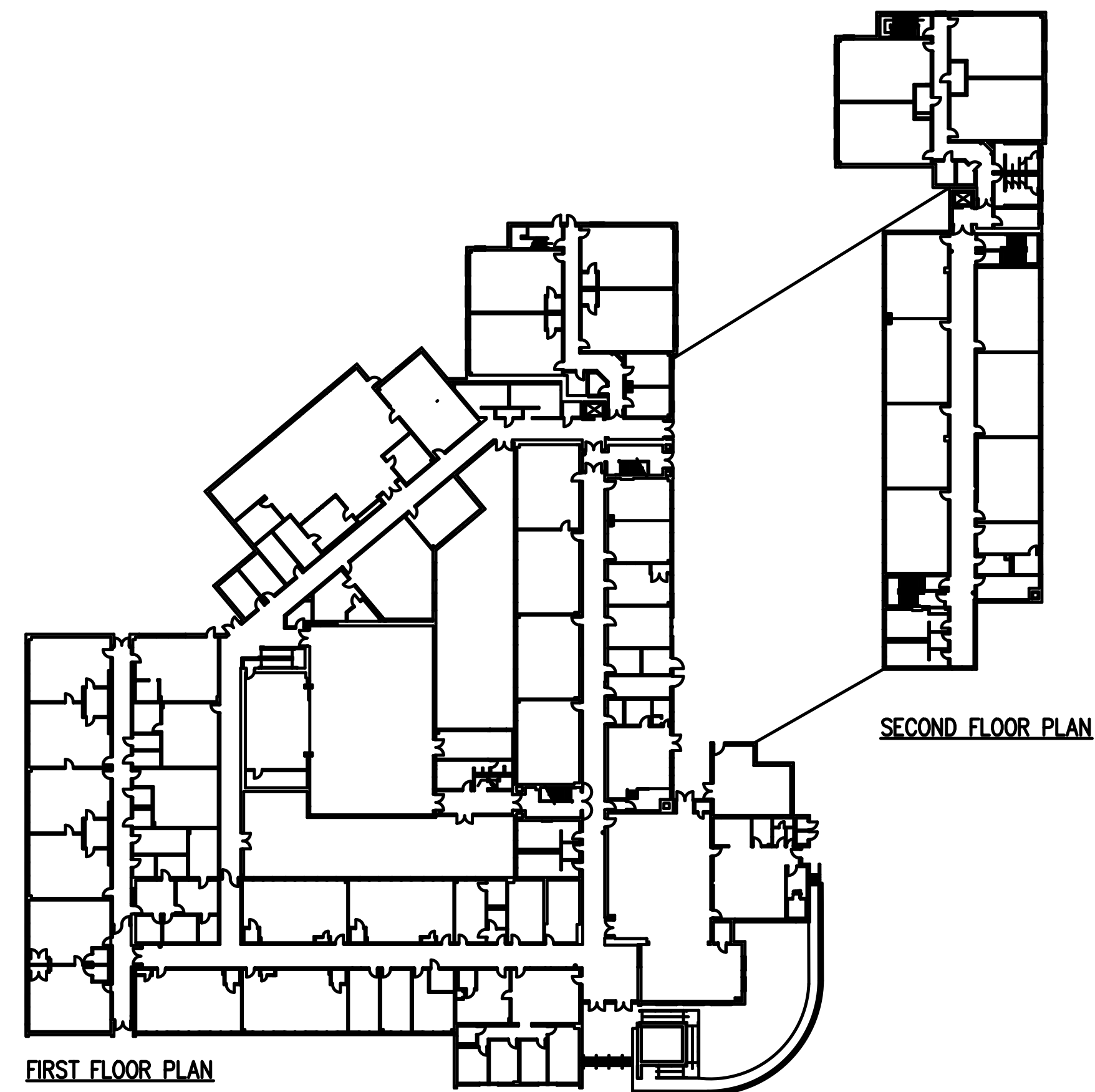


FAIRFAX COUNTY PUBLIC SCHOOLS LEMON ROAD ES AIR COOLED CHILLER REPLACEMENT PROJECT



7230 IDYLWOOD ROAD
FALLS CHURCH, VA 22043

DEMO WORK NOTES:

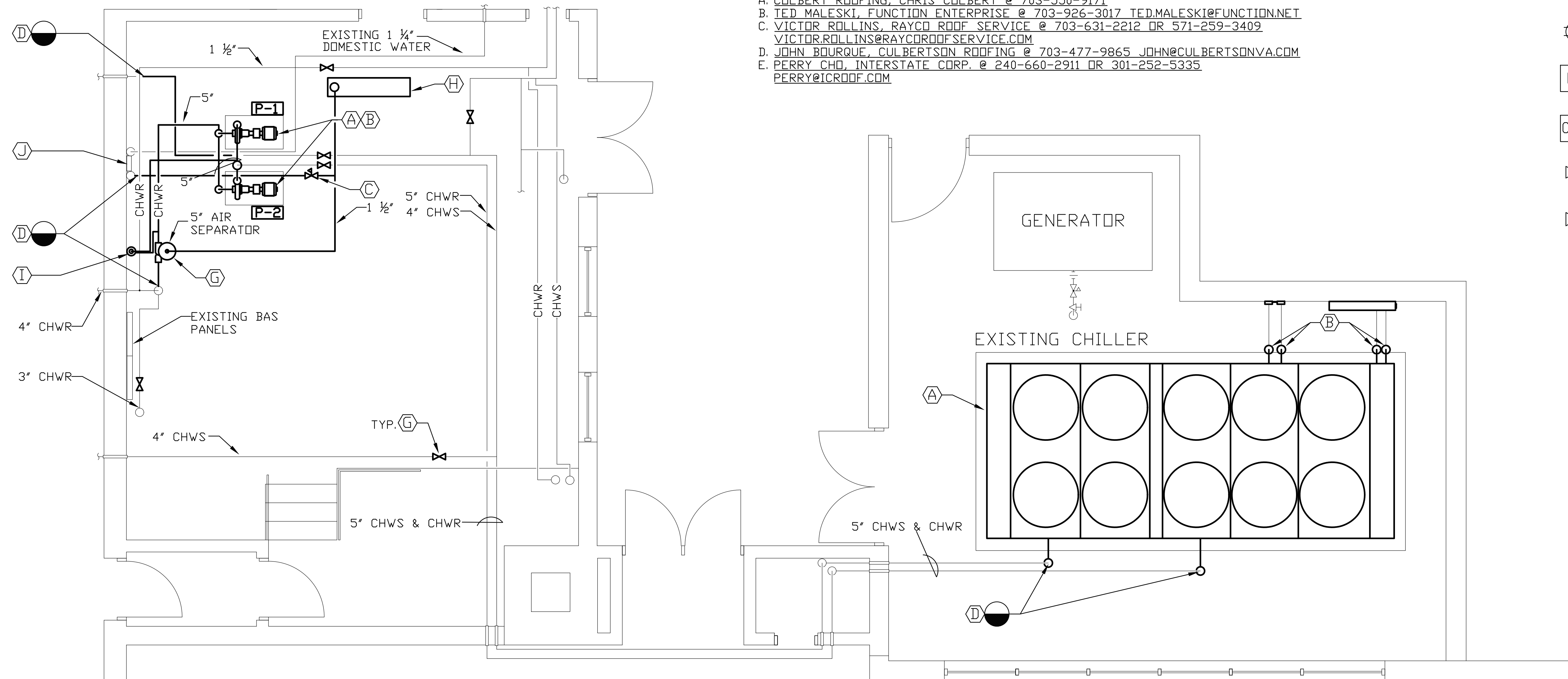
- (A) REMOVE THE EXISTING AIR COOLED CHILLER, CHILLED WATER PUMPS AND ACCESSORIES. THE EXISTING CONCRETE PADS FOR THE AIR COOLED CHILLER AND PUMPS TO REMAIN.
- (B) REMOVE ALL OF THE EXISTING ELECTRICAL F.S.S., DISCONNECTS, MOTOR STARTERS, POWER FEED CABLES, AND EXPOSED CONDUITS TO THE EXISTING AIR COOLED CHILLER, HEAT TRACE, CONTROL CIRCUIT AND CHILLED WATER PUMPS BACK TO THE POINTS INDICATED ON THE DRAWING.
- (C) DEMO THE EXISTING MAKE-UP WATER PRESSURE REDUCING VALVES, FOR BOTH CHILLED WATER AND HOT WATER SYSTEMS. INCLUDING THE PIPING BACK TO THE EXISTING BACKFLOW PREVENTER. EXISTING BACK FLOW PREVENTER TO REMAIN.
- (D) DEMO THE EXISTING 4" AND 5" SUPPLY AND 5" RETURN CHILLED WATER PIPING AT THE POINTS INDICATED ON THE DRAWING.
- (E) REMOVE ALL EXISTING ISOLATION VALVES INDICATED ON THE DRAWING.
- (F) DEMO ALL EIGHT OF THE FLUORESCENT LIGHTING FIXTURES IN THE BOILER ROOM. LEAVE THE EXISTING POWER CABLES AND CIRCUITS FOR THE NEW LED FIXTURES PER NEW WORK DRAWING.
- (G) DEMO THE EXISTING AIR SEPARATOR.
- (H) DEMO THE EXISTING EXPANSION TANK, SUPPORTS AND HANGERS FOR THE CHILLED WATER SYSTEM FROM THE CEILING.
- (I) DEMO THE CHEMICAL FEED TANK AND ASSOCIATED PIPING BACK TO THE POINT INDICATED ON THE DRAWINGS.
- (J) EXISTING BACKFLOW PREVENTER TO REMAIN.

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 MANUFACTURES 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 DIA-GRAMMATICALLY 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 EQUIPMENTS "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. CONTRACTORS SHALL BLEED ALL AIR FROM THE CHILLED WATER, OR HOT WATER SYSTEM AFTER REFILLING. THIS INCLUDES PIPING IN THE BOILER ROOM AND THE ENTIRE BUILDING. INSTALL ANY ADDITIONAL BLEEDERS, AIR VENTS 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 THE 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 DEMO.
13. ALL CONTROL WORK SHALL BE PERFORMED BY APPROVED CONTROL CONTRACTORS ONLY. DISCONNECT ENERGY MANAGEMENT WIRING FROM THE EQUIPMENT PERTAINING TO THE PROJECT. 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. (MATTHEW CUMMINGS @ 571-294-8259).
14. ALL ROOF WORK SHALL BE PERFORMED BY:
 - A. COLBERT ROOFING, CHRIS COLBERT @ 703-550-9171
 - B. TED MALESKI, FUNCTION ENTERPRISE @ 703-926-3017 TED.MALESKI@FUNCTION.NET
 - C. VICTOR ROLLINS, RAYCO ROOF SERVICE @ 703-631-2212 OR 571-259-3409 VICTOR.ROLLINS@RAYCOROOFSERVICE.COM
 - D. JOHN BOURQUE, CULBERTSON ROOFING @ 703-477-9865 JOHN@CULBERTSONVA.COM
 - E. PERRY CHD, INTERSTATE CORP. @ 240-660-2911 OR 301-252-5335 PERRY@ICROOF.COM

