections of pipe insulation.
 - b. Secure insulation materials and seal seams with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.
 - c. Prime and paint exterior installations for UV protection.
 7. Flanges.
 - a. Apply preformed pipe insulation to outer diameter of pipe flange.
 - b. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
 - c. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with the same insulation material as adjacent piping insulation.
 - d. Apply canvas jacket material with manufacturer's recommended adhesive, overlapping seams at least 1 inch, and seal joints with vapor-retarder mastic.

8. Finish for outdoor locations only: weatherproof aluminum jacket compatible with weatherproof jacket on adjoining pipe insulation.
- C. At pipe hangers.
1. Insulation protection shields.
 2. Butt insulation to shields.
 3. Cold piping: Wet coat of vapor barrier lap cement on all butt joints.
- D. Jackets and facings.
1. Vapor-sealed types: continuous; staples not permitted.
 2. Adhere longitudinal laps: Adhere 3 inches wide joint strip, of same material as facing, at center of each butt joint.
 3. Adhesives.
 - a. Vapor-sealed insulation: vapor-seal adhesive.
 - b. Heating service insulation: vapor-seal adhesive.
 - c. Weatherproof aluminum jacket: sealing compound.
 - d. PVC jacket: welding compound.
 - e. Underground asphalt felt jacket: asphalt mastic.
- E. Wiring, banding, and fastening devices: Secure insulation to piping and equipment in accordance with following minimum requirements.
1. Piping insulation section 3 foot long.
 - a. Concealed vapor-sealed insulation banded at ends and center.
 - b. Other concealed insulation banded at ends and center.
 2. Pipe fitting insulation.
 - a. Loops of wire to secure mitered segments of insulation.
 - b. Wire spiraled on from end to end on blanket insulation.
 3. Outdoor piping weatherproof aluminum jackets banded at circumferential joints and center of each section: Lap joint at bottom.
 4. Provide aluminum banding near ends of unicellular piping valve and accessory insulation where unicellular is allowed by Professional.

3.4 EQUIPMENT INSULATION

- A. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Secure insulation to equipment with bands, welded-on anchors, ties or adhesive. Where access to equipment is required for testing or maintenance the insulation shall be installed so that it is removable and so that the vapor barrier can be remade after access.
- B. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor barrier cement.
- C. For cold equipment or equipment containing fluids below ambient temperature.
 1. Insulate entire system.

2. Provide vapor barrier jackets, factory applied, or field applied.
 3. Finish with glass cloth and vapor barrier adhesive.
 4. Cover with aluminum jacket where specified.
- D. For equipment containing fluids above ambient temperature.
1. Insulate entire system.
 2. Provide standard jackets, with or without vapor barrier, factory applied, or field applied.
 3. Finish with glass cloth and adhesive.
 4. Cover with aluminum jacket where specified.
 5. For hot equipment containing fluids 140 degrees Fahrenheit or less, do not insulate flanges and unions, but bevel and seal ends of insulation.
 6. For hot equipment containing fluids over 140 degrees Fahrenheit, insulate flanges and unions with removable sections and jackets.
- E. Finish insulation at supports, protrusions, and interruptions.
- F. For equipment in mechanical equipment rooms or in finished spaces, finish with aluminum jacket.
- G. Do not insulate over nameplate or ASME stamps; bevel and seal insulation around such.
- H. General.
1. Apply insulation with edges tightly butted.
 - a. Joints staggered and secured in place by steel bands.
 - b. Where necessary weld on suitable anchors.
 2. Seal with 520, adhesive.

