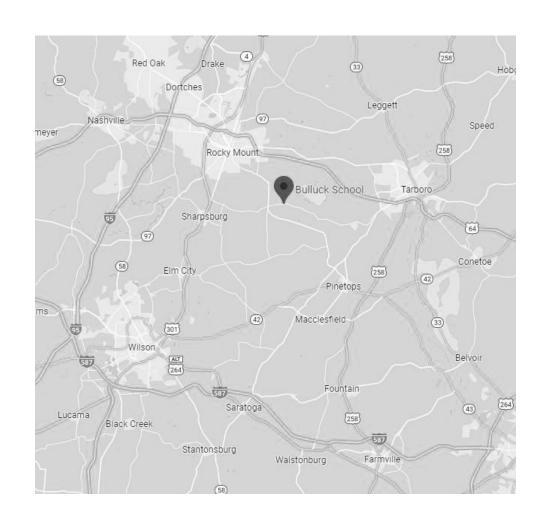
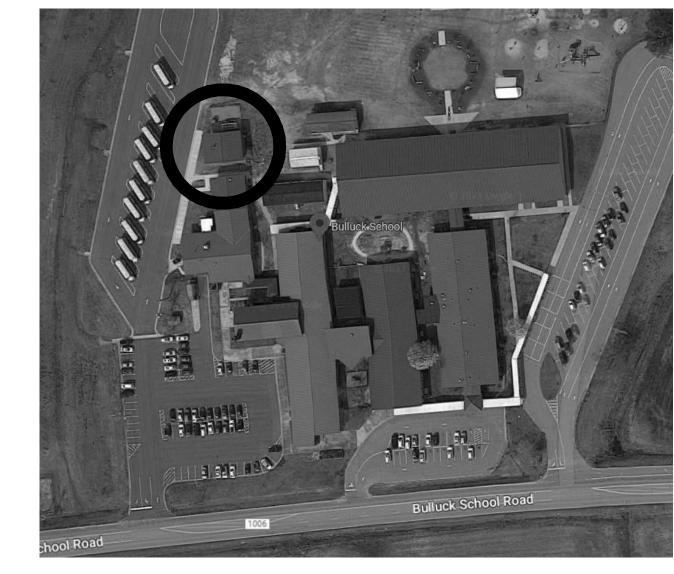
PROJECT: GW BULLOCK SCHOOL CHILLER UPGRADES





CAMPUS

VICINITY

PROJECT LOCATION:

GW BULLOCK ELEMENTARY SCHOOL

3090 BULLUCK SCHOOL ROAD ROCKY MOUNT, NC 27801

OWNER:

EDGECOMBE COUNTY PUBLIC SCHOOLS

2311 NORTH MAIN STREET TARBORO, NC 27886

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E5.02 DETAILS, RISER, AND PANEL SCHEDULES



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GENERAL NOTES SYMBOL LEGEND SYMBOL DESCRIPTION 1. THE CONTRACT DOCUMENTS ARE COMPLIMENTARY AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL. IN THE CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE BETTER QUALITY. IN THE — CHWS— CHILLED WATER SUPPLY CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE GREATER QUANTITY OF WORK. — CHWR — CHILLED WATER RETURN COORDINATE ALL WORK WITH THAT OF THE OTHER DISCIPLINES PRIOR TO THE INSTALLATION OF ANY PIPING, DUCTWORK, OR EQUIPMENT. POINT OF CONNECTION PERFORM A COMPLETE REVIEW OF THE CONTRACT DOCUMENTS PRIOR TO INSTALLATION OF THE MECHANICAL SYSTEMS AND REVIEW ANY CONFLICTS WITH THE ENGINEER. POINT OF DISCONNECTION / DEMOLITION DURING THE CONSTRUCTION PROCESS, PROTECT ALL EQUIPMENT, DEVICES, DUCTWORK, PIPING, AND APPURTENANCES FROM DIRT, DEBRIS, AND RAIN, STORE IN A COVERED LOCATION OFF OF THE FLOOR AND ABOVE STANDING WATER. ITEMS FOUND LYING IN STANDING WATER ON THE JOB SITE WILL NOT BE ACCEPTED FOR INSTALLATION. ENSURE THAT ITEMS TO BE FURNISHED OR PROVIDED WILL FIT IN THE SPACE AVAILABLE. MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS, INCLUDING THOSE FOR CONNECTIONS, AND PROVIDE SUCH SIZES AND SHAPES OF EQUIPMENT THAT ARE THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS. PROVIDE THE ENGINEER WITH SCALED COORDINATION DRAWINGS OF ALL MECHANICAL SPACES AND ABOVE CEILING LOCATE ALL EQUIPMENT TO PROVIDE MAXIMUM SPACE FOR MAINTENANCE AND SERVICE. PROVIDE ALL ELECTRICAL AND CONTROL CONNECTIONS TO THE EQUIPMENT PROVIDED. REFER TO THE ELECTRICAL DRAWINGS FOR LOCATIONS OF JUNCTION BOXES, DISCONNECTS, CIRCUIT BREAKERS (PANELBOARDS), TYPE, SIZE, AND NUMBER OF CONDUCTORS AND CONDUITS TO EQUIPMENT SHALL BE EQUIVALENT TO THE CONDUCTORS AND CONDUITS PROVIDED BY DIVISION 26. IN CASE OF MECHANICAL EQUIPMENT CONNECTION TO A CIRCUIT BREAKER, THE NUMBER AND SIZE OF THE CONDUCTORS AND CONDUITS SHALL CONFORM TO THE LATEST NATIONAL ELECTRICAL CODE REGULATIONS. ALL MOTOR STARTERS, SWITCHES, CONTROL DEVICES, ETC., PROVIDED BY DIVISION 23 SHALL BE RECESSED IN THE WALLS, EXCEPT WHEN THESE ITEMS ARE LOCATED IN MECHANICAL SPACES. PROVIDE A NAMEPLATE FOR ALL EQUIPMENT, SWITCHES, CONTROL DEVICES, ETC. REFER TO THE GENERAL PROVISIONS SECTION OF THE DIVISION 23 SPECIFICATIONS. PROVIDE ALL SUPPORT DEVICES NECESSARY FOR THE WORK. COORDINATE ALL LOCATIONS WITH OTHER DISCIPLINES PRIOR TO INSTALLATION. PROVIDE ALL PENETRATIONS PERTAINING TO THE WORK THROUGH THE ROOF, WALLS, AND FLOORS. PROVIDE THE WATERPROOFING AROUND THE OPENINGS. 10. FIRE SEAL ALL FLOOR AND FIRE WALL PIPE AND CONDUIT PENETRATIONS WITH A UL APPROVED METHOD. 11. PROVIDE ALL CUTTING AND PATCHING OF FLOORS AND WALLS FOR THE WORK UNLESS OTHERWISE INDICATED. ALL WALL AND FLOOR PENETRATIONS SHALL BE SEALED. SEAL ALL RATED FLOOR AND WALL PENETRATIONS WITH A UL APPOVED METHOD. FOR NON-RATE WALLS AND FLOORS, THE ANNULAR SPACE SHALL BE PACKED WITH MINERAL MECHANICAL SUMMARY WOOL, OR ANOTHER SUITABLE NON-COMBUSTIBLE MATERIAL, AND CAULKED AIR RIGHT. MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT 13. INSTALL SENSORS, AND OTHER CONTROLS 48" ABOVE FINISHED FLOOR OR AS INDICATED ON THE DRAWINGS. 2018 NC ENERGY CODE: PRESCRIPTIVE ___X___ COORDINATE WITH OTHER DISCIPLINES TO ALIGN EXACTLY WITH ADJACENT DEVICES SUCH AS LIGHT SWITCHES AND PRESCRIPTIVE _____ ASHRAE 90.1-2013: 14. PROVIDE ALL SENSORS, CONTROLS, WIRING, AND CONDUIT. ADDITIONAL PRESCRIPTIVE COMPLIANCE: 15. ALL LAYOUT AND LOCATIONS INDICATED ARE DIAGRAMMATIC. VISIT THE SITE, BECOME FAMILIAR WITH THE EXISTING N/A 506.2.1 MORE EFFICIENT MECHANICAL EQUIPMENT CONDITIONS, AND COORDINATE THE DUCT LAYOUT WITH ALL DISCIPLINES PRIOR TO INSTALLATION. N/A 506.2.2 REDUCED LIGHTING POWER DENSITY N/A 506.2.3 ENERGY RECOVERY VENTILATION SYSTEMS SUPPORT ALL PIPING, EQUIPMENT, AND APPURTENANCES FROM THE BUILDING STRUCTURE AND NOT THE ROOF DECK. N/A 506.2.4 HIGHER EFFICIENCY SERVICE WATER HEATING N/A 506.2.5 ON-SITE SUPPLY OF RENEWABLE ENERGY ALL HANGER RODS SHALL BE CUT TO WITHIN 1" OF THE BOTTOM NUT. IN MECHANICAL ROOMS, ALL HANGERS OR N/A 506.2.6 AUTOMATIC DAYLIGHTING CONTROLS OTHER EQUIPMENT BELOW 7'-4" SHALL BE WRAPPED WITH FOAM INSULATION FOR PERSONNEL PROTECTION. EQUIPMENT SHALL MEET OR EXCEED ALL REQUIREMENTS IN THE 2013 VERSION OF ASHRAE STANDARD 90.1 AND THE THERMAL ZONE: 3A INTERNATIONAL ENERGY CONSERVATION CODE WITH NORTH CAROLINA AMENDMENTS. WINTER DRY BULB: 20.0 DEGREES F SUMMER DRY BULB: 94.6 DEGREES F 19. DO NOT INSTALL PIPING OVER ANY ELECTRICAL PANEL OR SWITCHGEAR. SUMMER WET BULB: 74.3 DEGREES F SUMMER HR/MCDB: 129.5 / 81.2 DEGREES F ZIP TIES WILL NOT BE PERMITTED FOR USE AS CABLE SUPPORTS. WHERE NOT REQUIRED TO BE INSTALLED IN RACEWAY BY THE SPECIFICATION, PROVIDE J-HOOK SUPPORTS AND BRIDLE RINGS. CABLE SHALL BE INDEPENDENTLY INTERIOR DESIGN CONDITIONS SUPPORTED AND SHALL NOT BE SUPPORTED OF THE WORK OF OTHER TRADES. WINTER DRY BULB: 70 DEGREES F 75 DEGREES F RELATIVE HUMIDITY: 55 % BUILDING HEATING LOAD: BUILDING COOLING LOAD: **EXISTING** MECHANICAL SPACING CONDITIONING SYSTEM UNITARY **DESCRIPTION OF UNIT:** REFER TO SCHEDULE ON DRAWINGS REFER TO SCHEDULE ON DRAWINGS HEATING EFFICIENCY: **COOLING EFFICIENCY:** REFER TO SCHEDULE ON DRAWINGS SIZE CATEGORY OF UNIT: REFER TO SCHEDULE ON DRAWINGS

