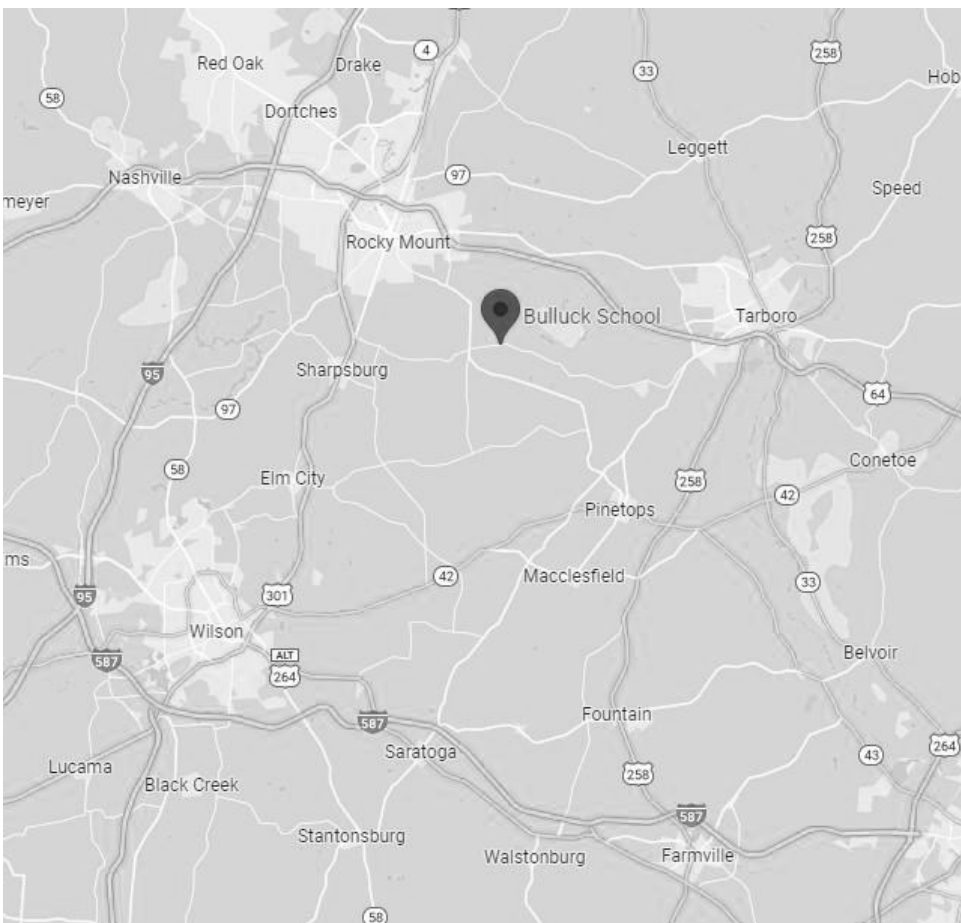
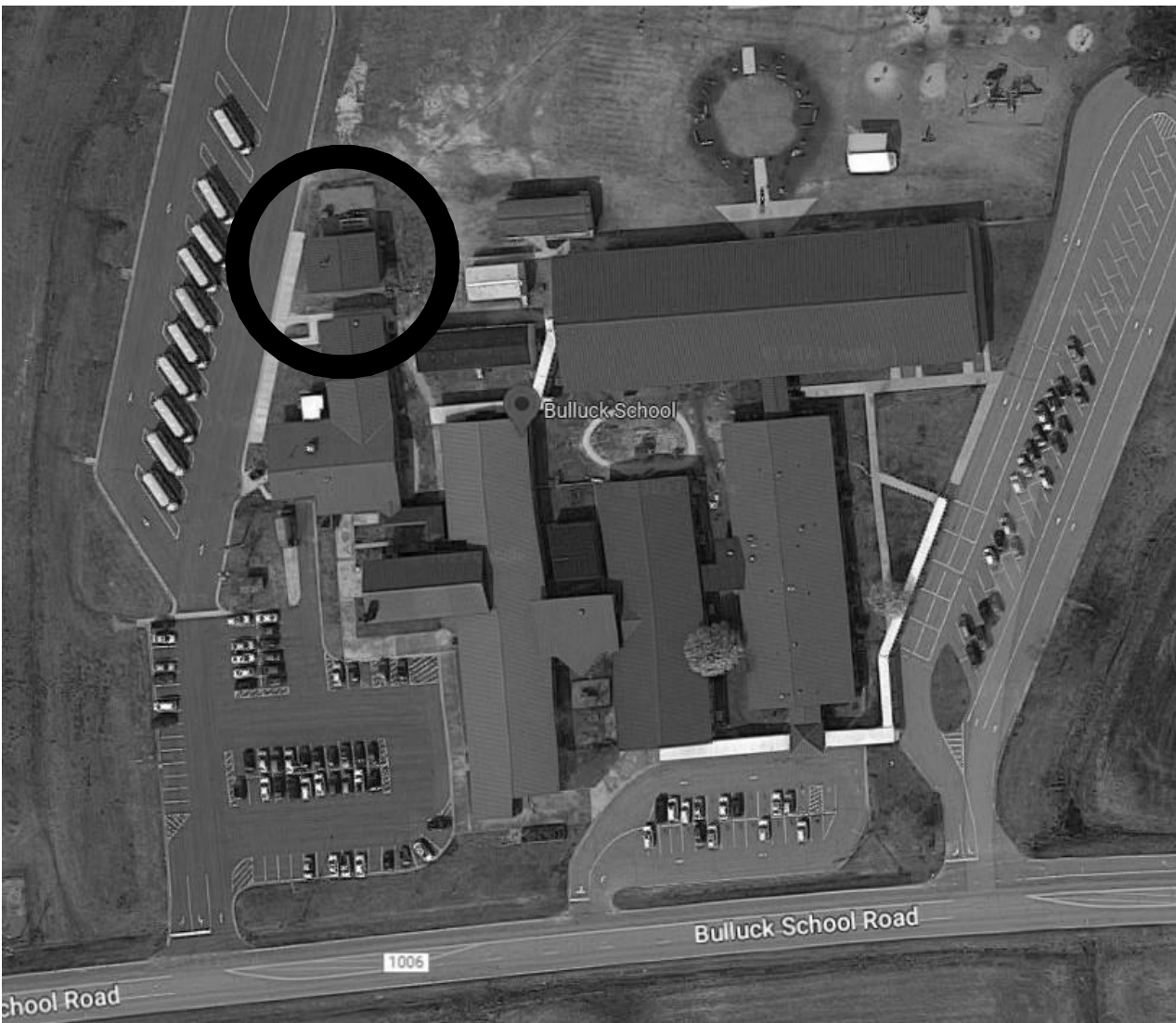


# PROJECT: GW BULLOCK SCHOOL CHILLER UPGRADES



VICINITY



CAMPUS

## 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

## INDEX OF DRAWINGS:

Sheet Number	Sheet Name
CS0.01	COVER SHEET
M0.01	LEAD SHEET
M1.01	DEMOLITIONS AND NEW WORK PLANS
M4.01	CONTROLS
M5.01	DETAILS
M6.01	MECHANICAL SCHEDULES
E0.01	LEAD SHEET
E1.01	DEMOLITION AND NEW WORK PLANS
E5.01	DETAILS
E5.02	DETAILS, RISER, AND PANEL SCHEDULES



**Progressive Design Collaborative, Ltd.**

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183

**PDC# 23013**

THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND AS SUCH SHALL REMAIN THE PROPERTY OF PROGRESSIVE DESIGN COLLABORATIVE, LTD. THEY SHALL NOT BE USED FOR ANY OTHER WORK OTHER THAN THAT AUTHORIZED BY PROGRESSIVE DESIGN COLLABORATIVE, LTD. UPON COMPLETION OF THE WORK, ALL COPIES, EXCEPT THE OWNER'S, SHALL BE RETURNED TO PROGRESSIVE DESIGN COLLABORATIVE, LTD.

