BUENA VISTA ELEMENTARY

CHILLER NO. 2 REPLACEMENT

310 S. BATESVILLE ROAD
Greer, South Carolina

DESIGN TEAM

OWNER

GREENVILLE COUNTY SCHOOL DISTRICT
301 E. CAMPERDOWN WAY
GREENVILLE, SC 29601 (864) 355-3100
BUDDY GILLENTINE

MECHANICAL ENGINEER

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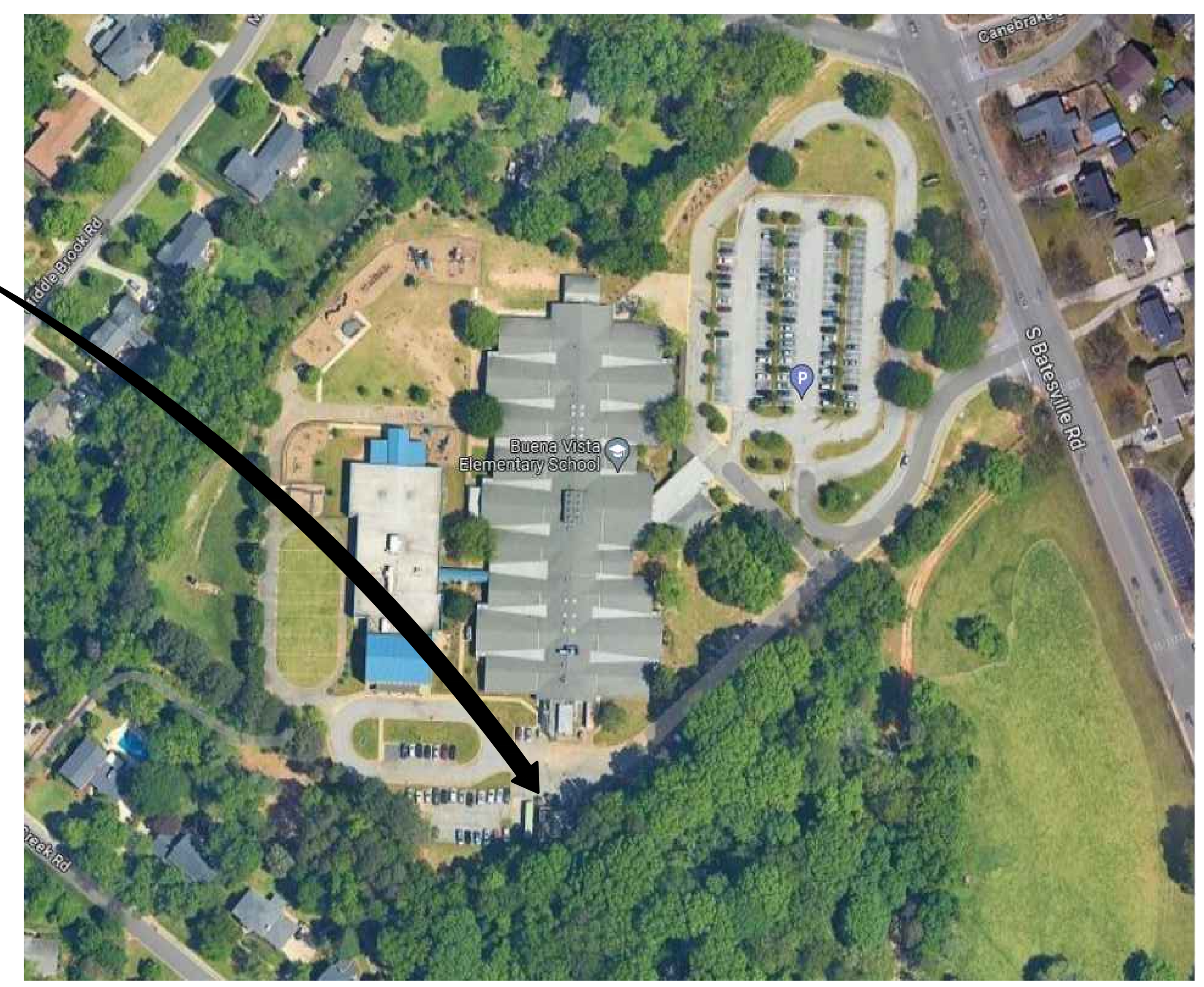
DON BURDETTE, PE

BUENA VISTA ELEMENTARY CHILLER LOCATION



VICINITY MAP

INDEX OF DRAWINGS

APPLICABLE CODES:
International Building Code (IBC), 2021 Edition
International Existing Building Code (IEBC), 2021 Edition
International Fire Code (IFC), 2021 Edition
International Energy Conservation Code (IECC), 2009 Edition
International Fuel Gas Code (IFGC), 2021 Edition
International Mechanical Code (IMC) 2021 Edition
National Electrical Code, NFPA 70, 2020 Edition

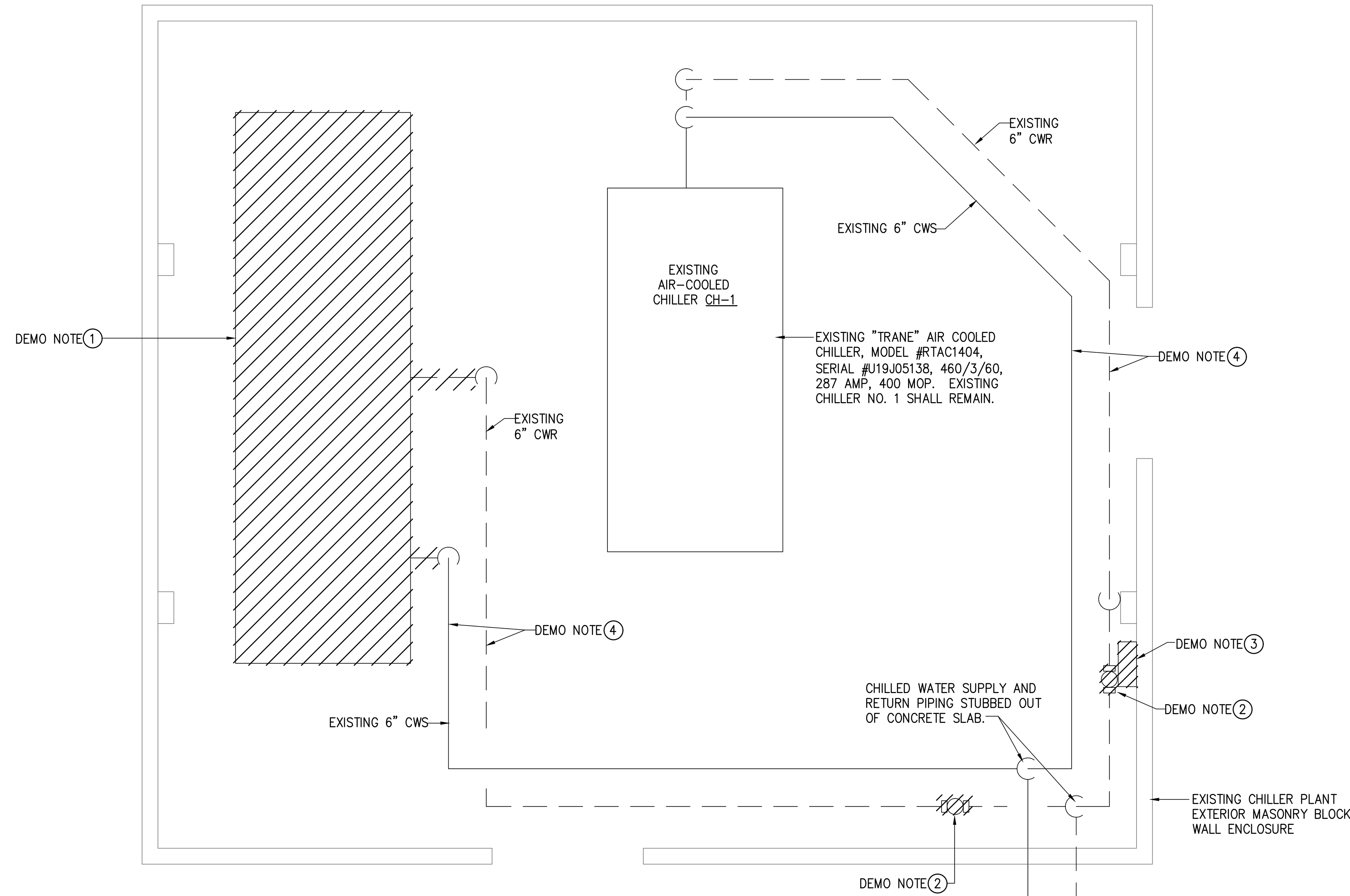
REVISIONS

NO.	DATE	BY	DESCRIPTION
1	5/22/24	JCP	CONSTRUCTION DOCUMENTS

PERITUS

BUENA VISTA ELEMENTARY CHILLER REPLACEMENT – GREER, SOUTH CAROLINA

DESIGN / DRAWN: JCP / LDF
CHECKED: JCP
DATE: 5/22/24
JOB NO.
SHEET: T-1
1 OF 1 SHEETS



MECHANICAL DEMOLITION PLAN

SCALE: ¼" = 1'-0"