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
G	PIPE DROP
O	PIPE RISE
—	DEMO
—	EXISTING TO REMAIN
—	NEW
⊙	POINT OF CONNECTION OF NEW TO EXISTING
⊙	POINT OF TERMINATION OF DEMOLITION
⊙	RECEPTACLE
P-#	PUMP
CH-#	CHILLER
⊘	BALANCING VALVE
⊘	PRESSURE REDUCING VALVE



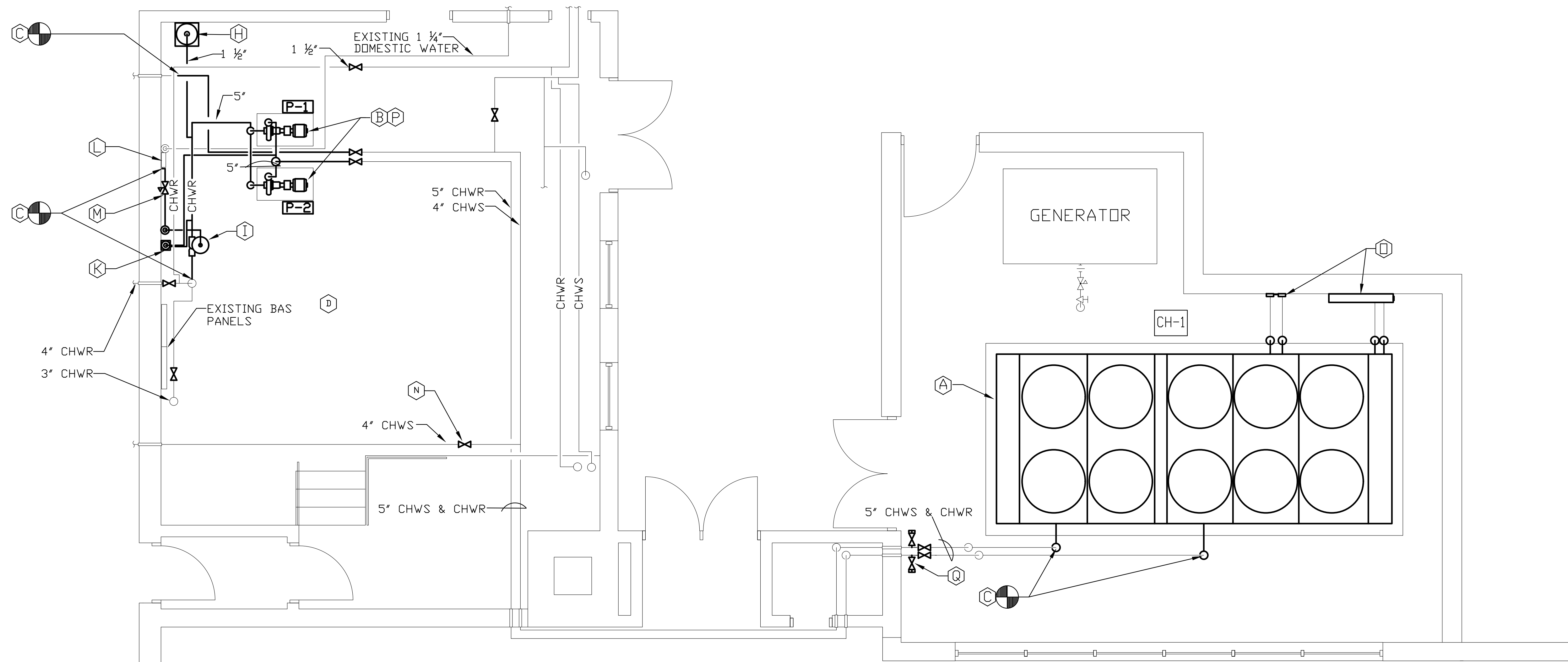
THE FOLLOWING ITEMS MUST BE COMPLETED BY THE CONTRACTOR BEFORE ANY WORK COULD BE PERFORMED AT THE SCHOOL.

- 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.

