PROJECT NOTES

GENERAL NOTES AND CONDITIONS

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, REGULATIONS AND REQUIREMENTS OF ALL AGENCIES HAVING JURISDICTION OVER THE PROJECT.
2. THE CONTRACTOR IS CAUTIONED THAT THE WORK INCLUDES ALTERATIONS TO AN EXISTING FACILITY. THE CONTRACTORS SHALL VISIT THE SITE TO DETERMINE ACTUAL FIELD CONDITIONS, AND CHECK THE ACCURACY OF THE EXISTING CONDITIONS. FAILURE TO DO SO WILL NOT RELIEVE THEM OF THE RESPONSIBILITY FOR CARRYING OUT ANY AND ALL WORK SHOWN, NOTED OR SPECIFIED.
3. THE INTENT OF THESE DRAWINGS IS FOR THE CONTRACTOR TO PROVIDE ALL LABOR, MATERIAL, FINISHES, EQUIPMENT, INSTALLATION AND SERVICES NECESSARY FOR AND INCIDENTAL WITH THE WORK, TO PROVIDE THE OWNER WITH A COMPLETE PROJECT INCLUSIVE OF ALL SYSTEMS.
4. ACTUAL FIELD CONDITIONS MAY VARY FROM THOSE INDICATED. SHOULD ACTUAL CONDITIONS DIFFER MATERIALLY FROM THOSE ORDINARILY ENCOUNTERED AND GENERALLY RECOGNIZED AS INHERENT IN WORK OF THE CONTRACTOR PROVIDED FOR IN THE CONTRACT, THE CONTRACTOR SHALL PROMPTLY, BEFORE CONDITIONS ARE DISTURBED, NOTIFY THE CONSTRUCTION MANAGER. FAILURE TO DO SO MAY WAIVE THE CONTRACTOR'S RIGHT TO RECEIVE ADDITIONAL TIME OR CONSIDERATION DUE TO SUCH CONDITIONS.
5. PRIOR TO INITIATING ANY PORTION OF THE WORK, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND COORDINATE ALL PORTIONS OF THE CONTRACT DOCUMENTS RELATING TO THAT PORTION OF THE WORK AND AFFECTING ADJOINING PORTIONS. IF DISCREPANCIES EXIST, THEY SHALL BE REPORTED TO THE CONSTRUCTION MANAGER FOR CLARIFICATION AND/OR RESOLUTION BEFORE COMMENCING SUCH WORK.
6. BY SUBMITTING A BID PROPOSAL THE CONTRACTOR CERTIFIES THAT THEY HAVE VISITED THE SITE AND UNDERSTAND THE COMPLETE SCOPE OF WORK, WHICH IS INCLUDED IN THE PROPOSAL.
7. DEFINITIONS: "PROVIDE" MEANS "FURNISH AND INSTALL". "VERIFY" MEANS "VERIFY IN THE FIELD AND COORDINATE DIMENSIONS AND DISCREPANCIES".
8. THESE NOTES AND OTHER NOTES ON THE DRAWINGS ARE DIRECTIONS FOR THE CONTRACTOR'S PERFORMANCE, UNLESS NOTED OTHERWISE (U.N.O.). FOR EXAMPLE, THE VERB "INSTALL" MEANS "CONTRACTOR SHALL INSTALL", "RELOCATE" MEANS "CONTRACTOR SHALL RELOCATE", ETC.
9. UNLESS NOTED OTHERWISE. NUMBERED DIMENSIONS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER SCALED DRAWINGS. DETAIL DRAWINGS TAKE PRECEDENCE OVER GENERAL DRAWINGS. IF CONFLICT EXISTS ON THE DRAWINGS, THEN THE MORE STRINGENT REQUIREMENT SHALL APPLY. FINAL INTERPRETATION SHALL BE MADE BY THE ENGINEER.
10. SAMPLES AND SHOP DRAWINGS MUST BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND PROCESSING BEFORE THE PURCHASE OR FABRICATION OF ANY MATERIALS.