HATCHED AREA INDICATES ITEMS TO BE REMOVED. SEE DEMOLITION NOTES FOR DESCRIPTION.

DEMOLITION NOTES:

1. REMOVE EXISTING "TRANE" AIR COOLED CHILLER, MODEL #RTAA2154, SERIAL #U99B06218, 460/3/60, 424 MCA, 500 MOP. TAG: CHILLER NO. 2
   EXISTING CHILLER NAMEPLATE INFORMATION:
   225 lbs. R-22 CIRCUIT #1
   225 lbs. R-22 CIRCUIT #2
   8 GALLONS OF OIL-15 CIRCUIT #1
   8 GALLONS OF OIL-15 CIRCUIT #2

   CHILLER SHALL BE PROPERLY EVACUATED OF REFRIGERANT AND OIL PRIOR TO BEING REMOVED. CONTRACTOR SHALL PROVIDE RECORDS OF RECOVERY AND DISPOSAL AND HAND OVER TO OWNER.

2. REMOVE EXISTING IN-LINE CHILLER PUMP, 5"x5" SIZE, 7.5 HP MOTOR ALONG WITH TRIPLE DUTY VALVE AND ISOLATION VALVES. SEE NEW WORK PLAN FOR REPLACEMENT PUMP REQUIREMENTS AT SAME LOCATION.

3. REMOVE EXISTING CHILLER PUMP VARIABLE FREQUENCY DRIVE, 7.5 HP WITH NEMA 3R ENCLOSURE.

4. REMOVE EXISTING CHILLED WATER SUPPLY AND RETURN PIPING INSULATION INCLUDING WEATHER PROOF CLADDING. PIPING SHALL REMAIN AND SHALL BE PREPARED FOR NEW PIPE INSULATION AND HEAT TRACING.

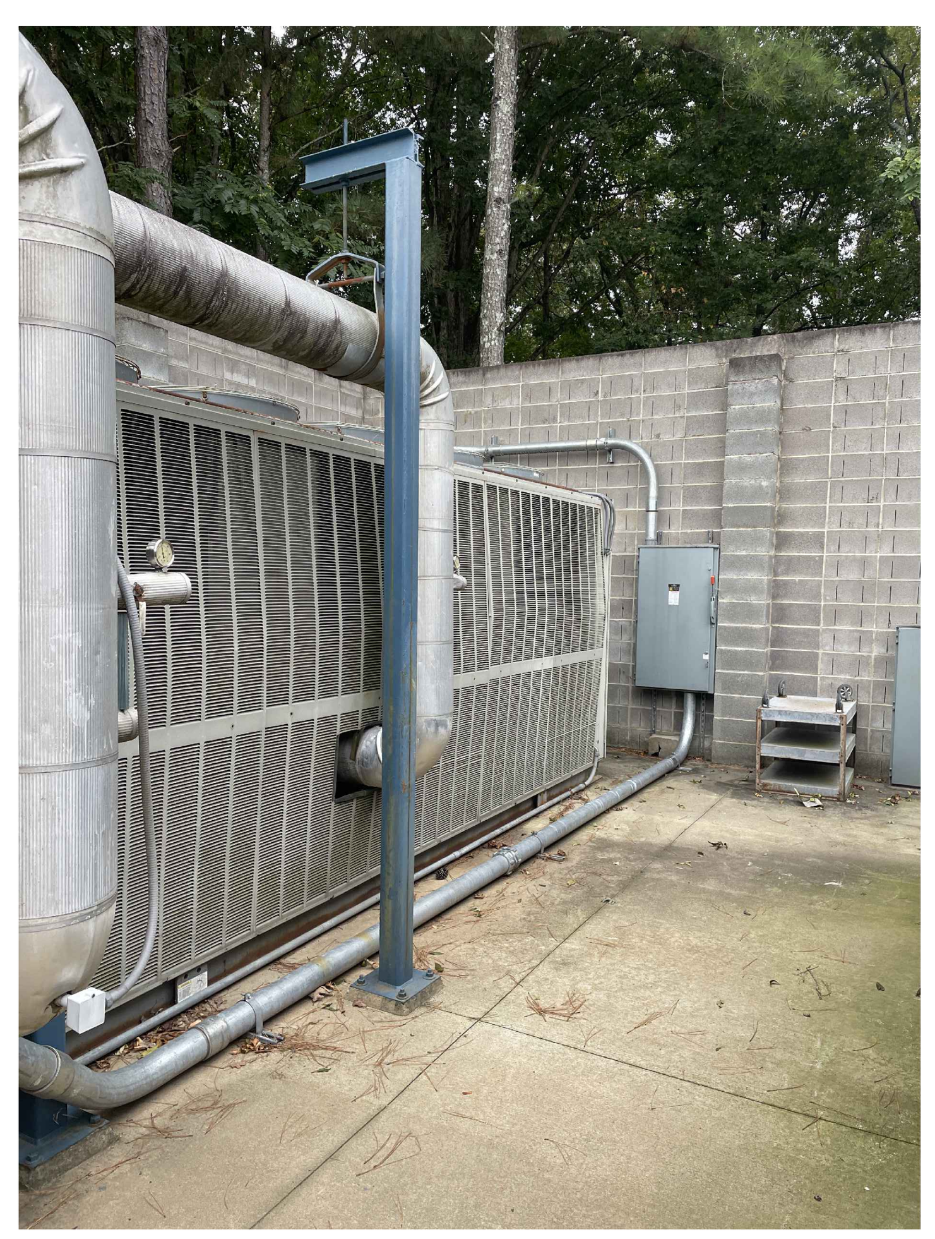
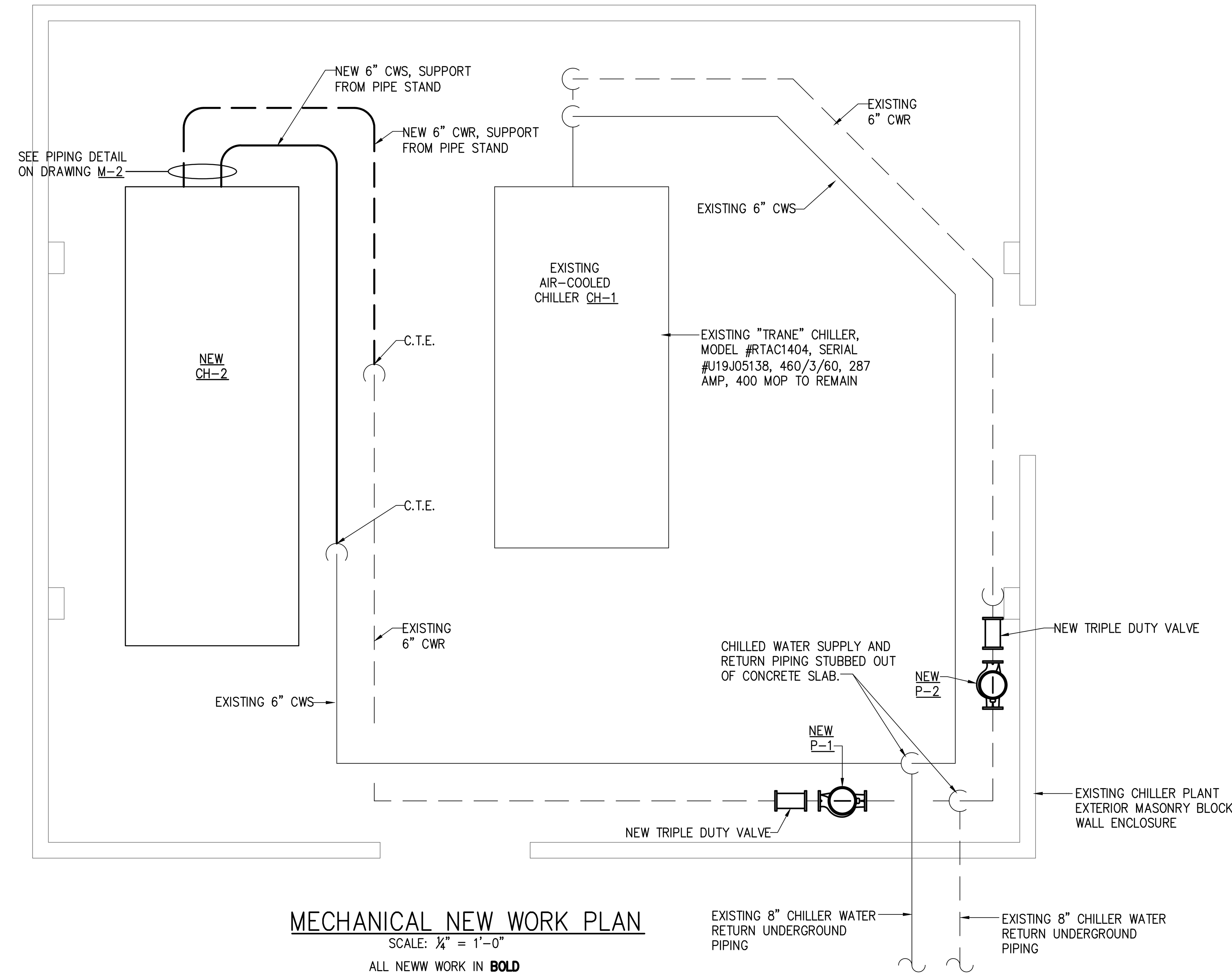