MMB-025-25	AIR COOLED CHILLER REPLACEMENT	SCALE: NTS
	LEMON ROAD ES 7230 IDYLWOOD RD FALLS CHURCH, VA 22043	DATE: 9/18/24
	Fairfax County Public Schools DEPARTMENT OF FACILITIES MANAGEMENT 5025 SIDEBURN ROAD FAIRFAX, VIRGINIA 22032-2637 703-764-2423	DRAWN BY: JLW SHEET: ME-1

NEW MECHANICAL WORK NOTES:

- (A) FURNISH AND INSTALL A NEW AIR COOLED CHILLER ON THE EXISTING CONCRETE PAD IN THE CHILLER ENCLOSURE. MODIFY THE EXISTING CONCRETE PAD TO FIT THE NEW CHILLER IF NECESSARY. INSTALL NEW PIPING PER CHILLER PIPING DETAIL 2/ME-4.
- (B) FURNISH AND INSTALL TWO NEW BASE MOUNTED PUMPS. INSTALL THE NEW CHILLED WATER PUMPS ON THE EXISTING CONCRETE PADS. MODIFY THE CONCRETE PADS AS NECESSARY TO FIT THE NEW BASE MOUNTED PUMPS PER DETAIL 1/ME-4.
- (C) INSTALL NEW 4" AND 5" PIPING WHERE INDICATED ON THE DRAWING.
- (D) INSTALL EIGHT NEW LED LIGHTING FIXTURES IN PLACE OF THE EXISTING EIGHT FLUORESCENT LIGHTING FIXTURES. USE THE EXISTING ELECTRICAL CABLES AND CIRCUITS PER THE LED LIGHTING SCHEDULE ON ME-3.
- (E) NEW AIR COOLED 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.
- (F) INSULATE ALL NEW CHILLED WATER PIPING AND REPAIR INSULATION THAT HAS BEEN DAMAGED DURING THE PROJECT. NEW INSULATION SHALL CONFORM TO THE PROJECT SPECIFICATIONS. PAINT THE NEW INSULATION TO MATCH THE EXISTING.
- (G) THE FOLLOW INSULATION COMPANIES SHALL BE USED TO INSULATE THE NEW PIPING.
 FAIRFAX INSULATION, DAN POTTER @703.264.0818.
 ANGLESEY INSULATION, VICTOR LILLY @301-440-0105 VIC@ANGLESEY.COM
 SILVER INSULATION, TINO @703.870.8790
- (H) PROVIDE AND INSTALL A NEW EXPANSION TANK WITH ISOLATION VALVE ON A NEW 3' X 3' X 4" CONCRETE PAD WHERE INDICATED ON THE DRAWING. SEE EXPANSION TANK SCHEDULE ON PAGE M-3 AND DETAIL 3/M-4.
- (I) PROVIDE AND INSTALL A NEW 5" AIR SEPARATOR AT THE POINT INDICATED ON THE DRAWING. PROVIDE SHUT OFF BALL VALVE TO ISOLATE THE AIR SEPARATOR SEE 3/ME-4 FOR DETAILED.
- (J) THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING PIPE SIZES.
- (K) FURNISH AND INSTALL A NEW 5 GALLON SHOT FEED CHEMICAL TANK WITH ASSOCIATED PIPING AND ISOLATION VALVES.
- (L) EXISTING BACKFLOW PREVENTER TO REMAIN.
- (M) PROVIDE AND INSTALL TWO NEW MAKEUP WATER STATION WITH A NEW PRESSURE REDUCING VALVE IN THE DOMESTIC WATER LINE AFTER THE EXISTING BACK FLOW PREVENTER FOR THE CHILLED WATER AND HOT WATER SYSTEMS. PER DETAIL 4/ME-4.
- (N) INSTALL NEW BUILDING ISOLATION VALVES IN THE EXISTING CHILLED WATER SUPPLY AND RETURN INSIDE THE BOILER ROOM AS INDICATED ON THE DRAWING.
- (O) PROVIDE AND INSTALL NEW F.S.S. DISCONNECT FOR THE CHILLER, HEAT TRACE, AND OUTDOOR ENCLOSURE FOR THE CONTROL WIRING. PROVIDE AND INSTALL NEW ELECTRICAL POWER FEED CABLES FROM THE NEW F.S.S. DISCONNECTS TO THE CHILLER AND FOR THE HEAT TRACE.
- (P) PROVIDE AND INSTALL TWO NEW VARIABLE FREQUENCY DRIVES FOR THE CHILLED WATER PUMPS IN PLACE OF EXISTING MOTOR STARTERS. USE THE EXISTING POWER FEED CABLES TO SUPPLY POWER TO THE FREQUENCY DRIVES. PROVIDE NEW ELECTRICAL CABLES FROM THE VARIABLE FREQUENCY DRIVES TO THE NEW CHILLED WATER PUMPS.
- (Q) NEW 5" TEES IN THE CHILLED WATER SUPPLY AND RETURN TO THE AIR COOLED CHILLER WITH ISOLATION VALVES AND END CAPS FOR A TEMPORARY CHILLER CONNECTION. (TYP. OF 2).



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	Fairfax County Public Schools DEPARTMENT OF FACILITIES MANAGEMENT 5025 SIDEBURN ROAD FAIRFAX, VIRGINIA 22032-2637 703-764-2423	SHEET: ME-2

LED LIGHTING FIXTURE SCHEDULE
MANUFACTURE: LITHONIA LIGHTING SERIES: VAP NOMINAL LUMENS: 4000 DISTRIBUTION: WIDE DIFFUSER: CLEAR POLYCARBONATE LENS COLOR: 4000K
PANEL AH2 BOILER ROOM 20AMP 277VAC


AIR SEPARATOR AND EXPANSION TANK SCHEDULE
WATER EXPANSION TANK SCHEDULE: BELL & GOSSETT MODEL B ASME, B300, 80 GALLON BLADDER-TYPE EXPANSION TANK WITH MODEL 87 AIR VENT. AIR ELIMINATORS: BELL & GOSSETT MODEL 107A HIGH CAPACITY AIR VENT AIR SEPARATOR: BELL & GOSSETT MODEL: R-5F CENTRIFUGAL, WITH STRAINER