11. DIMENSIONS OF EXISTING OPENINGS SHALL BE VERIFIED PRIOR TO PREPARATION OF SHOP DRAWINGS. SHOP DRAWINGS SHALL INCLUDE A SCHEDULE OF ACTUAL OPENING DIMENSIONS AS VERIFIED IN FIELD.
12. DURING THE WORK, ANY CONDITION UNCOVERED THAT CAUSES CONFLICT WITH THE INTENDED DESIGN MUST BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
13. CONTRACTOR SHALL STAGE WORK IN SUCH A WAY AS TO ENSURE SAFE EMERGENCY EGRESS AT ALL TIMES.
14. EXCEPT FOR PREFINISHED SURFACES, ALL ITEMS DISTURBED OR DAMAGED BY WORK SHALL BE REFINISHED TO MATCH SURROUNDING AREA OR FINISHED AS INDICATED.
15. ALL NEW AND EXISTING HOLES AND PENETRATIONS IN WALLS AND CEILING SURFACES SHALL BE PATCHED AND FIRE STOPPED.
16. THE FLOOR SPACE WILL BE UNOCCUPIED AT THE TIME OF WORK & SHALL BE SECURED AT THE END OF EACH WORK DAY.
17. BEFORE COMMENCING ANY DEMOLITION, THE CONTRACTOR MUST COORDINATE DEMOLITION WITH PROPOSED WORK AND OTHER DISCIPLINES.
18. THE ENGINEER SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, PRESENCE, HANDLING, REMOVAL OR DISPOSAL OF, OR EXPOSURE OF PERSONS TO HAZARDOUS MATERIALS IN ANY FORM AT THE PROJECT SITE, INCLUDING BUT NOT LIMITED TO ASBESTOS, ASBESTOS PRODUCTS, POLYCHLORINATED BIPHENYL (PCB) OR OTHER TOXIC SUBSTANCES. CONTRACTOR TO CONTACT CONSTRUCTION MANAGER IF THESE ITEMS ARE APPARENT OR SUSPECTED.
19. GENERAL NOTES, THOSE FOUND ON THIS SHEET, APPLY TO ALL DRAWINGS RELATED TO THIS PROJECT.
20. CONSTRUCTION NOTES SPECIFICALLY REFER TO ITEMS NOTED WITH NUMBER OR LETTER DESIGNATIONS ON THE RESPECTIVE DRAWING WHERE THE DESIGNATIONS ARE SHOWN.
21. PROVIDE AN AIR VENT AT THE HIGH POINT OF EACH DROP IN THE CHILLED WATER SYSTEMS.
22. UNLESS OTHERWISE NOTED, ALL PIPING THAT IS OVERHEAD, TIGHT TO UNDERSIDE OF SLAB AND STRUCTURE, WITH SPACE FOR INSULATION, IF REQUIRED.
23. INSTALL PIPING SO THAT ALL VALVES ARE ACCESSIBLE.
24. COORDINATE ALL MECHANICAL WORK WITH ELECTRICAL WORK, ETC., SHOWN ON OTHER DRAWINGS.
25. MAINTAIN MINIMUM 6'-8" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUIT, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL AND ELECTRICAL ROOMS.
26. EQUIPMENT CONNECTION SIZES MAY DIFFER FROM INDICATED PIPE SIZES. PROVIDE APPROPRIATE TRANSITIONS WHERE REQUIRED.
27. THESE DRAWINGS ARE DIAGRAMMATIC AND ALL OFFSETS, FITTINGS, TRANSITIONS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. COORDINATE THE INSTALLATION OF ALL PIPING, EQUIPMENT AND OTHER WORK WITH ALL OTHER TRADES.
28. IT IS THE INTENT THAT ALL WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT MATERIAL OR WORK SPECIFICALLY NOT INDICATED ON THE DRAWINGS, BUT NECESSARY TO COMPLETE THE WORK, SHALL BE PROVIDED.