ACCU	AIR COOLED CONDENSING UNIT	HZ	HERTZ
ACU	AIR CONDITIONING UNIT		
AD	ACCESS DOOR	IF	INJECTION FAN
AF	AIR FILTER	IN	INCHES
AFF	ABOVE FINISHED FLOOR	INSUL	INSULATION
AHU	AIR HANDLING UNIT	ISDL	ISOLATION
ALUM	ALUMINUM	IODE	is obtained.
AMP	AMPERE	KE	KITCHEN EXHAUST
AP	ACCESS PANEL	KW	KILOWATT
		r\vv	KILOWATI
ARCH	ARCHITECTURAL	1 A T	LEAVING AID TEMPEDATURE
AVG	AVERAGE	LAT	LEAVING AIR TEMPERATURE
CC	AIR COLLED CONDENSER	LBS	POUNDS
_	DOU 50	LF	LINEAR FEET
B	BOILER	LLC	LIQUID LEVEL CONTROLLER
B.I.	BLACK IRON	LWT	LEAVING WATER TEMPERATURE
BB	BASEBOARD RADIATION		
BDD	BACKDRAFT DAMPER	MAT	MIXED AIR TEMPERATURE
BHP	BRAKE HORSEPOWER	MAX	MAXIMUM
ВО	BLANK OFF	MIN	MINIMUM
BTU	BRITISH THERMAL UNIT		
BTUH	BRITISH THERMAL UNITS PER HOUR	N.C.	NORMALLY CLOSED
		N.O.	NORMALLY OPEN
CA	COMPRESSED AIR	NC	NOISE CRITERIA
CAP	CAPACITY	NIC	NOT IN CONTRACT
CAU	COMPRESSED AIR	NK	NECK
CC	COOLING COIL	NPSH	NET POSITIVE SUCTION HEAT
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
СН	CHILLER		
CI	CAST IRON	OA	OUTSIDE AIR
CL	CENTER LINE	OAI	OUTSIDE AIR INTAKE
CO	CARBON MONOXIDE	OBD	OPPOSED BLADE DAMPER
CO	CLEAN OUT	OD	OUTSIDE DAMPER
CONC	CONCRETE	OV	OUTLET VELOCITY
СТ	COOLI NG TOWER	-	
CU	CONDENSING UNIT	Р	PUMP
CUH	CABINET UNIT HEATER	PD	PRESSURE DROP
CV	CONSTANT VOLUME	PH	PHASE
CY	CYCLE	PRESS	PRESSURE
O1	OTOLL	PRV	PRESSURE REDUCING VALVE
DB	DRY BULB TEMPERATURE	PSIG	POUNDS PER SQUARE INCH
DELF	DEFLECTION	ΔP	PRESSURE DIFFERENTIAL
DIFF	DIFFUSER	ΔΓ	FRESSORE DIFFERENTIAL
DN	DOWN	RA	DETUDNI AID
DWG	DRAWING	REFRIG	RETURN AIR REFRIGERANT
			-
DX	DIRECT EXPANSION	REG	REGISTER
- A	FAOLL	RET	RETURN
EA	EACH	RF	RELIEF / RETURN FAN
EAT	ENTERING AIR TEMPERATURE	RH	RELATIVE HUMIDITY
EF	EXHAUST FAN	RM	ROOM
EFF	EFFICIENCY	RO	REVERSE OSMOSIS
EHC	ELECTRIC HEAT COIL	RPM	REVOLUTIONS PER MINUTE
	EVERNAL OTATIO PREGOLIRE		ROOFTOP UNIT
ESP	EXTERNAL STATIC PRESSURE	RTU	
ESP ET	EXPANSION TANK		OURRING AIR
ESP ET EUH	EXPANSION TANK ELECTRIC UNIT HEATER	SA	SUPPLY AIR
ESP ET EUH EWT	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE	SA SD	SMOKE DAMPER
ESP ET EUH	EXPANSION TANK ELECTRIC UNIT HEATER	SA SD SF	SMOKE DAMPER SUPPLY FAN
ESP ET EUH EWT EXH	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST	SA SD SF SM	SMOKE DAMPER SUPPLY FAN SHEET METAL
ESP ET EUH EWT EXH F.D.	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN	SA SD SF SM SP	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE
ESP ET EUH EWT EXH F.D. FA	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA	SA SD SF SM SP SQ. FT.	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET
ESP ET EUH EWT EXH F.D. FA FCU	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT	SA SD SF SM SP SQ. FT. SS	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL
ESP ET EUH EWT EXH F.D. FA FCU FD	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER	SA SD SF SM SP SQ. FT.	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE	SA SD SF SM SP SQ. FT. SS ST	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER	SA SD SF SM SP SQ. FT. SS ST	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX	SA SD SF SM SP SQ. FT. SS ST	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE	SA SD SF SM SP SQ. FT. SS ST T TC TE	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX	SA SD SF SM SP SQ. FT. SS ST T TC TE TG	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE	SA SD SF SM SP SQ. FT. SS ST T TC TE	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET	SA SD SF SM SP SQ. FT. SS ST T TC TE TG	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL
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ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3 °F GA	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3 °F	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3 °F GA GC GE	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3 °F GA GC GE GPM	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3 °F GA GC GE GPM	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT2 FT3 °F GA GC GE GPM GR	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY
ESP ET EUH EWT EXH F.D. FA FCU FD FLEX FM FP FPM FT FT3 °F GA GC GE GPM GR	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL VFD	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE
ESP ET EUH EXH F.D. FA FCU FD FLEX FP FPM FT FT2 FT3 °F GA GC GPM GR *H HC	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL VFD	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE
ESP ET EUH EXH F.D. FA CU FD FLEX FM FP FPM FT 2 FT3 °F GA GC GE GPM GR *H C HORIZ HP	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL HORIZONTAL HORSEPOWER	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL VFD VIB W	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE VIBRATION WATT
ESP ET EUH EXH F.D. FA FCU FD FLEX FM FP FT FT3 °F GA GC GE GPM GR *H HC HORIZ HP HR	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL HORIZONTAL HORSEPOWER HOUR	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL VFD VIB W WB	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE VIBRATION WATT WET BULB TEMPERATURE
ESP ET EUH EXH F.D. FCU FD EX FPM FT 2 FT3 °F GA GC GPM GR *H CHORIZ HP HR HU	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL HORIZONTAL HORSEPOWER HOUR HUMIDIFIER	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP AT UH V VAV VD VEL VFD VIB W WB WC	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE VIBRATION WATT WET BULB TEMPERATURE WATER COLUMN
ESP ET EUH EXH F.D. FA FCU FD FLEX FM FP FT FT3 °F GA GC GE GPM GR *H HC HORIZ HP HR	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL HORIZONTAL HORSEPOWER HOUR	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL VFD VIB W WB WC WMS	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE VIBRATION WATT WET BULB TEMPERATURE WATER COLUMN WIRE MESH SCREEN
ESP ET EUH EXH F.D. FA CU FD FLEX FPM FT FT2 FT3 °F GA GC GE GPM GR *HC HORIZ HP HR HU HVAC	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL HORIZONTAL HORSEPOWER HOUR HUMIDIFIER HEATING VENTILATION & AIR CONDITIONING	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP AT UH V VAV VD VEL VFD VIB W WB WC	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE VIBRATION WATT WET BULB TEMPERATURE WATER COLUMN
ESP ET EUH EXH F.D. FCU FD EX FPM FT 2 FT3 °F GA GC GPM GR *H CHORIZ HP HR HU	EXPANSION TANK ELECTRIC UNIT HEATER ENTERING WATER TEMPERATURE EXHAUST FLOOR DRAIN FREE AREA FAN COIL UNIT FIRE DAMPER FLEXIBLE FLOW METER FAN POWERED BOX FEET PER MINUTE FEET SQUARE FEET CUBIC FEET DEGREES FARENHEIT GAUGE GENERAL CONTRACTOR GENERAL EXHAUST GALLONS PER MINUTE GRILLE ENTHAPLY DIFFERENCE HEATING COIL HORIZONTAL HORSEPOWER HOUR HUMIDIFIER HEATING VENTILATION & AIR	SA SD SF SM SP SQ. FT. SS ST T TC TE TG TSP TYP ΔT UH V VAV VD VEL VFD VIB W WB WC WMS	SMOKE DAMPER SUPPLY FAN SHEET METAL STATIC PRESSURE SQUARE FEET STAINLESS STEEL SOUND TRAP TANK TEMPERATURE CONTROL TOILET EXHAUST TRANSFER GRILLE TOTAL STATIC PRESSURE TYPICAL TEMPERATURE DIFFERENTIAL UNIT HEATER VOLTAGE VARIABLE AIR VOLUME VOLUME DAMPER VELOCITY VARIABLE FREQUENCY DRIVE VIBRATION WATT WET BULB TEMPERATURE WATER COLUMN WIRE MESH SCREEN

PERFORMANCE

TOTAL BOILER OUTPUT. IF OVERSIZED, STATE REASON. N/A

REFER TO EQUIPMENT SCHEDULES FOR UNIT EFFICIENCIES.

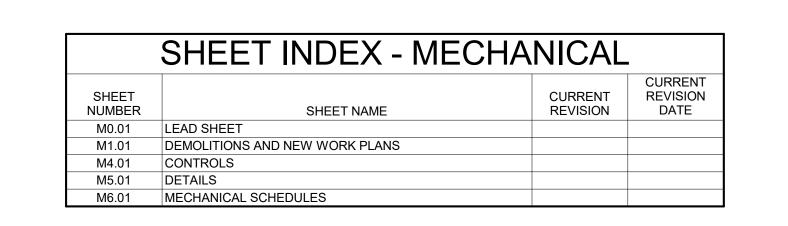
DESIGNER STATEMENT:

TOTAL CHILLER CAPACITY. IF OVERSIZED, STATE REASON. 110 TONS

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE NORTH CAROLINA

PERFORMANCE

ABBREVIATIONS

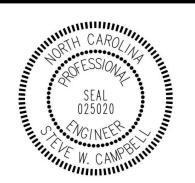




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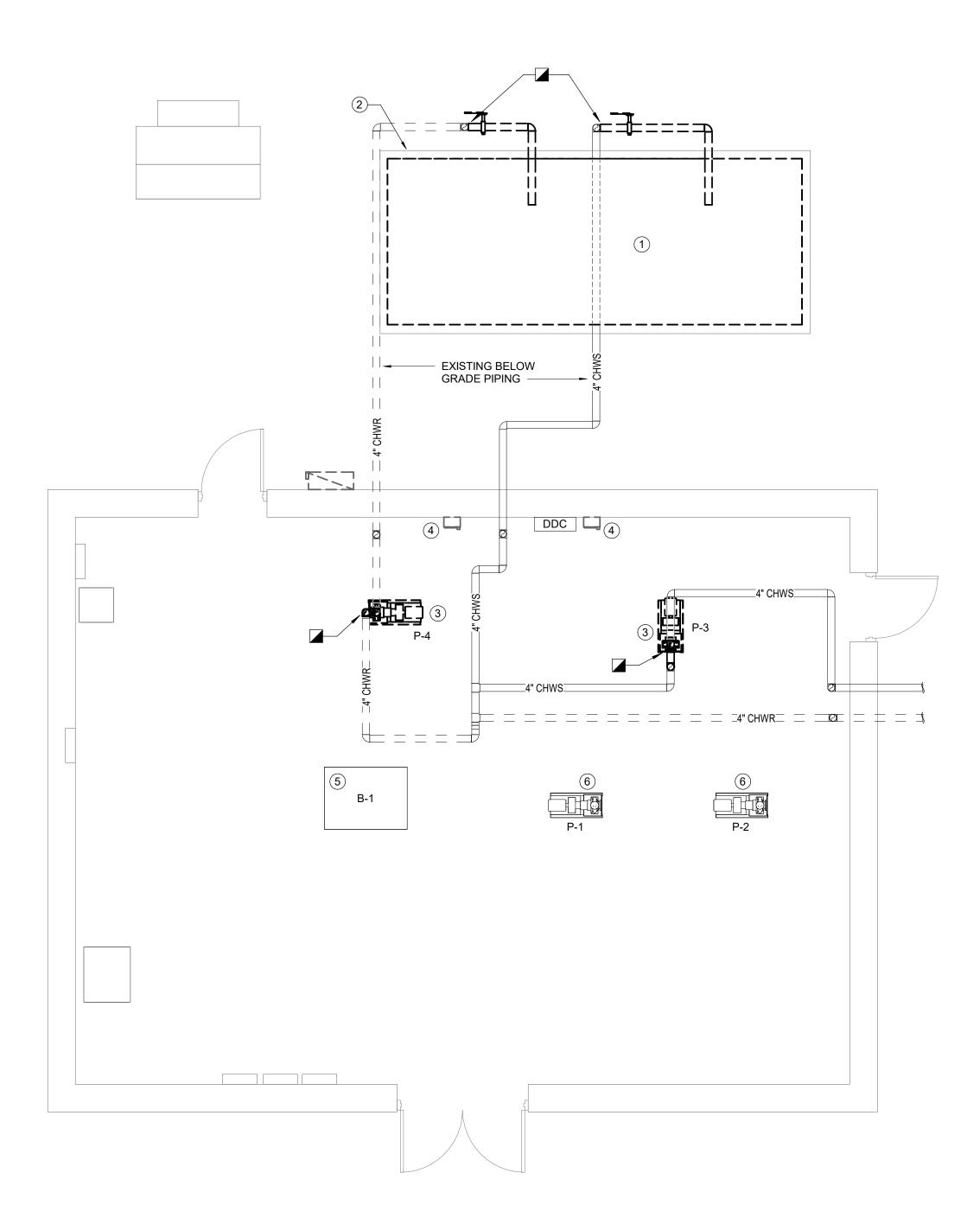
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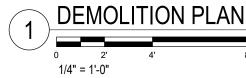
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LEAD SHEET



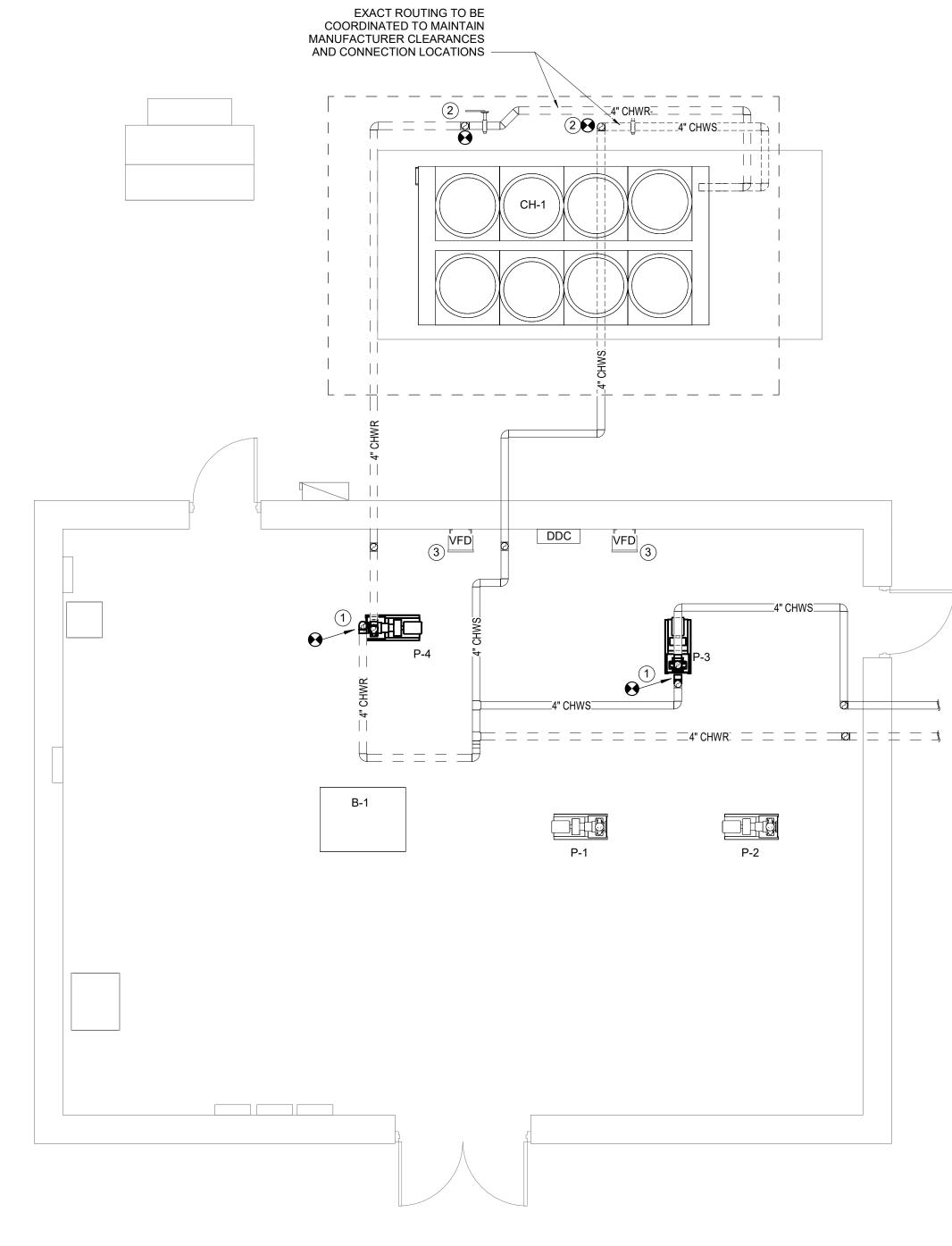


GENERAL DEMOLITION NOTES:

- A. ALL REFRIGERANT SHALL BE RECOVERED,
 RECLAIMED, AND RECYCLED IN ACCORDANCE WITH
 APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND
 REGULATIONS.
- B. WHERE PIPING OR EQUIPMENT IS REMOVED, COMPLETELY REMOVE ALL EXISTING HANGERS, HANGER RODS, AND OTHER SUPPORTING HARDWARE.