PHOTO AT EXISTING CHILLER NO. 2

NO SCALE



MECHANICAL NEW WORK PLAN

SCALE: ¼" = 1'-0"

ALL NEWW WORK IN **BOLD**

NOTES:

1. REFER TO PUMP AND PIPING INSTALLATION DETAIL ON DRAWING M-2 FOR INSTALLATION OF NEW INCLINE PUMPS P-1 AND P-2.
2. NEW AND EXISTING CHILLED WATER SUPPLY AND RETURN PIPING SHALL RECEIVE NEW INSULATION, WEATHER PROOF CLADDING AND ELECTRIC HEAT TRACING. REFER TO SPECIFICATIONS ON DRAWING M-2.

NO.	DATE	BY	DESCRIPTION
1	5/22/24	JCP	CONSTRUCTION DOCUMENTS

REVISIONS

PERITUS — SKILLED IN THE ART OF ENGINEERING

PERITUS JOB # 23101

BUENA VISTA ELEMENTARY CHILLER REPLACEMENT
–
GREER, SOUTH CAROLINA

DESIGN / DRAWN: JCP / LDF

CHECKED: JCP

DATE: 5/22/24

JOB NO.

SHEET M-1

1 OF 2 SHEETS

AIR COOLED VARIABLE SPEED HELICAL ROTARY COMPRESSOR WATER CHILLER SCHEDULE (OWNER PRE-PURCHASED CONTRACTOR INSTALLED)

UNIT No.	"TRANE" MODEL No.	COOLING CAPACITY (TONS)	MAX. KW	MINIMUM FULL LOAD EFFICIENCY (AHRI)	MINIMUM PART LOAD EFFICIENCY (IPLV, AHRI)	VOLTAGE	EVAPORATOR HEAT TRANSFER PEFORMANCE					ELECTRICAL		OPERATING WEIGHT (LB)	REMARKS
							EWT (F)	LWT (F)	G.P.M.	MAX P.D. (FT wg)	FOULING FACTOR	M.C.A.	M.O.P.		
CH–2	ACRC1505EU	145.8	152.29	11.489 EER	20.136 EER	460/3/60	55	45	348	13.3	0.0001	286.73	400	12,200	NOTES 1–12

NOTES:

1. EXTENDED FIVE (5) YEAR PARTS, LABOR AND REFRIGERANT WARRANTY.
2. R–513a REFRIGERANT – 340 lbs. (170 lbs/CIRCUIT).
3. FACTORY START–UP SERVICE.
4. MINIMUM TWO (2) INDEPENDENT REFRIGERANT CIRCUITS, 1 COMPRESSOR PER CIRCUIT.
5. SINGLE POINT POWER CONNECTION FOR INCOMING 3–PHASE 460V POWER.
6. FULL LOAD CAPACITY & EFFICIENCY BASED UPON 95° F. DRY BULB AMBIENT TEMPERATURE ENTERING CONDENSER.
7. FACTORY INSTALLED INSULATION ON ALL COLD SURFACES.
8. AMBIENT OPERATION 0° F. TO 105° F.
9. ECM VARIABLE SPEED CONDENSER FAN MOTORS.
10. FULL HEIGHT LOUVERED PANELS COVERING CONDENSER AND COMPRESSOR AREA.
11. FACTORY INSTALLED LONTALK COMMUNICATION INTERFACE.
12. ELASTOMERIC RUBBER ISOLATORS.

PUMP SCHEDULE

PUMP No.	B & G MODEL No.	G.P.M. EA.	HEAD FT.	H.P. EA.	VOLTAGE	TRIPLE DUTY VALVE		REMARKS
						MODEL	PRESS. DRP.	
P–1	E–80 5" x 5" x 6.5"	349	35	7.5	460/3/60	3DS–5B	3.5 FT.	NOTES 1–4, EXISTING CH–1
P–2	E–80 5" x 5" x 6.5"	349	35	7.5	460/3/60	3DS–5B	3.5 FT.	NOTES 1–4, NEW CH–2

NOTES:

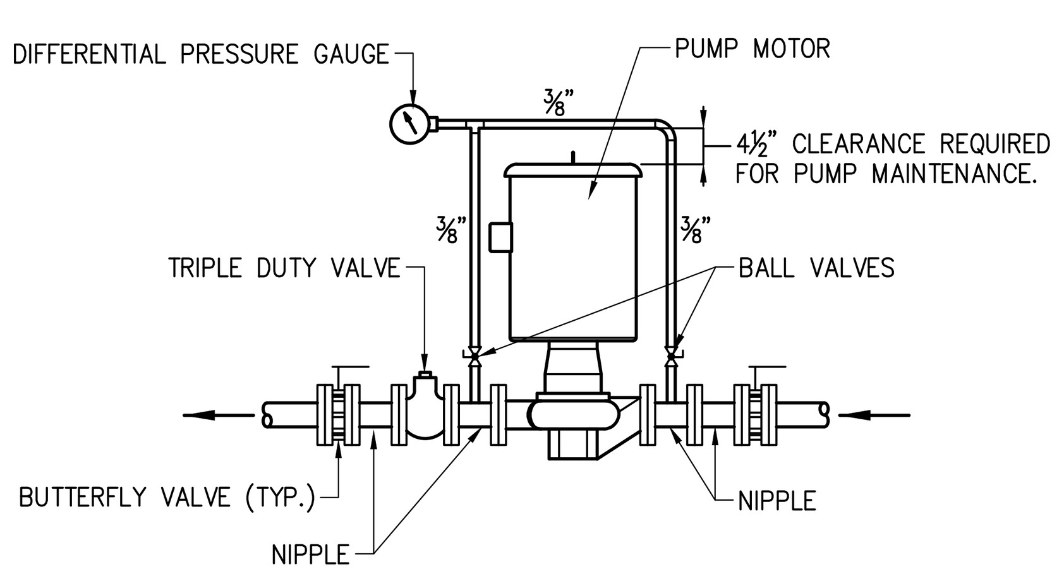
1. CLOSE COUPLED INLINE PUMP, CAST IRON VOLUTE CONSTRUCTION, AND PREMIUM EFFICIENCY TEFC 1750 RPM MOTOR, SUITABLE FOR OUTDOOR INSTALLATION.
2. P–1 OPERATES IN PARALLEL PIPING ARRANGEMENT WITH P–2.
3. PUMP SELECTION PROVIDE FOR SINGLE PUMP OPERATION ON PUMP CURVE.
4. REMOTE STARTERS BY ELECTRICAL.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
——CWS——	CHILLED WATER SUPPLY PIPING
– – –CWR– – –	CHILLED WATER RETURN PIPING
	GATE VALVE
	BALL VALVE
	GLOBE VALVE
	CHECK VALVE
	STRAINER ASSEMBLY
	BUTTERFLY VALVE (LUG BODY)
	REDUCER
	PRESSURE GAUGE
	THERMOMETER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
C.T.E.	CONNECT TO EXISTING

