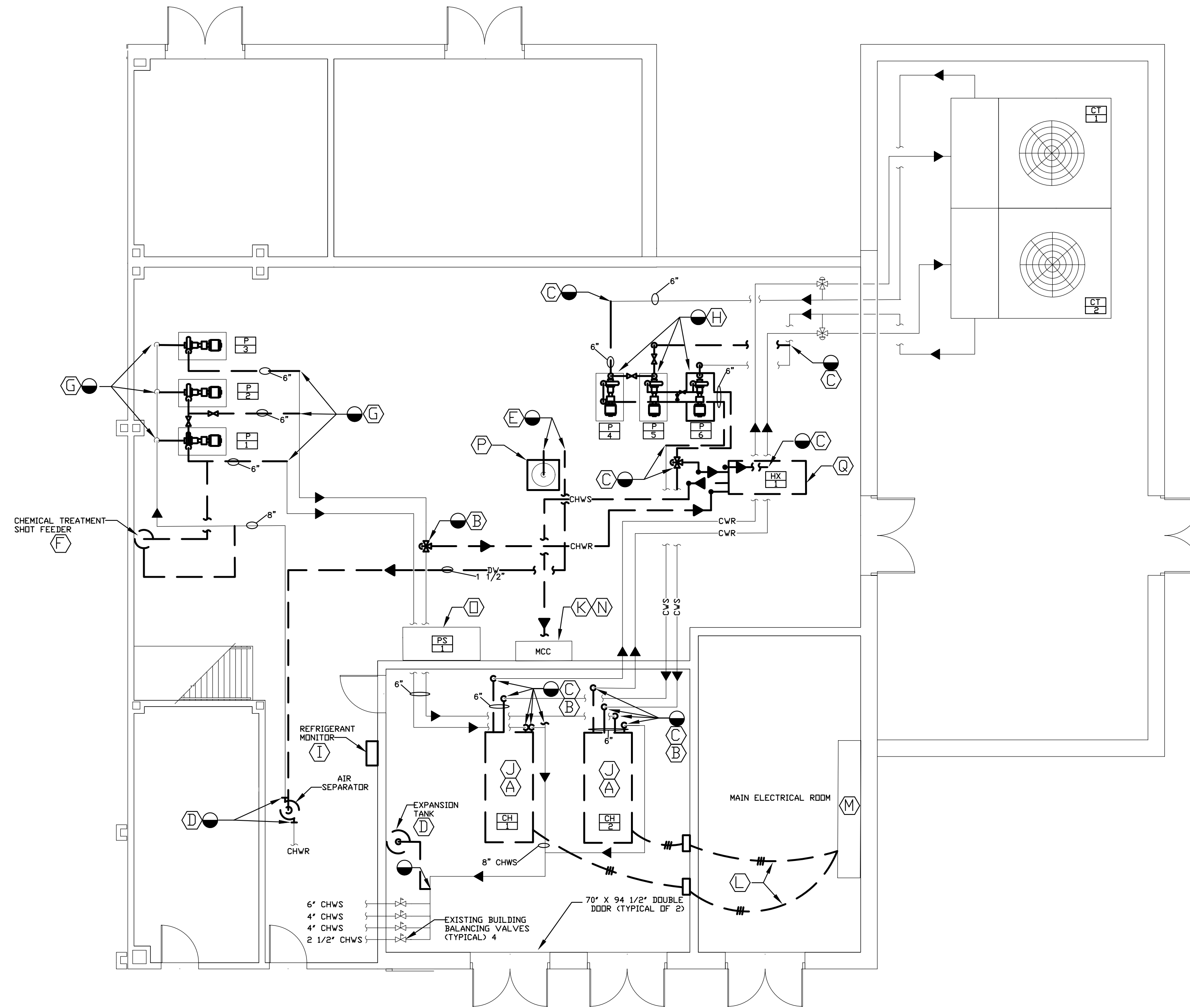


SYMBOLS & ABBREVIATIONS

- CWS— CONDENSER WATER SUPPLY PIPE
- CWR— CONDENSER WATER RETURN PIPE
- CHWS— CHILLED WATER SUPPLY PIPE
- CHWR— CHILLED WATER RETURN PIPE
- DW— DOMESTIC WATER
- FLEXIBLE PIPE CONNECTION
- STRAINER W/BLOW DOWN VALVE & CAP
- ISOLATION VALVE
- MODULATING CONTROL VALVE 3-WAY
- CHECK VALVE
- CAPPED PIPE END
- PIPE DROP
- PIPE RISE
- DEMO
- EXISTING TO REMAIN
- NEW
- POINT OF CONNECTION OF NEW TO EXISTING
- POINT OF TERMINATION OF DEMOLITION
- RECEPTACLE
- HEAT EXCHANGER (ECONOMIZER)
- DOMESTIC WATER PUMP STATION
- PUMP
- COOLING TOWER
- CHILLER
- BALANCING VALVE
- PRESSURE REDUCING VALVE



1 DEMO WORK PLAN
ME-1

GENERAL NOTES

1. ALL WORK SHALL CONFORM WITH ALL STATE AND LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES AND TAXES.
3. EACH ITEM OF EQUIPMENT SHALL BE MOUNTED AND CONNECTED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS & SHALL BE U.L. LISTED, & AGA CERTIFIED AS SPECIFIED.
4. CONTRACTOR SHALL MAKE AN ON-SITE INSPECTION TO DETERMINE FULLY THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION.
5. LOCATION OF EQUIPMENT, PIPING, AND OTHER MECHANICAL WORK IS INDICATED DIAGRAMMATICALLY BY THE DRAWINGS. DETERMINE EXACT LOCATIONS ON THE JOB SITE, SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF OTHER CONTRACTORS.
6. AFTER INSTALLATION AND START-UP, EACH ITEM OF EQUIPMENT SHALL BE THOROUGHLY CHECKED FOR VIBRATION TRANSMISSION TO THE STRUCTURE OR EXCESSIVE NOISE, AND IF EITHER OCCURS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING THE FAULTY SITUATION IMMEDIATELY.
7. ALL EXISTING EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE OWNER AND SHALL BE REMOVED, STORED, OR DISPOSED OF AT THE DIRECTION OF THE OWNER.
8. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF MECHANICAL EQUIPMENT'S ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR. CONTRACTOR ORIGINATED MODIFICATIONS TO THE MECHANICAL EQUIPMENT'S ELECTRICAL INSTALLATION, DUE TO DEVIATIONS FROM THE MECHANICAL EQUIPMENT'S BASIS OF DESIGN OR "PROTOTYPE" ELECTRICAL DATA, SHALL BE AT A COST TO THE MECHANICAL CONTRACTOR.
9. SIZES AND LOCATIONS OF EXISTING PIPING SHOWN ON THESE DRAWINGS ARE TAKEN FROM AVAILABLE DRAWINGS OF EXISTING BUILDING. CONTRACTOR SHALL VERIFY SIZES, LOCATIONS AND FLOW DIRECTIONS OF EXISTING PIPING BEFORE PURCHASING NEW MATERIALS AND EQUIPMENT OR FABRICATION.
10. CONTRACTOR SHALL BLEED ALL AIR FROM THE CHILLED WATER SYSTEM AFTER REFILLING. THIS INCLUDES PIPING IN THE BOILER ROOM AND THE ENTIRE BUILDING. INSTALL ANY ADDITIONAL BLEEDERS, AIR VENT AS REQUIRED TO REMOVE AIR THROUGHOUT THE ENTIRE BUILDING.
11. CONTRACTOR SHALL FURNISH AND INSTALL DRAIN VALVES ON THE LOW POINT OF EACH PIPE TO CHILLER TO ENABLE DRAINING.
12. CONTRACTOR SHALL FURNISH AND INSTALL BLEED VALVES AT THE HIGH POINTS OF ALL NEW PIPING. CAP ALL UNUSED PIPING AFTER PIPING DEMO.
13. ALL CONTROL WORK SHALL BE PERFORMED BY APPROVED CONTROL CONTRACTORS ONLY. DISCONNECT ENERGY MANAGEMENT WIRING FROM THE CHILLER AND PUMPS (ENABLE, STATUS AND ALARM CIRCUITS). NO EMS CONTROL CIRCUITS OR COMPONENTS SHALL BE DISCONNECTED OR REMOVED UNTIL THEY HAVE BEEN DE-ENERGIZED AND CONFIRMED OPEN. CONTACT THE FCPS ENERGY MANAGEMENT DEPARTMENT 48 HOURS BEFORE CONTROL WORK IS TO BE INITIATED. (MICHAEL RUDACILLE @ 703-764-4398)
14. ALL ROOFING WORK SHALL BE PERFORMED BY COLBERT ROOFING
CHRIS COLBERT @703.550.9171