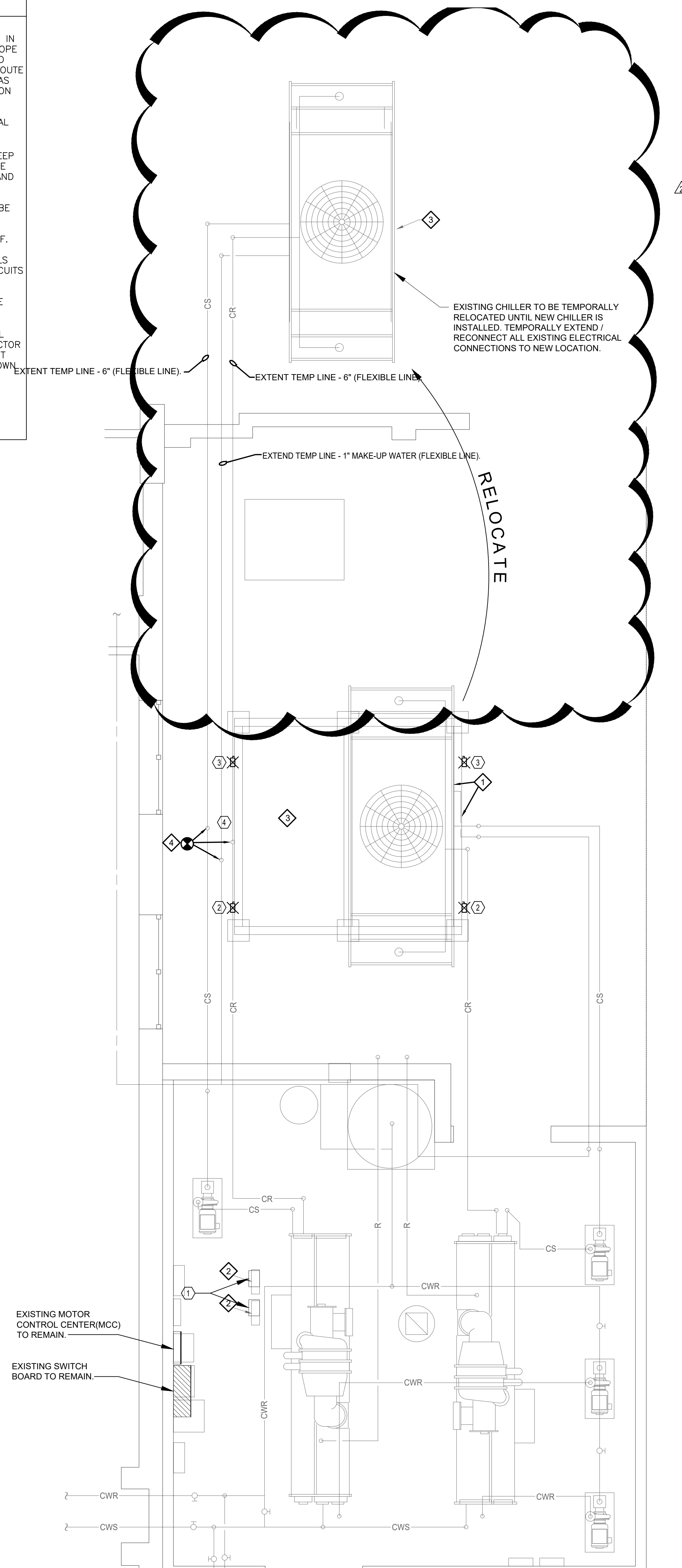
3.5 FIELD QUALITY CONTROL

- A. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship.
- B. All vapor barriers shall be continuous; tears, holes, staples, etc. shall be coated with vapor barrier mastic and patch with facing or tape.