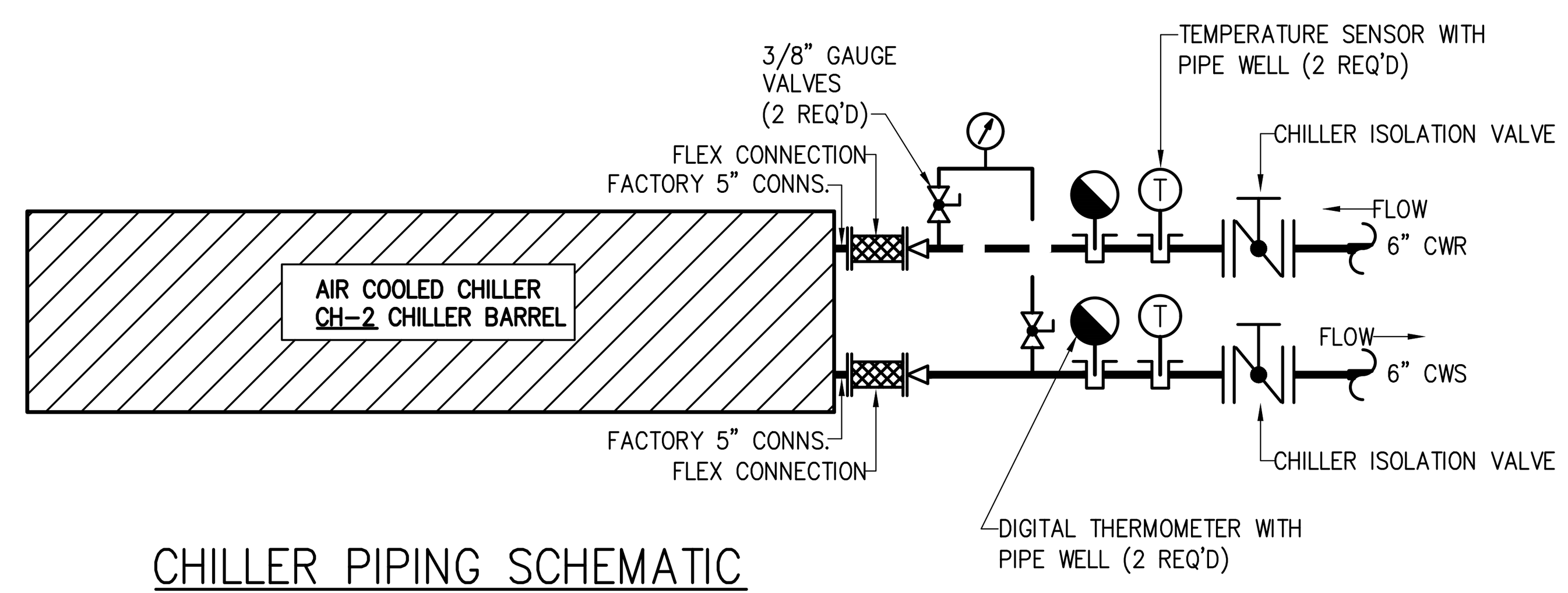
MECHANICAL GENERAL NOTES

1. ALL SCHEDULES SHOWN ARE THE PURPOSE OF AIDING THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORRECT TOTALS.
2. CO–ORDINATE INSTALLATION WITH ALL OTHER TRADES, INCLUDING ELECTRICAL.
3. REFER TO ELECTRICAL DRAWINGS FOR POWER CONNECTION POINTS.
4. ALL PIPING INSULATION SHALL COMPLY WITH SECTION OF THE INTERNATIONAL ENERGY CONSERVATION CODE. 2021 EDITION.
5. ALL ELECTRICALLY POWERED EQUIPMENT SHALL BE LISTED AND LABELED PER NATIONAL ELECTRICAL CODE, AND INTERNATIONAL MECHANICAL CODE, 2021 EDITION, CHAPTER 3.
6. ALL EQUIPMENT SHALL BE ACCESSIBLE PER INTERNATIONAL MECHANICAL CODE 2021 EDITION, CHAPTER 3.
7. ALL PIPING ARRANGEMENT AND ROUTING AS SHOWN IS DIAGRAMMATIC AND MAY REQUIRE ALTERATIONS DIFFERENT FROM THAT SHOWN IN ORDER TO ACCOMMODATE STRUCTURE FEATURES. CONTRACTOR SHALL FIELD VERIFY AND MAKE ALTERATIONS OR REVISIONS AS REQUIRED.
8. CONTRACTOR SHALL COORDINATE DIRECTLY WITH CHILLER MANUFACTURER TO SCHEDULE THE RECEIVING AND OFF–LOADING OF NEW CHILLER. COORDINATE EXACT OFFLOADING LOCATION WITH OWNER. CONTRACTOR SHALL PROVIDE FOR THE RIGGING, TRANSPORT, AND PLACEMENT OF NEW CHILLER ON TO EXISTING EQUIPMENT PAD WHEN WORK COMMENCES.



TYPICAL IN–LINE PUMP PIPING DIAGRAM

NO SCALE



CHILLER PIPING SCHEMATIC

NO SCALE

NOTE: CONNECTION ORIENTATION AT CHILLER IS SIDE–BY–SIDE, NOT OVER/UNDER.

MECHANICAL SPECIFICATIONS

SYSTEMS INSULATION DESCRIPTION:

A. IN GENERAL, THE WORK TO INCLUDE INSULATING ALL NEW PIPING SYSTEMS AS DESCRIBED HEREAFTER.

B. THE PIPING SYSTEMS TO BE INSULATED INCLUDE:
   1. CHILLED WATER PIPING.

C. MANUFACTURERS: PROVIDE PIPING INSULATION PRODUCTS PRODUCED BY ONE OF THE FOLLOWING FOR EACH TYPE AND TEMPERATURE RANGE OF INSULATION:
   1. CERTAINTEED CORP.
   2. JOHNS–MANVILLE CORP.
   3. OWENS–CORNING FIBERGLAS (OCF) CORP.
   4. PITTSBURG CORNING CORP.

D. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE PIPING INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME–SPREAD RATING OF 25 OR LESS AND A SMOKE–DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD.

E. CHILLED WATER PIPING: IN GENERAL, THE WORK SHALL INCLUDE INSULATING ALL NEW AND EXISTING CHILLED WATER SUPPLY AND RETURN PIPING. PIPE SHALL BE INSULATED WITH 2" THICK ONE–PIECE MOLDED POLYISOCYANURATE (POLYISO) CELLULAR PLASTIC INSULATION EQUAL TO "JOHNS MANVILLE" "TRYMER 25–50" WITH SARAN JACKETING AND WITH PROTECTIVE ALUMINUM JACKETING. 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 1½" 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.