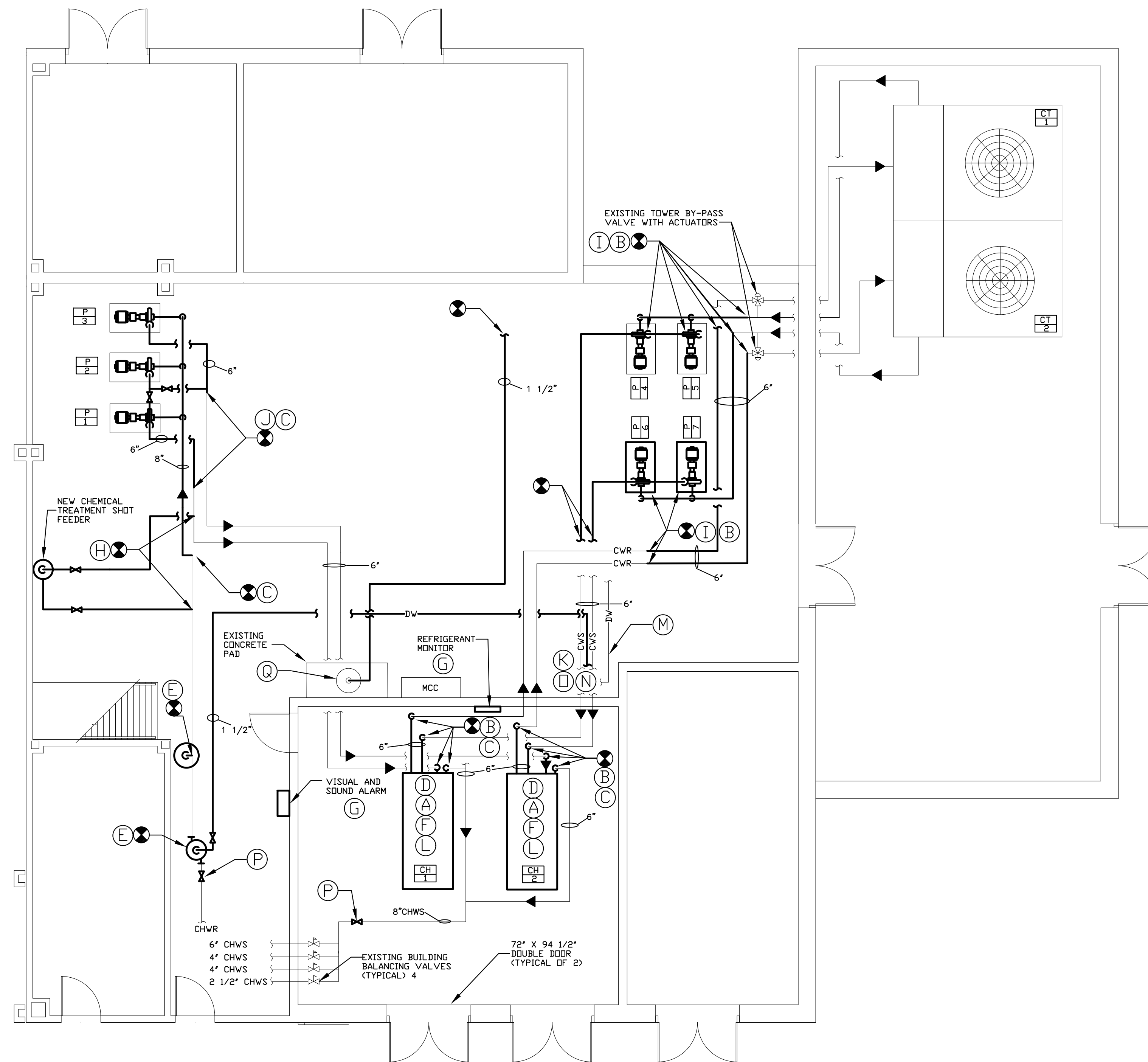
DEMO WORK NOTES:

- (A) REMOVE EXISTING CHILLERS 1 & 2 IN ITS ENTIRETY. REMOVE THE CHILLER EMERGENCY VENT PIPING BELOW THE ROOF. REMOVE ISOLATORS UNDER THE CHILLER. REMOVE AUXILIARY OIL COOLING LINES. EXISTING HOUSEKEEPING PAD SHALL REMAIN.
- (B) REMOVE PORTION OF THE EXISTING 6" CHILLED WATER SUPPLY AND RETURN PIPING TO POINT INDICATED.
- (C) REMOVE PORTION OF THE EXISTING 6" CONDENSER WATER SUPPLY AND RETURN PIPING TO POINT INDICATED.
- (D) REMOVE AIR SEPARATOR AND EXPANSION TANK AND ALL ASSOCIATED PIPING. ALSO EXPANSION TANK CONCRETE PAD
- (E) REMOVE CHILLER & BOILER DOMESTIC WATER MAKE-UP PIPING AND PRV'S TO POINT WHERE IT TIES INTO THE BOILER DOMESTIC WATER MAKE-UP PIPING AS INDICATED ON THE DRAWING.
- (F) REMOVE CHEMICAL FEED TANK AND THE ASSOCIATED PIPING.
- (G) REMOVE CHILLED WATER PUMP P1, P2 AND P3 AND ASSOCIATED PIPING TO THE POINT INDICATED.
- (H) REMOVE CONDENSER WATER PUMP P4, P5 AND P6, AND CONCRETE SLAB FOR PUMP P6 AND ASSOCIATED PIPING TO THE POINTS INDICATED.
- (I) REMOVE REFRIGERANT MONITORING SYSTEM, REFRIGERANT MONITOR RELAY PANEL, ASSOCIATED WIRES, AND RELAYS. REMOVE ANY WIRES THAT MAY BE INTERLOCKED WITH THE CURRENT BAS SYSTEM. ALL CONTROLS WORK SHALL BE PERFORMED BY A CONTROLS CONTRACTOR.
- (J) CONTRACTOR IS RESPONSIBLE TO DRAIN, REFILL AND VENT AIR FROM THE BUILDING CHILLED AND CONDENSER WATER SYSTEM
- (K) REMOVE STARTER, TRANSFORMER, HOA SWITCHES, OVERLOAD AND ANY ASSOCIATED AUXILIARY CONTACT OR SWITCHES FOR PUMP P1 TO P6 AND A SPARE IN MCC. DISCONNECT TOGGLE SWITCH AND FUSE BLOCK WILL REMAIN TO BE REUSED. CONTROLS CONTRACTOR TO REMOVE ALL LOW VOLTAGE COMPONENTS ASSOCIATED WITH CONTROLS. ALL OPENING CREATED BY REMOVING OLD ACCESSORIES SUCH AS HOA SWITCHES SHALL BE PATCHED WITH A METAL PLATE.
- (L) REMOVE 1 SET OF 3 250 MCM CABLES AND 1 #4 GROUND FROM EACH 2 1/2" CONDUIT FROM THE MDP PANEL IN THE MAIN ELECTRIC ROOM TO THE JUNCTION BOX IN THE CHILLER ROOM. REMOVE THE SAME 1 SET OF 3 250 MCM CABLES AND 1 #4 GROUND FROM THE JUNCTION BOX IN THE CHILLER ROOM TO THE CHILLER FOR CHILLERS 1 & 2.
- (M) REMOVE THE EXISTING 250 AMP BREAKERS FOR CHILLERS 1 & 2.
- (N) MCC FOR PUMPS P1 THROUGH P6
- (O) DEMO. DOMESTIC WATER PUMP STATION. LEAVE CONCRETE PAD TO BE REUSED FOR EXISTING BOILER EXPANSION TANK.
- (P) DEMO. EXISTING BOILER EXPANSION TANK CONCRETE PAD. RELOCATE EXISTING BOILER EXPANSION TANK TO EXISTING CONCRETE PAD FOR DOMESTIC WATER PUMP STATION.
- (Q) DEMO. EXISTING HEAT EXCHANGE (HX-1) AND ASSOCIATED PIPING. REMOVE EXISTING ELECTRICAL STAND NEXT TO THE HEAT EXCHANGER FOR THE COOLING TOWER VFD'S. DO NOT DEMO EXISTING COOLING TOWER VFD'S. RELOCATE TO THE NEW ELECTRICAL STAND. SEE NOTE (A) E-1 NEW ELECTRICAL WORK NOTES.