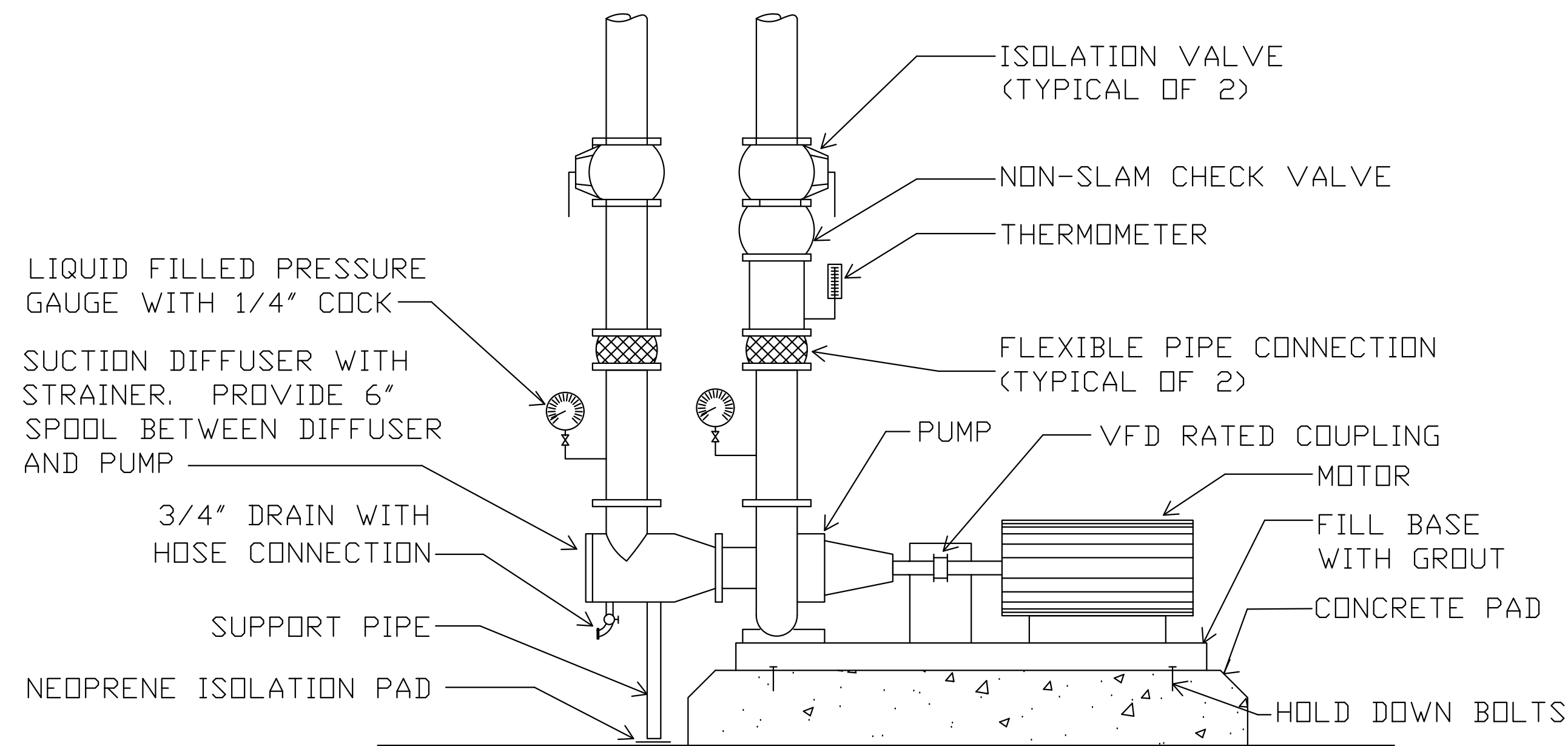
CHILLED WATER PUMP SCHEDULE							
EQUIPMENT	MODEL #	H/P	GPM	FT' HD	RPM	V/PH/HZ	BASIS OF DESIGN
P-1	E-1510 3 EB	15 H/P	380 GPM	90'	1800 RPM	480/3/60	BELL & GOSSETT
P-2	E-1510 3 EB	15 H/P	380 GPM	90'	1800 RPM	480/3/60	BELL & GOSSETT

NEW AIR COOLED CHILLER BAS CONTROL SCHEDULE			
EXISTING AND NEW ANALOG/DIGITAL INPUTS/OUTPUTS			
ETR* DIGITAL INPUTS	ETR* ANALOG INPUTS	EXISTING DO/AO OUTPUTS	ETR* DO/AO OUTPUTS
CHILLER STATUS	CHW SUPPLY TEMP.	TUBE SECURITY ALARM DO	TUBE SECURITY ALARM DO
CHILLER ALARM	CHW RETURN TEMP.	CHILLER ENABLE DO	CHILLER ENABLE DO
PUMP #1 STATUS	TUBE TEMPERATURE	PUMP #2 S/S DEMO DO	CURRENT LIMIT AO
PUMP #2 STATUS		PUMP #1 S/S DEMO DO	
		CURRENT LIMIT AO	
ETR* EXISTING TO REMAIN DO DIGITAL OUTPUT AO ANALOG OUTPUT NOTES: 1. THE BAS SYSTEM FOR LEMON ROAD ES IS AUTOMATED LOGIC. ALBIREO ENERGY, LLC EMAIL: INFO@ALBIREOENERGY.COM TOLL FREE:800-201-3153 2. THE NEW AIR COOLED CHILLER SHALL START/STOP AND ROTATE THE NEW CHILLED WATER PUMPS 1 & 2. 3. THE CONTROL CONTRACTOR SHALL DISCONNECT AND RECONNECT THE EXISTING AND NEW BAS CONTROLS WITH NEW LIKE COMPONENTS PER FCPS SPECIFICATIONS. 4. THE CONTROL CONTRACTOR IS RESPONSIBLE FOR THE PROGRAMMING CHANGES AND GRAPHIC UPGRADES FOR THE BAS SYSTEM TO INCLUDE FIRMWARE UPGRADE IF NEEDED.			