F. ALL NEW AND EXISTING PIPING EXPOSED OUTDOORS ABOVE GROUND AT CHILLER ENCLOSURE SHALL HAVE ELECTRIC HEAT TRACE UNDER INSULATION, EQUAL TO "RAYCHEM" MODEL XL–TRACE, SELF REGULATING, AND RATED AT 6 WATTS PER LINEAR FOOT. HEATING CABLE SHALL BE UL LISTED AND GROUND FAULT PROTECTED.

F. INSTALLATION OF INSULATION:
   1. GENERAL: INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT THE INSULATION SERVES ITS INTENDED PURPOSE.
   2. INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO TESTING AND ACCEPTANCE OF TESTS.
   3. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES. INSULATE EACH CONTINUOUS RUN OF PIPING WITH FULL–LENGTH UNITS OF INSULATION, WITH A SINGLE CUT PIECE TO COMPLETE THE RUN. DO NOT USE CUT PIECES OR SCRAPS ABUTTING EACH OTHER.
   4. CLEAN AND DRY PIPE SURFACES PRIOR TO INSULATING. BUTT INSULATION JOINTS FIRMLY TOGETHER TO ENSURE A COMPLETE AND TIGHT FIT OVER SURFACES TO BE COVERED.
   5. MAINTAIN INTEGRITY OF VAPOR–BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE.
   6. COVER FITTINGS AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION) EXCEPT WHERE A SPECIFIC FORM OR TYPE IS INDICATED.
   7. ALL INSULATION WORK SHALL BE DONE BY MECHANICS SKILLED IN ITS APPLICATION AND REGULARLY EMPLOYED BY THE INSULATION CONTRACTOR WHO SHALL BE A SUB–CONTRACTOR TO THIS CONTRACTOR. SPECIAL CARE SHALL BE GIVEN TO THE COVERING OF IRREGULAR FITTINGS IN ORDER TO OBTAIN AN EVEN SURFACE RESULTING IN A NEAT AND WORKMANLIKE APPEARANCE.

PIPING MATERIALS:

A. CHILLED WATER PIPING: BLACK STEEL PIPE SCHEDULE 40: ASTM A53, A106, OR A120; EXCEPT COMPLY WITH ASTM A53 OR A106 WHERE CLOSE COILING OR BENDING IS REQUIRED. FITTINGS FOR BLACK STEEL PIPE SHALL BE:
   1. SCREWED FITTINGS – 150 LB. GRAY CAST IRON CONFORMING TO ANSI NO. B16.4.
   2. FLANGED FITTINGS – 150 LB. GRAY CAST IRON CONFORMING TO ASTM NO. A181.
   3. UNIONS – 300 LB. MALLEABLE IRON GROUND JOINTS WITH BRASS–TO–IRON SEATS CONFORMING TO ANSI NO. B16.3.
   4. FLANGES – 150 LB. STEEL WELDING NECK WITH RAISED FACE CONFORMING TO ASTM NO. A181, EXCEPT FOR MATCHING FLANGES REQUIRED AT EQUIPMENT AND VALVES.
   5. WELDING FITTINGS, INCLUDING ELBOWS, REDUCING ELLS, CAPS, STRAIGHT TEES, REDUCING TEES, STRAIGHT AND REDUCING LATERALS AND REDUCERS SHALL BE "STANDARD WEIGHT", GRADE B FITTINGS, MEETING ASTM A234, AS PRODUCED BY CRANE, TUBE–TURNS, OR TAYLOR FORGE. FURNISH LONG RADIUS 90 DEGREE ELBOWS. COMPLETE ASTM SPECIFICATION INFORMATION SHALL BE STAMPED ON EACH FITTING.
   6. STANDARD WEIGHT WELDOLETS OR THREADOLETS MAY BE USED IN LIEU OF WELDING TEES ONLY WHERE THE BRANCH LINE IS AT LEAST TWO PIPE SIZES SMALLER THAN MAIN. UNDER NO CIRCUMSTANCES WILL IT BE PERMISSIBLE FOR ONE PIPE LINE TO BE WELDED DIRECTLY INTO ANOTHER, REGARDLESS OF SIZE.
   7. MANUFACTURE – WELDING FITTINGS AND FLANGES WHICH HAVE BEEN MACHINED, REMARKED, PAINTED, OR OTHERWISE PRODUCED DOMESTICALLY. NON–DOMESTIC FORGINGS WILL NOT BE ACCEPTABLE. FITTINGS AND FLANGES SHALL HAVE THE MANUFACTURER'S TRADEMARK PERMANENTLY & IDENTIFIED IN ACCORDANCE WITH MSS SP–25. WELD PIPE JOINTS IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE. BLACK STEEL PIPE AND FITTINGS 2–1/2" AND LARGER, EXCEPT CONNECTIONS TO EQUIPMENT, SHALL HAVE WELDED OR FLANGED JOINTS. WELDED FITTINGS SHALL BE USED IN ALL LINES 2–1/2" AND ABOVE.
   8. GAUGES AND THERMOMETERS: FURNISH AND INSTALL GAUGES WITH 4–1/2" DIALS. PRESSURE GAUGES SHALL SIMILAR TO "WEKSLER" MODEL BA14–2–PG. THERMOMETERS SHALL BE SIMILAR TO "WEKSLER" MODEL A935A ADJUSTABLE ANGLE THERMOMETER. 0–120° F RANGE.

TEST AND BALANCE (OWNER FURNISHED):

A. INDEPENDENT NEBB CERTIFIED TEST AND BALANCE AGENCY TO PERFORM HVAC WATER BALANCE OF THE FOLLOWING SYSTEMS:
   1. EXISTING CHILLER CH–1 AND NEW PUMP P–1 DESIGN FLOWRATE, NEW CHILLER CH–2 AND NEW PUMP P–2 DESIGN FLOWRATE.

B. THIS SERVICE SHALL BE FURNISHED BY THE OWNER. CONTRACTOR SHALL COORDINATE THE WORK REQUIRED BY THE TEST AND BALANCE CONTRACTOR.

CONTROLS:

A. CONTROLS WORK SHALL BE PERFORMED BY "TRANE TECHNOLOGIES" CONTROL DEPARTMENT: CONTACT IS JOE HOLMAN AT 864–672–6136. CONTROLS SUBCONTRACTOR SHALL WORK AS A SUB–CONTRACTOR TO THE PRIME CONTRACTOR ON THIS PROJECT.

B. DEMOLITION: TRANE SHALL REMOVE EXISTING CONTROLS DEVICES AND INTERLOCK WIRING ASSOCIATED WITH THE REMOVAL OF EXISTING CHILLER CH–2, INLINE CHILLER PUMPS DEDICATED TO EXISTING CH–2 AND CH–1, AS WELL AS OUTDOOR VARIABLE FREQUENCY DRIVE (VFD) ASSOCIATED WITH INLINE PUMP SERVING CH–1.

C. NEW WORK: NEW CHILLER CH–2 SHALL CONNECT TO EXISTING "TRANE" BUILDING AUTOMATION SYSTEM (BAS) BY WAY OF FACTORY INSTALLED COMMUNICATION INTERFACES ON THE CHILLER. FOR NEW CHILLER CH–2 INSTALLATION AND EXISTING CHILLER CH–1, THE CONTROLS SUBCONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED NEW INLINE PUMP INTERLOCK WIRING, AND ITS ASSOCIATED STARTERS, PROOF OF FLOW WIRING, AND ALL REQUIRED SAFETY INTERLOCKS REQUIRED OF THE CHILLER. NEW CHILLER INLINE PUMPS P–1 AND P–2 SHALL BE CONTROLLED AS REQUIRED BY NEW AND EXISTING CHILLER INSTALLATION INSTRUCTIONS. PUMP STATUS SHALL BE MONITORED BY THE BAS SYSTEM. EXISTING BUILDING OPERATOR INTERFACE AND GRAPHICS SHALL BE UPDATED FOR NEW CHILLER AND PUMP INSTALLATION INCLUDED IN THIS PROJECT.