MMB-033-23	CHILLER REPLACEMENT	SCALE: NTS
	LIBERTY MIDDLE SCHOOL 6801 UNION MILL ROAD CLIFTON, VA 20124	DATE: 1/17/23 DRAWN BY: JLW
	Fairfax County Public Schools DEPARTMENT OF FACILITIES MANAGEMENT 5025 SIDEBURN ROAD FAIRFAX, VIRGINIA 22032-2637 703-764-2623	SHEET: ME-1

SYMBOLS & ABBREVIATIONS

	CONDENSER WATER SUPPLY PIPE
	CONDENSER WATER RETURN PIPE
	CHILLED WATER SUPPLY PIPE
	CHILLED WATER RETURN PIPE
	DOMESTIC WATER
	FLEXIBLE PIPE CONNECTION
	STRAINER W/BLOW DOWN VALVE & CAP
	ISOLATION VALVE
	MODULATING CONTROL VALVE 3-WAY
	CHECK VALVE
	CAPPED PIPE END
	PIPE DROP
	PIPE RISE
	DEMO
	EXISTING TO REMAIN
	NEW
	POINT OF CONNECTION OF NEW TO EXISTING
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	PUMP
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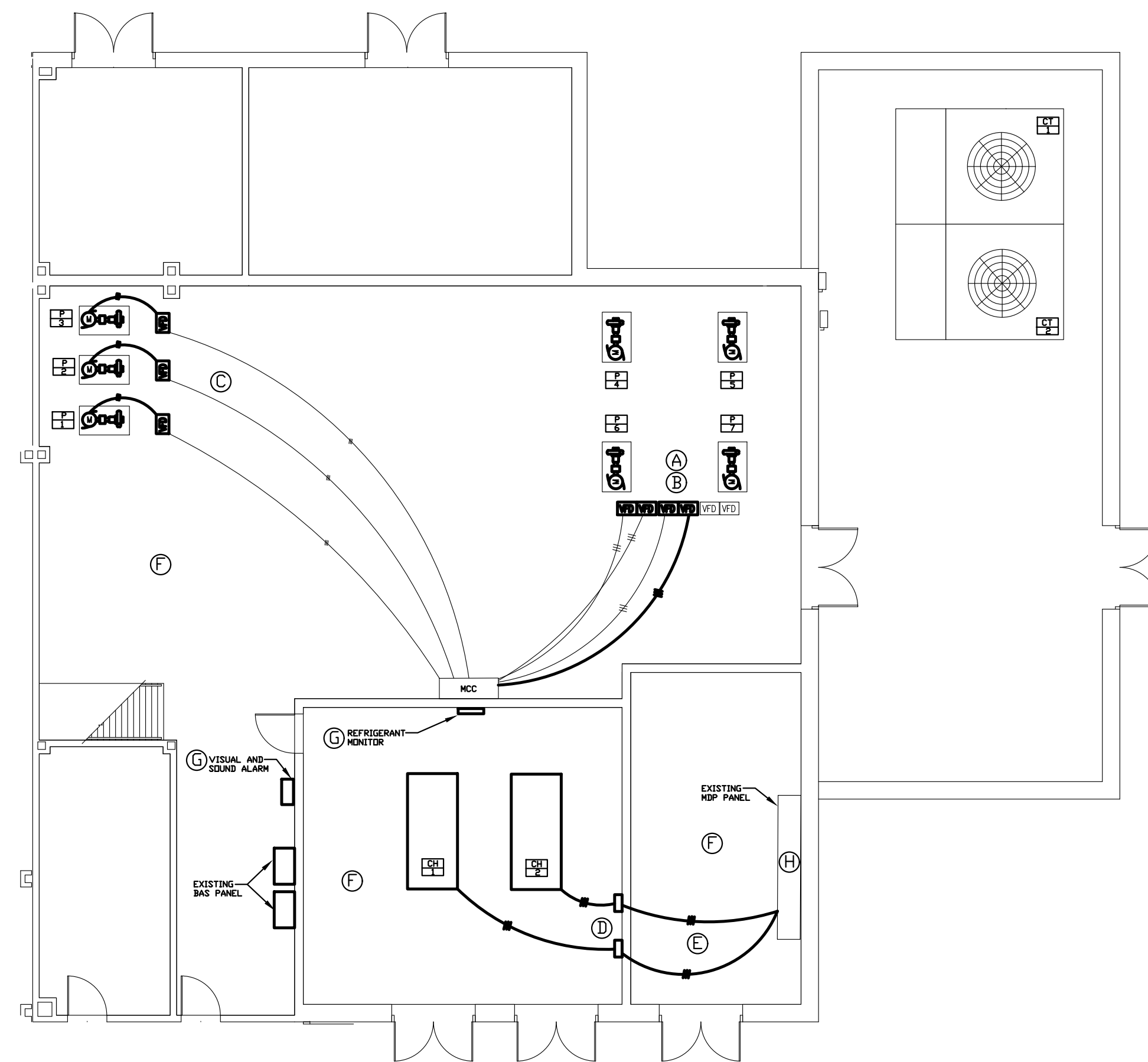


NEW MECHANICAL WORK NOTES:

- (A) FURNISH AND INSTALL NEW CHILLERS ON THE EXISTING CONCRETE PADS (EXISTING PADS SHOULD BE PAINTED). EXTEND OR MODIFY CONCRETE PADS IF NECESSARY SEE ME-4 FOR DETAILED SCHEDULE. COMBINE ALL THE RELIEF VENTS TO AN EXISTING COMMON VENT IN THE BOILER ROOM.
- (B) ROUTE NEW 6' CONDENSER WATER SUPPLY AND RETURN PIPING FROM EXISTING AT POINT INDICATED TO NEW CHILLER. PAINT TO MATCH THE EXISTING COLOR. INSTALL NEW PIPE SUPPORTS. PROVIDE LOW POINT DRAIN. SEE DETAIL 1 ON ME-3 FOR DETAILED INSTALLATION.
- (C) ROUTE NEW 6' CHILLED WATER SUPPLY AND RETURN PIPING FROM EXISTING AT POINT INDICATED TO NEW CHILLER. INSULATE NEW CHILLED WATER PIPES TO MATCH EXISTING. MARK WITH FLOW DIRECTIONS. INSTALL NEW PIPE SUPPORTS. PROVIDE LOW POINT DRAIN. RECONNECT THE CHEMICAL TREATMENT LINE SEE DETAIL 1 ON ME-3 FOR DETAILED INSTALLATION.
- (D) PROVIDE SERVICE CLEARANCE AROUND THE CHILLER PER MANUFACTURE'S RECOMMENDATIONS. PROVIDE ACCESS TO THE COMPRESSORS FOR ROUTINE MAINTENANCE. EXTEND CONCRETE PAD AS NEEDED TO ACCOMMODATE THE NEW CHILLER WIDTH. THE NEW CHILLERS SHALL ALIGN WITH EXISTING DOUBLE DOORS FACING SOUTH FOR COOLING COIL REMOVAL ACCESS.
- (E) PROVIDE NEW AIR SEPARATOR AND EXPANSION TANK ON A NEW 4' CONCRETE PAD. PROVIDE SHUT OFF BALL VALVE TO ISOLATE EACH TANK SEE ME-2 FOR DETAILED SCHEDULE.
- (F) THE CONTRACTOR SHALL FIELD VERIFY THE CHILLED WATER FLOW DIRECTIONS. THE SYSTEM SHALL BE BALANCED AND THE BALANCING REPORT SHALL BE SENT TO THE OWNER PER SPECIFICATION SECTION. THE BALANCING CONTRACTOR SHALL CONTACT THE CONTRACTOR OR THE OWNER IF THE FLOW RATE CAN NOT BE ACHIEVED.
- (G) PROVIDE AND INSTALL REFRIGERANT LEAKAGE SENSOR AND SIGN AGE INSIDE THE CHILLER ROOM. PROVIDE AND INSTALL VISUAL AND AUDIBLE ALARMS OUTSIDE/EXTERIOR OF THE CHILLER ROOM. SEE SPECIFICATION FOR DETAILED INFORMATION.
- (H) FURNISH AND INSTALL NEW SHOT FEEDER TANK WITH ASSOCIATED PIPING AND ISOLATION VALVES.
- (I) FURNISH AND INSTALL NEW CONDENSER WATER PUMPS P4, P5, P6, P7 PER PUMP SCHEDULE ON ME-4. PROVIDE A NEW CONCRETE PAD FOR PUMPS P6 AND P7. PROVIDE AND INSTALL NEW SUCTION DIFFUSER, STRAINERS, ISOLATION VALVES, ETC PER DETAIL 2 ON ME-3. CONNECT NEW PUMPS WITH NEW PIPING LAYOUT AS INDICATED ON THE DRAWING.
- (J) FURNISH AND INSTALL NEW CHILLED WATER PUMPS P1, P2, AND P3 PER PUMP SCHEDULE ON ME-4. PROVIDE AND INSTALL NEW SUCTION DIFFUSER, STRAINERS, ISOLATION VALVES, ETC PER DETAIL 2 ON ME-3. CONNECT NEW PUMPS WITH NEW PIPING LAYOUT AS INDICATED ON THE DRAWING.
- (K) PROVIDE SEPARATE NEW 1 1/2" DOMESTIC WATER MAKEUP PIPING BETWEEN POINTS INDICATED.
- (L) NEW CHILLER SHALL BE IDENTIFIED BY ENGRAVED NAME TAG WITH THE TITLE OF THE EQUIPMENT AS TAKEN FROM THE PLANS IN A POSITION THAT IS CLEARLY VISIBLE. THE LETTERS SHALL NOT BE LESS THAN 3/4" HIGH. THE TITLES SHALL BE SHORT AND CONCISE. PROVIDE WARRANTY TAG PER SPECIFICATION.
- (M) NEW DOMESTIC WATER LINE FEEDING THE NEW CHILL WATER AND HOT WATER PRESSURE REDUCING VALVES FROM THE EXISTING DOMESTIC WATER LINE.
- (N) EXISTING BACK FLOW PREVENT TO REMAIN.
- (O) PROVIDE AND INSTALL NEW CHILL WATER MAKEUP AND NEW HOT WATER MAKEUP STATIONS IN DOMESTIC WATER LINE AFTER THE EXISTING BACK FLOW PREVENT. PER DETAIL 3 ON ME-3
- (P) INSTALL NEW 8" BUTTERFLY BUILDING ISOLATION VALVES IN THE MAIN CHILL WATER SUPPLY AND RETURN INSIDE THE BOILER ROOM WHERE INDICATED ON THE DRAWING.
- (Q) RELOCATE EXISTING BOILER EXPANSION TANK TO THE EXISTING CONCRETE PAD BESIDE THE ELECTRICAL MCC CENTER. RE-PIPE THE EXISTING EXPANSION TANK PIPING TO THE NEW LOCATE OF THE EXISTING BOILER EXPANSION TANK. ADD SHUT OFF BALL VALVE AND DRAIN WITH HOSE CONNECTION.

1
ME-2
NEW MECHANICAL PLAN

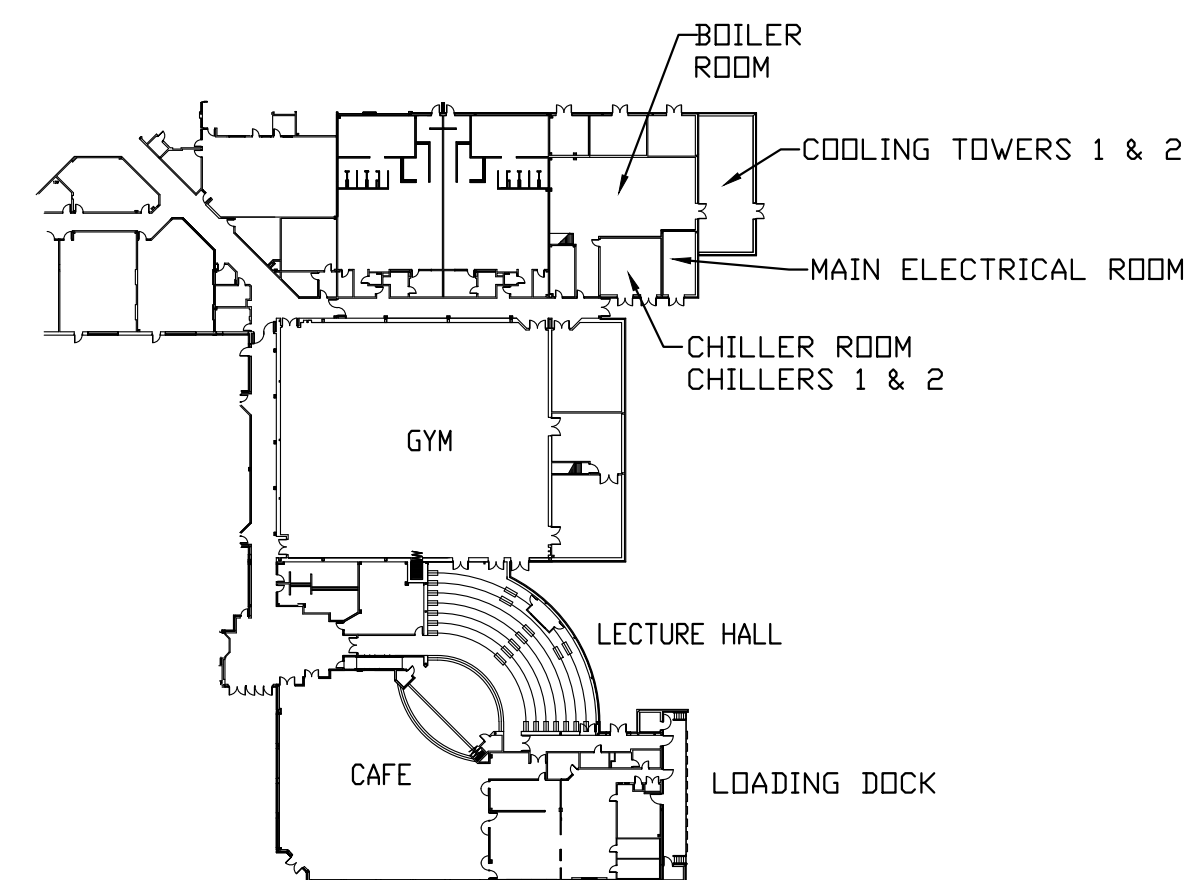
MMB-033-23	CHILLER REPLACEMENT	SCALE: NTS
	LIBERTY MIDDLE SCHOOL 6801 UNION MILL ROAD CLIFTON, VA 20124	DATE: 1/17/23
	Fairfax County Public Schools DEPARTMENT OF FACILITIES MANAGEMENT 5025 SIDEBURN ROAD FAIRFAX, VIRGINIA 22032-2637 703-764-2423	DRAWN BY: JLW
		SHEET: ME-2



NEW ELECTRICAL WORK NOTES:

- Ⓐ FURNISH AND INSTALL FOUR NEW VFD'S FOR THE CONDENSER WATER PUMPS. BUILD A NEW FREE STANDING ELECTRICAL RACK TO MOUNT THE NEW CONDENSER WATER PUMPS VFD'S AND THE EXISTING COOLING TOWER FAN VFD'S ON. EXTEND/CONNECT POWER FROM THE EXISTING CABLES AS NEEDED. SEE ME-5 FOR ADDITIONAL CONTROL WORKS.
- Ⓑ RECONNECT THE NEW VFD'S AND CONDENSER WATER PUMPS P4, P5, P6 WITH EXISTING CONDUCTORS. ROUTE 1 SET OF 3 #10 THHN WIRES AND 1 #10 GROUND FROM THE SPARE BREAKER IN THE MCC TO THE NEW CONDENSER WATER PUMP P7 AND VFD. EXTEND CONDUITS, AND CONDUCTORS AS NEEDED. ROUTE NEW POWER CABLES AND CONDUITS OVER HEAD TO PUMPS P4 AND P5. MAXIMUM LENGTH OF THE LIQUID-TIGHT CONDUIT AT THE EQUIPMENT SHALL BE LIMITED TO 36'.
- Ⓒ FURNISH AND INSTALL 3 NEW VFD'S FOR THE CHILLED WATER PUMPS ON A FREE STANDING RACK TO SUPPORT THE NEW VFD'S. NEW CHILL WATER PUMP VFD ELECTRICAL RACK SHALL BE LOCATED BESIDE THE EXISTING WATER HEAT EXPANSION TANK IN THE BOILER ROOM. EXTEND/CONNECT THE EXISTING CABLES FROM THE MCC TO THE NEW VFD'S AND THE PUMP MOTORS. THREE PHASE WIRE SIZE SHALL BE #4 THHN WITH #10 GROUND SIZE. MAXIMUM LENGTH OF THE LIQUID-TIGHT CONDUIT AT THE EQUIPMENT SHALL BE LIMITED TO 36'.
- Ⓓ CHILLER CH-1 AND CH-2 FEEDER JUNCTION BOX FEED FROM MAIN ELECTRIC ROOM IN LOCATION SHOWN.
- Ⓔ ROUTE 1 SET OF 3 300 MCM THHN AND 1 #4 GROUND IN EXISTING 2-1/2" IMC CONDUIT FROM MDP TO EACH CHILLER THROUGH EXISTING JUNCTION BOX. MAXIMUM LENGTH OF THE LIQUID-TIGHT CONDUIT AT THE EQUIPMENT SHALL BE LIMITED TO 36'.
- Ⓕ REPLACE 19 EXISTING FLUORESCENT LIGHTING FIXTURES WITH LED LIGHTING FIXTURES IN THE CHILLER, MAIN ELECTRICAL AND MECHANICAL ROOMS. SEE LIGHTING SCHEDULE ON ME-5 FOR DETAIL.
- Ⓖ RECONNECT POWER TO THE NEW REFRIGERANT MONITOR AND ALARM.
- Ⓗ REPLACE EXISTING 250 AMP BREAKERS WITH NEW 350 AMP BREAKERS IN THE MDP SIZED PER MANUFACTURER'S RECOMMENDATION.

1 NEW ELECTRICAL PLAN
ME-3



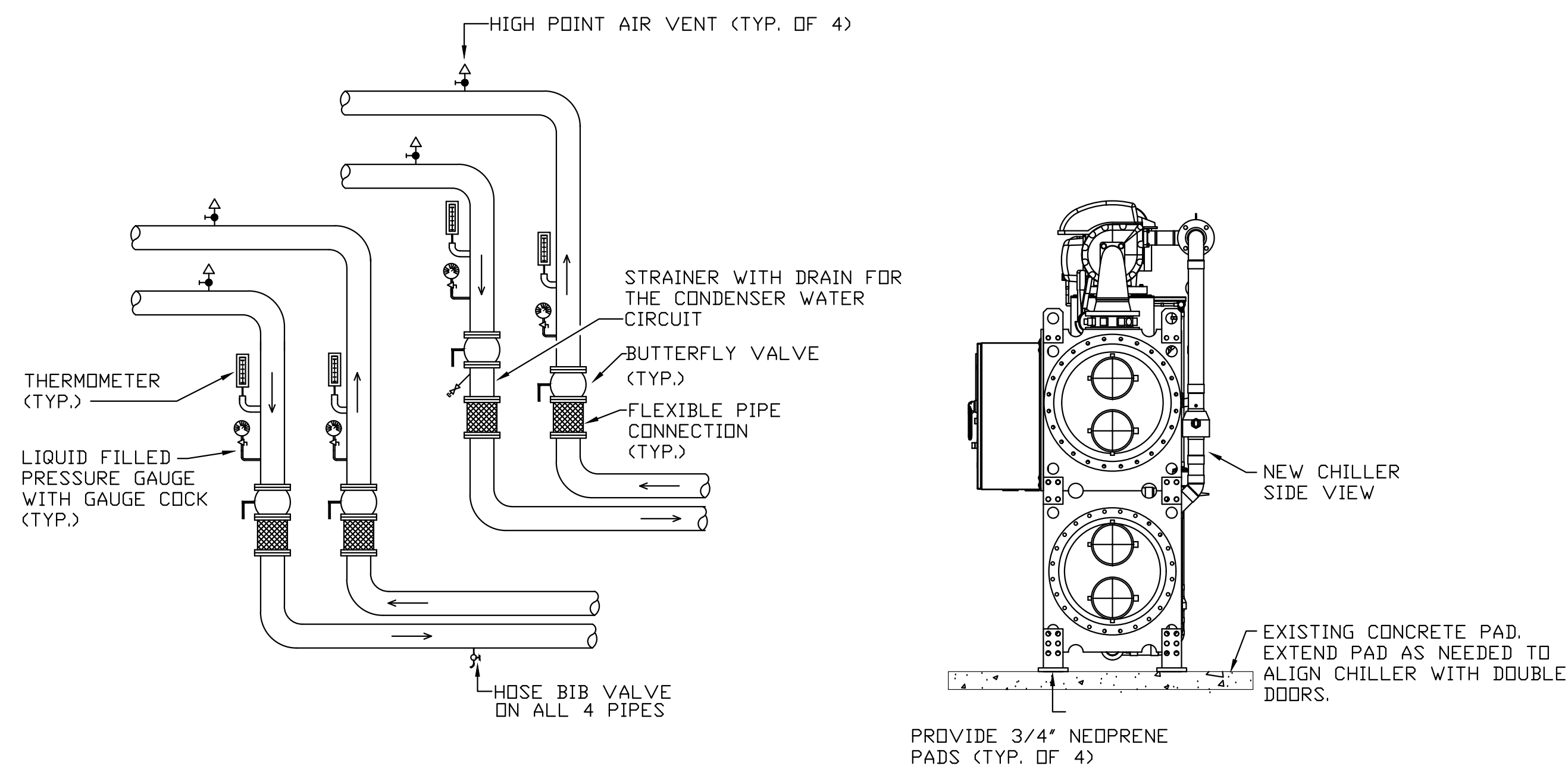
CHILLER REPLACEMENT ELECTRICAL SCHEDULE

EQUIP. NAME	MCA	MCCP	CABLE SIZE	EXISTING BREAKER	NEW BREAKER SIZE	ELECTRICAL PANEL FEED FROM
CHILLER #1	275 AMPS	350 AMPS	3 X 300 MCM & 1 X #4 GROUND	250 AMP	350 AMP	MDP MAIN ELECTRIC ROOM
CHILLER #2	275 AMPS	350 AMPS	3 X 300 MCM & 1 X #4 GROUND	250 AMP	350 AMP	MDP MAIN ELECTRIC ROOM
CHILL WATER PUMPS P1,P2,P3	30 AMPS	30 AMPS	3 X #8 AWG 1 X #10 GROUND	FUSED AT THE MCC	40 AMP FUSE AT MCC	MOTOR CONTROL CENTER
CONDENSER WATER PUMPS P4,P5,P6,P7	10 AMPS	20 AMPS	3 X #12 AWG 1 X #12 GROUND	FUSED AT THE MCC	20 AMP FUSE AT MCC	MOTOR CONTROL CENTER