KEY NOTES (1):

- 1. DISCONNECT EXISTING CHILLER FROM EXISTING PIPING AND ELECTRICAL CONNECTIONS AND REMOVE. REMOVE EXISTING BUTTERFLY VALVES AND STRAINER. REMOVE PIPING TO FIRST ELBOW ABOVE GRADE.
- 2. EXISTING HOUSEKEEPING PAD TO REMAIN.
- DISCONNECT EXISTING PUMP, TRIPLE DUTY VALVE, SUCTION DIFFUSER AND REMOVE.
- 4. REMOVE EXISTING STARTER FOR PUMP.
- 5. EXISTING BOILER TO REMAIN.
- 6. EXISTING HOT WATER PUMP TO REMAIN.



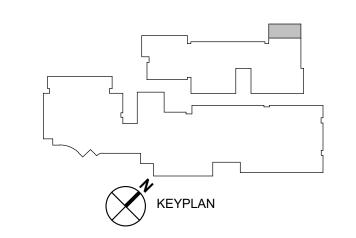


GENERAL NOTES:

- A. WHERE IT IS DISTURBED OR IMPACTED, ALL PIPING SHALL HAVE INSULATION AND JACKETING TO MATCH EXISTING.
- B. CONTRACTOR SHALL DRAIN, FLUSH, AND CLEAN ENTIRE CHILLED WATER LOOP. PROVIDE TEMPORARY BYPASS AT CHILLER. REMOVE BYPASS AFTER FLUSHING. REESTABLISH WATER CHEMISTRY IN LOOP AT COMPLETION OF THE WORK.

KEY NOTES (2):

- PROVIDE PUMP AND ACCESSORIES AND RECONNECT TO EXISTING PIPING.
- 2. RECONNECT TO PIPING AT FIRST ELBOW ABOVE GRADE, PROVIDE BUTTERFLY VALVES AND STRAINER, AND EXTEND PIPING TO CHILLER PIPING CONNECTION POINTS. COORDINATE FINAL CONNECTION LOCATIONS WITH MANUFACTURER'S SHOP DRAWINGS.
- 3. VFD FOR PUMP.

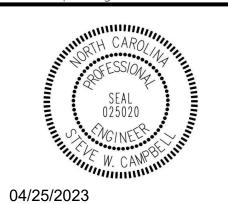




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ECOMBE COUNTY PUBLIC SCHOOL NORTH MAIN STREET

DEMOLITIONS AND NEW WORK PLANS

M1₋01

AIR COOLED CHILLER PLANT SEQUENCE OF OPERATIONS

A DDC controller capable of standalone operation will control the chilled water system in accordance with time schedules and operating parameters from the Building Automation System (BAS).

General: The chilled water system consists of one chiller and its primary pump and secondary pump. The DDC controller will monitor system operation and energize the chiller controller and pump as required.

Operation: The chilled water system will be enabled when outside air temperature is > 55 °F (adj.), and one or more chilled water valves opens ≥ 10%

The secondary chilled water pump shall be enabled first. The secondary pump shall run at constant speed. TAB shall use VFD to balance the system.

Once the secondary pump has been enabled for 1 minute (adj), the chiller control panel shall start the primary pump. Once flow in the primary loop is proven, the chiller shall be enabled after a 1 minute delay. Once enabled the chilled water system shall run for a minimum of 20 minutes (adj.). The system shall be disabled when the outside air temperature is < 50 °F (adj.) and there are no requests for chilled water.

Chiller Control: The chiller shall be enabled when the chilled water system is enabled and will operate using the manufacturer's controls to maintain a constant leaving temperature of 44°F (adj.).

Chilled Water Reset: The BAS shall send a chilled water reset to the chiller's control panel. The set point shall be reset from 44°F (adj.) at an outside temperature of 70°F (adj.) or above to 50°F (adj.) at an outside temperature of 55°F (adj.) or below.

Chilled Water Primary Pump P-4: The Chilled water primary pump is hardwired interlocked with the chiller and shall enable when the chiller is enabled.

Alarms: The following software alarms will be generated and displayed at the Operator's Workstation:

Supply Temp Low (<5°F below set point (adj.))

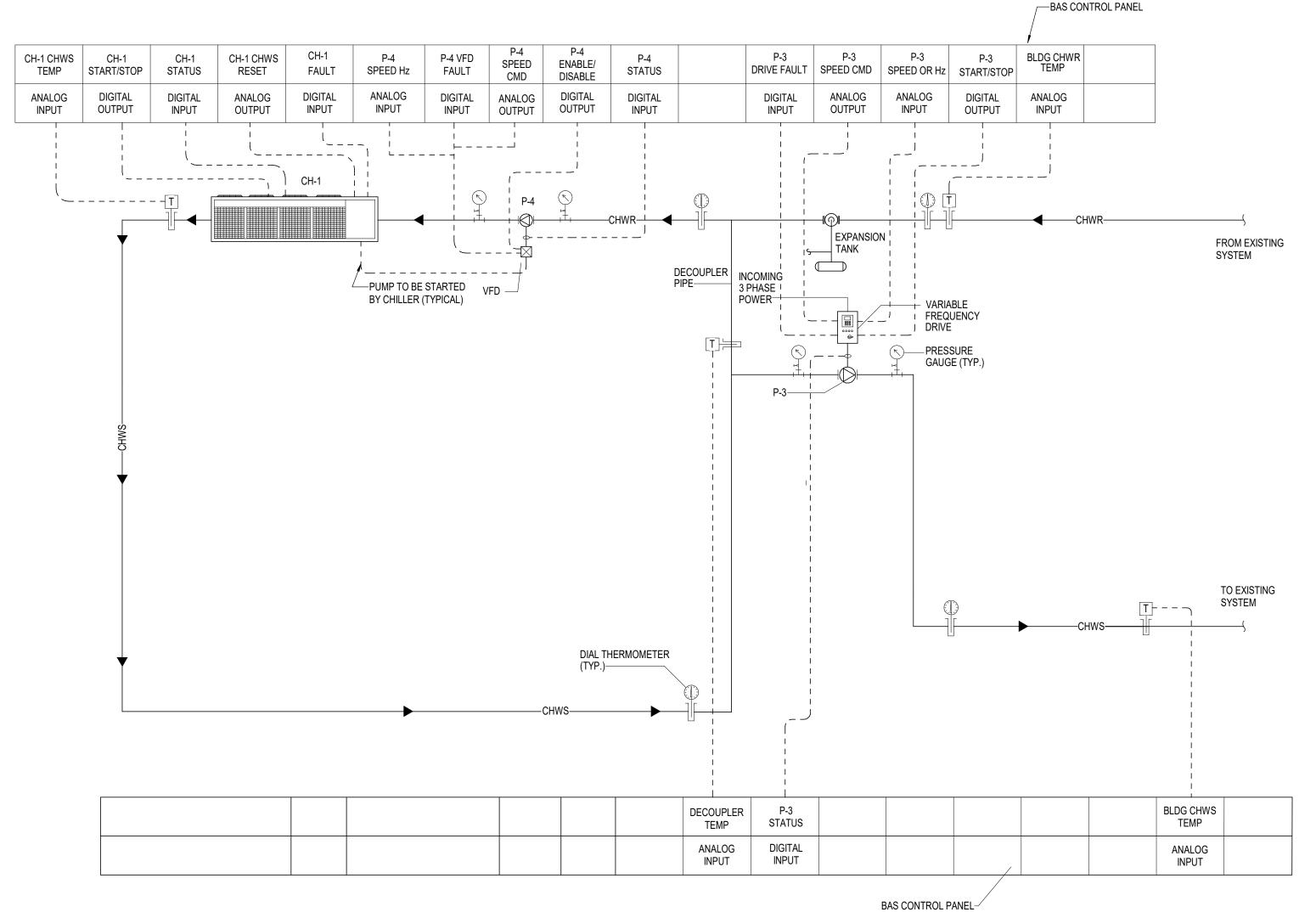
Supply Temp High (>5°F above set point(adj.))
Pump Failure (command with no status)

Pump "In Hand" (status with no command)
Chiller fault (via BACnet)

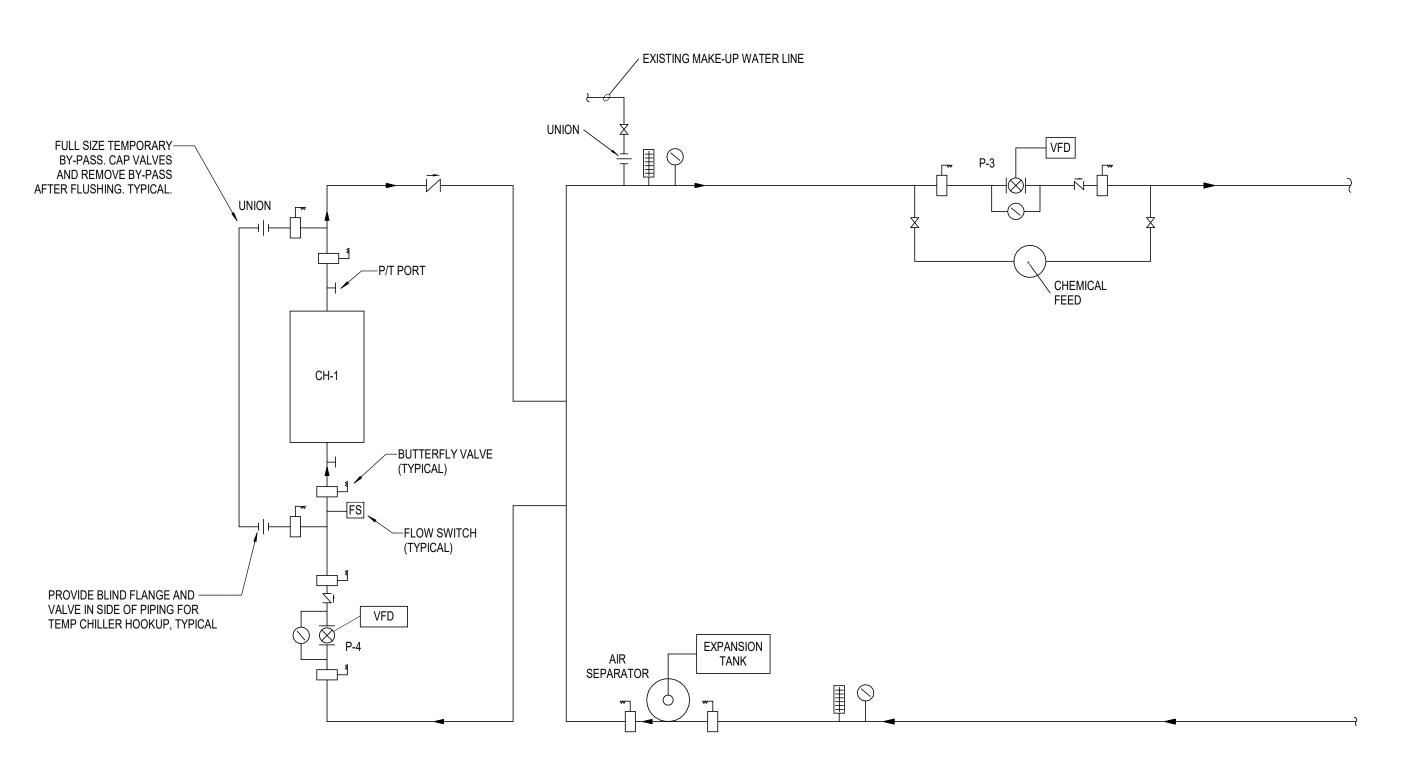
VARIABLE FREQUENCY DRIVE INTERFACE POINTS LIST TABLE

	II VI O LIC		
POINT NAME	HARDWIRED	INTERFACE COM CARD	GUI DISPLAY
VFD COMMAND START/STOP	X	Х	HARDWIRED
VFD SPEED COMMAND (%)	X	Х	HARDWIRED
PUMP/FAN STATUS (VIA VFD)	X	Х	HARDWIRED
VFD SPEED FEEDBACK (Hz)		Х	СОМ
PUMP ALARM (COMMAND/STATUS MISMATCH)		Х	СОМ
VFD FAULT STATUS		Х	СОМ
VFD FAULT RESET		Х	СОМ
VFD POWER (KW)		Х	СОМ
TIMESTAMP		Х	СОМ

CONTROL MODE RUN STATUS START INHIBIT TIMER OCCUPIED CHILLER START/STOP REMOTE START CONTACT TEMPERATURE RESET CHILLED WATER SETPOINT CHILLED WATER TEMPERATURE ACTIVE DEMAND LIMIT
RUN STATUS START INHIBIT TIMER OCCUPIED CHILLER START/STOP REMOTE START CONTACT TEMPERATURE RESET CHILLED WATER SETPOINT CHILLED WATER TEMPERATURE ACTIVE DEMAND LIMIT
PERCENT LINE CURRENT PERCENT LINE KILOWATTS AUTO DEMAND LIMIT INPUT AUTO CHILLED WATER RESET TOTAL COMPRESSOR STARTS COMPRESSOR ON TIME REFRIGERANT LEAK SENSOR
EMERGENCY STOP
CHILLED WATER FLOW STATUS OIL PRESSURE DELTA P OIL SUMP TEMPERATURE ENTERING CHILLED WATER TEMPERATURE LEAVING CHILLED WATER TEMPERATURE EVAPORATOR PRESSURE EVAPORATOR REFRIGERANT LIQUID TEMPERATURE VAPORIZER TEMPERATURE ACTIVE DELTA P ACTIVE DELTA T