NO.	DATE	BY	DESCRIPTION
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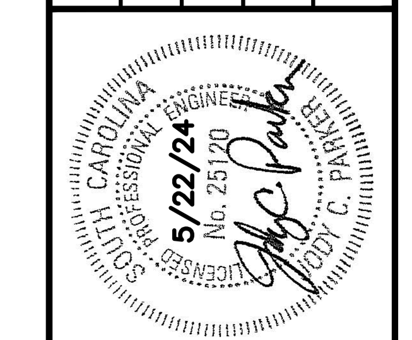
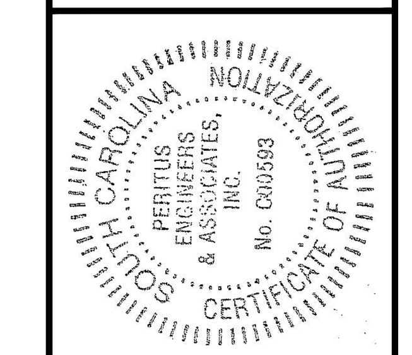
REVISIONS





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PERITUS JOB # 231101

BUENA VISTA ELEMENTARY CHILLER REPLACEMENT – GREER, SOUTH CAROLINA

DESIGN / DRAWN: JCP / LDF

CHECKED: JCP

DATE: 5/22/24

JOB NO.

SHEET: M–2

2 OF 2 SHEETS

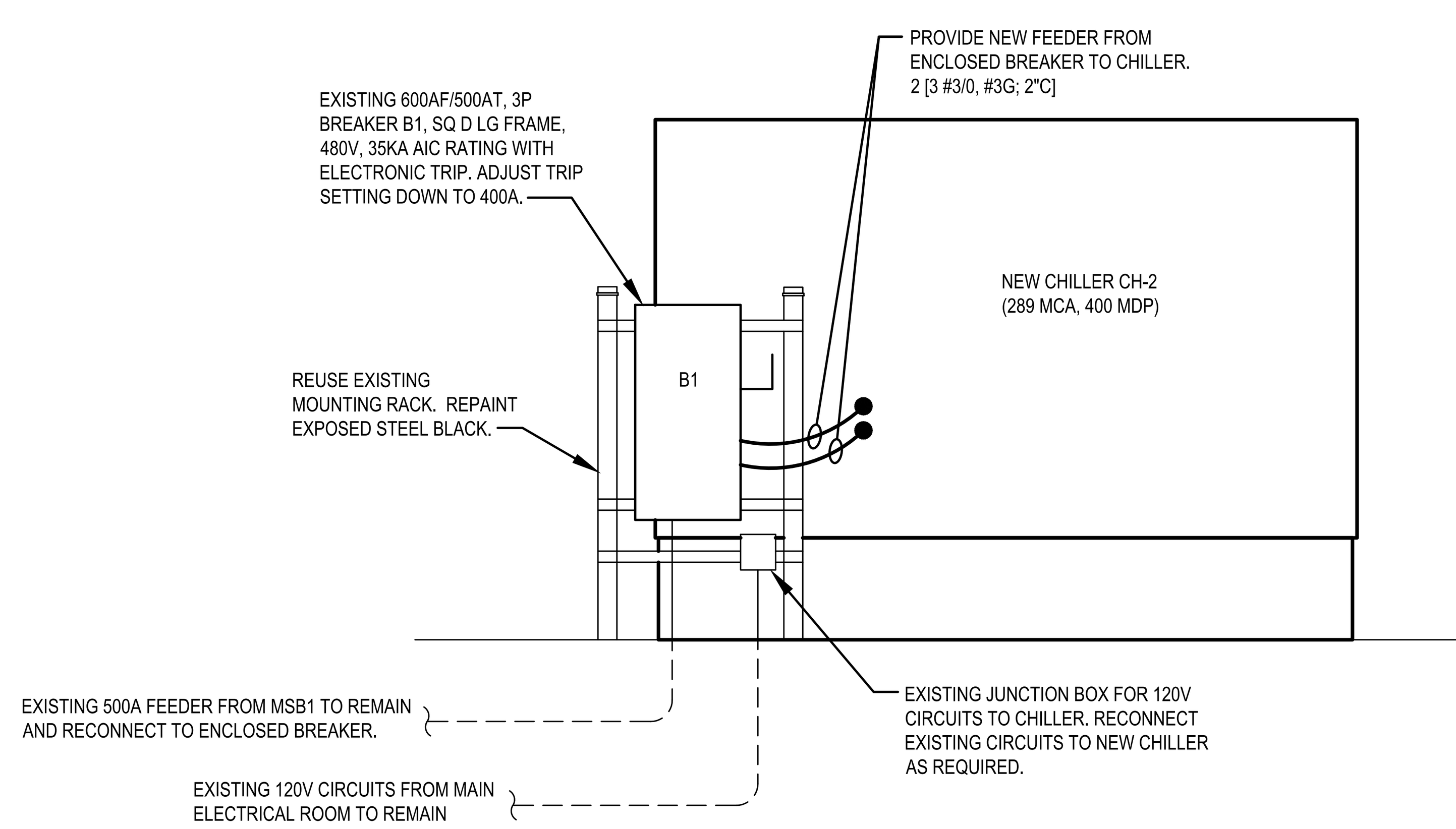
SYMBOL	DESCRIPTION
	CIRCUITS AND CONDUIT
A-1,3	HOME RUN TO LIGHTING/SERVICE PANEL. HASH MARKS, WHEN SHOWN, INDICATE NUMBERS OF CONDUCTORS. "/" INDICATES HOT WIRE, "N" INDICATES NEUTRAL CONDUCTOR," P" INDICATES GROUND CONDUCTOR. HOME RUN NOTE INDICATES PANEL NAME AND CIRCUIT NAME OR FEEDER TAG. CONDUCTORS 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.
	EQUIPMENT
	LIGHTING OR SERVICE PANEL, SURFACE MOUNTED.(208V)
	LIGHTING OR SERVICE PANEL, SURFACE MOUNTED.(480V)
T	DRY TYPE TRANSFORMER
30/20/3P/3R	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
NEMA 1 30/20/3P	COMBINATION STARTER, NEMA SIZE NOTED, WITH FUSED DISCONNECT SIZE SHOWN. STARTER TO BE FVNR, UNLESS NOTED OTHERWISE, WITH HOA SWITCH AND 1-N.O., 1-N.C. AUXILLARY CONTACTS. SQ. D OR EQUAL.
B	ENCLOSED BREAKER
	WIRING DEVICES
	STRAIGHT BLADE DEVICE SYMBOLS
	EXISTING 20A, 125V, 2P, 3W, NEMA 5-20R, DUPLEX RECEPTACLE.

ABBREVIATIONS:

AFG	ABOVE FINISHED GRADE	MSB	MAIN SWITCHBOARD
CU	COPPER	NTS	NOT TO SCALE
CKT	CIRCUIT	PH	PHASE
EC	ELECTRICAL CONTRACTOR	PNL	PANEL
EMT	ELECTRICAL METALLIC TUBING	PVC	POLYVINYL CHLORIDE CONDUIT
FU	FUSE	RECPT	RECEPTACLE (R.)
FWE	FURNISHED WITH EQUIPMENT	RGS	RIGID GALVANIZED STEEL
IMC	INTERMEDIATE METAL CONDUIT	TYP	TYPICAL
MLO	MAIN LUGS ONLY	UNO	UNLESS NOTED OTHERWISE
MCB	MAIN CIRCUIT BREAKER	UGND	UNDERGROUND
MFR	MANUFACTURER	XFMR	TRANSFORMER
MDP	MAIN DISTRIBUTION PANEL		

ELECTRICAL GENERAL NOTES:

1. 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.
2. CONFORM TO THE NATIONAL ELECTRICAL CODE (2020), IBC (2021), 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.
3. FURNISH AND INSTALL ALL MATERIALS IN A NEAT AND WORKMANLIKE FASHION. ALL MATERIALS SHALL BE NEW, WITH FIRST QUALITY AND UL LABEL.
4. 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.
5. WHERE EXPOSED TO PHYSICAL DAMAGE CONDUITS 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. UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40 WITH TRANSITION TO RIGID GALVANIZED STEEL FOR EXPOSED CONDUITS.
6. PROVIDE GROUNDING FOR ALL EQUIPMENT IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
7. ALL ENCLOSURES SHALL BE OF THE NEMA TYPE WHICH IS SUITABLE FOR THE APPLICATION.
8. SEAL ALL CONDUIT PENETRATIONS TO MATCH RATING OF WALL BEING PENETRATED.
9. 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 OF EQUIPMENT SERVED AS WELL AS SOURCE PANEL AND CIRCUIT NUMBER PER NEC 110. ALL PANELS ARE TO BE PROVIDED WITH TYPEWRITTEN PANEL SCHEDULES.
10. ALL BREAKERS ON CIRCUITS SUPPLYING HVAC EQUIPMENT SHALL BE TYPE HACR BREAKERS.
11. 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.
12. GUARANTEE 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.
13. 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.
14. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED TO MEET SEISMIC REQUIREMENTS OF 2021 IBC.