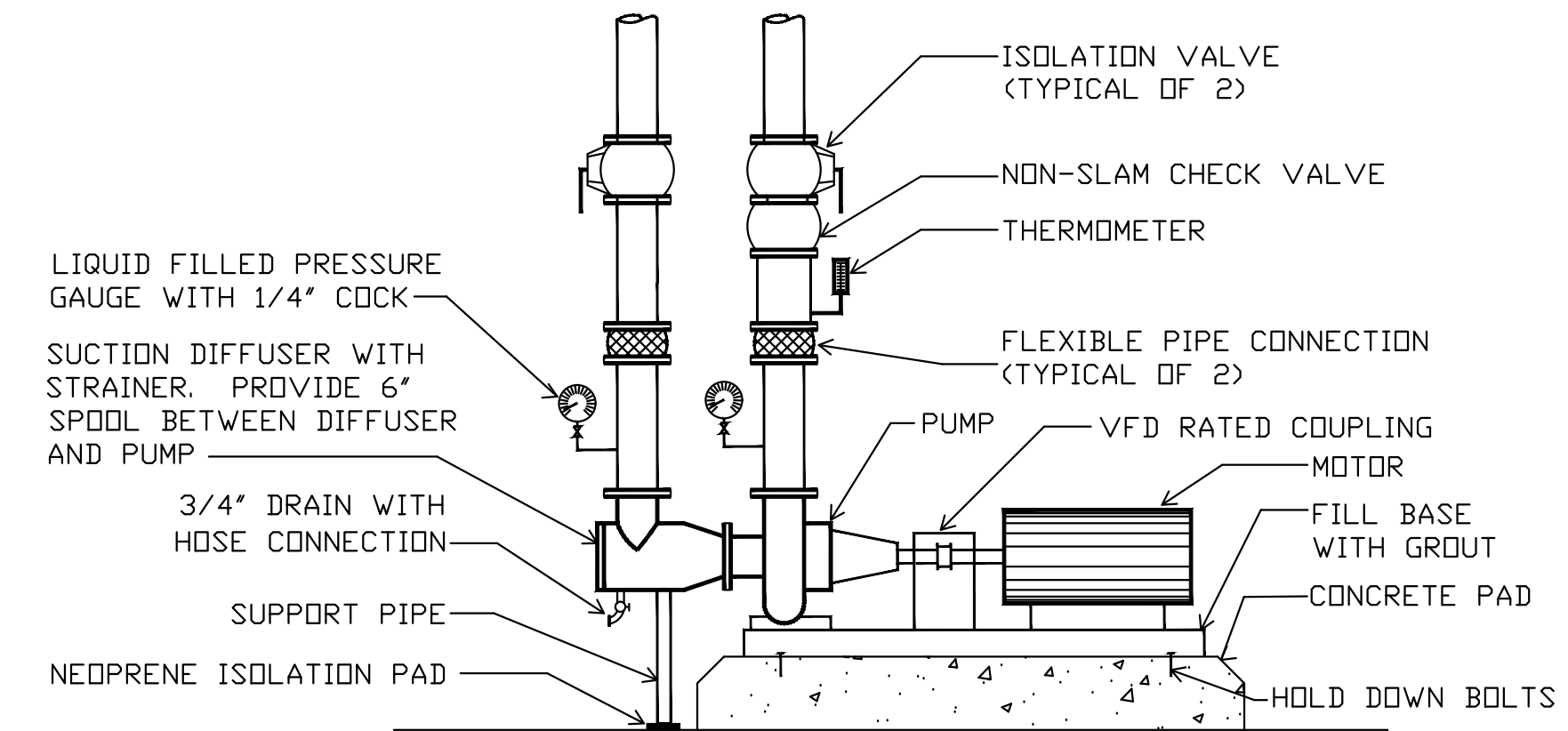
ELECTRICAL SCHEDULE NOTES:

- REMOVE THE EXISTING 250 MCM CABLES FOR CHILLERS 1 & 2. REPLACE THE 250 MCM CABLES WITH 300 MCM CABLES AND A #4 GROUND FROM THE MDP IN THE MAIN ELECTRIC ROOM TO EACH OF THE NEW CHILLERS 1 & 2.
- REPLACE THE 250 AMP BREAKER IN THE MDP WITH A NEW 350 AMP BREAKER FOR EACH OF THE NEW CHILLERS 1 & 2.
- EXTEND EXISTING CABLES AND CONDUITS OR REPLACE THE CABLES AND CONDUITS TO ACCOMMODATE THE NEW CHILL WATER PUMPS AMPERAGE AND VFD'S FROM THE EXISTING MCC TO THE NEW VFD ELECTRICAL RACK FOR THE NEW CHILL WATER PUMPS. ADD NEW CABLES AND CONDUITS FROM THE NEW VFD'S TO THE NEW CHILL WATER PUMP MOTORS.
- EXTEND THE EXISTING CABLES AND CONDUITS OR REPLACE THE CABLES AND CONDUITS TO ACCOMMODATE THE NEW CONDENSER PUMPS P4,P5,P6 TO THE NEW ELECTRICAL RACK FOR THE CONDENSER PUMPS NEW VFD'S AND THE EXISTING COOLING TOWER FAN VFD'S.
- ADD NEW CABLES AND CONDUIT FROM THE EXISTING MCC SPARE TO THE NEW ELECTRICAL RACK FOR NEW CONDENSER PUMP P7, AND VFD BEING ADDED. INSTALL NEW CABLES AND CONDUITS TO THE NEW CONDENSER PUMP P7 FROM THE NEW VFD FOR P7.
- EXISTING MCC BUCKETS FOR PUMPS P1 THROUGH P7 ARE TO HAVE THE MOTOR CONTROLS REMOVED, AND ONLY THE FUSE BLOCK IS TO REMAIN. THE EXISTING HANDLE WILL BE TO DISCONNECT THE POWER GOING TO THE NEW VFD'S. PATCH ALL HOLES LEFT IN THE DOORS OF THE EXISTING BUCKETS. REPAIR OR REPLACE ANY BUCKET DOOR HANDLES THAT PERTAIN TO PUMPS P1 THROUGH P7 THAT ARE NOT WORKING PROPERLY.
- BUILD A NEW FREE STANDING ELECTRICAL RACK TO ACCOMMODATE THE NEW CHILL WATER PUMPS P1,P2,P3 VFD'S BESIDE THE EXISTING WATER HEATER CONCRETE PAD.
- BUILD A NEW FREE STANDING ELECTRICAL RACK TO ACCOMMODATE THE NEW CONDENSER PUMPS P4,P5,P6,P7 VFD'S AND THE EXISTING COOLING TOWER FAN VFD'S. BUILD THE NEW ELECTRICAL RACK WHERE THE EXISTING HEAT EXCHANGE IS NOW.

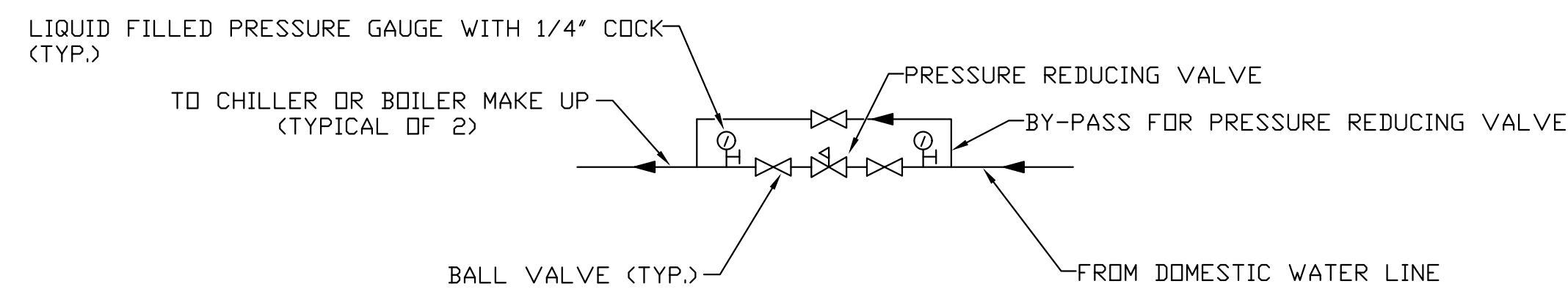
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1 CHILLER INSTALLATION DETAIL
ME-3 NTS



2 BASE MOUNTED PUMP DETAIL
ME-3 NTS



3 MAKE UP WATER DETAIL
ME-3 NTS

MMB-033-23	CHILLER REPLACEMENT	SCALE: NTS
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WATER-COOLED CHILLER SCHEDULE