CHILLED WATER SYSTEM WITH AIR COOLED CHILLER (PRIMARY/SECONDARY)



CHILLED WATER PIPING SCHEMATIC

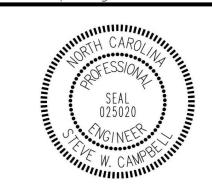


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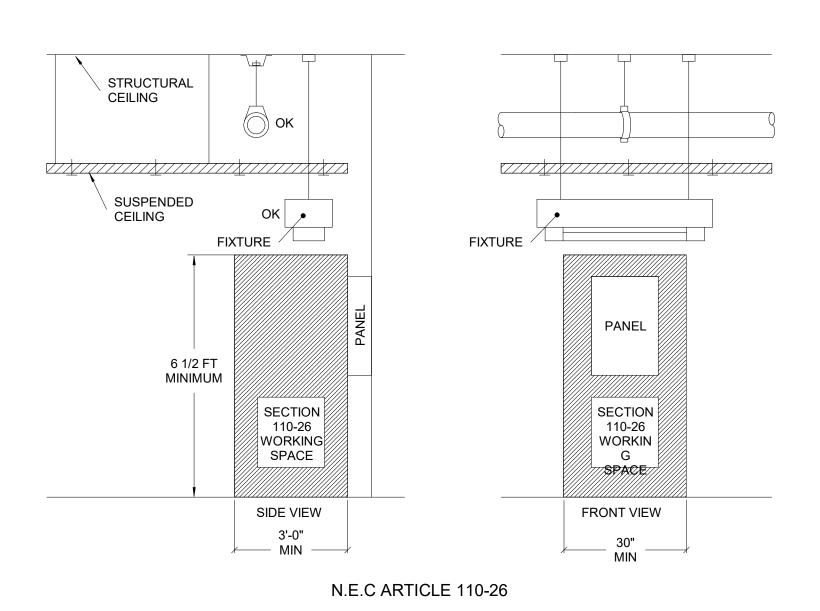
JPGRADES

TY PUBLIC SCHOOLS

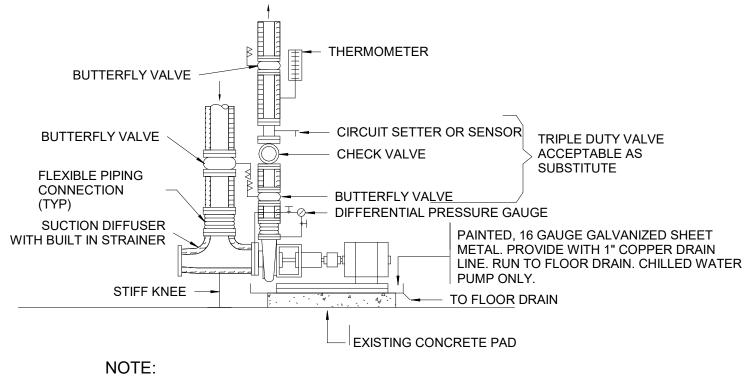
ECOMBE COUNTY PUBL NORTH MAIN STREET

CONTROLS

M4.01



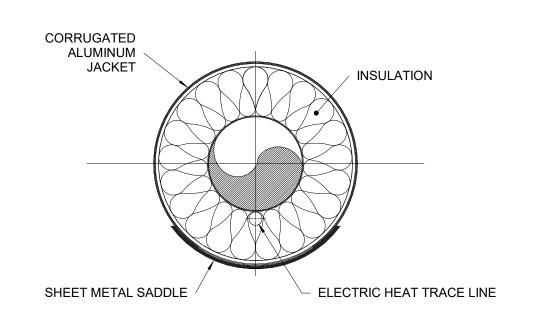
7 DETAIL - WORKING CLEARANCE FOR ELECTRICAL EQUIPMENT
NOT TO SCALE



1. ALL FLANGE BOLTS AND NUTS SHALL BE CADMIUM PLATED.

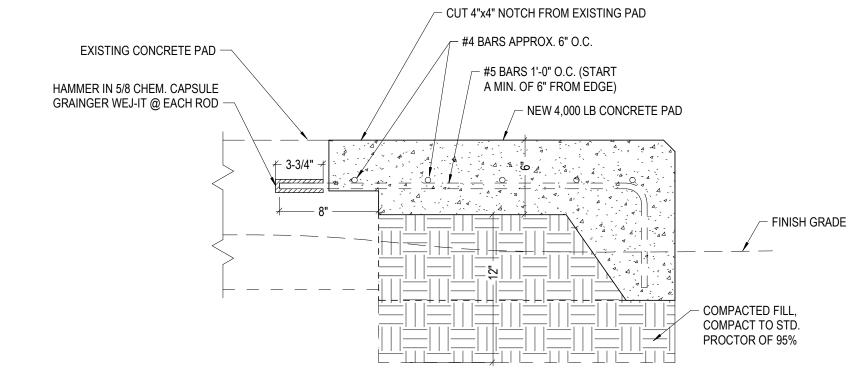
2. <u>UNINSULATED FLANGES, INCREASERS, FLEX CONNECTORS,</u> AND PIPE FITTINGS, SHALL BE GALVANIZED.

DETAIL - BASE MOUNTED END SUCTION PUMP

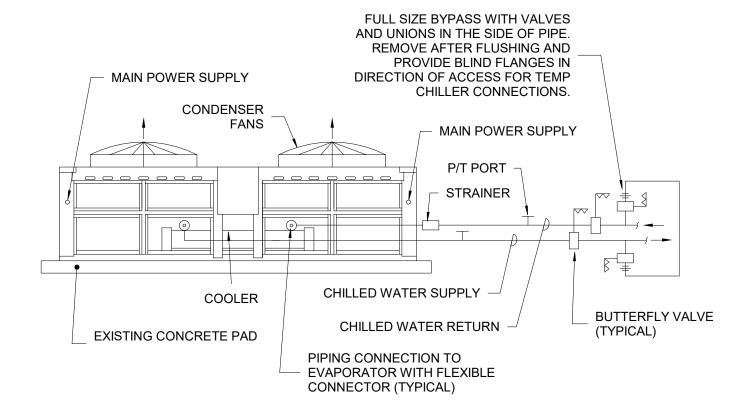


5 DETAIL - CHILL WATER PIPE (EXTERIOR)

NOT TO SCALE



1 DETAIL - PAD EXTENSION

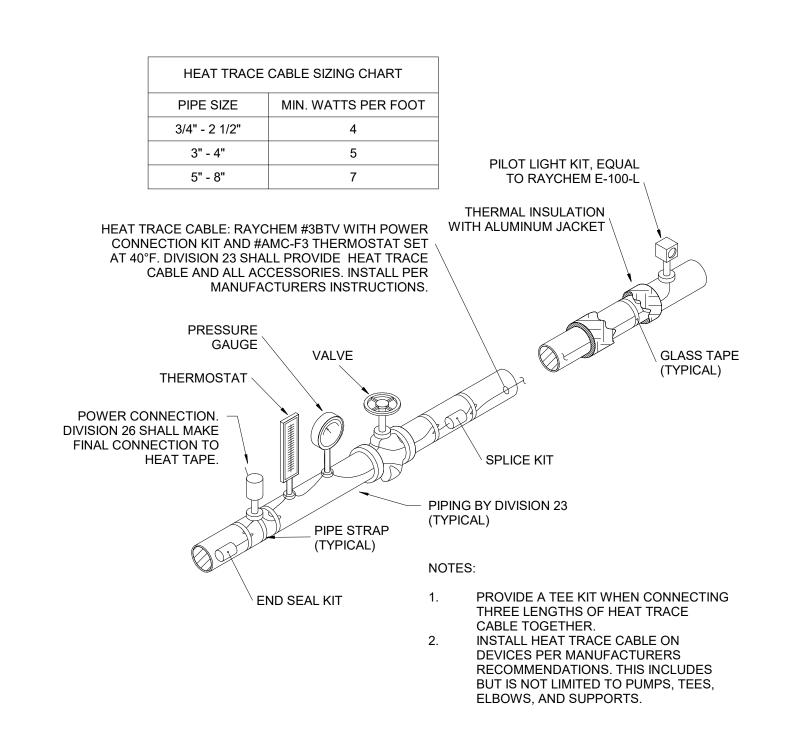


NOTE:

- 1. PROVIDE LOUVERED COIL GUARDS AND WIRE GUARDS FOR
- COMPRESSOR SECTION.

 2. DETAIL IS GENERIC. PIPING AND ELECTRICAL CONNECTION LOCATIONS MAY VARY BY MANUFACTURER.

DETAIL - PACKAGED AIR COOLED CHILLER NOT TO SCALE

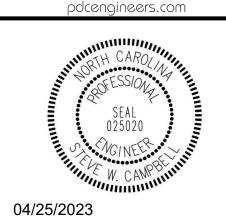


3 HEAT TRACE CABLE NOT TO SCALE



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DETAILS

M5.01

	AIR-COOLED CHILLER SCHEDULE																	
MARK	MANUFACTURER	MODEL	COMPRESSOR TYPE	DESIGN CAP.	EFFICIE EER	IPLV	EWT (°F)	LVA/T	GPM	MINI	ΔP FT kW	′ N	ELECT MCA MC	RICAL	V	P	WEIGHT (LBS)	REMARKS
CH-1	TRANE	CGMA 110	SCROLL	107.1	10.05	15.34	54	44	256	125	17.0 128	.0 2	225 2	50	480	3	7000	

CH-1

TRANE AIR COOLED SCROLL CHILLER, MODEL CGAM 110

107.1 TONS CAPACITY. 10.05 EER. 44°F EVAP. LEAVING TEMP, 54°F EVAP ENTERING TEMP. 17 FT PRESSURE DROP. 344 GPM. 95°F AMBIENT.

PROVIDE NEOPRENE VIBRATION ISOLATORS. PROVIDE ENCLOSURE PANELS AROUND COMPLETE UNIT WITH LOW SOUND FANS. PROVIDE SUPERIOR SOUND LEVEL PACKAGE. THE OVERALL A-WEIGHTED SOUND PRESSURE LEVEL SHALL NOT EXCEED 69 DB AFTER ATTENUATION, AS MEASURED PER ARI STANDARD 370. PROVIDE WIDE AMBIENT OPTION REQUIRED FOR 25 - 125°F OPERATION. PROVIDE SUCTION AND DISCHARGE SERVICE VALVE FOR EACH COMPRESSOR. PROVIDE SINGLE POINT 480 VOLT POWER CONNECTION THAT FEEDS CHILLER AND PROVIDE AN ADDITIONAL 120 VOLT POWER CONNECTION FOR THE EVAPORATOR HEAT TAPE. TEAO CONDENSER FAN MOTORS. PROVIDE FACTORY MOUNTED AND WIRED CONTROL TRANSFORMER. FACTORY MOUNTED AND WIRED EVAPORATOR HEATER FOR FREEZE PROTECTION TO -20°F. PROVIDE CONTROL PANEL THAT PROVIDES CHILLED WATER SETPOINT ADJUSTMENT AND DEMAND LIMITING VIA A 4-20 mA INPUT. PROVIDE HIGH SHORT CIRCUIT CURRENT RATED CONTROL PANEL. CONTROL PANEL SCCR RATING SHALL BE MINIMUM 65 kA. PROVIDE BACNET CONTROL INTERFACE. 460/3/60. MCA = 225, MOCP = 250. WEIGHT = 7,000 LBS. EQUIVALENTS BY JCI AND CARRIER, OR AS LISTED IN SPECIFICATIONS. MINIMUM TWO REFRIGERATION CIRCUITS. ALL COLD PARTS SHALL BE INSULATED WITH 1-1/2" CLOSED CELL FOAM INSULATION. IF 1-1/2" THICK INSULATION IS NOT AVAILABLE FROM FACTORY, CONTRACTOR SHALL PROVIDE ADDITIONAL INSULATION LAYERS IN THE FIELD. PROVIDE STRAINER ON INLET.

GENERAL NOTES:

- 1. UPROVIDE SINGLE POINT POWER CONNECTION WITH CIRCUIT BREAKER
- PROVIDE (BACNET) COMMUNICATION INTERFACE.
 PROVIDE LOUVERED PANEL/GRILLES TO COVER CONDENSER COIL AND SECURE
- INTERNAL COMPONENTS.

 4. PROVIDE CONTROLS FOR REMOTE RESET OF CHILLED WATER SET POINT AND
- SETTING OF DEMAND LIMIT SETPOINT.
- 5. PROVIDE NEOPRENE VIBRATION ISOLATORS.6. PROVIDE FACTORY MOUNTED WIRED CONTROL TRANSFORMER.
- 7. FACTORY MOUNTED AND WIRED EVAPORATOR HEATER FOR FREEZE
- PROTECTION TO -20°F.

 PROVIDE FACTORY FLOW SWITCH, PHASE REVERSAL PROTECTION, AND
- FACTORY STARTUP.