PROJECT

CECIL COUNTY SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT

100% IAC SUBMISSION

MARCH 24, 2023

912 APPLETON RD.
ELKTON, MD 21921

Cecil County Public Schools
Serving learners, families, and the community.
201 Booth Street, Elkton, MD 21921 410-996-5400 Fax: 410-996-5454

CECIL COUNTY PUBLIC SCHOOL SYSTEM
201 BOOTH ST.
ELKTON, MD 21921
PSC NUMBER : 07.042.23

MECHANICAL/ELECTRICAL

Gipe Associates Inc.
Consulting Engineers
1220 East Joppa Road, Building A, Suite 223
Baltimore, Maryland (410)832-2420
Easton, Maryland (410)822-8688
W.O.# 22082

INDEX

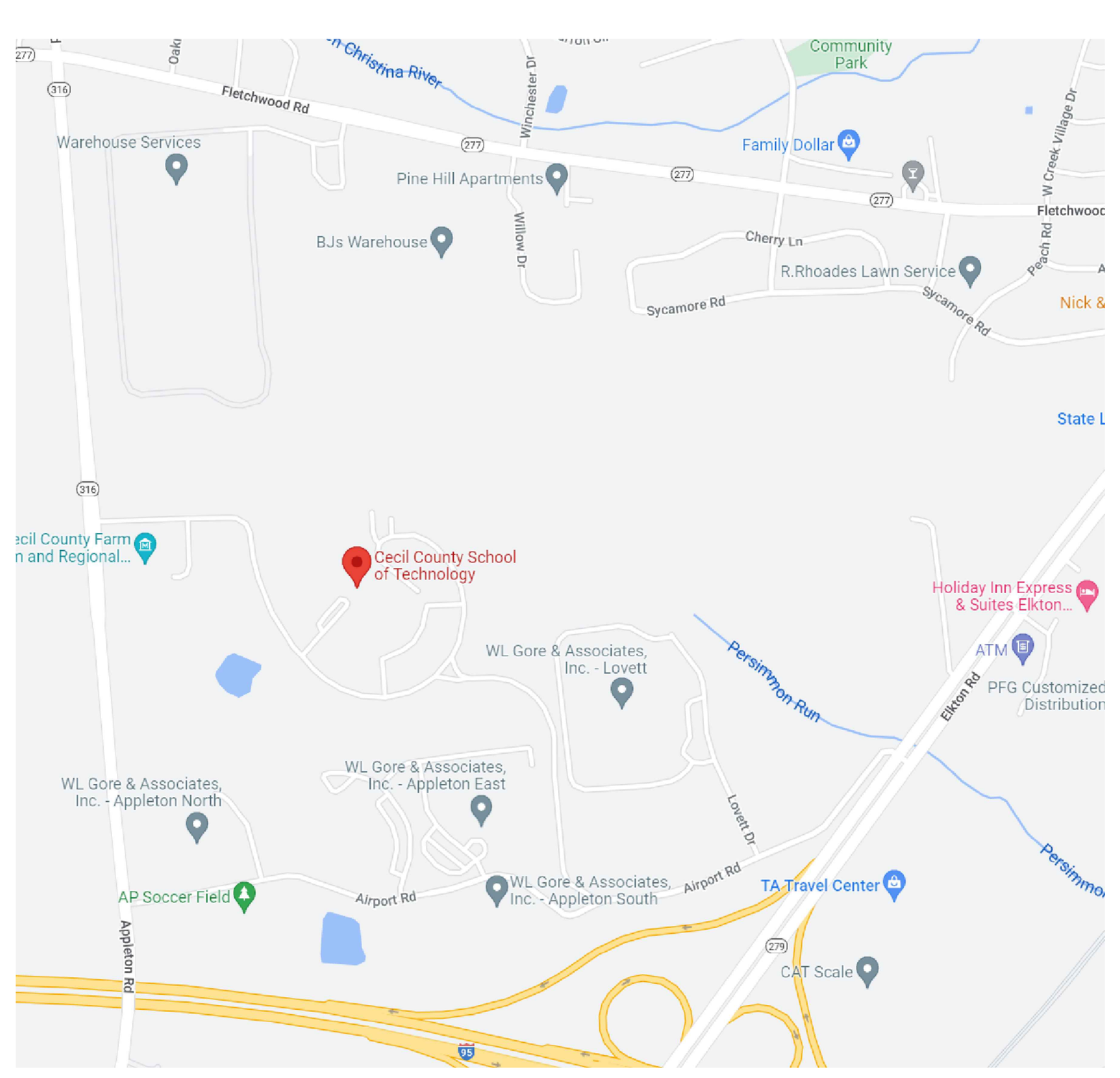
THESE CONTRACT DOCUMENTS FOR THE CHILLER AND COOLING TOWER REPLACEMENT AT CECIL COUNTY SCHOOL OF TECHNOLOGY WERE PREPARED UNDER MY SUPERVISION AND TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF THAT THESE CONTRACT DOCUMENTS COMPLY WITH THE RELEVANT BUILDING CODES OF THE STATE OF MARYLAND.