DESIGNATION	CAPACITY (TONS)	UNIT PERFORMANCE							EVAPORATOR				CONDENSER				ELECTRICAL			BASIS OF DESIGN		
		INPUT (KW)	(KW/TON)	RLA (AMPS)	NPLV (KW/TON)	75% LOAD (KW/TON)	50% LOAD (KW/TON)	25% LOAD (KW/TON)	WPD (FT H2O)	PASSES	FLOW (GPM) MAX.	EWT (°F)	LWT (°F)	WPD (FT H2O)	PASSES	FLOW (GPM) MAX.	EWT (°F)	LWT (°F)	V/PH/Hz	MCA	MDCP	DAIKIN
CHILLER 1	240	164.2	0.6843	244	0.3586	0.4727	0.3101	0.2762	7.51	2	580	55	45	8.25	2	525	85.0	98.25	460V/3Ph/60Hz	275	350	WMC043DDSNA
CHILLER 2	240	164.2	0.6843	244	0.3586	0.4727	0.3101	0.2762	7.51	2	580	55	45	8.25	2	525	85.0	98.25	460V/3Ph/60Hz	275	350	WMC043DDSNA

NOTES:

1. FOULING FACTORS: EVAPORATOR 0.00010 CONDENSER 0.00025
2. PROVIDE STANDARD CONTROL PANEL AND BACNET/MSTP
3. PROVIDE REFRIGERANT MONITOR INCLUDING 4-20MA SIGNAL, STROBE LIGHT, AUDIBLE HORN AND AIR PICKUP FILTER
4. CHILLER STARTER TYPE - VFD
5. PROVIDE MARINE BOXES FOR EACH CHILLER 1 & 2
6. CHILLER 1 & 2 SHALL CONTROL 1 CHILL WATER PUMP FOR EACH CHILL WATER CIRCUIT. EACH CHILLER WILL ALSO CONTROL AND LEAD/LAG 2 CONDENSER WATER PUMPS, THE THREE-WAY VALVE, AND THE TOWER FAN FOR THAT CONDENSER WATER CIRCUIT.
7. PROVIDE ELECTRONIC FLOW SWITCH FOR BOTH THE CONDENSER AND THE CHILLED WATER LOOPS.

NEW PUMP SCHEDULE

PUMP UNIT#	TYPE	SERVICE	HEAD (FT)	SYSTEM FLUID	FLOW RATE (GPM)	MODEL & SERIES	PUMP SPEED (RPM)	MOTOR (H.P.)	V/PH/Hz	BASIS OF DESIGN
P1, P2, P3	BASE MOUNT	CHILLED WATER	136	WATER	580	MODEL- 3AD E-1510	3600	30	460/3/60	BELL & GOSSETT
P4,P5,P6,P7	BASE MOUNT	COND WATER	55	WATER	525	MODEL- 4BD E-1510	1800	10	460/3/60	BELL & GOSSETT

AIR SEPARATOR AND EXPANSION TANK SCHEDULE

AIR SEPARATOR SCHEDULE: BELL & GOSSETT ROLAIRTROL MODEL RL-8F MAX 1900 GPM.
 WATER EXPANSION TANK SCHEDULE: BELL & GOSSETT MODEL B ASME, B-300,
 80 GALLON BLADDER-TYPE EXPANSION TANK WITH MODEL 87 AIR VENT.
 AIR ELIMINATORS: BELL & GOSSETT MODEL 107 HIGH CAPACITY AIR VENT

CHILL WATER SYSTEM DDC POINT LIST

UNIVERSAL INPUTS CHILLER #1	UNIVERSAL INPUTS CHILLER #2	DIGITAL OUTPUTS
CHILLER #1 RUN STATUS	CHILLER #2 RUN STATUS	CHILLER #1 ENABLE/DISABLE
CHILLER #1 ALARM STATUS	CHILLER #2 ALARM STATUS	CHILLER #2 ENABLE/DISABLE
CHILLER #1 SUPPLY TEMP.	CHILLER #2 SUPPLY TEMP.	<u>ANALOG OUTPUTS (FUTURE)</u>
CHILLER #1 RETURN TEMP.	CHILLER #2 RETURN TEMP.	CHILLER #1 SET POINT RESET
CHILL WATER PUMP P1 RUN STATUS	CHILL WATER PUMP P3 RUN STATUS	CHILLER #2 SET POINT RESET
CONDENSER WATER PUMP P4 RUN STATUS	CONDENSER WATER PUMP P6 RUN STATUS	<u>MISC. UNIVERSAL INPUTS</u>
CONDENSER WATER PUMP P5 RUN STATUS	CONDENSER WATER PUMP P7 RUN STATUS	BLDG CHW SUPPLY TEMP.
COOLING TOWER WATER LEAVING (SUP) TEMP.	COOLING TOWER WATER LEAVING (SUP) TEMP.	BLDG CHW RETURN TEMP.
COOLING TOWER WATER ENTERING WATER (RET) TEMP.	COOLING TOWER WATER ENTERING (RET) TEMP.	
COOLING TOWER #1 FAN STATUS.	COOLING TOWER #2 FAN STATUS.	

BAS CONTROL NOTES:

- [A] THE EXISTING BAS SYSTEM SHALL CONTROL THE ENABLE/DISABLE FOR CHILLERS 1 & 2.
- [B] CHILLERS 1 & 2 SHALL START/STOP CHILL WATER PUMPS, AND CONDENSER PUMPS. CHILLERS 1 & 2 SHALL PROVIDE CONTROL OUTPUTS TO CONTROL THE CONDENSER WATER BY-PASS THREE WAY VALVE, AND THE COOLING TOWER FAN VFD'S.
- [C] REMOVE AND INSTALL LIKE FOR LIKE NEW TEMPERATURE SENSORS IN THE EXISTING SYSTEM.
- [D] PROVIDE NEW CONTROL WIRING AND CONDUITS. EXTEND THE EXISTING CONDUITS AND WIRING FOR THE NEW CHILL WATER SYSTEM.
 1. CHILLERS 1 & 2
 2. CHILL WATER PUMPS P1,P2,P3 NEW VFD'S
 3. CONDENSER WATER PUMPS P4,P5,P6,P7 NEW VFD'S
 4. COOLING TOWER FAN VFD'S
- [E] CONTROL CONTRACTOR MUST CALL THE FOLLOWING PERSON AT THE FCPS ENERGY MANAGEMENT DEPARTMENT BEFORE ANY EXISTING CONTROL WIRES OR COMPONENTS ARE REMOVED - MICHAEL RUDACILLE (703)764-4398
- [F] CONTROL CONTRACTOR WILL REMOVE EXISTING CONTROL WIRES FROM THE UNIT WITHOUT CUTTING THEM AND PERMANENTLY LABEL EVERY CONTROL WIRE IN THE NEW CHILLER.
- [G] CONTROL CONTRACTOR WILL REPLACE ALL RELAYS FOR THE CHILLER WITH NEW COMPONENTS. LABEL EACH POINT INSIDE THE NEW CHILLER (LABEL RELAY SOCKETS, NOT RELAYS, AS TO DEVICE CONTROLLED/FUNCTION). EXTEND CONTROL WIRES AS NECESSARY. (LAND ALL CONTROL WIRING ON LABELED TERMINAL STRIPS. NO WIRE NUTS SHALL BE USED.)
- [H] CONTROL CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL RELAYS AT THE ELECTRICAL PANEL TO SHUT DOWN THE CHILLERS IN THE EVENT OF REFRIGERATION LEAK INCLUDING NEW WIRING AND CONDUITS. PROVIDE WIRING AND CONDUIT FROM THE MONITOR TO THE NEW RELAYS AND FROM THE RELAYS TO THE ELECTRICAL PANEL.
- [I] CONTRACTOR WILL RETAIN THE FOLLOWING CONTROL CONTRACTOR FOR CONTROL WIRING, PROGRAMMING MODIFICATIONS, AND GRAPHICS MODIFICATIONS:
 BOLAND TRANE- KATIE KIMMEL (240)372-8225

LED LIGHTING FIXTURE SCHEDULE

MANUFACTURE: LITHONIA LIGHTING
 SERIES: VAP
 NOMINAL LUMENS: 4000
 DISTRIBUTION: WIDE
 DIFFUSER: CLEAR POLYCARBONATE LENS
 COLOR: 4000K

CENTRAL COOLING SYSTEM BAS OVERVIEW

CENTRAL COOLING SYSTEM ENABLE/DISABLE: THE CENTRAL COOLING SYSTEM SHALL BE ENABLED WHENEVER A COOLING REQUEST IS RECEIVED FROM ANY ZONE SERVED BY THE CENTRAL CHW COOLING SYSTEM CONTINUOUSLY FOR 10 MIN. (ADJ.) AND THE O.A. TEMP. IS GREATER THAN 35°F (ADJ.) AND WHEN THE CHILLER SYSTEM LOCKOUT SCHEDULE ALLOWS.