 9. FACTORY HEAT TRACE(SEPARATE CIRCUIT).

 10. PROVIDE HIGH SHORT CIRCUIT CURRENT RATED CONTROL PANEL. CONTROL
- PANRL SCCR RATING SHALL BE MINIMUM 65kA
 11. PROVIDE STRAINER ON EVAPORATOR INLET
- 12. EQUIVALENTS BY CARRIER, JCI / YORK, OR AS LISTED IN THE SPECIFICATIONS

PUMP SCHEDULE													
MARK	MANUFACTURER	SERIES	MODEL	GPM	HEAD (FT)	EFF (%)	ВНР	HP	IMP (IN)	RPM	V	PH	REMARKS
P-3	BELL & GOSSETT	e-1510	2BD	256	70	71.7	6.54	7.5	9.5	1759	480	3	
P-4	BELL & GOSSETT	e-1510	3AD	256	40	82.7	3.23	5.0	7.0	1682	480	3	

GENERAL NOTES:

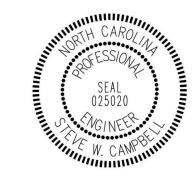
- A. ALL PUMPS SHALL HAVE NON-OVERLOADING INVERTER DUTY MOTORS WITH AEGIS SHAFT
- B. PROVIDE WITH SUCTION DIFFUSER AND TRIPLE DUTY VALVE (OR WAFER CHECK AND SHUTOFF)
- C. EQUIVALENTS TACO, ARMSTRONG, OR AS LISTED IN SPECIFICATIONS
 D. CONTROLS CONTRACTOR SHALL PROVIDE VFDs FOR ALL PUMPS FOR BALANCE PURPOSE



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MECHANICAL SCHEDULES

M6.01

		T	
	GENERAL NOTES	DE	EMOLITION GENERAL NOTES:
1.	CONDUCTORS FOR BRANCH CIRCUITS SHALL BE SIZED TO PREVENT VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST OUTLET OF POWER, HEATING AND LIGHTING LOADS, OR ANY COMBINATION OF SUCH LOADS. THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST OUTLET SHALL NOT EXCEED 5%. A. WHERE THE CONDUCTOR LENGTH FROM THE PANEL TO THE FIRST	A.	NOTIFY THE OWNER, IN WRITING, AT LEAST 7 DAYS IN ADVANCE OF ALL REQUIRED SHUTDOWNS ELECTRICAL UTILITIES. UPON WRITTEN RECEIPT OF APPROVAL FROM OWNER, SHUTDOWNS SHALL BE PERFORMED AS DIRECTED BY THE OWNER AND SHALL BE CONDUCTED AT NO ADDITIONAL CONTRACT COST. AT THE COMPLETION OF EACH SHUT DOWN, ALL SERVICES SHALL BE RESTORED SO THAT NORMAL OPERATION OF ALL UTILITIES CAN RESUME.
	OUTLET ON A 120V CIRCUIT EXCEED 50'-0" THE BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL NOT BE SMALLER THAN #10AWG. INCREASE THE BRANCH CIRCUIT CONDUCTOR SIZE AN ADDITIONAL WIRE SIZE FOR EACH ADDITIONAL 125' FOR THE ENTIRE CIRCUIT. THE GROUND CONDUCTOR SIZE SHALL BE INCREASED PROPORTIONALLY TO THE INCREASED PHASE CONDUCTORS AS PER NEC 2017 250.122 (B).	B.	WHEN WORKING IN AND AROUND THE EXISTING BUILDING, EXTREME CARE SHALL BE EXERCISED IN REGARDS TO PROTECTION OF THE EXISTING STRUCTURE, MECHANICAL AND ELECTRICAL SERVICES WHICH WILL REMAIN. REPAIR, REPLACE OR RESTORE TO THE SATISFACTION OF THE OWNER/ARCHITECT/ENGINEER ALL EXISTING WORK DAMAGED IN THE PERFORMANCE OF DEMOLITION AND/OR
2.	THE ELECTRICAL CONTRACTOR SHALL COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO THE INSTALLATION OF HIS EQUIPMENT SO AS TO AVOID CONFLICTS DURING CONTRUCTION AND ALLOW FOR OPTIMUM MAINTENANCE AND WORKING	C.	NEW WORK. ALL EXISTING WIRING, EQUIPMENT, CONDUITS AND MATERIALS NOT REQUIRED FOR RE-USE OR RE-INSTALLATION (SHOWN OR
3.	SPACE. USE OF THE CONDUIT SYSTEM FOR EQUIPMENT GROUNDING SHALL NOT BE ACCEPTABLE. A SEPARATE GREEN GROUND WIRE SHALL RUN WITH THE CIRCUIT CONDUCTORS IN EACH CIRCUIT. IN ALL AREAS WHERE FIRE RATED WALLS, FLOORS AND CEILINGS ARE		OTHERWISE) SHALL BE REMOVED. ALL EXISTING MATERIALS AND EQUIPMENT WHICH ARE REMOVED AND DESIRED BY THE OWNER, OR ARE INDICATED TO REMAIN AS THE PROPERTY OF THE OWNER, SHALL BE DELIVERED TO THE OWNER ON THE PREMISES BY THE CONTRACTOR WHERE DIRECTED BY THE ARCHITECT. ALL OTHER
4.	IN ALL AREAS WHERE FIRE RATED WALLS, FLOORS AND CEILINGS ARE INSTALLED, ALL PENETRATIONS OF ELECTRICAL CONDUITS OR OTHER RELATED ELECTRICAL MATERIAL SHALL BE PROPERLY SEALED WITH APPROVED FIRE RATED MATERIALS TO MAINTAIN THE RATINGS OF THE BUILDING CONSTRUCTION.		MATERIALS AND EQUIPMENT WHICH ARE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY THE CONTRACTOR FROM THE PREMISES.
5.	ALL FUSES, DISCONNECT SWITCHES, AND BREAKER SIZES SHOWN FOR MECHANICAL/PLUMBING/FIRE PROTECTION EQUIPMENT SHALL BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND MECHANICAL/PLUMBING CONTRACTOR.	D.	EXISTING CONDITIONS (PRESENCE AND LOCATION OF PANELBOARDS, LIGHTING FIXTURES, RECEPTACLES, EQUIPMENT, MATERIALS AND CIRCUITING) INDICATED ARE BASED ON INFORMATION OBTAINED FROM AVAILABLE RECORD DRAWINGS AND FIELD SURVEYS AND ARE NOT WARRANTED TO BE COMPLETE OR
6. 7.	ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH STATE, LOCAL AND NATIONAL CODES AND ORDINANCES. THE NEW FIRE ALARM EQUIPMENT SHOWN SHALL BE PROVIDED IN		CORRECT. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL CONDUITS, EQUIPMENT AND MATERIALS IN THE FIELD PRIOR TO STARTING ALL WORK.
8.	ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. PROVIDE ALL WIRING AS REQUIRED FOR A COMPLETE SYSTEM. EACH CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT	E.	EXISTING EQUIPMENT SIZES NOTED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND ARE NOT WARRANTED TO BE CORRECT. CONTRACTOR SHALL VERIFY ALL SIZES IN THE FIELD IF
	PER APPROVED GOVERNING CODES OR PER APPROVAL OF THE ENGINEER. UNACCEPTABLE WORKMANSHIP OR MATERIALS SHALL BE REPLACED AT THE REQUEST OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.	F.	EQUIPMENT IS IN PROJECT SCOPE. WHEN EXISTING MECHANICAL AND ELECTRICAL WORK IS REMOVED,
9. 10.	ALL JUNCTION BOXES AND CONDUIT RUNS (WITH OR WITHOUT WIRES) SHALL BE COLOR CODED WITH PAINT, IN ACCORDANCE WITH ELECTRICAL GENERAL PROVISIONS. THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS		ALL CONDUITS, WIRING AND MATERIALS SHALL BE REMOVED TO A POINT BELOW FINISHED FLOORS OR BEHIND FINISHED WALLS AND CAPPED. SUCH POINTS SHALL BE FAR ENOUGH BEHIND FINISHED SURFACES TO ALLOW FOR THE INSTALLATION OF THE NORMAL THICKNESS OF FINISHED MATERIAL.
	AND JUNCTION BOXES SHALL BE REVIEWED AND COORDINATED WITH THE ARCHITECT AND OWNER PRIOR TO INSTALLATION, FOR USE WITH THE ACTUAL EQUIPMENT, CASEWORK AND MILLWORK TO BE FURNISHED.	G.	EXISTING MECHANICAL AND ELECTRICAL EQUIPMENT, CONDUIT, WIRING, DEVICES, AND MATERIALS AFFECTED BY DEMOLITION OR
11. 12.	ALL WIRE AND CONDUIT SIZES ARE BASED ON 75°C THHN OR THWN WIRE UNLESS OTHERWISE NOTED. THE LOCATION OF ALL WALL MOUNTED DEVICES, INCLUDING MOUNTING HEIGHTS, SHALL BE FIELD VERIFIED WITH THE ARCHITECT PRIOR TO INSTALLATION.		NEW WORK INSTALLATION AND REQUIRED TO REMAIN IN SERVICE SHALL BE REINSTALLED OR SUPPORTED AS REQUIRED IN ACCORDANCE WITH NEW WORK SPECIFICATIONS. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE OWNER.
13.	WHERE ELECTRICAL EQUIPMENT PENETRATES EXTERIOR WALLS OR THE ROOF, THEY SHALL BE PROPERLY SEALED WITH METHODS APPROVED BY THE ENGINEER. SUBMIT DETAIL OF PROPOSED SEALING METHODS.	H.	IN GENERAL ALL EQUIPMENT AND MATERIALS SHOWN "LIGHT" IS EXISTING TO REMAIN AND ALL EQUIPMENT AND MATERIALS SHOWN AS "HEAVY AND DASHED" IS EXISTING AND SHALL BE DEMOLISHED.
14.	WHERE CONDUIT OR OUTLET BOXES CANNOT BE INSTALLED IN EXISTING WALLS FOR NEW DEVICES, THEN PROVIDE AND INSTALL SURFACE MOUNTED WIREMOLD RACEWAYS. CONFIRM ALL WIREMOLD WITH ARCHITECT PRIOR TO INSTALLATION.	I.	ENSURE THAT ALL ELECTRICAL WORK IS DONE DE-ENERGIZED. SPECIFICALLY WHERE ELECTRICAL EQUIPMENT IS OPENED EXPOSING LIVE PARTS, BREAKERS ARE REMOVED OR INSTALLED OR
15.	OUTLET BOXES ON OPPOSITE SIDES OF THE FIRE RESISTANT WALL OR SHAFT ENCLOSURE RATED TWO HOURS OR LESS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24" AS REQUIRED BY NCSBC VOL 1 PARAGRAPH 705.4.3.		WHERE ELECTRICAL CONNECTIONS ARE MODIFIED, ALL POWER AT THE PANEL OR ENCLOSURE SHALL BE DE-ENERGIZED AT ITS SOURCE, PRIOR TO WORK BEING DONE.
	1174 V (G) V (I 11766.4.6.	J.	ALL TESTING, TROUBLESHOOTING AND VERIFICATION OF DEENERGIZATION IS TO BE DONE IN ACCORDANCE WITH NFPA 70E INCLUDING ESTABLISHING, ISOLATING IF REQUIRED, SHOCK PROTECTIVE AND ARC FLASH PROTECTIVE APPROACH BOUNDARIES AND WEARING PERSONAL PROTECTIVE EQUIPMENT APPROPRIATE FOR THE HAZARD.
		K.	PRIOR TO THE REMOVAL OF A CIRCUIT FROM A PANELBOARD, THE CONTRACTOR SHALL VERIFY THAT NO EXISTING LOADS REMAIN ON THAT CIRCUIT. IF UNEXPECTED LOADS REMAIN ON THE CIRCUIT, NOTIFY EOR FOR DIRECTIONS TO PROCEED. ONCE CIRCUITS HAVE BEEN VERIFIED TO BE UNDER NO LOAD, BREAKERS IN THE CORRESPONDING PANELBOARD SHALL BE FLIPPED TO THE 'OFF' POSITION AND MARKED AS SPARE AND READY FOR FUTURE WORK. ALL CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE.
		L.	UPDATE PANEL SCHEDULES TO REFLECT NEW AND CHANGED LOAD. ALL PANEL SCHEDULES SHALL BE COMPUTER GENERATED.