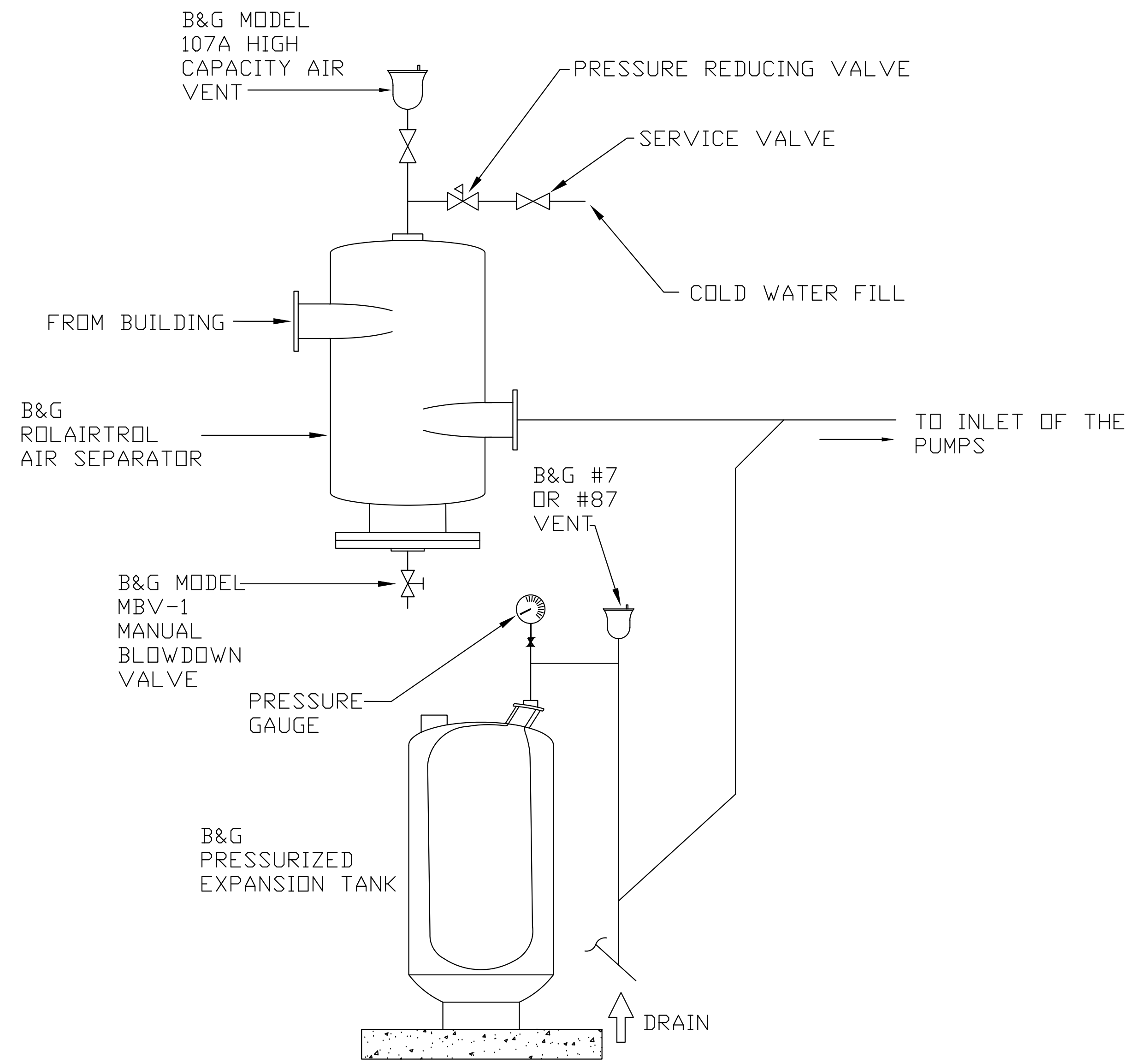
CHILLER AND PUMP REPLACEMENT ELECTRICAL SCHEDULE					
EQUIPMENT NAME	EXISTING BREAKER	NEW BREAKER	NEW WIRE SIZE	V/PH/HZ	ELECTRICAL PANEL
CHILLER	350 AMP	400 AMP	6 X 3/0 AWG 2 X 6 AWG GRD.	480/3/60	MAIN ELECTRIC ROOM
CHWP #1	40 AMP		3 X 8 AWG 1 X 10 AWG GRD.	480/3/60	PANEL AH2
CHWP #2	40 AMP		3 X 8 AWG 1 X 10 AWG GRD.	480/3/60	PANEL AH2
VFD #1		40 AMP	3 X 8 AWG 1 X 10 AWG GRD.	480/3/60	PANEL AH2
VFD #2		40 AMP	3 X 8 AWG 1 X 10 AWG GRD.	480/3/60	PANEL AH2
HEAT TRACE CIRCUIT	30 AMP	30 AMP	2 X 10 AWG 1 X 10 AWG GRD.	120 VAC	PANEL AL2
CONTROL CIRCUIT	20 AMP	20 AMP	2 X 12 AWG 1 X 12 AWG GRD.	120 VAC	PANEL AL2
NOTES: 1. ELECTRICAL PANEL FOR THE PUMPS, HEAT TRACE, AND CONTROLS AH2 & AL2 ARE LOCATED IN THE BOILER ROOM. 2. CHILLER MAIN DISCONNECT LOCATED IN THE MAIN ELECTRIC ROOM BESIDE THE BOILER ROOM. 3. POWER CABLES FEEDING THE EXISTING DISCONNECT TO THE EXISTING CHILLER TO REMAIN. 4. REPLACE THE POWER FEED CABLES FROM THE NEW F.S.S. TO THE NEW CHILLER PER SCHEDULE ABOVE.					