GENERAL NOTES		SYMBOL LEGEND		ABBREVIATIONS			
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 CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE GREATER QUANTITY OF WORK.	— CHWS —	CHILLED WATER SUPPLY	ACCU	AIR COOLED CONDENSING UNIT	HZ	HERTZ
		— CHWR —	CHILLED WATER RETURN	ACU	AIR CONDITIONING UNIT	IF	INJECTION FAN
2.	COORDINATE ALL WORK WITH THAT OF THE OTHER DISCIPLINES PRIOR TO THE INSTALLATION OF ANY PIPING, DUCTWORK, OR EQUIPMENT.	●	POINT OF CONNECTION	AD	ACCESS DOOR	IN	INCHES
		■	POINT OF DISCONNECTION / DEMOLITION	AF	AIR FILTER	INSUL	INSULATION
3.	PERFORM A COMPLETE REVIEW OF THE CONTRACT DOCUMENTS PRIOR TO INSTALLATION OF THE MECHANICAL SYSTEMS AND REVIEW ANY CONFLICTS WITH THE ENGINEER.			AFF	ABOVE FINISHED FLOOR	ISOL	ISOLATION
				AHU	AIR HANDLING UNIT		
4.	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.			ALUM	ALUMINUM	KE	KITCHEN EXHAUST
				AMP	AMPERE	KW	KILOWATT
5.	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 INSTALLATIONS.			AP	ACCESS PANEL	LAT	LEAVING AIR TEMPERATURE
				ARCH	ARCHITECTURAL	LBS	POUNDS
6.	LOCATE ALL EQUIPMENT TO PROVIDE MAXIMUM SPACE FOR MAINTENANCE AND SERVICE.			AVG	AVERAGE	LF	LINEAR FEET
				CC	AIR COLLED CONDENSER	LLC	LIQUID LEVEL CONTROLLER
7.	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.			B	BOILER	LWT	LEAVING WATER TEMPERATURE
				B.I.	BLACK IRON	MAT	MIXED AIR TEMPERATURE
8.	PROVIDE ALL SUPPORT DEVICES NECESSARY FOR THE WORK. COORDINATE ALL LOCATIONS WITH OTHER DISCIPLINES PRIOR TO INSTALLATION.			BB	BASEBOARD RADIATION	MAX	MAXIMUM
				BDD	BACKDRAFT DAMPER	MIN	MINIMUM
9.	PROVIDE ALL PENETRATIONS PERTAINING TO THE WORK THROUGH THE ROOF, WALLS, AND FLOORS. PROVIDE THE WATERPROOFING AROUND THE OPENINGS.			BHP	BRAKE HORSEPOWER		
				BO	BLANK OFF		
10.	FIRE SEAL ALL FLOOR AND FIRE WALL PIPE AND CONDUIT PENETRATIONS WITH A UL APPROVED METHOD.			BTU	BRITISH THERMAL UNIT		
				BTUH	BRITISH THERMAL UNITS PER HOUR	N.C.	NORMALLY CLOSED
11.	PROVIDE ALL CUTTING AND PATCHING OF FLOORS AND WALLS FOR THE WORK UNLESS OTHERWISE INDICATED.			CA	COMPRESSED AIR	N.O.	NORMALLY OPEN
				CAP	CAPACITY	NC	NOISE CRITERIA
12.	ALL WALL AND FLOOR PENETRATIONS SHALL BE SEALED. SEAL ALL RATED FLOOR AND WALL PENETRATIONS WITH A UL APPROVED METHOD. FOR NON-RATE WALLS AND FLOORS, THE ANNULAR SPACE SHALL BE PACKED WITH MINERAL WOOL, OR ANOTHER SUITABLE NON-COMBUSTIBLE MATERIAL, AND CAULKED AIR RIGHT.			CAU	COMPRESSED AIR	NIC	NOT IN CONTRACT
				CC	COOLING COIL	NK	NECK
13.	INSTALL SENSORS, AND OTHER CONTROLS 48" ABOVE FINISHED FLOOR OR AS INDICATED ON THE DRAWINGS. COORDINATE WITH OTHER DISCIPLINES TO ALIGN EXACTLY WITH ADJACENT DEVICES SUCH AS LIGHT SWITCHES AND CONTROLS.			CFM	CUBIC FEET PER MINUTE	NPSH	NET POSITIVE SUCTION HEAT
				CH	CHILLER	NTS	NOT TO SCALE
14.	PROVIDE ALL SENSORS, CONTROLS, WIRING, AND CONDUIT.			CI	CAST IRON	OA	OUTSIDE AIR
				CL	CENTER LINE	OAI	OUTSIDE AIR INTAKE
15.	ALL LAYOUT AND LOCATIONS INDICATED ARE DIAGRAMMATIC. VISIT THE SITE, BECOME FAMILIAR WITH THE EXISTING CONDITIONS, AND COORDINATE THE DUCT LAYOUT WITH ALL DISCIPLINES PRIOR TO INSTALLATION.			CO	CARBON MONOXIDE	OBD	OPPOSED BLADE DAMPER
				CO	CLEAN OUT	OD	OUTSIDE DAMPER
16.	SUPPORT ALL PIPING, EQUIPMENT, AND APPURTENANCES FROM THE BUILDING STRUCTURE AND NOT THE ROOF DECK.			CONC	CONCRETE	OV	OUTLET VELOCITY
				CT	COOLI NG TOWER		
17.	ALL HANGER RODS SHALL BE CUT TO WITHIN 1" OF THE BOTTOM NUT. IN MECHANICAL ROOMS, ALL HANGERS OR OTHER EQUIPMENT BELOW 7'-4" SHALL BE WRAPPED WITH FOAM INSULATION FOR PERSONNEL PROTECTION.			CU	CONDENSING UNIT	P	PUMP
				CUH	CABINET UNIT HEATER	PD	PRESSURE DROP
18.	EQUIPMENT SHALL MEET OR EXCEED ALL REQUIREMENTS IN THE 2013 VERSION OF ASHRAE STANDARD 90.1 AND THE INTERNATIONAL ENERGY CONSERVATION CODE WITH NORTH CAROLINA AMENDMENTS.			CV	CONSTANT VOLUME	PH	PHASE
				CY	CYCLE	PRESS	PRESSURE
19.	DO NOT INSTALL PIPING OVER ANY ELECTRICAL PANEL OR SWITCHGEAR.			DB	DRY BULB TEMPERATURE	PRV	PRESSURE REDUCING VALVE
				DEL	DEFLECTION	PSIG	POUNDS PER SQUARE INCH
20.	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 SUPPORTED AND SHALL NOT BE SUPPORTED OF THE WORK OF OTHER TRADES.			DIFF	DIFFUSER	AP	PRESSURE DIFFERENTIAL
				DN	DOWN	RA	RETURN AIR
				DWG	DRAWING	REFRIG	REFRIGERANT
				DX	DIRECT EXPANSION	REG	REGISTER
						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
				ESP	EXTERNAL STATIC PRESSURE	RTU	ROOFTOP UNIT
				ET	EXPANSION TANK		
				EUH	ELECTRIC UNIT HEATER	SA	SUPPLY AIR
				EWT	ENTERING WATER TEMPERATURE	SD	SMOKE DAMPER
				EXH	EXHAUST	SF	SUPPLY FAN
						SM	SHEET METAL
				F.D.	FLOOR DRAIN	SP	STATIC PRESSURE
				FA	FREE AREA	SQ. FT.	SQUARE FEET
				FCU	FAN COIL UNIT	SS	STAINLESS STEEL
				FD	FIRE DAMPER	ST	SOUND TRAP
				FLEX	FLEXIBLE		
				FM	FLOW METER	T	TANK
				FP	FAN POWERED BOX	TC	TEMPERATURE CONTROL
				FPM	FEET PER MINUTE	TE	TOILET EXHAUST
				FT	FEET	TG	TRANSFER GRILLE
				FT2	SQUARE FEET	TSP	TOTAL STATIC PRESSURE
				FT3	CUBIC FEET	TYP	TYPICAL
				*F	DEGREES FARENHEIT	ΔT	TEMPERATURE DIFFERENTIAL
						UH	UNIT HEATER
				GA	GAUGE		
				GC	GENERAL CONTRACTOR	V	VOLTAGE
				GE	GENERAL EXHAUST	VAV	VARIABLE AIR VOLUME
				GPM	GALLONS PER MINUTE	VD	VOLUME DAMPER
				GR	GRILLE	VEL	VELOCITY
						VFD	VARIABLE FREQUENCY DRIVE
				*H	ENTHAPLY DIFFERENCE	VIB	VIBRATION
				HC	HEATING COIL		
				HORIZ	HORIZONTAL	W	WATT
				HP	HORSEPOWER	WB	WET BULB TEMPERATURE
				HR	HOUR	WC	WATER COLUMN
				HU	HUMIDIFIER	WMS	WIRE MESH SCREEN
				HVAC	HEATING VENTILATION & AIR CONDITIONING	WP	WORKING PRESSURE
				HX	HEAT EXCHANGER		
		MECHANICAL SUMMARY MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT					
		CODE 2018 NC ENERGY CODE: ASHRAE 90.1-2013:		PRESCRIPTIVE X PRESCRIPTIVE PERFORMANCE PERFORMANCE			
		ADDITIONAL PRESCRIPTIVE COMPLIANCE:					
		_N/A_ 506.2.1 MORE EFFICIENT MECHANICAL EQUIPMENT					
		_N/A_ 506.2.2 REDUCED LIGHTING POWER DENSITY					
		_N/A_ 506.2.3 ENERGY RECOVERY VENTILATION SYSTEMS					
		_N/A_ 506.2.4 HIGHER EFFICIENCY SERVICE WATER HEATING					
		_N/A_ 506.2.5 ON-SITE SUPPLY OF RENEWABLE ENERGY					
		_N/A_ 506.2.6 AUTOMATIC DAYLIGHTING CONTROLS					
		THERMAL ZONE: 3A					
		WINTER DRY BULB: 20.0 DEGREES F					
		SUMMER DRY BULB: 94.6 DEGREES F					
		SUMMER WET BULB: 74.3 DEGREES F					
		SUMMER HR/MCDB: 129.5 / 81.2 DEGREES F					
		INTERIOR DESIGN CONDITIONS					
		WINTER DRY BULB: 70 DEGREES F					
		SUMMER DRY BULB: 75 DEGREES F					
		RELATIVE HUMIDITY: 55 %					
		BUILDING HEATING LOAD:		EXISTING			
		BUILDING COOLING LOAD:		EXISTING			
		MECHANICAL SPACING CONDITIONING SYSTEM					
		UNITARY					
		DESCRIPTION OF UNIT:		REFER TO SCHEDULE ON DRAWINGS			
		HEATING EFFICIENCY:		REFER TO SCHEDULE ON DRAWINGS			
		COOLING EFFICIENCY:		REFER TO SCHEDULE ON DRAWINGS			
		SIZE CATEGORY OF UNIT:		REFER TO SCHEDULE ON DRAWINGS			
		BOILER:		TOTAL BOILER OUTPUT. IF OVERSIZED, STATE REASON. N/A			
		CHILLER:		TOTAL CHILLER CAPACITY. IF OVERSIZED, STATE REASON. 110 TONS			
		REFER TO EQUIPMENT SCHEDULES FOR UNIT EFFICIENCIES.					
		DESIGNER STATEMENT:					
		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 STATE ENERGY CODE					

SHEET INDEX - MECHANICAL			
SHEET NUMBER	SHEET NAME	CURRENT REVISION	CURRENT REVISION DATE
M0.01	LEAD SHEET		
M1.01	DEMOLITIONS AND NEW WORK PLANS		
M4.01	CONTROLS		
M5.01	DETAILS		
M6.01	MECHANICAL SCHEDULES		