M. EXISTING FIRE ALARM SYSTEM SHALL BE MAINTAINED AND OPERABLE DURING DEMOLITION. CONTRACTOR SHALL TEMP

EXISTING DEVICES TO ALLOW DEMOLITION OF EXISTING CONDUIT

	SYMBOL LEGEND		Al	BBREVIATIONS
	DESCRIPTION	REMARKS	ABBREV.	DEFINITION
	WEATHERPROOF DUPLEX GROUNDING TYPE RECEPTACLE - +16" ABOVE	HUBBELL GF-5362-X WITH	Α	AMPS, AMPERE, AMPERAGE
	GRADE TO BOTTOM OF OUTLET BOX, UNLESS OTHERWISE NOTED.	TAYMAC HEAVY DUTY IN- USE COVER	AC A/C	ABOVE COUNTER ALTERNATING CURRENT
	JUNCTION BOX WITH REMOVABLE COVER - SIZE PER NATIONAL ELECTRICAL CODE		ADA AFF	AMERICANS WITH DISABILITIES ACT ABOVE FINISHED FLOOR
	120/208 VOLT PANELBOARD WITH NEUTRAL AND GROUND BUS		AFG AHJ	ABOVE FINISHED GRADE AUTHORITY HAVING JURISDICTION
	ACCESSORIES.		AIC AL	AMPERE INTERRUPTING CURRENT ALUMINUM
	277/480 VOLT PANELBOARD WITH NEUTRAL, AND GROUND BUS ACCESSORIES.		ANSI ATSC	AMERICAN NATIONAL STANDARD INSTITUTE AUTOMATIC TRANSFER SWITCH CONTROL
	AGGEGGGNIEG.		ATS A/V	AUTOMATIC TRANSFER SWITCH AUDIO/VISUAL
	FUSIBLE DISCONNECT SWITCH, HEAVY DUTY		AWG BAS	AMERICAN WIRE GAUGE BUILDING AUOTMATION SYSTEM
-	HOME RUN CIRCUIT TO PANELBOARD		BFC	BELOW FINISHED CEILING CONDUIT
			C CB	CIRCUIT BREAKER
			CCTV	CLOSED CIRCUIT TELEVISION CIRCUIT
			CT CU	CURRENT TRANSFORMER COPPER
			D DB	DIMMING OR DIMMER DISTRIBUTION BOARD
			DC DL	DIRECT CURRENT DAY-LIGHTING
			DISC E	DISCONNECT SWITCH EMERGENCY
			ECB EOR	ENCLOSED CIRCUIT BREAKER ENGINEER OF RECORD
			EWC	ELECTRIC WATER COOLER EXISTING
			FUT FA	FUTURE FIRE ALARM
			FACP FATC	FIRE ALARM CONTROL PANEL FIRE ALARM TERMINAL CABINET
			FDR FPMR	FEEDER FUSE PER MANUFACTURER
			GAA	RECOMMENDATIONS GENERATOR ALARM ANNUNCIATOR
			GAP GEN	GENERATOR ALARM PANEL GENERATOR
			GEC	GROUNDING ELECTRODE CONDUCTOR
			GFI GFCI	GROUND FAULT INTERRUPTER GROUND FAULT CIRCUIT INTERRUPTER
			GFEP GFP	GROUND FAULT EQUIPMENT PROTECTION GROUND FAULT PROTECTION
			GND GRS	GROUND GALVANIZED RIGID STEEL
			HH HOA	HAND HOLE HAND-OFF AUTOMATIC
			HP IEEE	HORSEPOWER INSTITUE OF ELECTRICAL AND
			IG	ELECTRONICS ENGINEERS ISOLATED GROUND
			KCMIL KV	THOUSAND CIRCULAR MILS KILOVOLT
			KVA KW	KILOVOLT AMPS KILOWATT
			KWH LC	KILOWATT HOURS LIGHTING CONTACTOR
			LS LSIG	LOUD SPEAKER LONG TIME, SHORT TIME, INSTANTANEOUS
			MAX	AND GROUND FAULT PROTECTION MAXIMUM
			MCB MCC	MAIN CIRCUIT BREAKER MOTOR CONTROL CENTER
			MDP MIN	MAIN DISTRIBUTION PANEL MINIMUM
			MH MLO	MAN HOLE MAIN LUGS ONLY
			MTS	MANUAL TRANSFER SWITCH
			N/A NC	NOT APPLICABLE NORMALLY CLOSED
			NEC NEMA	NATIONAL ELECTRIC CODE NATIONAL ELECTRICAL
				MANUFACTURER'S ASSOCIATION NEUTRAL
			NFPA NIC	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT
			NO O/H	NORMALLY OPEN OVER HEAD
			P PA	POLE PUBLIC ADDRESS
			PB PC	PULL BOX PHOTOCELL
			PH PT	PHASE POTENTIAL TRANSFORMER POTENTIAL TRANSFORMER
			RC RSC	RECEPTACLE CONTACTOR RIGID STEEL CONDUIT
			SEC SPD	SECURITY SURGE PROTECTIVE DEVICE
			SW SWBD	SWITCH SWITCHBOARD
			SWGR TC	SWITCHGEAR TIME CLOCK
			TEMP TGB	TEMPORARY TECHNOLOGY GROUND BAR
			TGMB TTB	TECHNOLOGY MAIN GROUND BAR TELEPHONE TERMINAL BOARD
			TV TYP.	TELEVISION TYPICAL
			U/C U/G	UNDER COUNTER UNDERGROUND
			UGE	UNDERGROUND ELECTRIC
	CHEET INDEX OF COTOLOA	1	UL UON	UNDERWRITERS' LABORATORIES UNLESS OTHERWISE NOTED
	SHEET INDEX - ELECTRICA	L	UPS V	UNINTERRUPTABLE POWER SUPPLY VOLTS, VOLTAGE

Current Current Revision Date

Sheet Number

LEAD SHEET

DETAILS

DEMOLITION AND NEW WORK PLANS

DETAILS, RISER, AND PANEL SCHEDULES

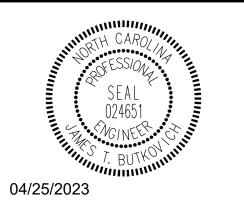
SYMBOL



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PDC 23013 04/25/2023

CHECKED BY: JPT

REVISIONS NUMBER DATE DESCRIPTION

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VOLTS, VOLTAGE VARIABLE FREQUENCY DRIVE

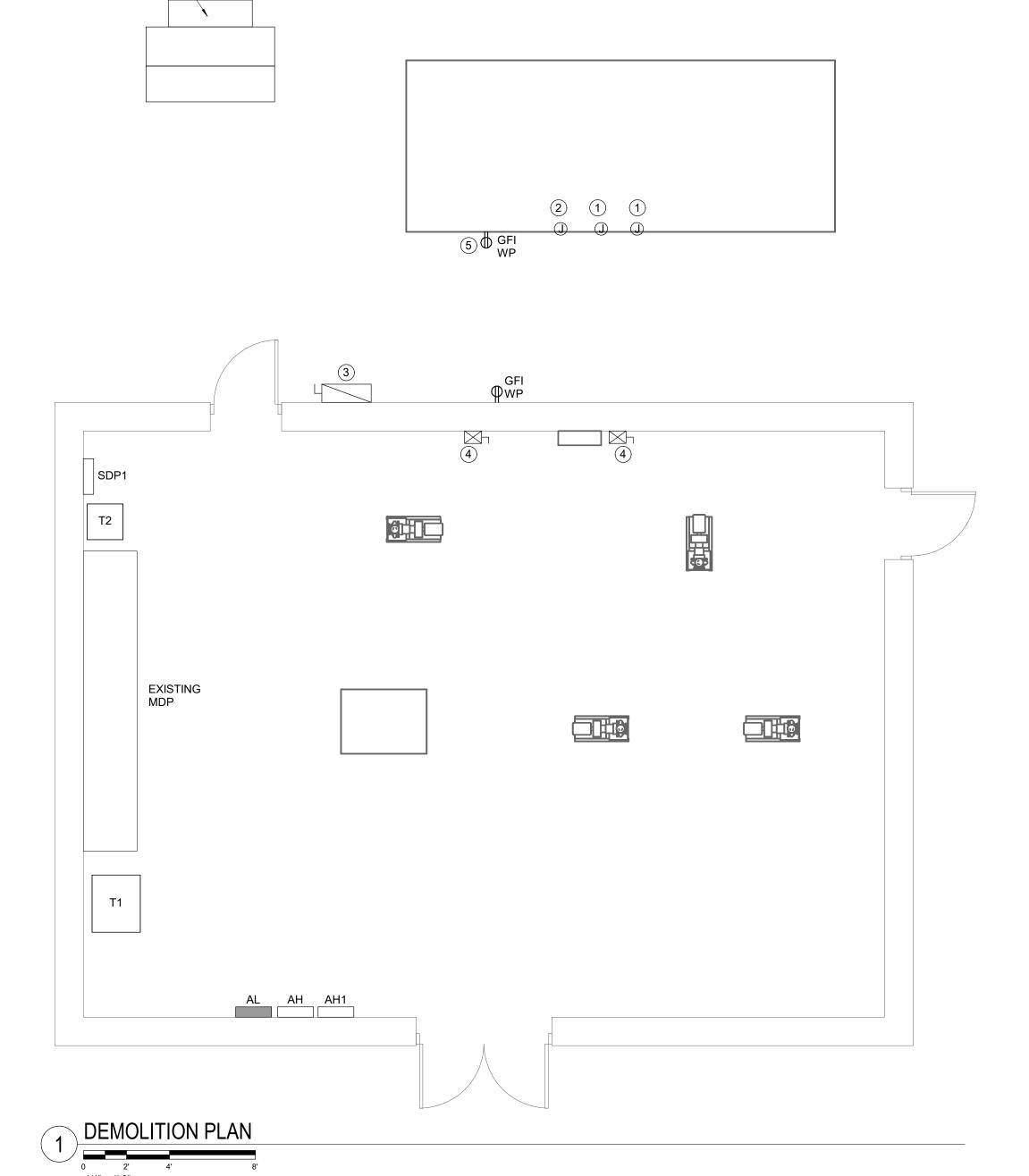
WIRE GUARD
WEATHERPROOF
TRANSFER

TRANSFORMER

V VFD WG

XFER XFMR

LEAD SHEET



GENERAL DEMOLITION NOTES:

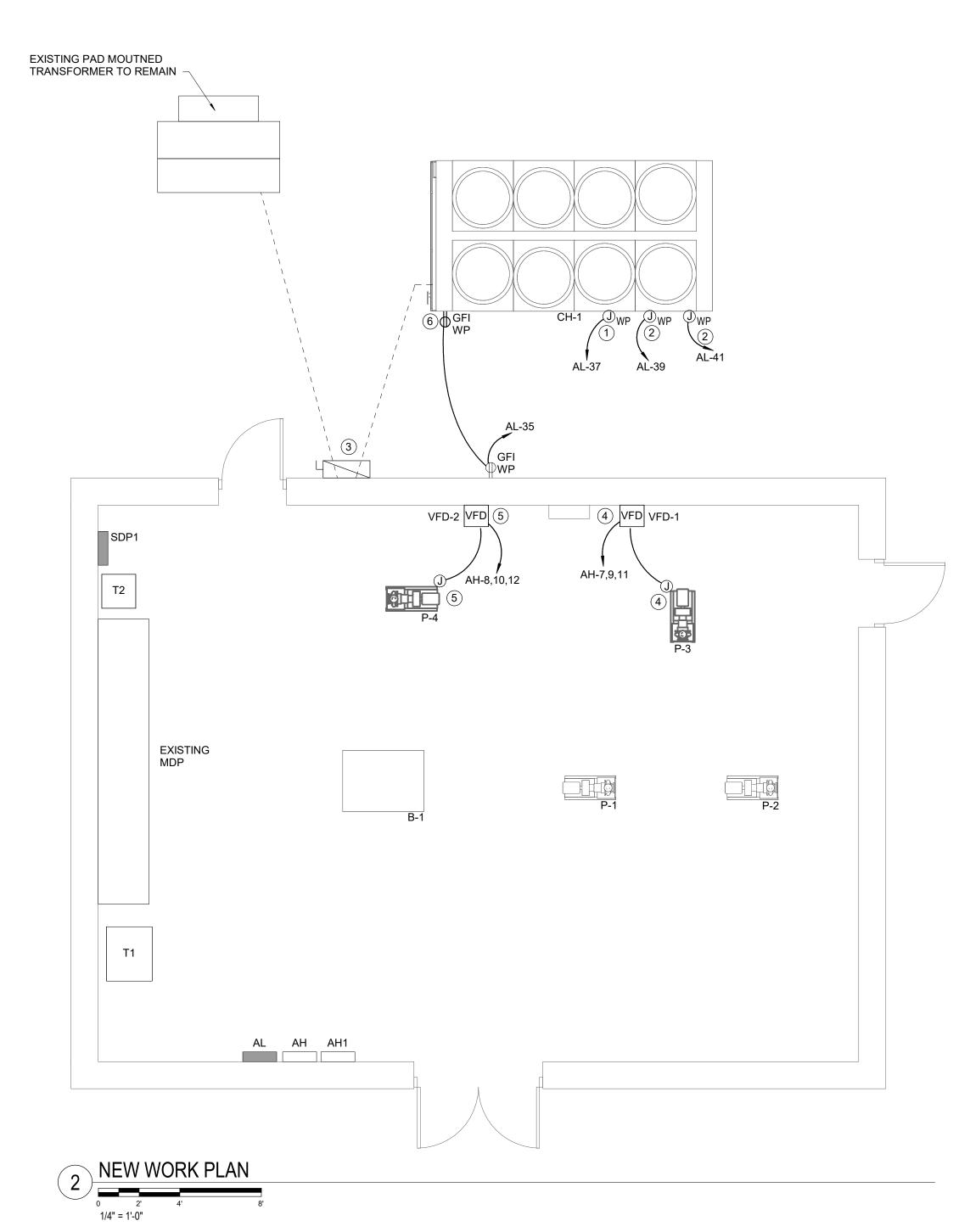
EXISTING PAD MOUTNED

TRANSFORMER TO REMAIN -

- A. EXISTING PANELS SHOWN FOR REFERENCE, UNLESS OTHERWISE NOTED.
- B. IN AREAS WITH DEMOLITION WORK AND NO CEILING GRID LEAVE EXISTING LIGHTING AND CEILING MOUNTED DEVICES IN PLACE UNLESS REMOVAL IS REQUIRED FOR ACCESS TO EXISTING DEVICES, CONDUIT, WIRING TO BE REMOVED.

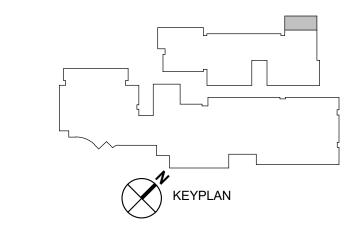
KEY NOTES DEMOLITION:

- 1. DISCONNECT EXISITNG HEAT TRACE WIRING FROM HEAT TRACE CONNECTION POINTS AND LEAVE WIRING AND CONDUIT IN PLACE FOR RECONNECTION TO NEW HEAT TRACE CONNECTIONS FOR NEW CHILLER.
- 2. DISCONNNECT WIRING FOR EXISTING CHILLER CONTROLS AND LEAVE EXISTING WIRING AND CONDUIT IN PLACE FOR RE-CONNECTION TO NEW CHILLER CONTROL PANEL POWER CONNECTION.
- 3. REMOVE EXISTING CHILLER DISCONNECT AND FEEDER/CONDUIT FROM EXISTING CHILLER TO BE REMOVED TO DISCONNECT TO BE REMOVED. LEAVE ALL OTHER WIRING AND CONDUIT IN PLACE FROM TRANSFORMER TO LOCATION OF EXISTING DISCONNECT. LEAVE TRENCH OPEN FOR ROUTING OF NEW UNDERGROUND FEEDER FROM NEW DISCONNECT TO NEW CHILLER TO BE INSTALLED. LEAVE PREPARE EXISTING WIRING FROM EXISTING TRANSFORMER TO BE RECONNECTED TO NEW DISCONNECT. REMOVE EXISTING SERVICE ENTRANCE GROUNDING CONDUCTOR AND GROUND ROD AND PREPARE FOR INSTALLATION OF NEW.
- 4. DISCONNECT WIRING FROM EXISTING CHILLED WATER PUMP TO BE REMOVED. REMOVE EXISTING CONDUIT AND WIRING BACK TO SOURCE PANEL AND REMOVE BREAKER. LEAVE CONDUIT ROUTING SPACE BEHIND FOR NEW WORK. REMOVE EXISTING MOTOR STARTERS, DISCONNECTS, VFD'S AND ASSOCIATED WIRING AND TURN OVER TO OWNER.
- 5. DISCONNECT FEEDER FROM EXISTING WEATHERPROOF/GFI RECEPTACLE AT CHILLER LOCATION AND LEAVE WIRING/CONDUIT IN PLACE FOR CONNECTION OF NEW RECEPTACLE. REMOVE EXISTING RECEPTACLE AND TURN OVER TO OWNER.