END OF SECTION 230719

DEMOLITION NOTES

1. THE ELECTRICAL DEMOLITION DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE PROVIDED TO CONVEY THE GENERAL SCOPE OF WORK. ALL EXISTING DEVICES SHALL BE FIELD VERIFIED PRIOR TO BEGINNING WORK OR SUBMITTING PRICES. REROUTE CIRCUITRY OR RE-FEED EXISTING EQUIPMENT TO REMAIN AS REQUIRED TO FACILITATE THE COMPLETION OF ALL WORK ON THIS PROJECT.
2. THE OWNER SHALL BE GIVEN THE FIRST RIGHT OF REFUSAL FOR ALL EQUIPMENT BEING DEMOLISHED (FIXTURES, GEAR, DISCONNECTS, MOTOR STARTERS, ETC.). THE CONTRACTOR SHALL STORE EQUIPMENT THAT THE OWNER ELECTS TO KEEP AT THE LOCATION ON THE SITE TO BE DESIGNATED BY THE OWNER. ALL OTHER EQUIPMENT SHALL BE DEMOLISHED AND PROPERLY DISPOSED OF BY THE CONTRACTOR.
3. ALL EXISTING CIRCUITS IN THE RENOVATED AREAS SHALL BE TRACED BY THE ELECTRICAL CONTRACTOR AND MARKED ACCORDINGLY BEFORE BEGINNING WORK. ALL UNUSED BREAKERS SHALL BE LABELED AS SPARE AND TURNED OFF.
4. PROVIDE NEW TYPED CIRCUIT DIRECTORIES FOR ALL PANELS FEEDING DEVICES IN RENOVATED AREAS. INCLUDE ALL CIRCUITS CONTAINED IN THESE PANELS ON THE DIRECTORIES.
5. ALL EXISTING LIGHT FIXTURES IN HATCHED AREA SHALL BE EXISTING TO REMAIN (ETR) UNLESS OTHERWISE NOTED. EXISTING CIRCUITRY SHALL REMAIN AND MODIFIED TO ACCOMMODATE OCCUPANCY SENSORS AND AUTOMATIC WALL SWITCHES AS SHOWN ON THE RENOVATION PLAN. CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL WIRING AND CONDUIT REQUIRED TO ADD NEW DEVICES WHETHER EXPLICITLY SHOWN OR NOT.