CHILLER 1 & 2 ENABLE: ON A CALL FOR COOLING BOTH CHILLERS 1 & 2 SHALL BE ENABLED AT THE SAME TIME. CHILLERS 1 & 2 SHALL RUN SIMULTANEOUSLY AND BE CONTROLLED BY THE DAIKIN CHILLER PROGRAM. CHILLERS 1 & 2 SHALL BE SET UP TO COMMUNICATE.

CHILLERS 1 & 2 CONTROLS: ON A CALL FOR COOLING BOTH CHILLERS 1 & 2 SHALL BE ENABLED AND CHILLERS 1 & 2 WILL ENABLE THE CHILL WATER AND CONDENSER WATER PUMPS. EACH CHILLER WILL ENABLE 1 CHILL WATER PUMP AND LEAD/LAG 2 CONDENSER WATER PUMPS FOR EACH CHILL WATER CIRCUIT. CHILLERS 1 & 2 WILL ALSO CONTROL THE TOWER BY-PASS THREE-WAY VALVE, AND THE TOWER FAN FOR EACH CHILL WATER CIRCUIT. CHILLER #1 WILL OPERATE CHILL WATER CIRCUIT #1, AND CHILLER #2 WILL OPERATE CHILL WATER CIRCUIT #2.

TWO 3-POSITION MANUAL TOGGLE SWITCHES: PROVIDED BY THE BAS CONTRACTOR AND MOUNTED NEAR THE PUMP VFD'S SHALL BE CLEARLY MARKED AND WIRED TO THE BAS CONTROLLER. IT SHALL INDICATE ON THE GRAPHICS PAGE WHETHER THE STANDBY PUMP FOR CHILL WATER HAS BEEN VALVE OVER TO CHILLER #1, CHILLER #2 OR NEITHER. THE TOGGLE SWITCH IS FOR INFORMATION ONLY AND WILL NOT CONTROL ANYTHING.

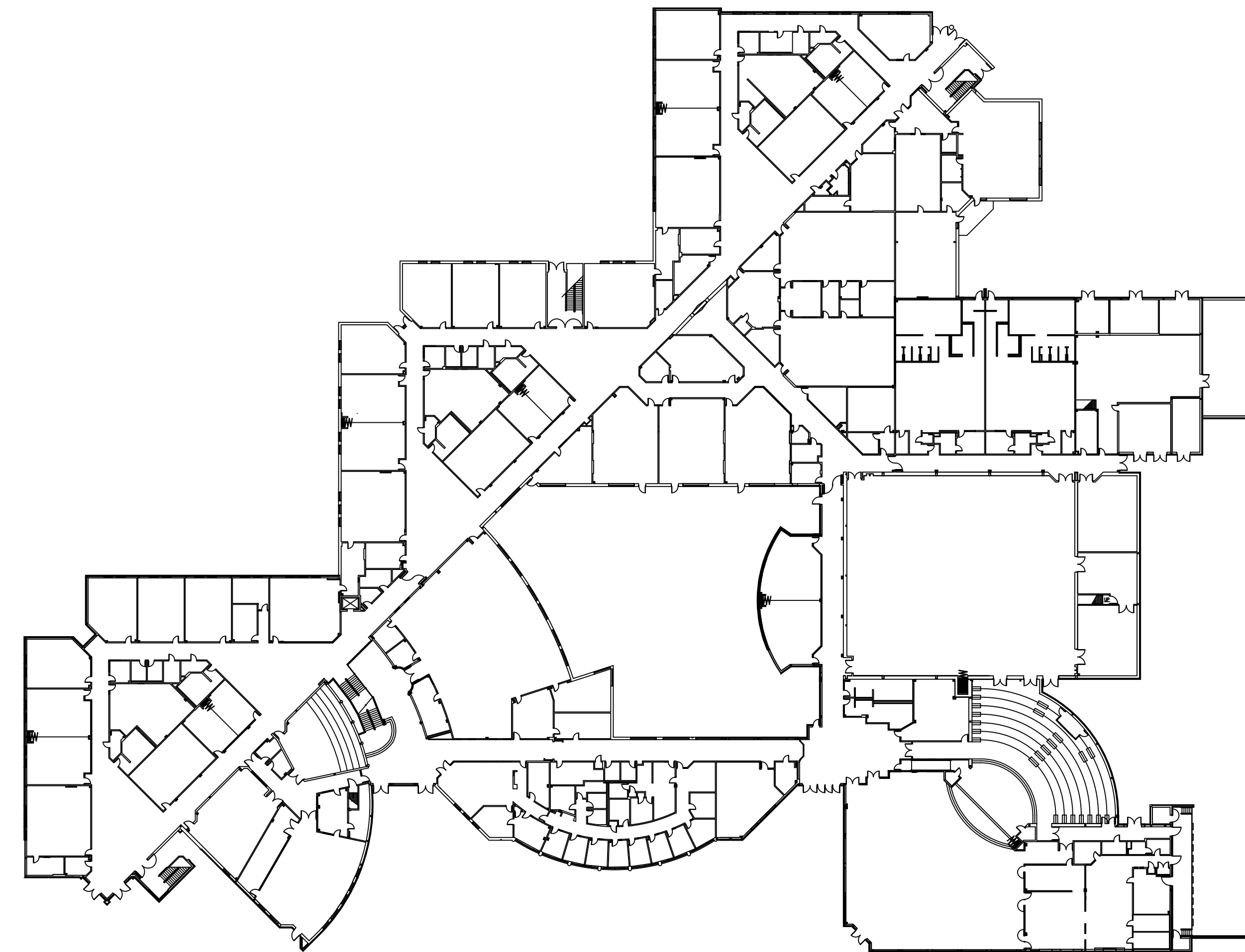
CHILLER STOP SEQUENCE: WHEN THE CHILLER IS NO LONGER NEEDED, THE BAS SYSTEM SHALL REMOVE THE ENABLE COMMAND AND ALLOW THE CHILLERS TO CYCLE DOWN UNDER THEIR OWN CONTROL. THE CHILLERS MUST REMAIN OFF FOR AT LEAST FIVE MINUTES BEFORE BEING ALLOWED TO RESTART. CHILLERS SHALL BE PROGRAMMED BY DAIKIN TO RUN CHILL WATER AND CONDENSER WATER PUMPS FOR AS LONG AS THE CHILLER NEEDS TO SHUT DOWN PROPERLY.

THE FOLLOWING ITEMS MUST BE COMPLETED BY THE CONTRACTOR BEFORE ANY WORK COULD BE PERFORMED AT THE SCHOOL.

- [1] PROVIDE TRADE PERMITS TO THE OWNER, AND PERMITS POSTED AT THE FRONT OF THE BUILDING BEFORE ANY WORK CAN START.
- [2] SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE PRINCIPAL AND OWNER.
- [3] SUBMIT WRITTEN PROPOSAL FROM THE CONTROL SUB-CONTRACTOR WITH THE SCOPE OF WORK. CONTROL CONTRACTOR CAN NOT START THEIR WORK UNTIL MR. MICHAEL RUDACILLE HAS BEEN NOTIFIED.

MMB-033-23	CHILLER REPLACEMENT	SCALE: NTS
	LIBERTY MIDDLE SCHOOL 6801 UNION MILL ROAD CLIFTON, VA 20124	DATE: 1/17/23
	Fairfax County Public Schools DEPARTMENT OF FACILITIES MANAGEMENT 5025 SIDEBURN ROAD FAIRFAX, VIRGINIA 22032-2637 703-764-2425	DRAWN BY: JLW SHEET: ME-4

FAIRFAX COUNTY PUBLIC SCHOOL LIBERTY MIDDLE SCHOOL CHILLER REPLACEMENT PROJECT



DRAWING INDEX	
SHEET #	SHEET NAME
GENERAL G--	COVER SHEET
MECHANICAL M-1 M-2 M-3 M-4	DEMOLITION WORK PLAN NEW MECHANICAL PLAN DETAIL PAGE SCHEDULE PAGE
ELECTRICAL E-1	NEW ELECTRICAL PLAN