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

SCAMPBELL@PDCENGINEERS.COM

DRAWN BY: CRR CHECKED BY: SWC

PDC 23013 04/25/2023

REVISIONS

NUMBER	DATE	DESCRIPTION

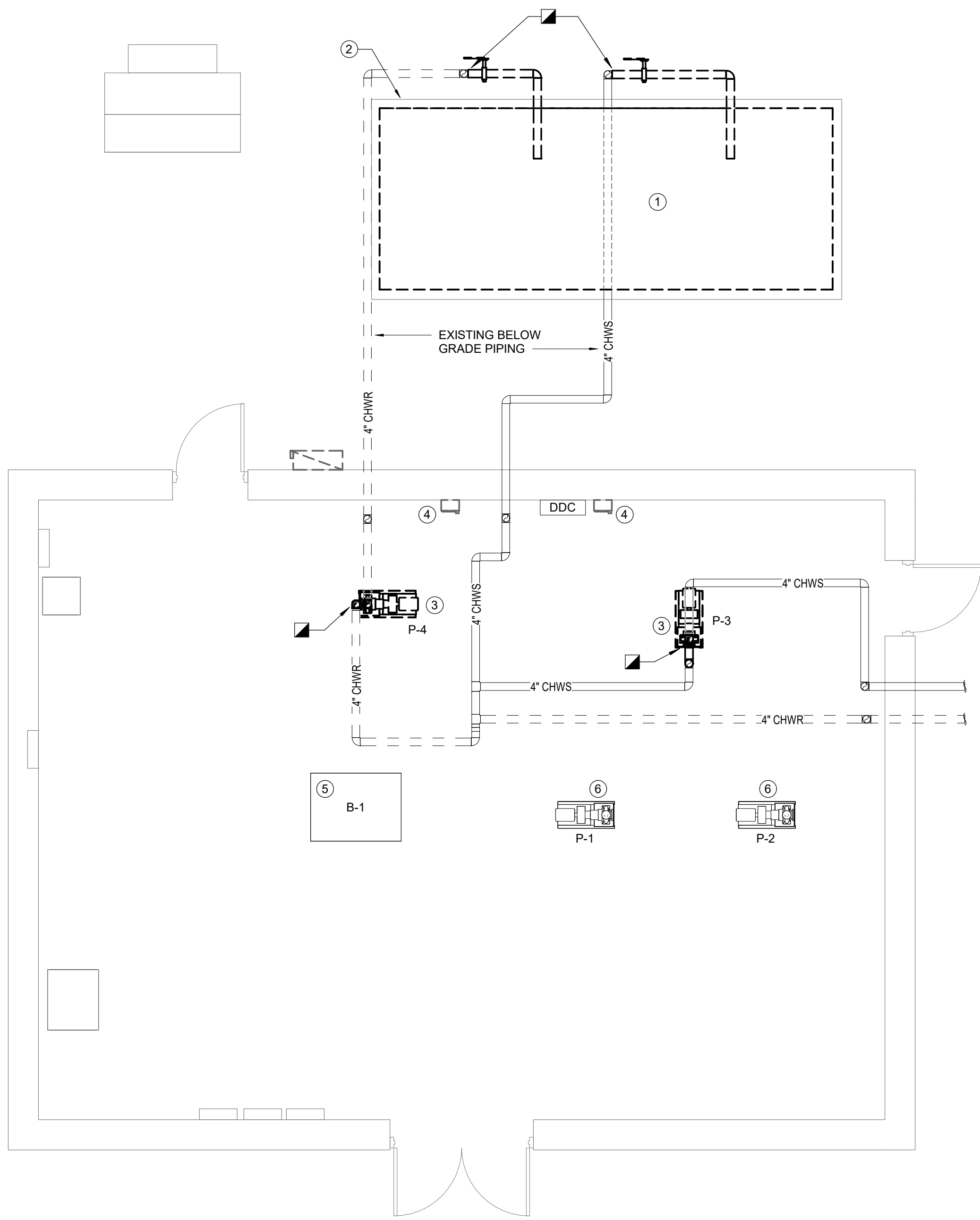
BID/PERMIT

GW BULLOCK SCHOOL CHILLER UPGRADES

EDGEcombe COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

LEAD SHEET

M0.01



1 DEMOLITION PLAN

0 2' 4' 8'

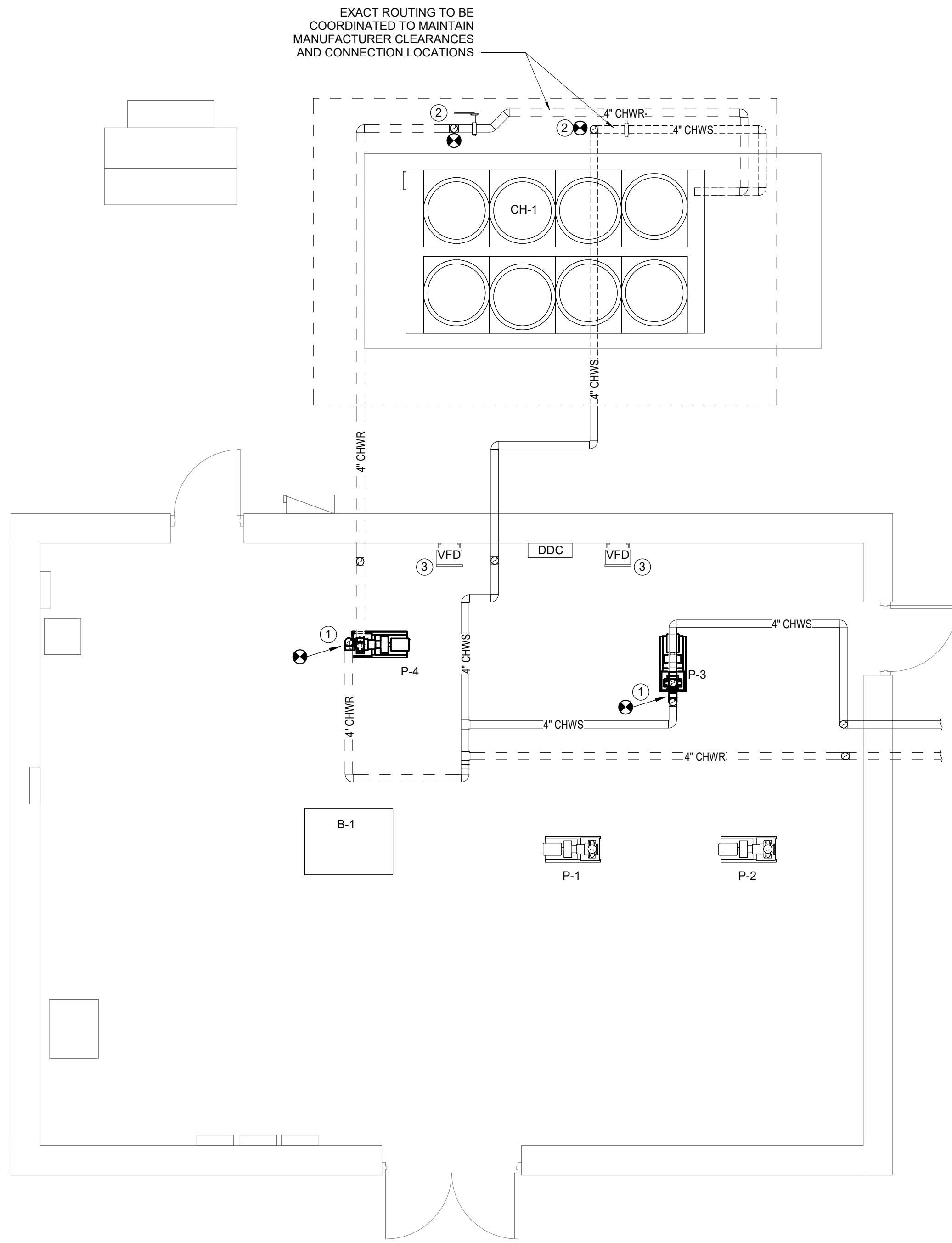
1/4" = 1'-0"

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.
3. 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.



2 NEW WORK PLAN

0 2' 4' 8'

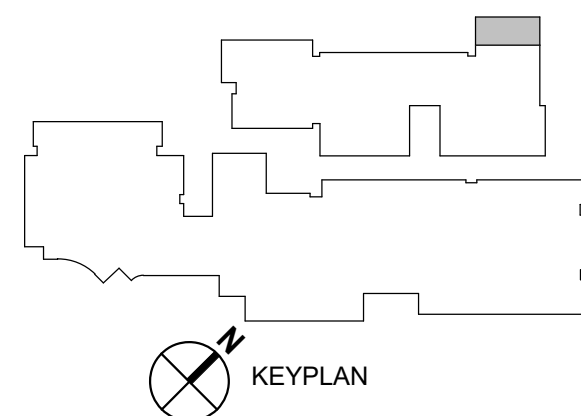
1/4" = 1'-0"

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):

1. 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.



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

SCAMPBELL@PDCENGINEERS.COM

DRAWN BY: CRR CHECKED BY: SWC

PDC 23013 04/25/2023

REVISIONS

NUMBER	DATE	DESCRIPTION

BID/PERMIT

GW BULLOCK SCHOOL CHILLER UPGRADES

EDGEcombe COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

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% (adj.).

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:

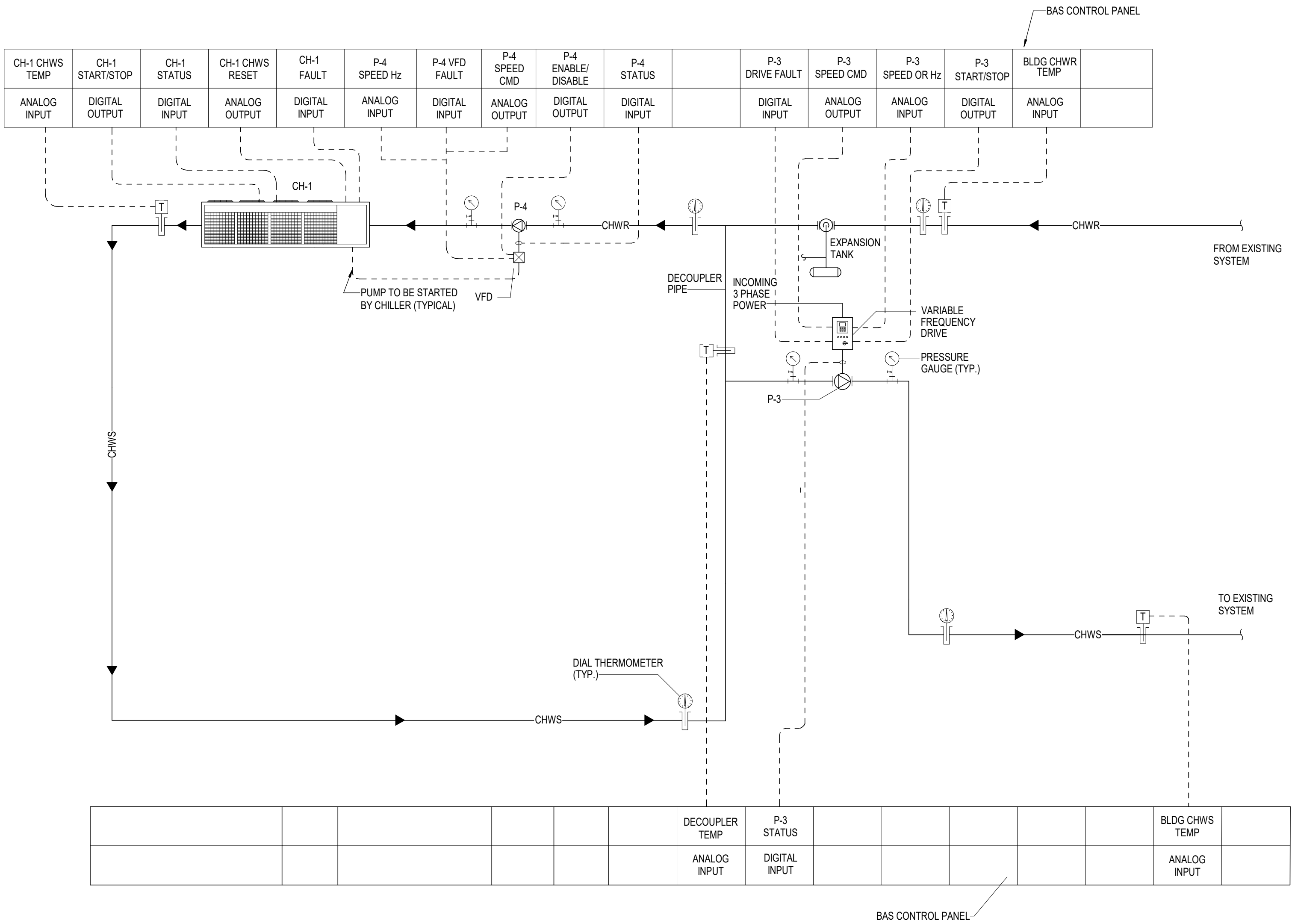
- Supply Temp Low (<5°F below set point (adj.))
- Supply Temp High (>5°F above set point(adj.))
- Pump Failure (command with no status)
- Pump "In Hand" (status with no command)
- Chiller fault (via BACnet)