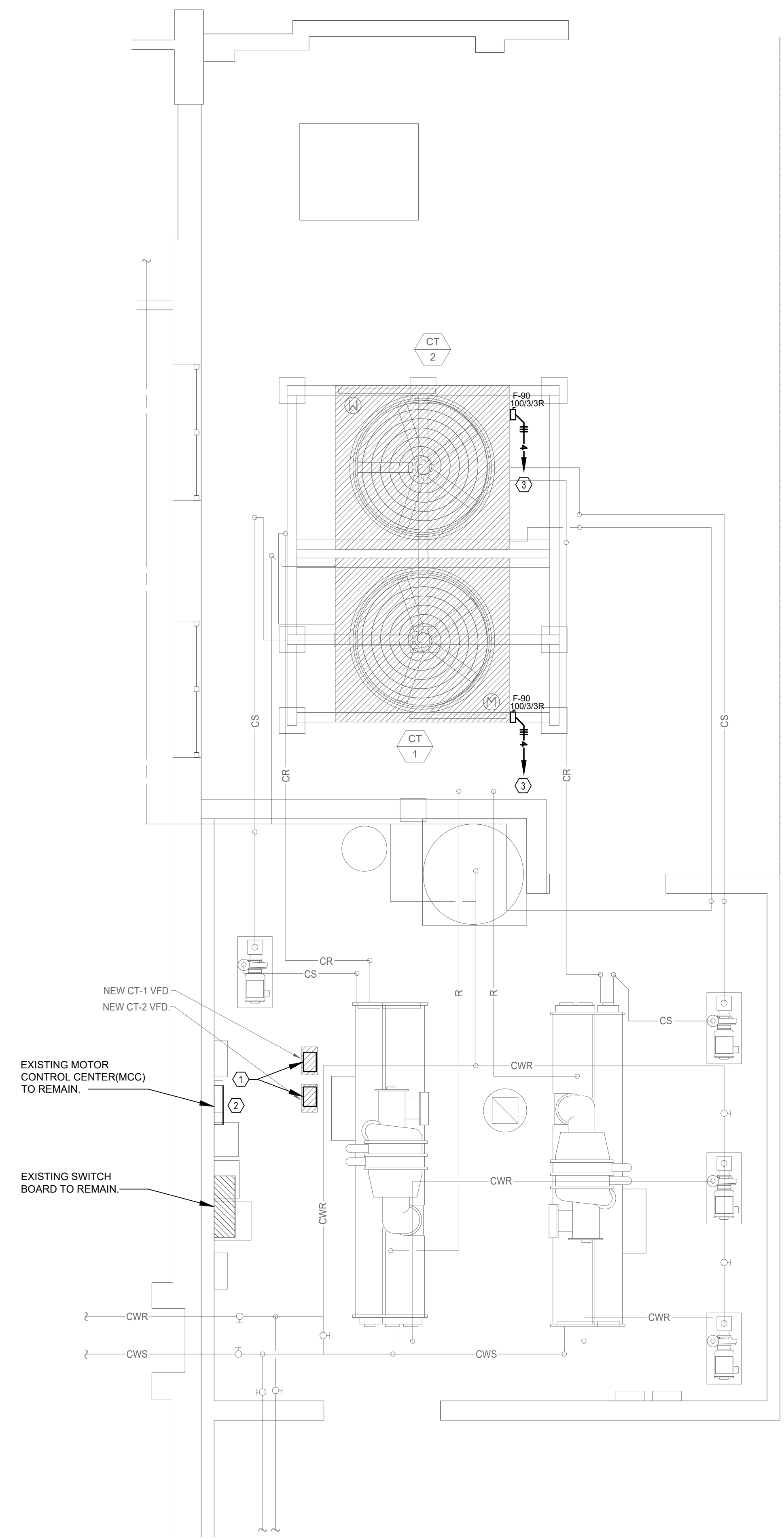


1
E-100
FOREST HALL - ELECTRICAL DEMOLITION PLAN
Scale: 1/4" = 1'-0"

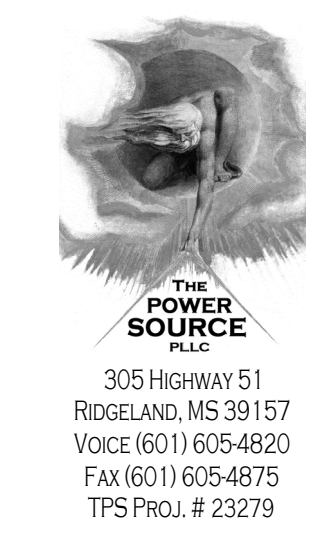
Mark	Description
①	EXISTING VFD TO BE REPLACED. SEE 1/E-201 FOR NEW VFD INFO.
②	DEMOLISH BASIN HEATERS CIRCUITRY.
③	DEMOLISH COOLING TOWER FAN DISCONNECT AND CIRCUITRY. SEE 1/E-201 FOR NEW DISCONNECT SIZE AND CIRCUITRY.
④	DEMOLISH ELECTRIC VALVE CIRCUITRY.

RENOVATION KEYED NOTES

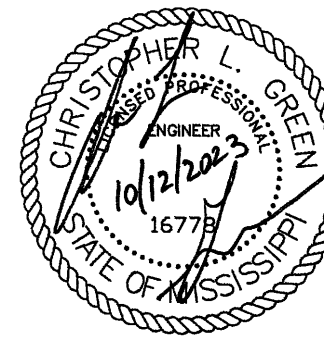
Mark	Description
①	NEW VFD SUPPLIED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
②	REPLACE EXISTING COOLING TOWER BREAKERS WITH A NEW 900.
③	ROUTE NEW CIRCUITRY THROUGH NEW VFD TO THE EXISTING MOTOR CONTROL CENTER(MCC).



2
E-100
FOREST HALL - ELECTRICAL RENOVATION PLAN
Scale: 1/4" = 1'-0"



305 Highway 51
ROSELAND, MS 39157
VOICE: (601) 605-4820
FAX: (601) 605-4875
TFS PROJ. # 23279



350 EDGEWOOD TERRACE DRIVE
JACKSON, MS 39206
PHONE: (601) 362-3552
FAX: (601) 366-6438

ELECTRICAL ENGINEER
THE POWER SOURCE, PLLC
945 MADISON AVE.
MADISON, MS 39110
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PROJECT:

IHL# 208-358
COOLING TOWER UPGRADES FY24
UNIVERSITY OF SOUTHERN MISSISSIPPI
HATTIESBURG, MISSISSIPPI

PROJECT NUMBER: 23-119
DATE: 10/12/2023
DRAWN BY: HBS
CHECKED BY: CLG
REV: 0
1/2 ADDENDUM #2 11-13-2023
2
3

SEAL

SHEET TITLE:

FOREST HALL TOWER - ELECTRICAL RENOVATION PLAN

SHEET NUMBER OF

E-100