MICHAEL NOTARANGE — DATE 03/24/2023

MARYLAND REGISTRATION NO. 35222; EXPIRATION DATE 01-05-2024

LOCATION MAP

NOT TO SCALE

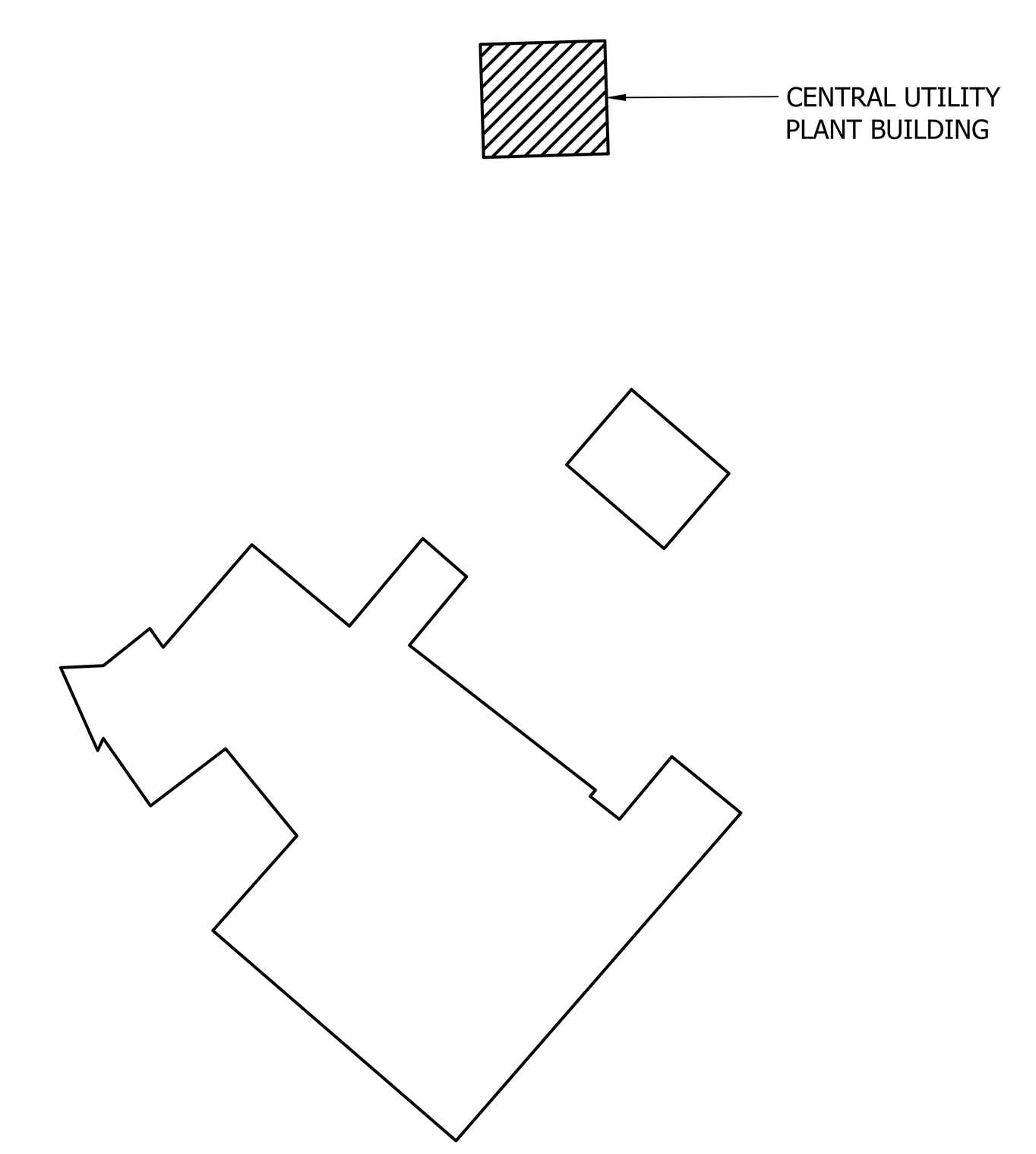


VICINITY MAP

NOT TO SCALE

KEY PLAN

NOT TO SCALE



REVISIONS

NO.	DATE	DESCRIPTION

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 35222, EXPIRATION DATE: 01/05/2024.

STATE OF MARYLAND MICHAEL NOTARANGE No. 35222 PROFESSIONAL ENGINEER

Gipe Associates Inc.
Consulting Engineers
1220 East Joppa Road, Suite 223, Towson, MD. 21286, Phone: 410/832-2420, Fax: 410/832-2418
8719 Brooke Drive, Suite 2-5, Easton, Maryland 21601, Phone: 410/822-8688, Fax: 410/822-6306

WO# 22082

PROJECT MANAGER	MPN
DESIGNER	PGB
PSC#:	07.042.23

COVER SHEET
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

CS0.0

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL STATE, COUNTY AND LOCAL CODES, REGULATIONS AND ORDINANCES. MATERIAL, EQUIPMENT, INSTALLATION, AND PROCEDURES SHALL BE IN STRICT ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE LATEST CURRENT EDITION OF THE REFERENCED DOCUMENTATION.

   A. REGULATIONS OF LOCAL AUTHORITIES HAVING JURISDICTION.
   B. NFPA-NATIONAL FIRE PROTECTION ASSOCIATION.
   C. SMACNA - SHEET METAL AND AIR CONDITIONING NATIONAL ASSOCIATION.
   D. ASME - AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
   E. ASTM - AMERICAN SOCIETY OF TESTING AND MATERIALS.
   F. ASHRAE - AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS, INC. LATEST EDITION OF STANDARD 15.
   L. INTERNATIONAL EXISTING BUILDING CODE - 2018.
   M. INTERNATIONAL BUILDING CODE - 2018.
   N. INTERNATIONAL ENERGY CONSERVATION CODE - 2018.
   O. INTERNATIONAL MECHANICAL CODE - 2018.
   P. INTERNATIONAL PLUMBING CODE - 2018.
   Q. SMACNA - SHEET METAL AND AIR CONDITIONING NATION ASSOCIATION.