1 ELECTRICAL RISER
SCALE: NTS

SECTION 260519 - CONDUCTORS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this section shall comply with all applicable requirements of section 260500, general provisions.

1.2 SCOPE

A. This specification covers the requirements for all wire and cable to be used in the installation of the electrical systems for the project, including all power, lighting, control and instrumentation systems.

B. Wire and cable will normally be furnished by the contractor for installation. Drawings will indicate where cable is not to be furnished.

C. All cable is to be "contractor-furnished", the contractor shall submit for approval by the owner any deviations anticipated or proposed with respect to the cable manufacturer, cable type, or specification contained herein.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All wire and cable shall be Underwriters' Laboratories (UL) listed. In addition to other standard labeling, all wire and cable shall be marked UL on the outer surface indicating Underwriters' Laboratories, inc. Certification.

B. Grounding conductors, where insulated, shall be colored solid green. Conductors intended as a neutral shall be colored solid white.

C. For all circuits 600 volt and less, wires and cables shall have code grade, 600 volt type THWN-THHN, 75 degrees c., wet or dry locations, moisture and heat resistant thermoplastic insulation. Insulation thickness shall be per national electrical code, table 310-13.

D. Conductor sizes are expressed in American wire gage (awg) or in circular mils. Conductors shall be annealed copper wire, minimum size #12 awg, except that #14 awg may be used for control. All conductors shall be stranded except that solid conductors may be used for #12 awg lighting and receptacle branch circuits.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Separation of usage. Lighting and power wiring shall be routed in conduits, or other raceways as shown on the drawings. Lighting and power wiring shall not be routed in a common raceway except where shown on drawings. Push-button wiring shall be routed in separate raceways even though related to a particular motor circuit.

B. Pulling. Where mechanical assistance is used for pulling conductors, patented wire pulling compounds having inert qualities that do not harm the wire insulation or covering shall be applied to the conductors as they are pulled into raceways. Interior of all raceways shall be free from grease, filings or foreign matter before conductors are pulled in.

END OF SECTION 260519

SECTION 260539 - ELECTRICAL RACEWAYS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

A. Contractor Furnished. The contractor shall provide all conduit, fittings, and supports required and not otherwise shown on plans as furnished by others.

B. The types of electrical raceways required for the project include the following:

1. Electrical Metallic Tubing
2. Intermediate Metal Conduit
3. Flexible Metal Conduit
4. Liquid-Tight Flexible Metal Conduit
5. Rigid Galvanized Conduit
6. PVC Rigid Conduit

C. The minimum raceway size shall be as indicated on plans. If no indication is given on plans, then conduit shall be minimum 3/4".

D. Product Delivery, Storage, and Handling. Contractor is to provide color-coded end-cap thread protectors and handle conduit and tubing carefully to prevent damage. Store pipe and tubing inside whenever possible. When necessary to store outdoors, elevate well above grade and enclose with durable, watertight wrapping.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. Electrical Metallic Tubing. Galvanized, thin wall tubing, fittings shall be hex-nut, expansion gland type, zinc plated, and U.L. listed as "raintight." No crimp, spring, or set-screw type fittings will be accepted.

B. Intermediate Metal Conduit. Galvanized steel tubing, with zinc coated interior.

C. Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked.

D. Liquid-Tight Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked, double wrapped, with liquid-tight PVC jacket.

E. Rigid Galvanized Conduit. Rigid steel, hot-dipped galvanized conduit.
F. PVC Rigid Conduit: U.L. listed Schedule 40 heavy wall rigid conduit.

G. Conduit, tubing and duct accessories including straps, hangers, expansion and deflection fittings as recommended by conduit, tubing, and duct manufacturers.

PART 3 - EXECUTION

3.1 APPLICATION

A. Electrical Metallic Tubing. Branch circuits run in hollow dry walls and above ceilings. Not to be exposed.

B. Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration and located in a dry, interior location. Flexible conduit is not to exceed 60" in length for any one application and shall be secured at each end and per code.

C. Liquid-tight Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration, and also subjected to one or more of the following conditions: Exterior location; moist or humid atmosphere where condensate can be expected to accumulate; corrosive atmosphere; subjected to water spray; subjected to dripping oil, grease or water. Flexible conduit is not to exceed 60" in length for any one application and shall be secured at each end and per code.

D. Metal Clad Cable Assemblies. Metal Clad Cable Assemblies (Type AC or MC) shall only be installed when allowed on plans. When installed, assemblies shall be installed in a neat and workmanlike manner, secured to structure per NEC, routed parallel and perpendicular to building walls and structure, and grouped together as much as practical.

E. Intermediate Metal Conduit. All conduits of 2" nominal trade size or more and/or where exposed. Not to be stubbed up at floor level.

F. Rigid Galvanized. Where specified on plans for certain underground or exposed runs, or where stubbed up at floor level.

G. Rigid PVC. Where specified on plans for certain underground runs, UL approved Schedule 40 heavy wall rigid PVC conduit shall be used. Not to be stubbed up at floor level. All PVC underground runs shall transition to rigid galvanized before stubbing up through floor slab or grade.

3.2 INSTALLATION

A. Install conduit and tubing in accordance with NEC and National Electrical Contractors Association's "Standard of Installation", and with recognized industry practices. Where NECA and NEC standards differ, use the more stringent requirement.

B. Complete the installation of raceways before starting installation of wires.

C. Wherever possible, install horizontal raceway runs above water and steam piping.

D. Care shall be taken to keep the interior of conduits clean, and each conduit run shall be thoroughly cleaned and dried before any cable is pulled through.

E. Unless indicated otherwise on drawings, all exposed conduits shall be run parallel with or perpendicular to building structural members.

F. Conduits entering sheet metal enclosures shall be made up with double locknut and insulating bushing. Locknut shall be of the type which will bite into the metal of the box.