VARIABLE FREQUENCY DRIVE  
INTERFACE POINTS LIST TABLE

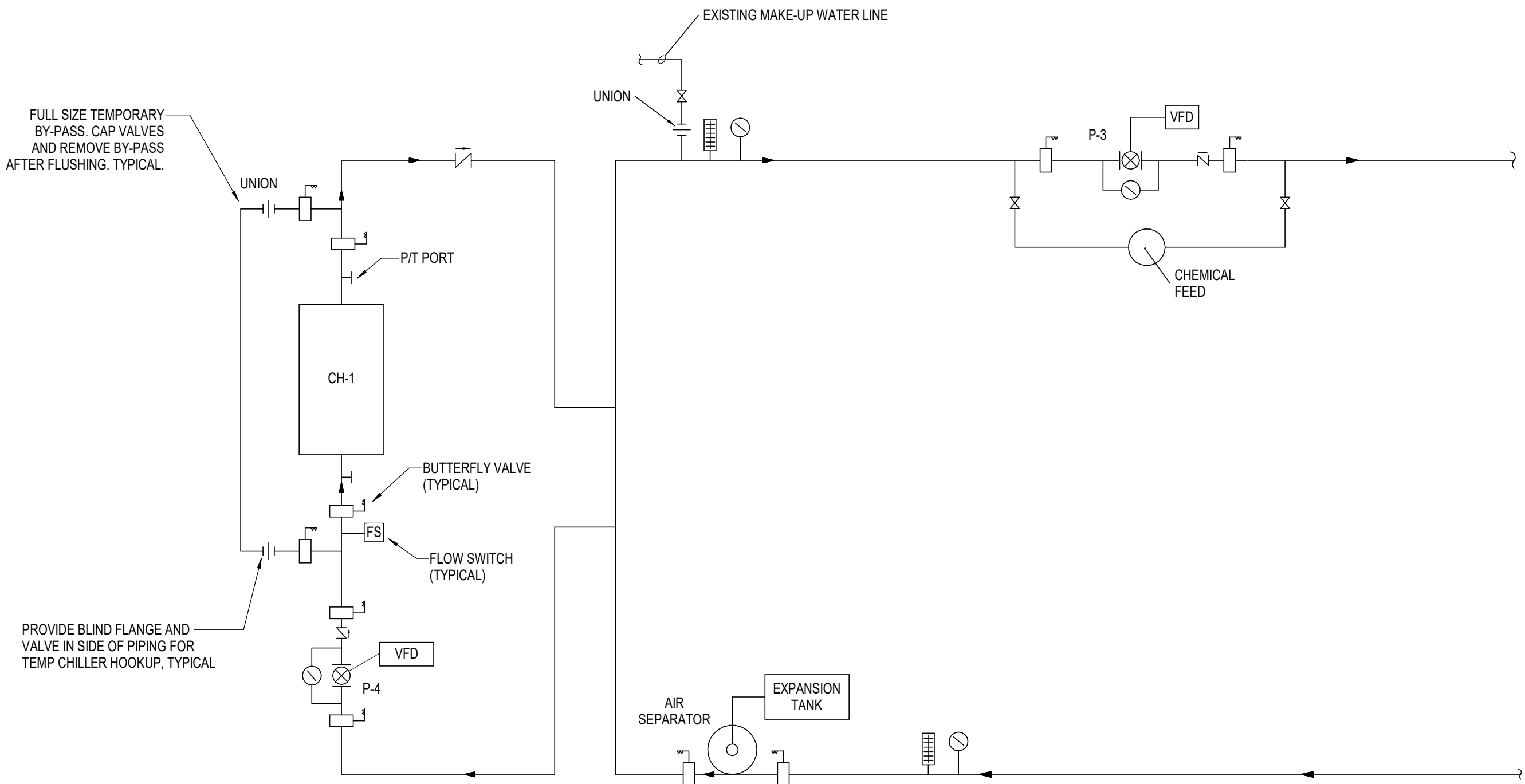
POINT NAME	HARDWIRED	INTERFACE COM CARD	GUI DISPLAY
VFD COMMAND START/STOP	X	X	HARDWIRED
VFD SPEED COMMAND (%)	X	X	HARDWIRED
PUMP/FAN STATUS (VIA VFD)	X	X	HARDWIRED
VFD SPEED FEEDBACK (Hz)		X	COM
PUMP ALARM (COMMAND/STATUS MISMATCH)		X	COM
VFD FAULT STATUS		X	COM
VFD FAULT RESET		X	COM
VFD POWER (KW)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