KEYNOTES NEW WORK:

- 1. PROVIDE NEW WEATHERPROOF JUNCTION BOX AT LOCATION OF EXISITING CHILLER CONTROLLER THAT WAS DEMOLISHED. RECONNECT EXISTING WIRING LEFT IN PLACE FROM DEMOLITION TO NEW CHILLER CONTROL PANEL AS REQUIRED FOR COMPLETE OPERATION.
- 2. PROVIDE NEW WEATHERPROOF JUNCTION BOX AT LOCATIONS OF EXISITING CHILLER HEAT TRACE WIRING THAT WAS DEMOLISHED. RECONNECT EXISTING POWER WIRING LEFT IN PLACE FROM DEMOLITION TO NEW CHILLER HEAT TRACE AS REQUIRED FOR COMPLETE OPERATION.
- 3. PROVIDE NEW NEMA 3R, 480V, 400A, FUSED, DISCONNECT SWITCH AT EXISTING FEEDER LOCATION FROM EXISTING TRANSFORMER. PROVIDE NEW FEEDER (- (4) #250 & (1) #4G IN 3"C-) FROM NEW DISCONNECT UNDERGROUND TO NEW CHILLER POWER CONNECTION POINT AND CONNECT EXISTING FEEDERS FROM TRANSFORMER TO NEW DISCONNECT. FUSE DISCONNECT PER MANUFACTURER'S RECOMMENDATION. PROVIDE NEW 1/0CU SERVICE ENTRANCE GROUND AT DISCONNECT WITH NEW GROUND ROD PER NEC GROUNDING REQUIREMENTS.
- 4. PROVIDE NEW JUCTION BOX AT NEW CHILLED WATER PUMP LOCATION. PROVIDE NEW FEEDER (-(3) #12 & (1)#12GND IN 3/4"C-) AND NEW 20A, 3P, 480V, SQUARE D BASED BREAKER IN PANEL AH AT CIRCUIT SHOWN. WIRE VIA VFD-1 AND REUSE EXISTING CONDUIT ROUTING SPACE LEFT OVER FROM DEMOLITION.
- 5. PROVIDE NEW JUCTION BOX AT NEW CHILLED WATER PUMP LOCATION. PROVIDE NEW FEEDER (-(3) #12 & (1)#12GND IN 3/4"C-) AND NEW 20A, 3P, 480V, SQUARE D BASED BREAKER IN PANEL AH AT CIRCUIT SHOWN. WIRE VIA VFD-2, REUSE EXISTING CONDUIT ROUTING SPACE LEFT OVER FROM DEMOLITION.
- 6. PROVIDE NEW WEATHERPROOF/GFI 120V RECEPTACLE AT CHILLER LOCATION. RECONNECT TO EXISTING FEEDER/CONDUIT LEFT BEHIND FROM DEMOLITION OF EXISTING RECEPTACLE. RECEPTACLE IS CONNECTED TO EXTERIOR SERVICE YARD CIRCUIT SHOWN.





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REVISIONS

NUMBER DATE DESCRIPTION

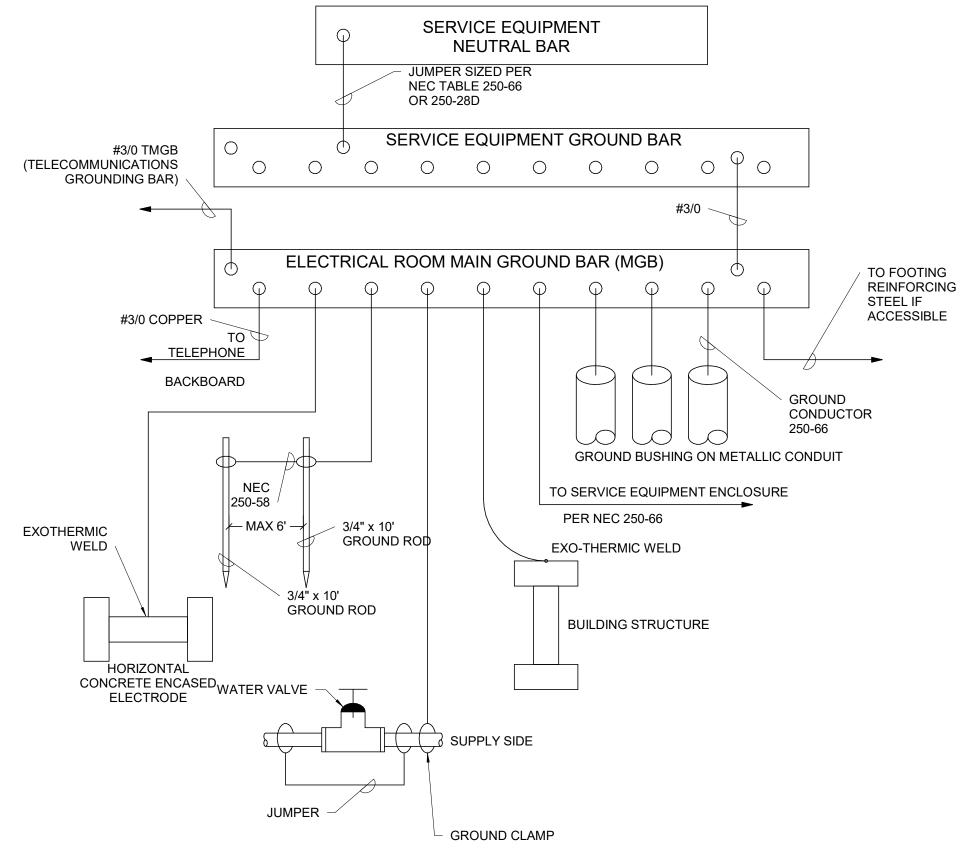
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UPGRADES

BE COUNTY PUBLIC SCHOOLS

DEMOLITION AND NEW WORK

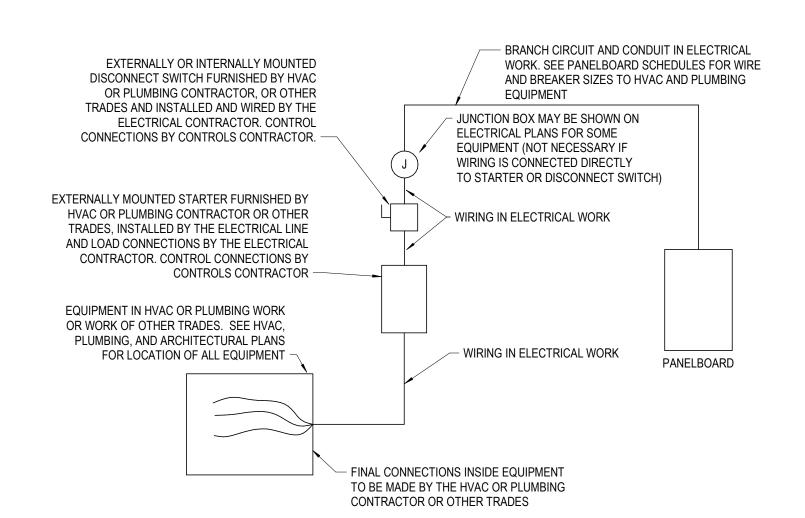
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GENERAL NOTES:

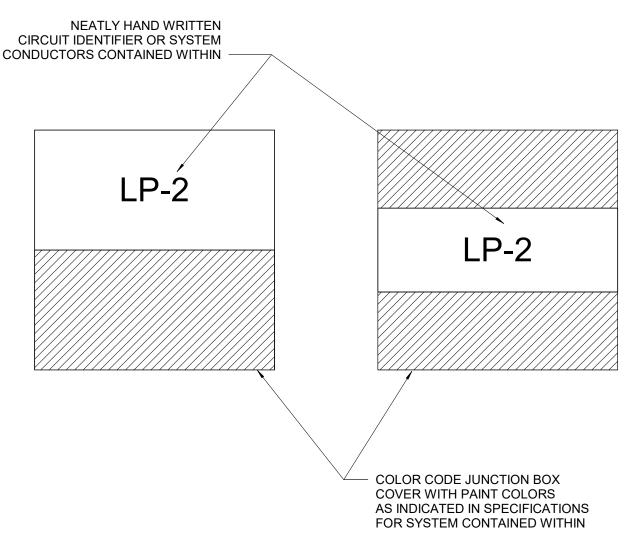
- A. THIS SCHEMATIC IS NOT INTENDED TO SHOW ALL NEC AND OTHER CODE REQUIRED BONDING AND GROUNDING. RATHER, IT IS INTENDED TO ALERT THE CONTRACTOR TO TYPICAL MISAPPLICATIONS AND/OR OVERSIGHTS THAT OCCUR IN THE FIELD. THE CONTRACTOR IS A LICENSED PROFESSIONAL AND REMAINS RESPONSIBLE FOR ADHERENCE TO ALL INSTALLATION CODES WHETHER SHOWN OR NOT.
- B. ALL CONDUCTORS SHOWN ON THIS SCHEMATIC SHALL BE SIZED PER NEC 250-66 UNLESS NOTED OTHERWISE.
- C. ALL GROUNDING AND BONDING SHOWN IS REQUIRED TO BE INSTALLED IF PRESENT ON THE PROJECT.
- D. SEE OTHER DETAILS FOR ADDITIONAL GROUNDING AND BONDING OF OTHER EQUIPMENT AND/OR SYSTEMS.
- E. COORDINATE CONCRETE ENCASED ELECTRODES WITH STRUCTURAL ENGINEER.

6 DETAIL - BONDING AND GROUNDING SCHEMATIC



A COMBINATION STARTER SHALL BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER, WHERE AVAILABLE.





NOTE:

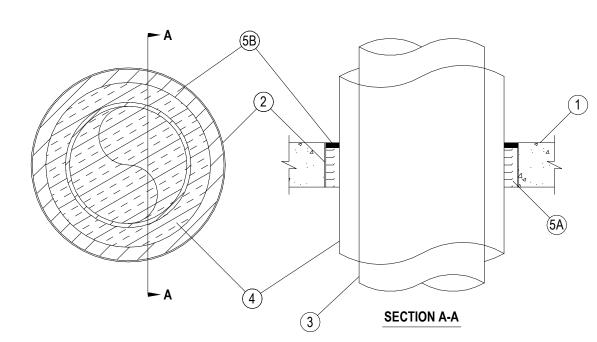
CONTRACTOR SHALL IDENTIFY JUNCTION BOX COVERS WITH ONE OF THE TWO METHODS SHOW ABOVE, BUT <u>NOT</u> BOTH. ALL JUNCTION BOX COVERS SHALL BE CONSISTENTLY IDENTIFIED ACROSS THE ENTIRE PROJECT.

JUNCTION BOX LABELING NOT TO SCALE



System No. C-AJ-5091

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)	FT Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 0 and 1 Hr (See Items 2 and 4)
	L Rating At Ambient —4 CFM/sq ft
	L Rating At 400 F —Less Than 1 CFM/sq ft



Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 29 in. (737 mm).

See Concrete Blocks (CAZT) category in the Fire Resistance directory for names of manufacturers.

Metallic Sleeve — (Optional) — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall. If the steel sleeve extends beyond the top surface of the floor or both surfaces of the wall, the T Rating of the firestop system is 0 hr.
 Sheet Metal Sleeve — (Optional) - Max 6 in. (152 mm) diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve

2B. Sheet Metal Sleeve — (Optional) - Max 12 in. (305 mm) diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.

diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the

- diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floo 3. Through Penetrants One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:

 A. Steel Pipe Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
- B. Iron Pipe Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
 C. Copper Pipe Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
 D. Copper Tubing Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
- 4. Pipe Covering Min 1/2 in. (13 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). When thickness of pipe covering is less than 2 in. (51 mm), the T Rating for the firestop system is 0 hr.

 See Pipe Equipment Covering Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe
- covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

 4A. Pipe Covering (Not Shown) As an alternate to Item 4, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf or 224 kg/m³) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel hands or min 18 AWG stainless steel wire.
- sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm).

 5. Firestop System The firestop system shall consist of the following:
- A. Packing Material Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
 B. Fill, Void or Cavity Material* Sealant Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of
- floor or with both surfaces of wall.

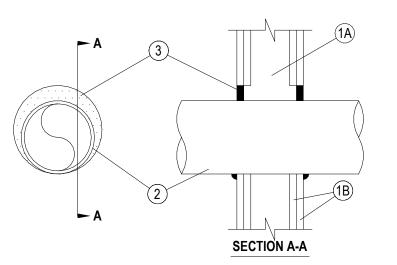
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC FS-One Sealant or FS-ONE MAX Intumescent Sealant
 Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively





System No. W-L-1054

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft
	L Rating at 400 F — Less Than 1 CFM/sq ft



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.

B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.