END OF SECTION 260539

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BEI JOB NO. 23372E

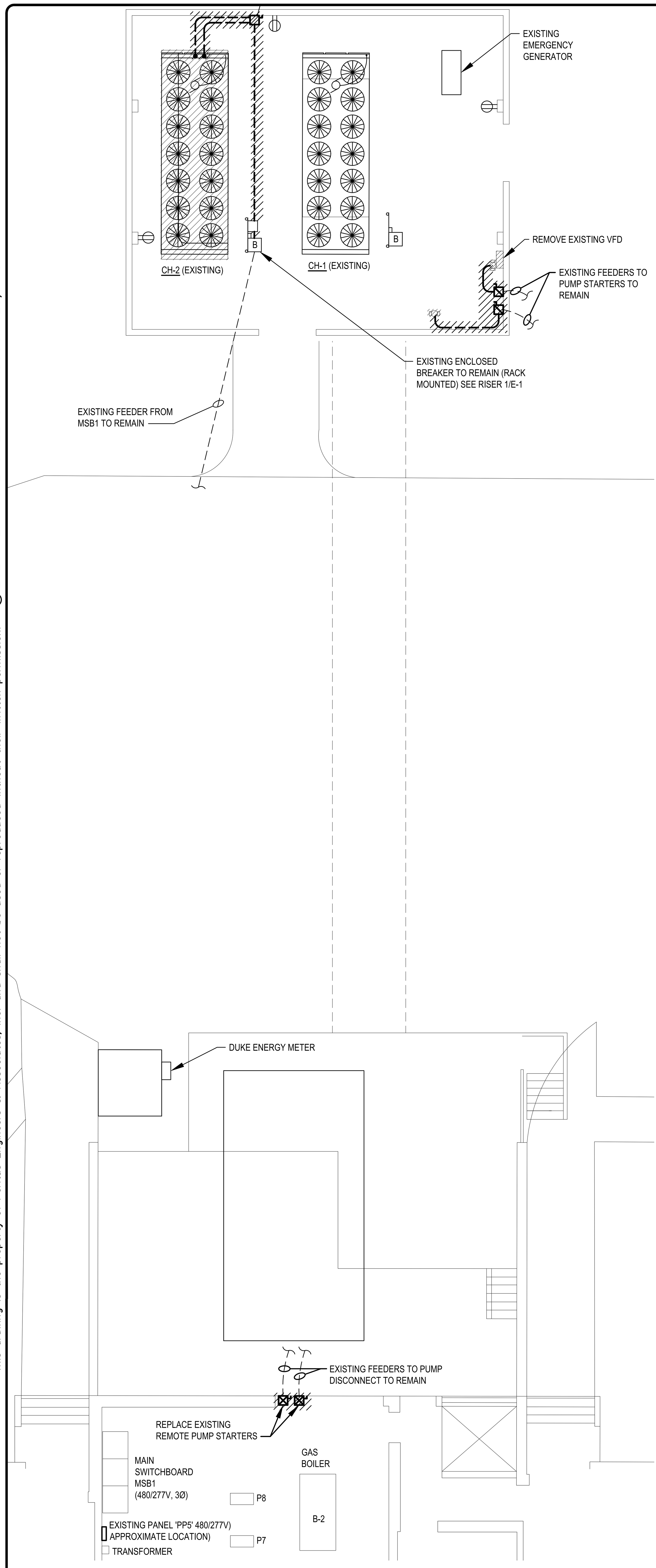
NO.	DATE	BY	DESCRIPTION
1	5/22/24	DJB	CONSTRUCTION DOCUMENTS

REVISIONS

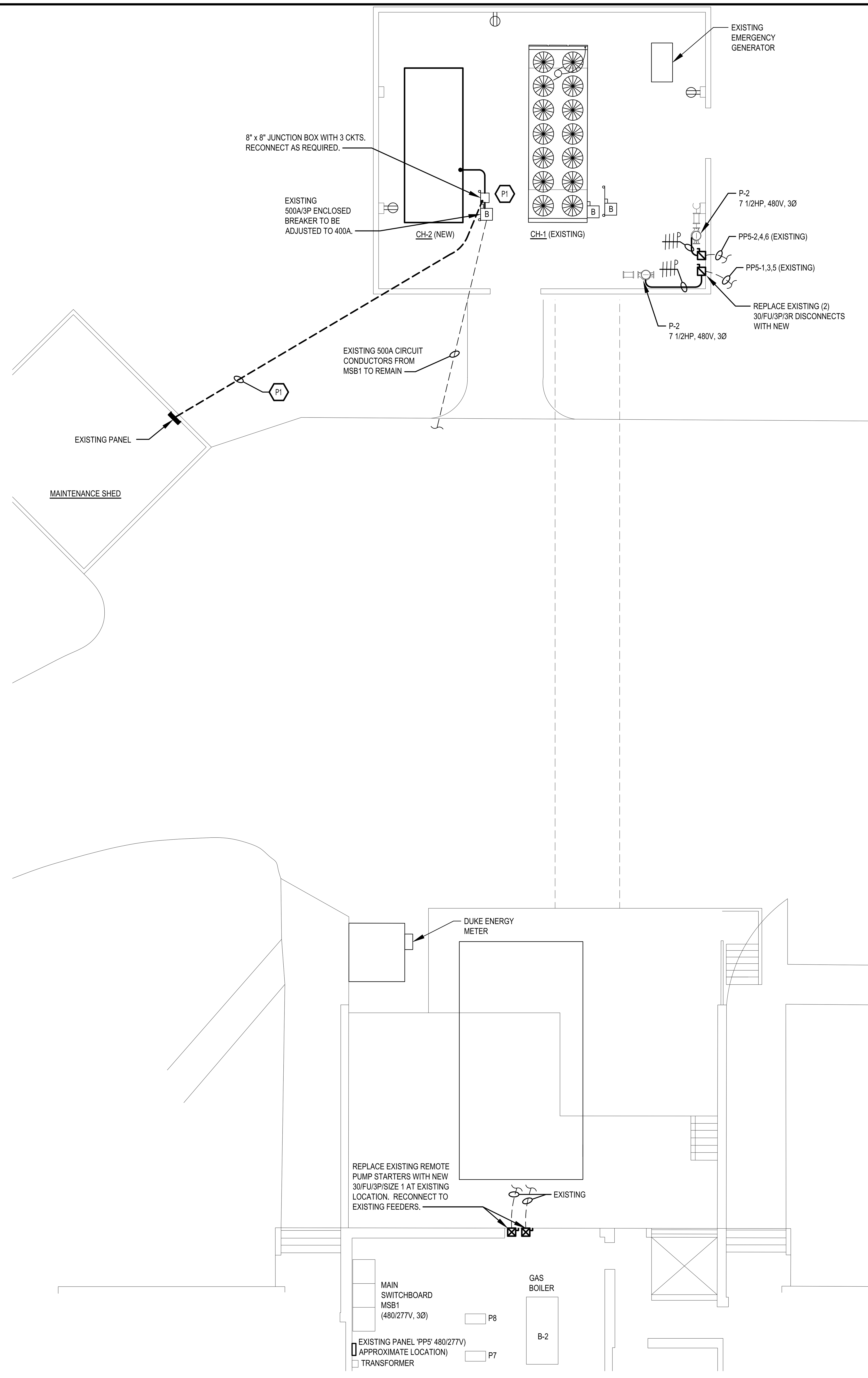
BUENA VISTA ELEMENTARY
CHILLER REPLACEMENT
—
GREER, SOUTH CAROLINA

DESIGN / DRAWN	RAB / TMP
CHECKED	DJB
DATE	5/22/2024
JOB NO.	
SHEET	E-1

1 OF 2 SHEETS



1 ELECTRICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 ELECTRICAL POWER PLAN
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

1. CONTRACTOR SHALL VERIFY LOADS AND AVAILABILITY OF ALL CIRCUITS BEING MODIFIED AS PART OF THIS PROJECT AND SHALL ENSURE THAT CIRCUIT LOADS DO NOT EXCEED CODE LIMITS. CONTRACTOR SHALL LABEL ALL DEVICES SHOWN TO BE CONNECTED TO EXISTING CIRCUITS WITH THE CURRENT PANEL AND CIRCUIT NUMBER ON THE RECORD DRAWINGS.
2. SEE MECHANICAL DRAWINGS FOR EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT.
3. DEVICES SHOWN IN LIGHT LINEWEIGHT ARE EXISTING TO REMAIN.

POWER PLAN KEYNOTES

P1. PROVIDE NEW HEAT TRACE CONNECTION (20A/120V) FROM EXISTING 120/208 VOLT PANEL IN ADJACENT BUILDING. PROVIDE FINAL CONNECTIONS REQUIRED. COORDINATE EXACT LOCATION IN FIELD WITH MECHANICAL. CONTRACTOR ROUTE UNDERGROUND, APPROXIMATE 100 LINER FEET TO ADJACENT BUILDING. CONTRACTOR TO VERIFY DISTANCE. MAINTAIN 24: DEPTH; STUBUPS TO BE IN RGS CONDUIT. PROVIDE WEATHER RESISTANT LABEL AT HEAT TRACE CONNECTION WITH PANEL NAME, CIRCUIT NO. AND PANEL LOCATION.

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SHEET E-2
2 OF 2 SHEETS