BACNET INTEGRATION POINTS LIST FOR AIR-COOLED CHILLER

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



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



CHILLED WATER PIPING SCHEMATIC



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

SCAMPBELL@PDCENGINEERS.COM

DRAWN BY: CRR CHECKED BY: SWC

PDC 23013 04/25/2023

REVISIONS

NUMBER	DATE	DESCRIPTION

BID/PERMIT

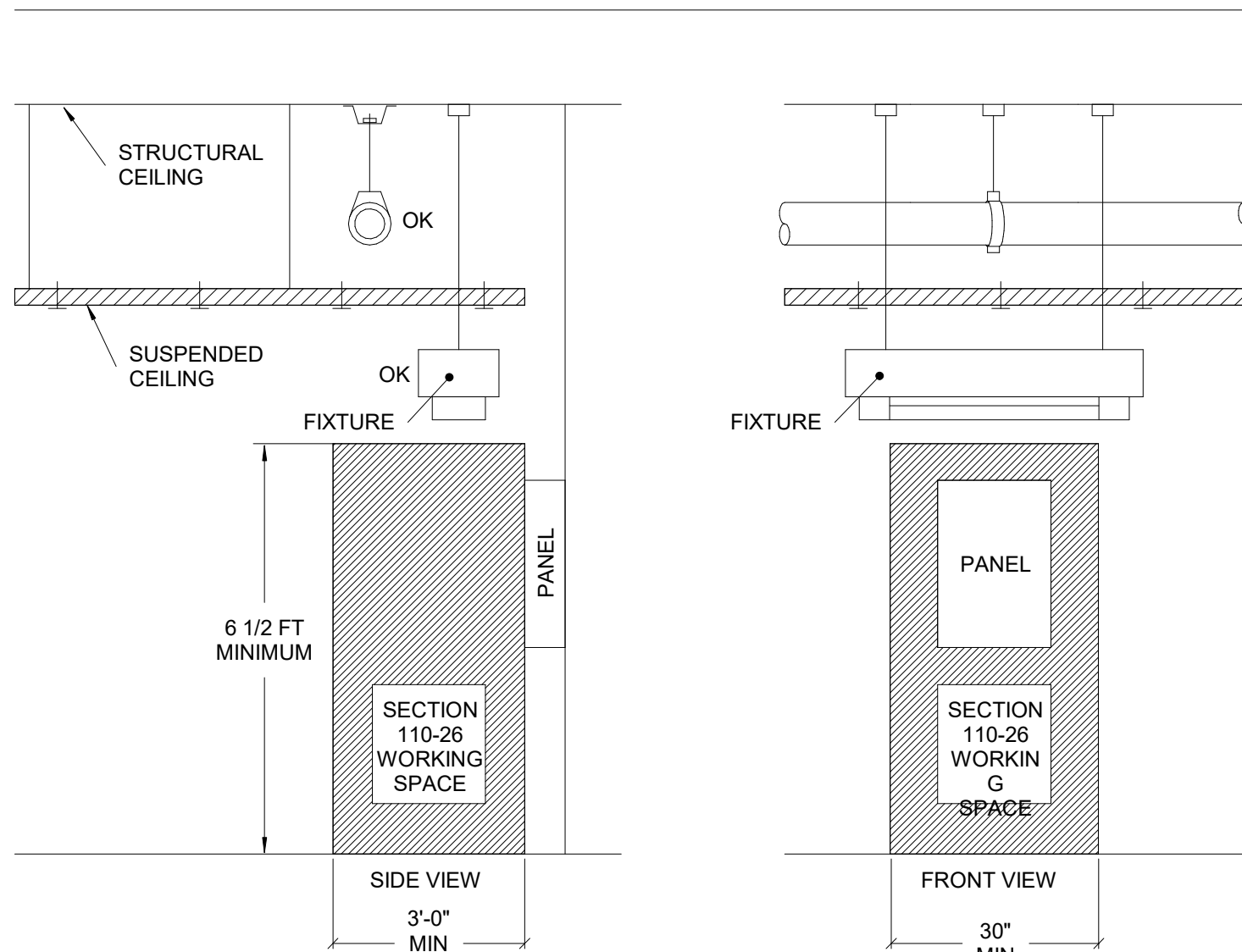
GW BULLOCK SCHOOL CHILLER UPGRADES

EDGEcombe COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

CONTROLS

M4.01

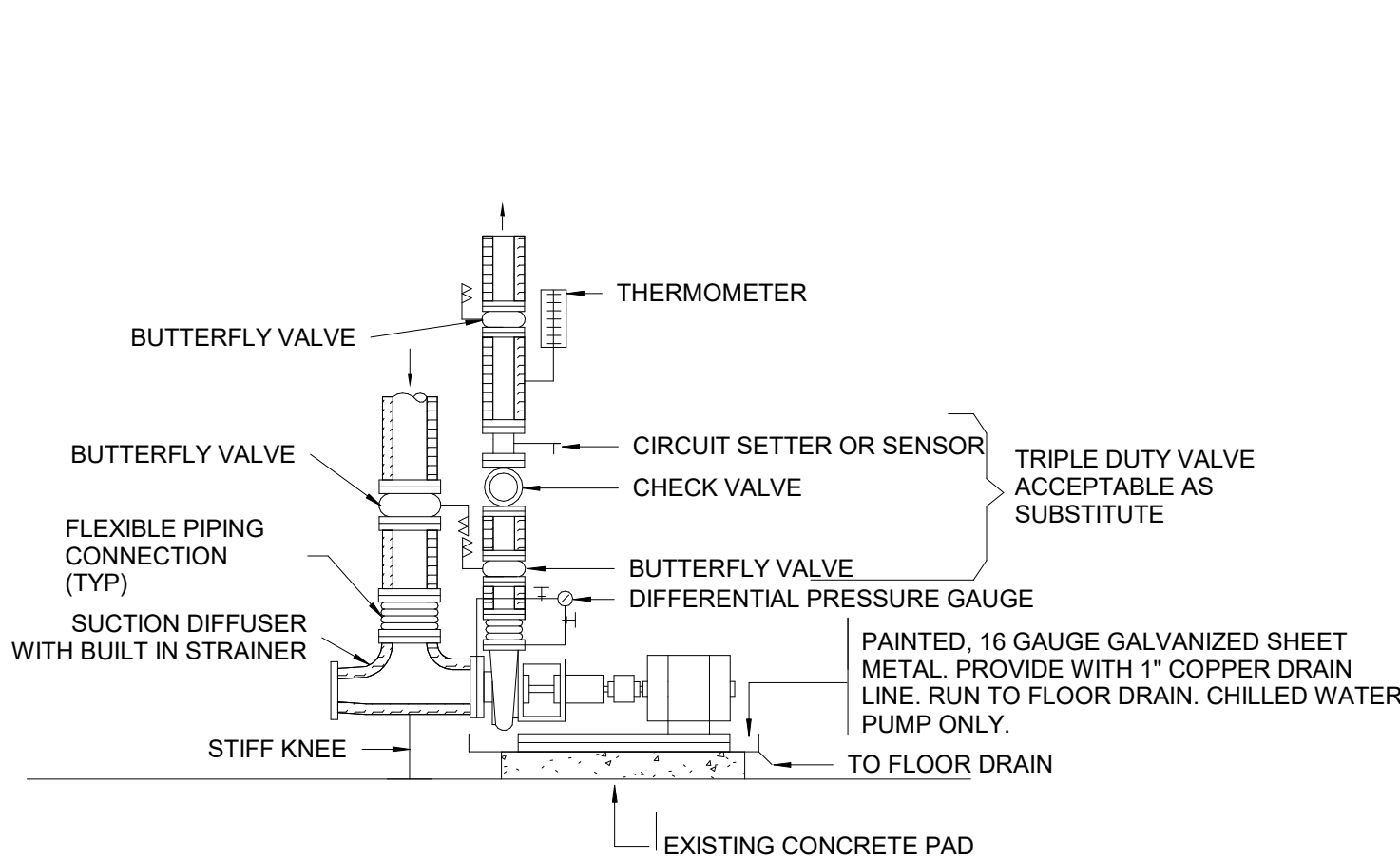




N.E.C ARTICLE 110-26

## 7 DETAIL - WORKING CLEARANCE FOR ELECTRICAL EQUIPMENT

NOT TO SCALE

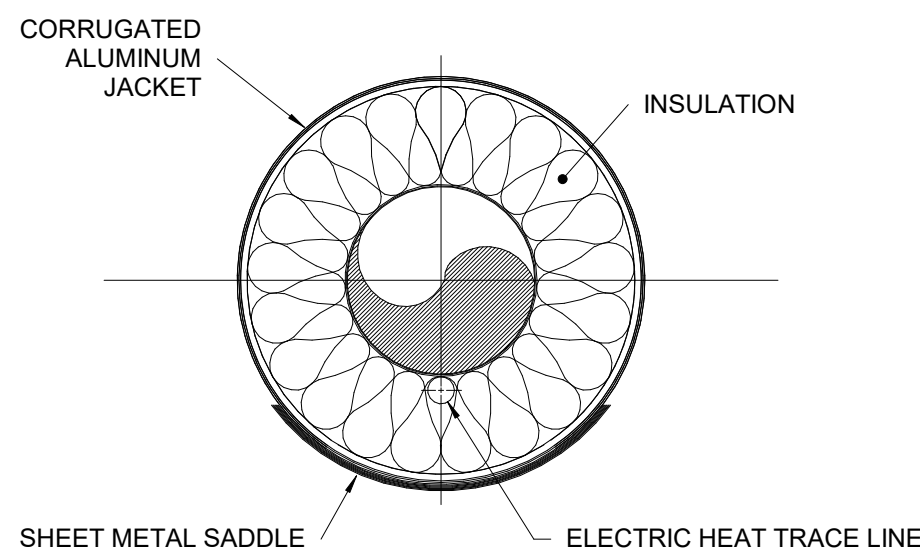


### NOTE:

1. ALL FLANGE BOLTS AND NUTS SHALL BE CADMIUM PLATED.
2. UNINSULATED FLANGES, INCREASERS, FLEX CONNECTORS, AND PIPE FITTINGS, SHALL BE GALVANIZED.

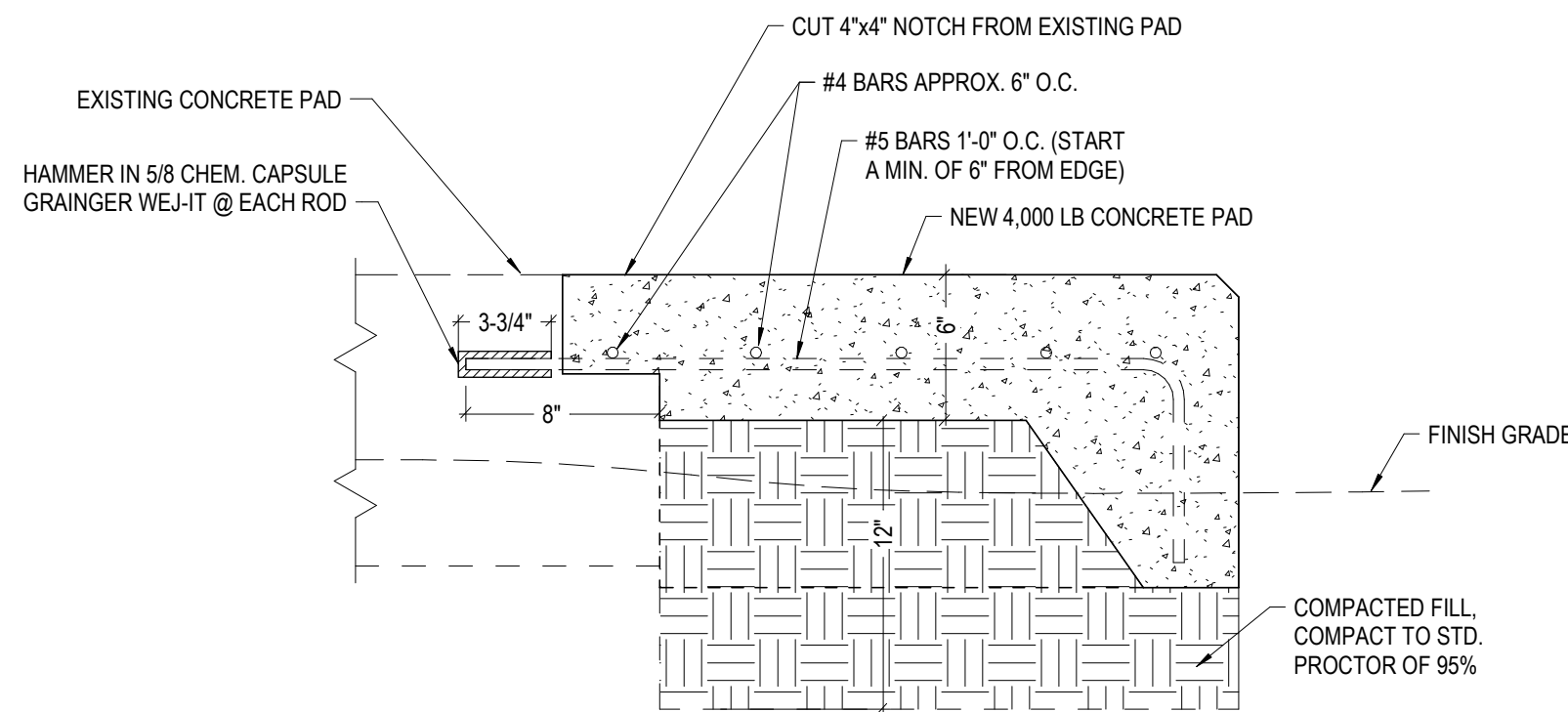
## 4 DETAIL - BASE MOUNTED END SUCTION PUMP