NEW AIR COOLED CHILLER SCHEDULE										
DESIGNATION	EQUIPMENT TYPE	UNIT PERFORMANCE				ELECTRICAL			BASIS OF DESIGN	
		COOLING CAPACITY	COOLING EFFICIENCY	IPLV/IP	WATER ENTERING/LEAVING TEMP.	WATER FLOW GPM	UNIT VOLTAGE	MCA	MOC	TRANE MODEL
CH-1	AIR COOLED CHILLER	150 TON CAPACITY	10.575 EER (BTU/W-H)	16.483 EER (BTU/W-H)	54.00°F / 44.00°F	380 GPM	460V/60HZ/3PH	317 AMP	400 AMP	ACSA 1602EUA
NOTES: 1. NEW AIR COOLED CHILLER SHALL HAVE ARCHITECTURAL LOUVERED PANELS. LOUVERED PANELS SHALL COVER THE COMPLETE CONDENSING COILS AND SERVICE AREA BENEATH THE CONDENSER. 2. PROVIDE A 20 AMP, 115 VOLT CONVENIENCE OUTLET ON THE UNIT. 3. NEW AIR COOLED CHILLER SHALL HAVE A BACNET REMOTE COMMUNICATIONS-BAS INTERFACE (MS/TP) FACTORY INSTALLED COMMUNICATION BOARD. 4. THE DISPLAY IS OUTDOOR CAPABLE INCLUDING AN UV RESISTANT TOUCHSCREEN WITH A REMOVABLE COVER. 5. NEW AIR COOLED CHILLER SHALL BE EQUIPPED WITH FACTORY INSTALL STRAINER AND ELECTRONIC FLOW SWITCH. 6. THE NEW AIR COOLED CHILLER SHALL BE ABLE TO PROVIDE A START STOP COMMAND FOR TWO CHILLED WATER PUMPS, AND BE ABLE TO LEAD /LAG THE PUMPS. 7. A LOW AMBIENT PACKAGE SHALL BE PROVIDED AND FACTORY INSTALLED ON THE NEW AIR COOLED CHILLER. 8. NEW AIR COOLED CHILLER SHALL HAVE A FACTORY INSTALLED IMMERSION HEATER TO PROTECT THE EVAPORATOR DOWN TO -20.0°F. 9. CONDENSER FAN MOTORS ON THE NEW AIR COOLED CHILLER SHALL BE VARIABLE SPEED MOTORS FOR HIGHER EFFICIENCY AND OPERATING TEMPERATURES BETWEEN -20.0°F TO 115.0°F. 10. NEW AIR COOLED CHILLER SHALL HAVE DUAL REFRIGERANT CIRCUITS AND CAPACITY MODULATION CONTROL. 11. EACH COMPRESSOR ON THE NEW AIR COOLED CHILLER SHALL HAVE A FACTORY INSTALLED HEATER TO MINIMIZE THE AMOUNT OF LIQUID REFRIGERANT PRESENT IN THE OIL SUMP DURING OFF CYCLES. 12. ALL UNIT CONTROLS FOR THE NEW AIR COOLED CHILLER SHALL BE HOUSED IN AN OUTDOOR RATED WEATHER TIGHT ENCLOSURE. 13. THE NEW AIR COOLED CHILLER SHALL HAVE A SINGLE POINT POWER WEATHER TIGHT CONNECTION WITH A INCOMING LINE CONNECTION TYPE CIRCUIT BREAKER AND DISCONNECT HANDLE.										