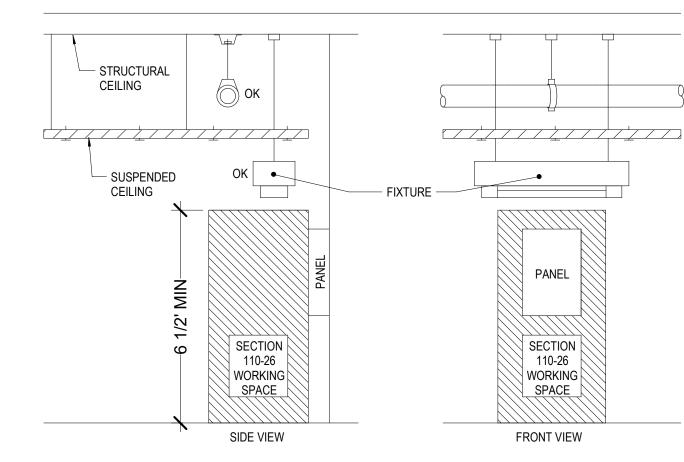
Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

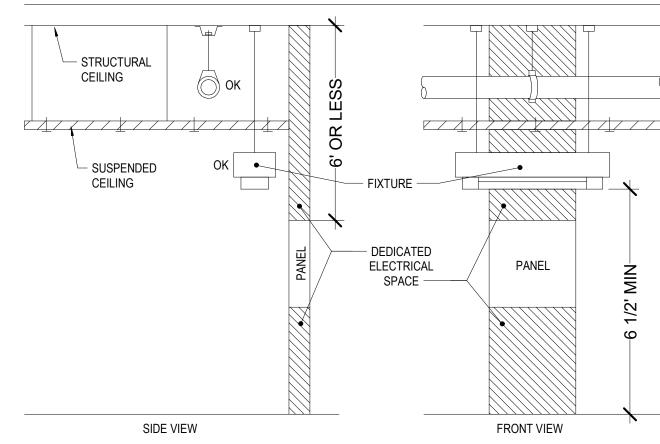
- B. Iron Pipe Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
 C. Conduit Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) diam steel conduit.
 D. Copper Tubing Nom 6 in. (152 mm) diam (or smaller) Type I. (or heavier) copper tubing
- D. Copper Tubing Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
 E. Copper Pipe Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
- 3. Fill, Void or Cavity Material* Sealant Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.

 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC FS-One Sealant or FS-ONE MAX Intumescent Sealant
- * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.





WORKING CLEARANCE FOR ELECTRICAL EQUIPMENT
N.E.C ARTICLE 110-26



DEDICATED SPACE FOR ELECTRICAL EQUIPMENT
N.E.C ARTICLE 110-26(F)(1)





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PDC 23013 04/25/2023

REVISIONS					
NUMBER	DATE	DESCRIPTION			

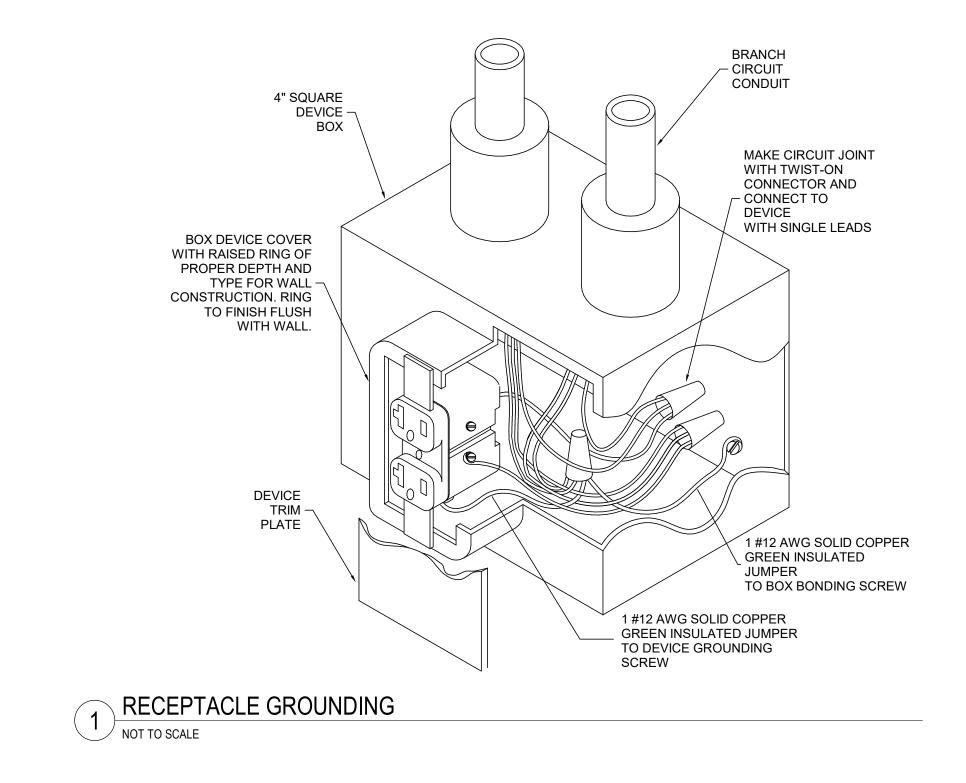
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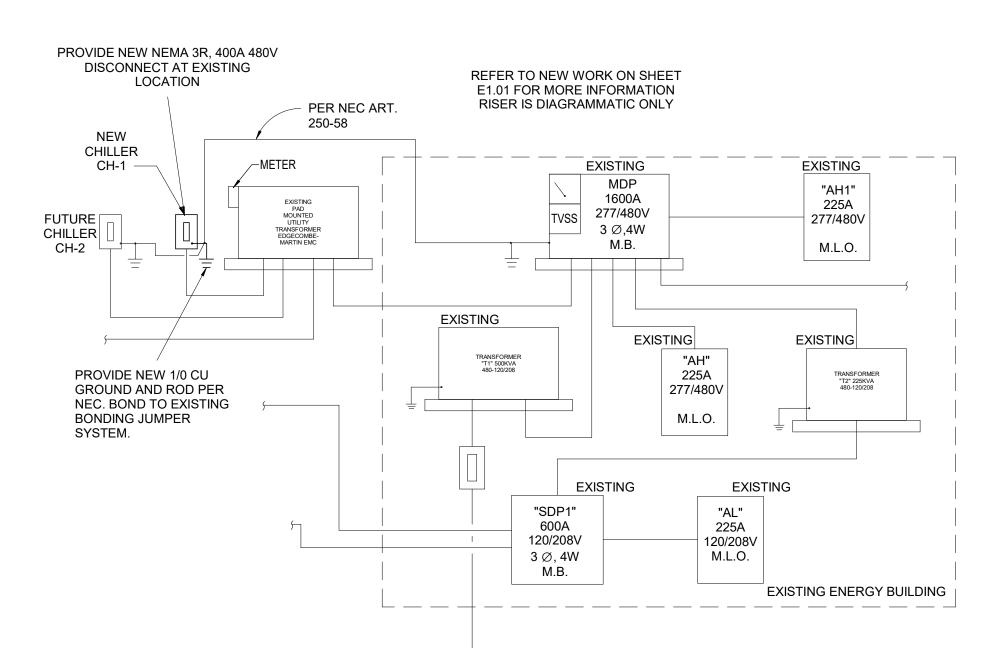
GRADES

E COUNTY PUBLIC SCHOOLS

DETAILS

E5.01





	<u>LEGEND</u>
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
M.C.B.	MAIN CIRCUIT BREAKER
M.L.O.	MAIN LUGS ONLY
G	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
E.C.B.	ENCLOSED CIRCUIT BREAKER
M.S.B.	MAIN SHUNT TRIP BREAKER

2 E - POWER RISER DIAGRAM

NOT TO SCALE

PANELBOARD: AH STATUS: **LOCATION: BOILER ROOM** MAINS: 200 A PANEL RATING: 200 A PANEL NOTES: PROVIDE DOOR WITH LOCK AND HINGED TRIM MOUNTING: Surface VOLTS: 480/277 Wye MCB RATING: PROVIDE COPPER GROUND AND NEUTRAL BUS PROVIDE FULL SIZE NEUTRAL BUS, U.O.N. ENCL NEMA: Type 1 PHASE: 3 FED FROM: MDP MIN AIC: 22,000 NOTES: EXISTING PANEL TO REMAIN, PROVIDE NEW BREAKERS AS SHOWN LOAD TYPE CKT LOAD DESCRIPTION

3	М	EXISTING PUMP P-1			3	30 A			3	30			30 A	3		-	EXISTING PUMP P-2	М	4
5											3	3							6
7							2.1	1.33											8
9	М	NEW PUMP P-3, NEW BREAKER	3-#12 & 1#12G	3/4"	3	20 A			2.1	1.33			20 A	3	3/4"	3-#12 & 1#12G	NEW PUMP P-4, NEW BREAKER	М	10
11											2.1	1.33							12
13							0	0											14
15		EXISTING UNIT HEATER UH-1		-	3	20 A			0	0			30 A	3			EXISTING SPARE		16
17											0	0							18
19							0	0											20
21		EXISTING SPARE		-	3	20 A			0	0			40 A	3			EXISTING SPARE		22
23											0	0							24
25							0	0											26
27		EXISTING SPARE			3	30 A			0	0			30 A	3			EXISTING SPARE		28
29											0	0							30
31							0	0											32
33		EXISTING SPARE		-	3	30 A			0	0			30 A	3			EXISTING SPARE		34
35											0	0							36
37							0	0											38
39		EXISTING SPARE			3	30 A			0	0			30 A	3		-	EXISTING SPARE		40
41											0	0							42
TOTAL LOAD:								kVA	9.43	kVA									
ı																			

BREAKER TYPES:	S "LOCK-ON" DEVICE TES GROUND FAULT DEVICE	ST - INDICATES SHUNT TRIP DEVIC GFPE - INDICATES GROUND FAULT		ATES ARC FAULT PROTECTED DEVICE
Load Classification	Connected Load (VA)	Demand Factor	Estimated Demand	Panel Totals
Receptacle	0 kVA	0.00%	0 kVA	
Motor	0 kVA	0.00%	0 kVA	Total Connected Load: 55.30 kVA
HVAC	0 kVA	0.00%	0 kVA	Total Connected Amps: 66.52 A
Lighting	0 kVA	0.00%	0 kVA	Total Estimated Demand: 55.30 kVA
Equipment	0 kVA	0.00%	0 kVA	Total Estimated Demand Amps: 66.52 A
Kitchen Equipment	0 kVA	0.00%	0 kVA	

PANEL NOTES: PROVIDE DOOR WITH LOCK AND HINGED TRIM

PROVIDE COPPER GROUND AND NEUTRAL BUS

Panel Totals

Total Estimated Demand Amps: 93.99 A

Total Connected Load: 33.86 kVA

Total Connected Amps: 93.99 A

Total Estimated Demand: 33.86 kVA

PANELBOARD: AL

Load Classification

Kitchen Equipment

LOCATION: BOILER ROOM

MOUNTING: Surface

STATUS:

GFCI - INDICATES GROUND FAULT DEVICE

Connected Load (VA)

0 kVA

0 kVA

0 kVA

0 kVA

MAINS: 225 A

VOLTS: 120/208 Wye

		ENCL NEMA: Type 1 MIN AIC: 10,000 NOTES:			ASE : 3 RES : 4				FED FRO	M: T1					PRC	OVIDE FULL SIZE NEUT	RAL BUS, U.O.N.	
		EXISTING PAR	NEL TO REMAIN, NEV	V LOADS	S ARE AL	DED TO	EXISTING	CIRCUITS	SHOWN.									
СКТ	LOAD TYPE	LOAD DESCRIPTION	WIRE SIZE	CND	POLES	TRIP AMPS		A	I	В	(C	TRIP AMPS	POLES	CND	WIRE SIZE	LOAD DESCRIPTION	LOAD TYPE
1	Е	EXISTING LOAD			1	20 A	1	3										
3	Е	EXISTING LOAD			1	20 A			1	3			40 A	3			EXISTING CU-12A	Н
5	E	EXISTING LOAD	-		1	20 A					1	3						
7	E	EXISTING LOAD	-		1	20 A	1	3										
9	E	EXISTING LOAD	-		1	20 A			1	3			40 A	3			EXISTING CU-12B	Н
11	E	EXISTING LOAD	-		1	20 A					1	3						
13	Е	EXISTING LOAD			1	20 A	1	0					20 A	1			SPARE	
15	Е	EXISTING LOAD			1	20 A			1	0			20 A	1			SPARE	
17	Е	EXISTING LOAD			1	20 A					0	0	20 A	1			SPARE	
19	E	EXISTING LOAD	-		1	20 A	1	0					20 A	1			SPARE	
21	E	EXISTING LOAD	-		1	20 A			1	0			20 A	1			SPARE	
23	E	EXISTING LOAD	-		1	20 A					0	0	20 A	1			SPARE	
25	Е	EXISTING LOAD		-	1	20 A	1	0					20 A	1			SPARE	
27	Е	EXISTING LOAD		-	1	20 A			1	0			20 A	1			SPARE	
29	Е	EXISTING LOAD		-	1	20 A					0	0	20 A	1			SPARE	
31	Е	EXISTING LOAD			1	20 A	1	0										
33		SPARE			1	20 A			1	0			30 A	3			SPARE	
35	R	EXISTING REC - SVC YARD	2#12 & 1#12G	3/4"	1	20 A					0.36	0						
37	R	EXISTING CHILLER CONTROLS	2#12 & 1#12G	3/4"	1	20 A	0.5						-	1			SPACE	
39	R	EXISTING CHILLER HEAT TRACE	2#12 & 1#12G	3/4"	1	20 A			0.5	-			-	1			SPACE	
41	R	EXIST CH WATER HEAT TRACE	2#12 & 1#12G	3/4"	1	20 A					0.5		-	1			SPACE	
					TOTA	L LOAD:	12.5	0 kVA	12.50	0 kVA	8.86	kVA						-
_		BREAKER TYPES:	LO - INDICATES "LO						CATES SHI							ES ARC FAULT PROTE		

GFPE - INDICATES GROUND FAULT FOR...

Demand Factor 100.00%

0.00%

0.00%

0.00%

0.00%

0.00%

Estimated Demand

0 kVA

0 kVA

0 kVA

0 kVA

PANEL RATING: 225 A

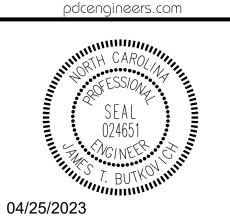
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REVISIONS NUMBER DATE DESCRIPTION

BID/PERMIT

GRADI

UP CHILLI EDGECOMBE COUNTY PUBLIC 2311 NORTH MAIN STREET TARBORO, NC 27886

DETAILS, RISER, AND PANEL SCHEDULES