NOT TO SCALE



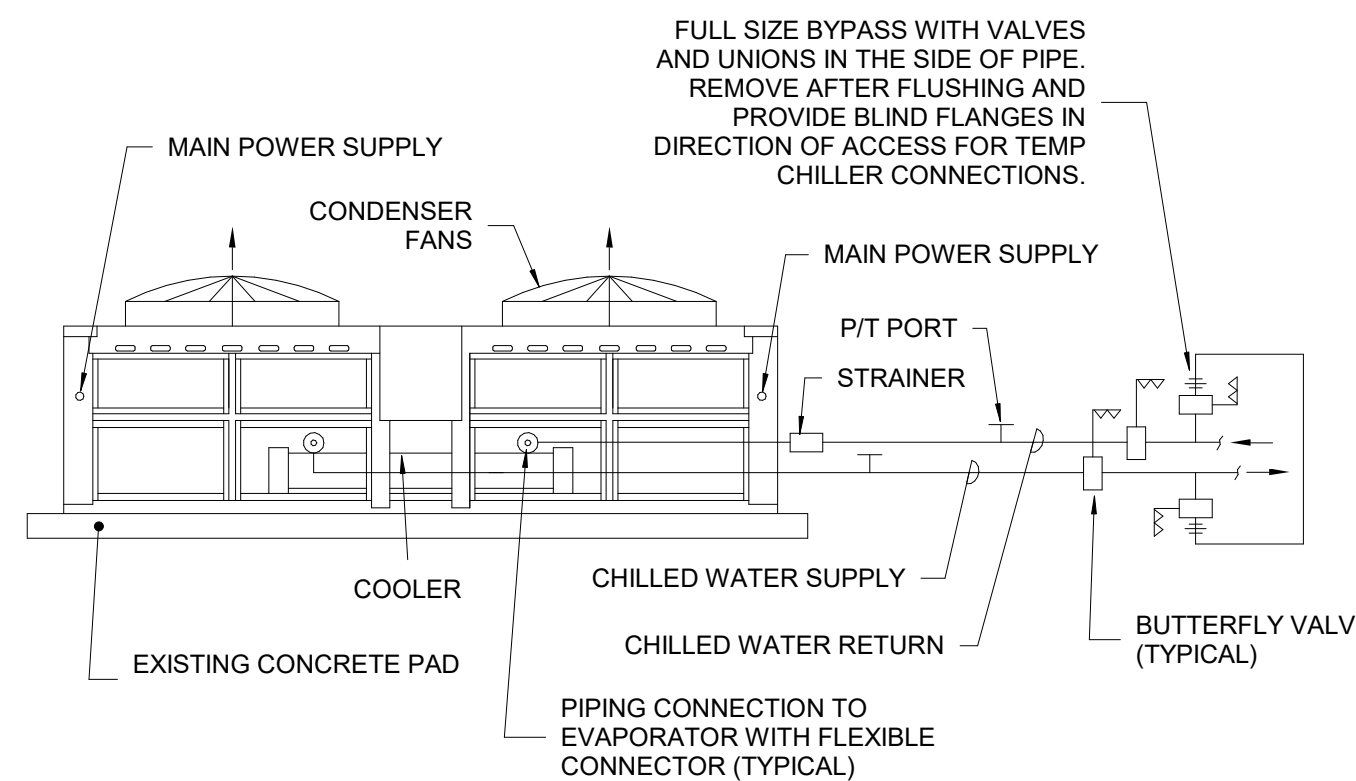
## 5 DETAIL - CHILL WATER PIPE (EXTERIOR)

NOT TO SCALE



## 1 DETAIL - PAD EXTENSION

NOT TO SCALE



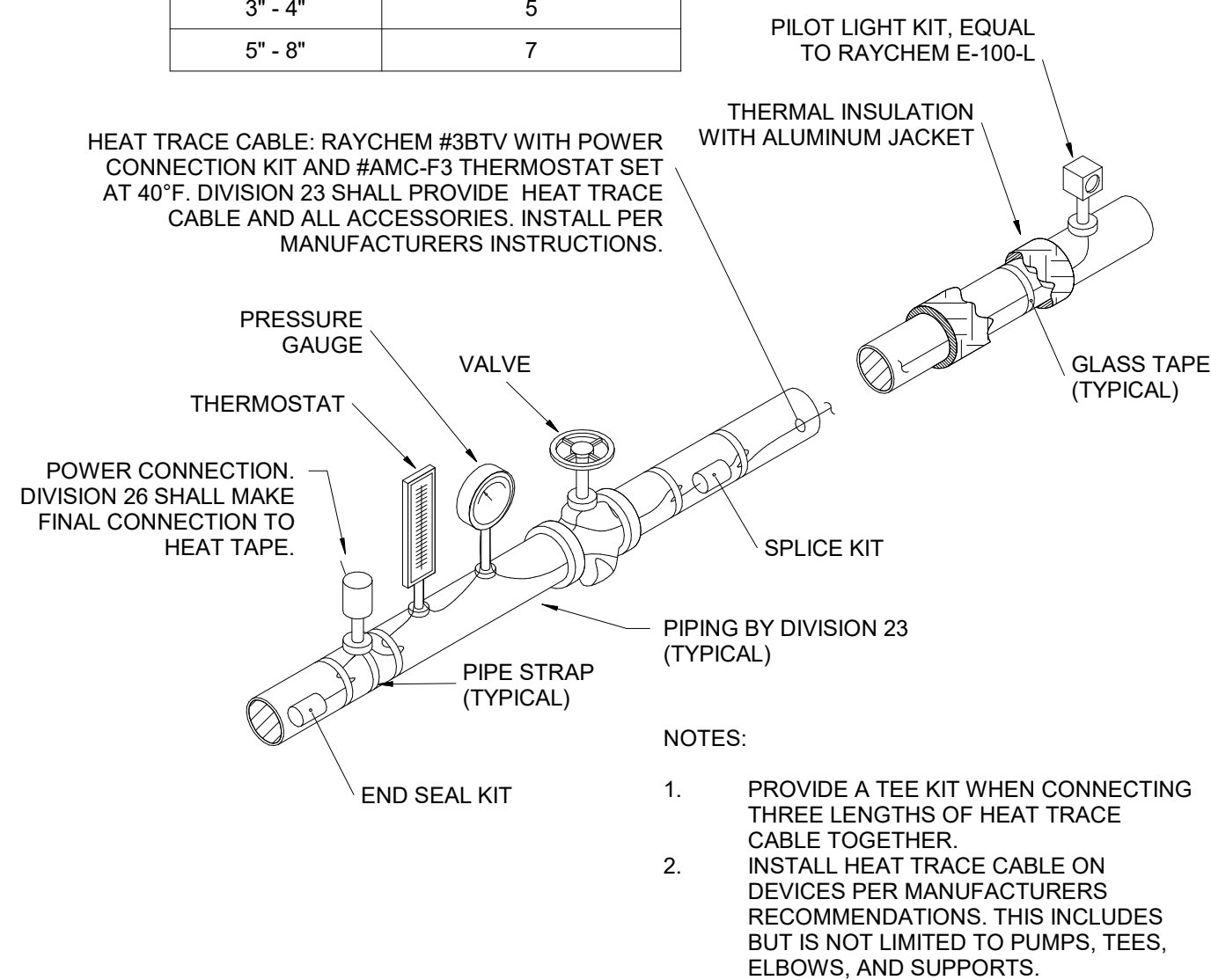
### NOTE:

1. PROVIDE LOUVERED COIL GUARDS AND WIRE GUARDS FOR COMPRESSOR SECTION.
2. DETAIL IS GENERIC. PIPING AND ELECTRICAL CONNECTION LOCATIONS MAY VARY BY MANUFACTURER.

## 2 DETAIL - PACKAGED AIR COOLED CHILLER

NOT TO SCALE

HEAT TRACE CABLE SIZING CHART	
PIPE SIZE	MIN. WATTS PER FOOT
3/4" - 2 1/2"	4
3" - 4"	5
5" - 8"	7



## 3 HEAT TRACE CABLE

NOT TO SCALE



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

SCAMPBELL@PDCENGINEERS.COM

DRAWN BY: CRR CHECKED BY: SWC

PDC 23013 04/25/2023

### REVISIONS

NUMBER	DATE	DESCRIPTION

### BID/PERMIT

GW BULLOCK SCHOOL CHILLER UPGRADES

EDGEcombe COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

DETAILS

M5.01

AIR-COOLED CHILLER SCHEDULE																	
MARK	MANUFACTURER	MODEL	COMPRESSOR TYPE	DESIGN CAP.	EFFICIENCY		EVAPORATOR				ELECTRICAL					WEIGHT (LBS)	REMARKS
					EER	IPLV	EWI (°F)	LWT (°F)	GPM	MIN GPM	ΔP FT	KW	MCA	MCOP	V		
CH-1	TRANE	CGMA 110	SCROLL	107.1	10.05	15.34	54	44	256	125	17.0	128.0	225	250	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 SCOR RATING SHALL BE MINIMUM 65 KA. PROVIDE BACNET CONTROL INTERFACE. 460/3/60. MCA = 225, MCOP = 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
2. PROVIDE (BACNET) COMMUNICATION INTERFACE.
3. 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.
8. 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 (%)	BHP	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 GROUNDING RING
- 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



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

SCAMPBELL@PDCENGINEERS.COM

DRAWN BY: CRR

CHECKED BY: SWC

PDC 23013 04/25/2023

REVISIONS

NUMBER	DATE	DESCRIPTION

BID/PERMIT

GW BULLOCK SCHOOL CHILLER UPGRADES

EDGEcombe COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

MECHANICAL  
SCHEDULES

M6.01

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 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).

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 CONSTRUCTION AND ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.

3.

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.

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.

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.

6.

ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH STATE, LOCAL AND NATIONAL CODES AND ORDINANCES.

7.

THE NEW FIRE ALARM EQUIPMENT SHOWN SHALL BE PROVIDED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. PROVIDE ALL WIRING AS REQUIRED FOR A COMPLETE SYSTEM.

8.

EACH CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT PER APPROVED GOVERNING A 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.

9.

ALL JUNCTION BOXES AND CONDUIT RUNS (WITH OR WITHOUT WIRES) SHALL BE COLOR CODED WITH PAINT, IN ACCORDANCE WITH ELECTRICAL GENERAL PROVISIONS.

10.

THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS 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.

11.

ALL WIRE AND CONDUIT SIZES ARE BASED ON 75°C THHN OR THWN WIRE UNLESS OTHERWISE NOTED.

12.

THE LOCATION OF ALL WALL MOUNTED DEVICES, INCLUDING MOUNTING HEIGHTS, SHALL BE FIELD VERIFIED WITH THE ARCHITECT PRIOR TO INSTALLATION.

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.

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.

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.

DEMOLITION GENERAL NOTES:

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.

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 NEW WORK.

C.

ALL EXISTING WIRING, EQUIPMENT, CONDUITS AND MATERIALS NOT REQUIRED FOR RE-USE OR RE-INSTALLATION (SHOWN OR 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 MATERIALS AND EQUIPMENT WHICH ARE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY THE CONTRACTOR FROM THE PREMISES.

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 CORRECT. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL CONDUITS, EQUIPMENT AND MATERIALS IN THE FIELD PRIOR TO STARTING ALL WORK.

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 EQUIPMENT IS IN PROJECT SCOPE.

F.

WHEN EXISTING MECHANICAL AND ELECTRICAL WORK IS REMOVED, ALL CONDUITS, WIRING AND MATERIALS SHALL BE REMOVED TO A POINT BELOW FINISHED FLOORS OR BEHIND FINISHED WALLS AND CARPED. SUCH POINTS SHALL BE FAR ENOUGH BEHIND FINISHED SURFACES TO ALLOW FOR THE INSTALLATION OF THE NORMAL THICKNESS OF FINISHED MATERIAL.

G.

EXISTING MECHANICAL AND ELECTRICAL EQUIPMENT, CONDUIT, WIRING, DEVICES, AND MATERIALS AFFECTED BY DEMOLITION OR 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.

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.

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 WHERE ELECTRICAL CONNECTIONS ARE MODIFIED, ALL POWER AT THE PANEL OR ENCLOSURE SHALL BE DE-ENERGIZED AT ITS SOURCE, PRIOR TO WORK BEING DONE.