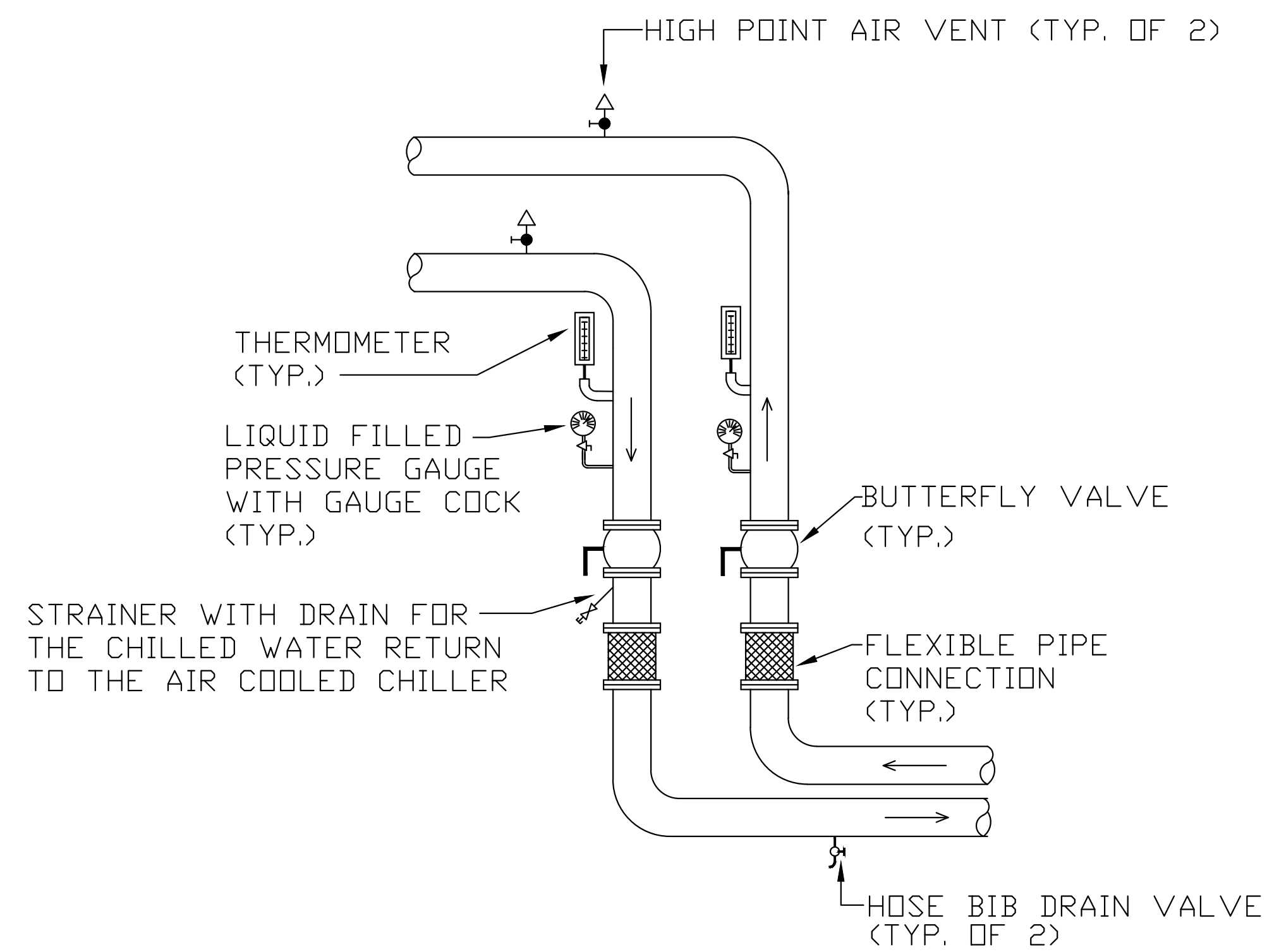
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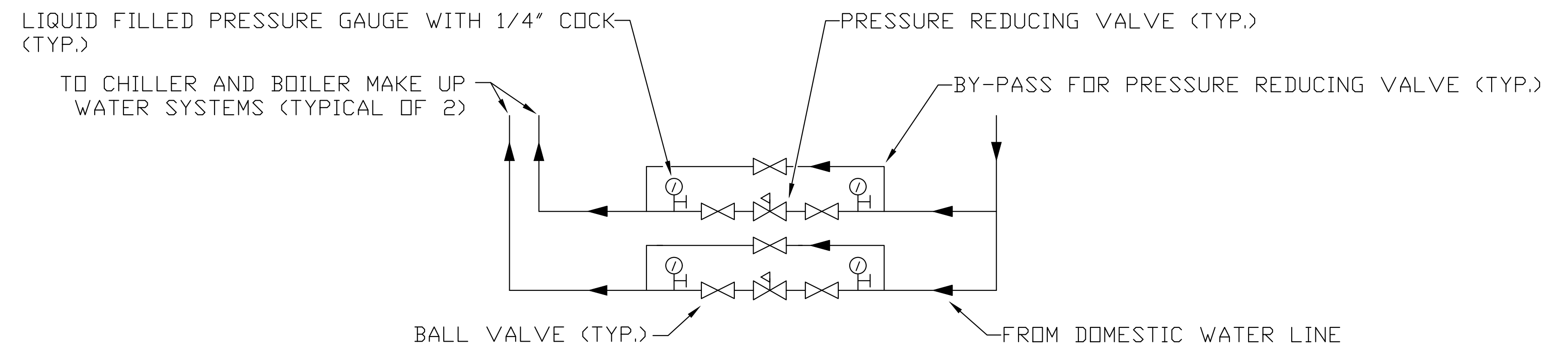
1 BASE MOUNTED PUMP DETAIL
ME-4 NTS



3 EXPANSION TANK & AIR SEPARATOR PIPING DETAIL
ME-4 NTS



2 CHILLED WATER PIPING DETAIL
ME-4 NTS



4 MAKE-UP WATER DETAIL
ME-4 NTS

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