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 AND WIRING.

SYMBOL LEGEND

SYMBOL


DESCRIPTION

REMARKS




WEATHERPROOF DUPLEX GROUNDING TYPE RECEPTACLE - +16" ABOVE GRADE TO BOTTOM OF OUTLET BOX, UNLESS OTHERWISE NOTED.


HUBBELL GF-5362-X WITH TAYMAC HEAVY DUTY IN-USE COVER




JUNCTION BOX WITH REMOVABLE COVER - SIZE PER NATIONAL ELECTRICAL CODE




120/208 VOLT PANELBOARD WITH NEUTRAL AND GROUND BUS ACCESSORIES.



277/480 VOLT PANELBOARD WITH NEUTRAL, AND GROUND BUS ACCESSORIES.



FUSIBLE DISCONNECT SWITCH, HEAVY DUTY



HOME RUN CIRCUIT TO PANELBOARD

ABBREVIATIONS

ABBREV.

DEFINITION

A

AMPS, AMPERE, AMPERAGE

AC

ABOVE COUNTER

A/C

ALTERNATING CURRENT

ADA

AMERICANS WITH DISABILITIES ACT

AFB

ABOVE FINISHED FLOOR

AFG

ABOVE FINISHED GRADE

AHJ

AUTHORITY HAVING JURISDICTION

AIC

AMPERE INTERRUPTING CURRENT

AL

ALUMINUM

ANSI

AMERICAN NATIONAL STANDARD INSTITUTE

ATSC

AUTOMATIC TRANSFER SWITCH CONTROL

ATS

AUTOMATIC TRANSFER SWITCH

A/V

AUDIO/VISUAL

AWG

AMERICAN WIRE GAUGE

BAS

BUILDING AUTOMATION SYSTEM

BFC

BELOW FINISHED CEILING

C

CONDUIT

CB

CIRCUIT BREAKER

CCTV

CLOSED CIRCUIT TELEVISION

CKT

CIRCUIT

CT

CURRENT TRANSFORMER

CU

COPPER

D

DIMMING OR DIMMER

DB

DISTRIBUTION BOARD

DC

DIRECT CURRENT

DL

DAY-LIGHTING

DISC

DISCONNECT SWITCH

E

EMERGENCY

ECB

ENCLOSED CIRCUIT BREAKER

EOR

ENGINEER OF RECORD

EWG

ELECTRIC WATER COOLER

EX

EXISTING

FUT

FUTURE

FA

FIRE ALARM

FACP

FIRE ALARM CONTROL PANEL

FATC

FIRE ALARM TERMINAL CABINET

FDR

FEEDER

FPMR

FUSE PER MANUFACTURER RECOMMENDATIONS

GAA

GENERATOR ALARM ANNUNCIATOR

GAP

GENERATOR ALARM PANEL

GEN

GENERATOR

GEC

GROUNDING ELECTRODE CONDUCTOR

GFI

GROUND FAULT INTERRUPTER

GFCI

GROUND FAULT CIRCUIT INTERRUPTER

GFEF

GROUND FAULT EQUIPMENT PROTECTION

GFP

GROUND FAULT PROTECTION

GND

GROUND

GRS

GALVANIZED RIGID STEEL

HH

HAND HOLE

HQA

HAND-OFF AUTOMATIC

HP

HORSEPOWER

IEEE

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

IG

ISOLATED GROUND

KCMIL

THOUSAND CIRCULAR MILS

KV

KILOVOLT

KVA

KILOVOLT AMPS

KW

KILOWATT

KWH

KILOWATT HOURS

LC

LIGHTING CONTACTOR

LS

LOUD SPEAKER

LSIG

LONG TIME, SHORT TIME, INSTANTANEOUS AND GROUND FAULT PROTECTION

MAX

MAXIMUM

MCB

MAIN CIRCUIT BREAKER

MCC

MOTOR CONTROL CENTER

MDP

MAIN DISTRIBUTION PANEL

MIN

MINIMUM

MH

MAN HOLE

MLO

MAIN LUGS ONLY

MTS

MANUAL TRANSFER SWITCH

N/A

NOT APPLICABLE

NC

NORMALLY CLOSED

NEC

NATIONAL ELECTRIC CODE

NEMA

NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION

N or NEUT

NEUTRAL

NFPA

NATIONAL FIRE PROTECTION ASSOCIATION

NIC

NOT IN CONTRACT

NO

NORMALLY OPEN

O/H

OVER HEAD

P

POLE

PA

PUBLIC ADDRESS

PB

PULL BOX

PC

PHOTOCELL

PH

PHASE POTENTIAL TRANSFORMER

PT

POTENTIAL TRANSFORMER

RC

RECEPTACLE CONTACTOR

RSC

RIGID STEEL CONDUIT

SEC

SECURITY

SPD

SURGE PROTECTIVE DEVICE

SW

SWITCH

SWBD

SWITCHBOARD

SWGR

SWITCHGEAR

TC

TIME CLOCK

TEMP

TEMPORARY

TGB

TECHNOLOGY GROUND BAR

TGMB

TECHNOLOGY MAIN GROUND BAR

TTB

TELEPHONE TERMINAL BOARD

TV

TELEVISION

TYP

TYPICAL

U/C

UNDER COUNTER

U/G

UNDERGROUND

UGE

UNDERGROUND ELECTRIC

UL

UNDERWRITERS' LABORATORIES

UON

UNLESS OTHERWISE NOTED

UPS

UNINTERRUPTABLE POWER SUPPLY

V

VOLTS, VOLTAGE

VFD

VARIABLE FREQUENCY DRIVE

WG

WIRE GUARD

WP

WEATHERPROOF

XFER

TRANSFER

XFMR

TRANSFORMER

SHEET INDEX - ELECTRICAL

Sheet Number

Sheet Name

Current Revision

Current Revision Date

E0.01

LEAD SHEET

E1.01


DEMOLITION AND NEW WORK PLANS

E5.01

DETAILS

E5.02

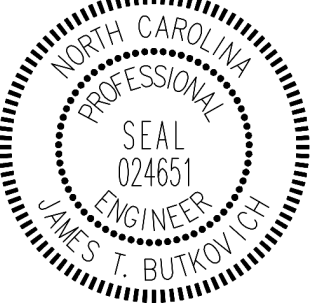
DETAILS, RISER, AND PANEL SCHEDULES



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

TBUTKOVICH@PDCENGINEERS.COM

DRAWN BY: FGS

CHECKED BY: JPT

PDC 23013

04/25/2023

REVISIONS

NUMBER	DATE	DESCRIPTION

BID/PERMIT

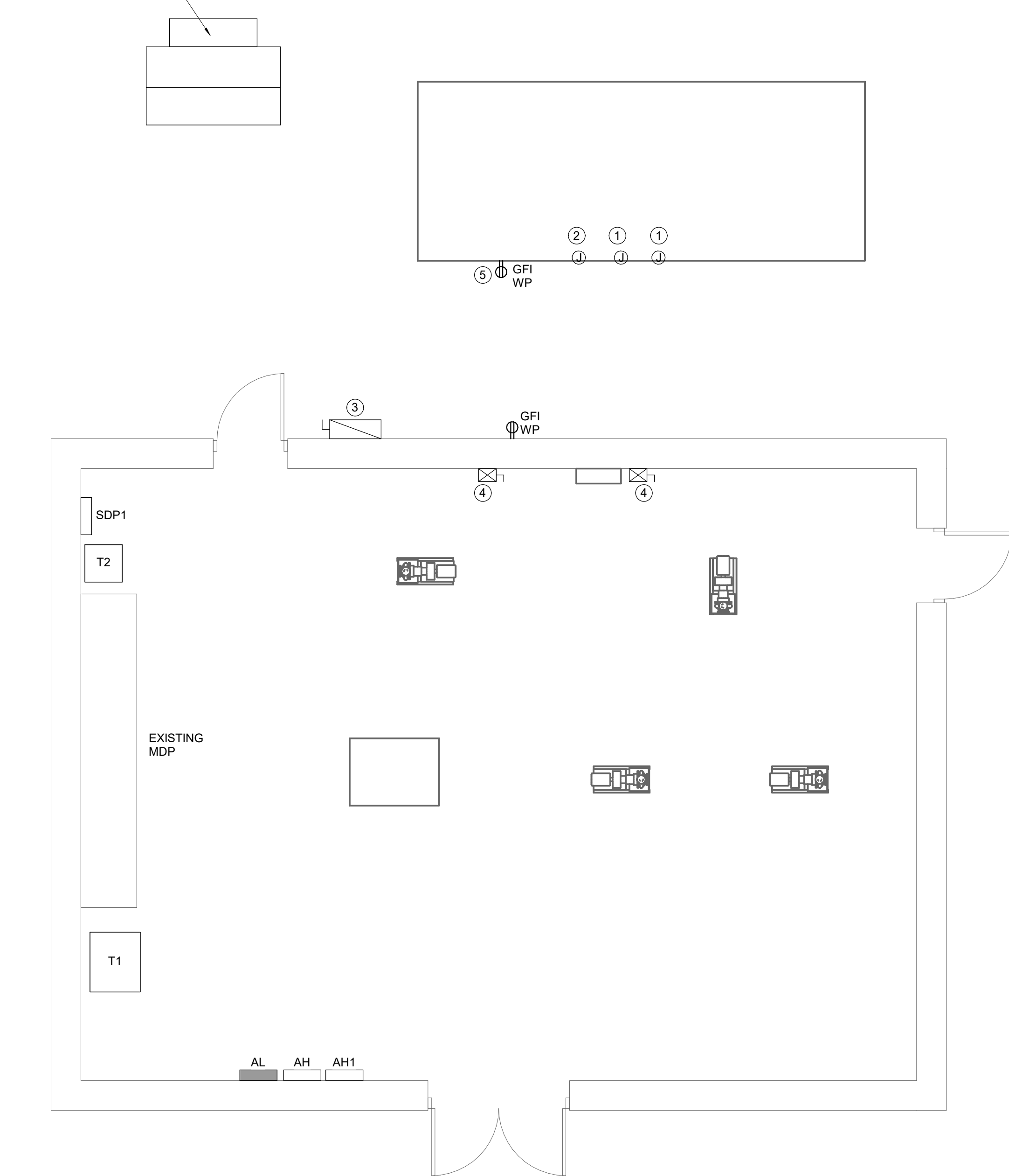
GW BULLOCK SCHOOL CHILLER UPGRADES

EDGECOMBE COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

LEAD SHEET

E0.01

EXISTING PAD MOUNTED  
TRANSFORMER TO REMAIN



1 DEMOLITION PLAN  
0 2 4 8  
1/4" = 1'-0"

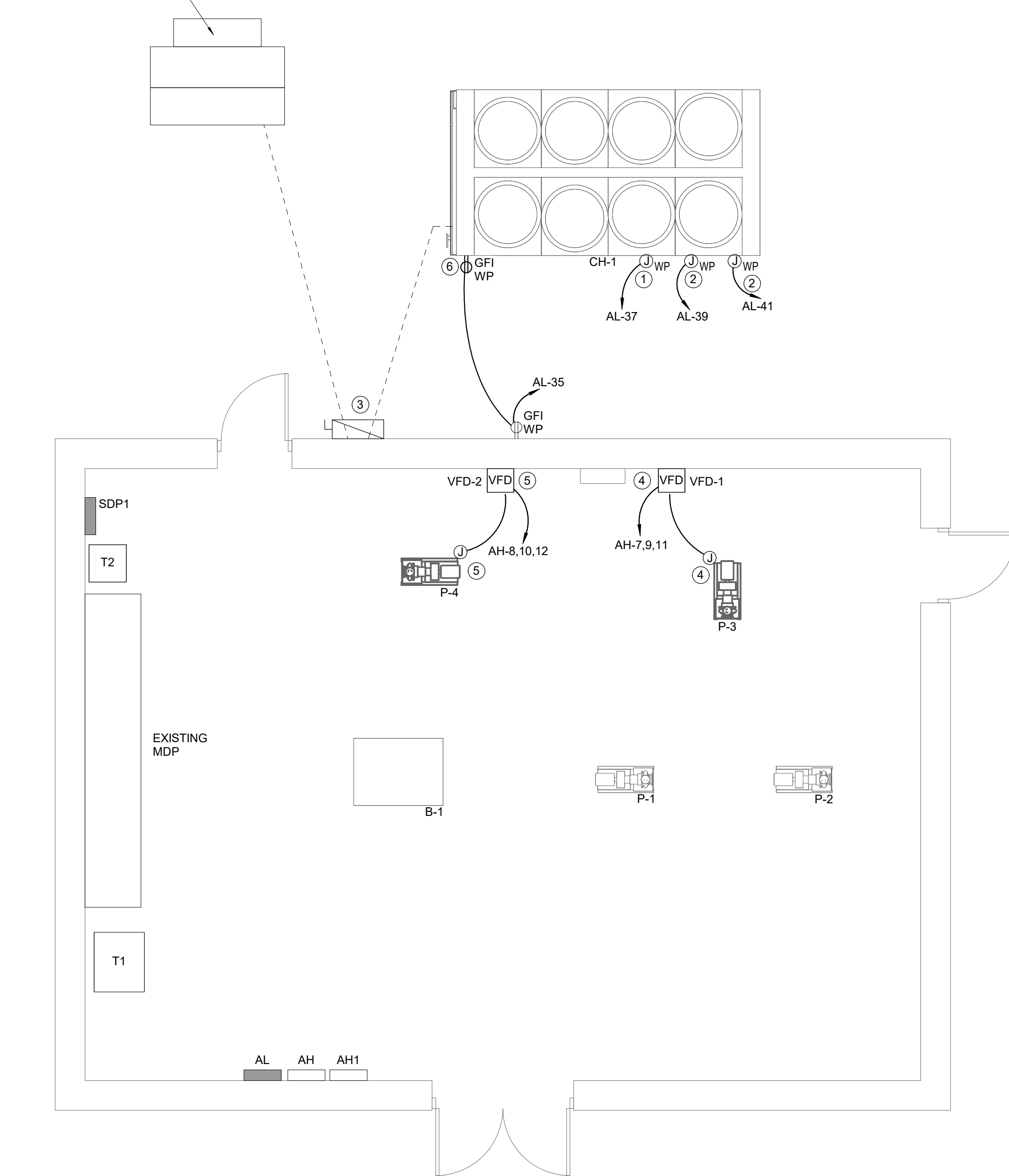
GENERAL DEMOLITION NOTES:

- 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 EXISTING HEAT TRACE WIRING FROM HEAT TRACE CONNECTION POINTS AND LEAVE WIRING AND CONDUIT IN PLACE FOR RE-CONNECTION TO NEW HEAT TRACE CONNECTIONS FOR NEW CHILLER.
2. DISCONNECT 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. 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.

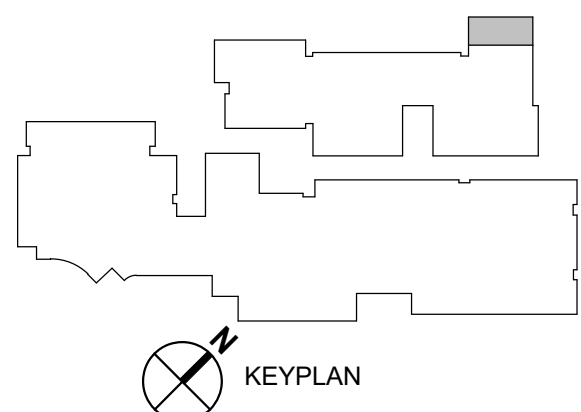
EXISTING PAD MOUNTED  
TRANSFORMER TO REMAIN



2 NEW WORK PLAN  
0 2 4 8  
1/4" = 1'-0"

KEYNOTES NEW WORK:

1. PROVIDE NEW WEATHERPROOF JUNCTION BOX AT LOCATION OF EXISTING 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 EXISTING 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 JUNCTION 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 JUNCTION 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.



Progressive Design Collaborative, Ltd.

3101 Poplarwood Court, Suite 320  
Raleigh, North Carolina 27604  
919-790-9989

License# C-0183  
pdcengineers.com



04/25/2023

TBUTKOVICH@PDCENGINEERS.COM

DRAWN BY: FGS CHECKED BY: JPT

PDC 23013 04/25/2023

REVISIONS

NUMBER	DATE	DESCRIPTION

BID/PERMIT

GW BULLOCK SCHOOL CHILLER UPGRADES

EDGEcombe COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

DEMOLITION  
AND NEW WORK  
PLANS

E1.01







PANEL BOARD: AL				STATUS: MAINS: 225 A				PANEL RATING: 225 A				PANEL NOTES: PROVIDE DOOR WITH LOCK AND HINGED TRIM											
LOCATION: BOILER ROOM				VOLTS: 120/208 Wye				MCB RATING: FED FROM: T1				PROVIDE COPPER GROUND AND NEUTRAL BUS											
MOUNTING: Surface				PHASE: 3								PROVIDE FULL SIZE NEUTRAL BUS, U.O.N.											
ENCL NEMA: Type 1				WIRES: 4																			
MIN AIC: 10,000																							
NOTES:																							
EXISTING PANEL TO REMAIN, NEW LOADS ARE ADDED TO EXISTING CIRCUITS SHOWN.																							
CKT	LOAD TYPE	LOAD DESCRIPTION	WIRE SIZE	CND	POLES	TRIP AMPS	A		B		C		TRIP AMPS	POLES	CND	WIRE SIZE	LOAD DESCRIPTION	LOAD TYPE	CKT				
1	E	EXISTING LOAD	--	--	1	20 A	1	3					40 A	3	--	--	EXISTING CU-12A	H	2				
3	E	EXISTING LOAD	--	--	1	20 A			1	3									4				
5	E	EXISTING LOAD	--	--	1	20 A					1	3							6				
7	E	EXISTING LOAD	--	--	1	20 A	1	3											8				
9	E	EXISTING LOAD	--	--	1	20 A			1	3			40 A	3	--	--	EXISTING CU-12B	H	10				
11	E	EXISTING LOAD	--	--	1	20 A					1	3							12				
13	E	EXISTING LOAD	--	--	1	20 A	1	0					20 A	1	--	--	SPARE		14				
15	E	EXISTING LOAD	--	--	1	20 A			1	0			20 A	1	--	--	SPARE		16				
17	E	EXISTING LOAD	--	--	1	20 A					0	0	20 A	1	--	--	SPARE		18				
19	E	EXISTING LOAD	--	--	1	20 A	1	0					20 A	1	--	--	SPARE		20				
21	E	EXISTING LOAD	--	--	1	20 A			1	0			20 A	1	--	--	SPARE		22				
23	E	EXISTING LOAD	--	--	1	20 A					0	0	20 A	1	--	--	SPARE		24				
25	E	EXISTING LOAD	--	--	1	20 A	1	0					20 A	1	--	--	SPARE		26				
27	E	EXISTING LOAD	--	--	1	20 A			1	0			20 A	1	--	--	SPARE		28				
29	E	EXISTING LOAD	--	--	1	20 A					0	0	20 A	1	--	--	SPARE		30				
31	E	EXISTING LOAD	--	--	1	20 A	1	0					20 A	1	--	--	SPARE		32				
33	R	SPARE	--	--	1	20 A							30 A	3	--	--	SPARE		34				
35	R	EXISTING REC - SVC YARD	2#12 & 1#12G	3/4"	1	20 A					0.36	0							36				
37	R	EXISTING CHILLER CONTROLS	2#12 & 1#12G	3/4"	1	20 A	0.5	--					--	1	--	--	SPACE		38				
39	R	EXISTING CHILLER HEAT TRACE	2#12 & 1#12G	3/4"	1	20 A			0.5	--			--	1	--	--	SPACE		40				
41	R	EXIST CH WATER HEAT TRACE	2#12 & 1#12G	3/4"	1	20 A					0.5	--	--	1	--	--	SPACE		42				
						TOTAL LOAD:	12.50 kVA		12.50 kVA		8.86 kVA												
BREAKER TYPES: LO - INDICATES "LOCK-ON" DEVICE GFCI - INDICATES GROUND FAULT DEVICE																ST - INDICATES SHUNT TRIP DEVICE GPPE - INDICATES GROUND FAULT FOR...				APCI - INDICATES ARC FAULT PROTECTED DEVICE			
Load Classification		Connected Load (VA)				Demand Factor		Estimated Demand				Panel Totals											
Receptacle		0 kVA				100.00%		0 kVA				Total Connected Load:											
Motor		0 kVA				0.00%		0 kVA				33.86 kVA											
HVAC		0 kVA				0.00%		0 kVA				Total Connected Amps:											
Lighting		0 kVA				0.00%		0 kVA				33.99 A											
Equipment		0 kVA				0.00%		0 kVA				Total Estimated Demand:											
Kitchen Equipment		0 kVA				0.00%		0 kVA				33.99 A											

[illegible]

## GW BULLOCK SCHOOL CHILLER UPGRADES

EDGECOMBE COUNTY PUBLIC SCHOOLS  
2311 NORTH MAIN STREET  
TARBORO, NC 27886

## E5.02