2. CONTRACTORS SHALL BE RESPONSIBLE TO VERIFY AND FAMILIARIZE THEMSELVES WITH ACTUAL FIELD CONDITIONS ASSOCIATED WITH WORK UNDER THIS CONTRACT PRIOR TO SUBMITTING THEIR BID.
3. ELEVATIONS NOTED ARE TO CENTER LINES OF PIPES FOR ALL PRESSURE LINES AND TO INVERT FOR ALL GRAVITY FLOW LINES.
4. PROVIDE ISOLATION VALVES AS INDICATED ON THE DRAWINGS, DETAILS AND AS REQUIRED SO THAT EQUIPMENT AND INSTRUMENTS IN THE SYSTEM CAN BE ISOLATED FOR SERVICE AND MAINTENANCE.
5. PROVIDE AN AIR VENT AT THE HIGH POINT OF EACH DROP IN THE CHILLED WATER SYSTEM.
6. UNLESS OTHERWISE NOTED, ALL PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF SLAB AND STRUCTURE, WITH SPACE FOR INSULATION, IF REQUIRED.
7. INSTALL PIPING SO THAT ALL VALVES AND DAMPERS ARE ACCESSIBLE.
8. MAINTAIN MINIMUM 6'-8" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUIT, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL AND ELECTRICAL ROOMS.
9. CERTAIN ITEMS SUCH AS CLEAN-OUTS, ACCESS DOORS, RISES AND DROPS IN DUCTWORK AND PIPING, ETC., ARE INDICATED ON THE DRAWINGS FOR CLARITY OR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THOSE ITEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THESE ITEMS AS REQUIRED ELSEWHERE IN THE CONTRACT DOCUMENTS.
10. EQUIPMENT CONNECTION SIZES MAY DIFFER FROM INDICATED PIPE SIZES. PROVIDE APPROPRIATE TRANSITIONS WHERE REQUIRED.
11. THE DRAWINGS ARE DIAGRAMMATIC AND ALL OFFSETS, FITTINGS, TRANSITIONS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. COORDINATE THE INSTALLATION OF ALL PIPING, EQUIPMENT AND OTHER WORK WITH ALL OTHER TRADES.
12. IT IS THE INTENT THAT ALL WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT MATERIAL OR WORK SPECIFICALLY NOT INDICATED ON THE DRAWINGS, BUT NECESSARY TO COMPLETE THE WORK, SHALL BE PROVIDED.
13. ALL AUTOMATIC TEMPERATURE CONTROL SETPOINTS SHALL BE ADJUSTABLE.
14. PROVIDE A MINIMUM OF 36-INCHES OF CLEARANCE TO ALL EQUIPMENT AT THE ELECTRICAL COMPONENT LOCATIONS.
15. CONTRACTOR IS PROHIBITED FROM ATTACHING TO THE ROOF DECK AND LOWER CHORD OF JOISTS AS A SUPPORT SYSTEM FOR DEVICES AND BUILDING SYSTEMS.
16. CONTRACTOR SHALL REPAIR ALL PENETRATION HOLES IN WALLS, FLOORS, CEILINGS AND ROOF AS A RESULT OF DEMOLITION WORK. REPAIRS SHALL MATCH ADJACENT CONSTRUCTION.
17. PROVIDE ALL NECESSARY COMPONENTS FOR U.L. LISTED THROUGH PENETRATION SYSTEM AT RATED WALL PENETRATIONS IN ORDER TO MAINTAIN THE REQUIRED ASSEMBLY RATING. REFER TO ARCHITECTURAL DRAWINGS FOR RATED ASSEMBLY LOCATIONS AND CONSTRUCTION.
18. MECHANICAL CONTRACTOR SHALL PROVIDE P/T PORTS ADJACENT TO ALL TEMPERATURE SENSORS FOR VERIFICATION TESTING. COORDINATE WITH THE ATC CONTRACTOR FOR LOCATIONS.
19. REFRIGERANTS SHALL BE RECOVERED FROM ALL REFRIGERATION EQUIPMENT IN ACCORDANCE WITH ARI AND SPA STANDARDS. RECOVERED REFRIGERANT SHALL BE PLACED IN APPROVED CONTAINERS LABELED IN ACCORDANCE WITH ARI AND EPA STANDARDS AND TURNED OVER TO THE OWNER.

GENERAL MECHANICAL LEGEND

SYMBOL	DEFINITION
Ø	DIAMETER
	CONNECT TO EXISTING
	DEMOLITION ENDS HERE
#	DRAWING NOTE DESIGNATION
Ø	FLAT OVAL

MECHANICAL PIPING LEGEND

SYMBOL	DEFINITION
CHS	CHILLED WATER SUPPLY
CHR	CHILLED WATER RETURN
CHS(P)	CHILLED WATER SUPPLY (PRIMARY)
CHS(S)	CHILLED WATER SUPPLY (SECONDARY)
CHR(P)	CHILLED WATER RETURN (PRIMARY)
CHR(S)	CHILLED WATER RETURN (SECONDARY)
CW	COLD WATER
HS	HEATING SUPPLY
HR	HEATING RETURN
HS(P)	HEATING SUPPLY (PRIMARY)
HS(S)	HEATING SUPPLY (SECONDARY)
HR(P)	HEATING RETURN (PRIMARY)
HR(S)	HEATING RETURN (SECONDARY)
CD	CONDENSATE DRAIN LINE
NPW	NON-POTABLE WATER
G	GAS
SAN	SANITARY
	EXPANSION LOOP
x%	PITCH OF PIPE, % SLOPE
	PIPE-TURN DOWN
	PIPE-TURN UP
	PIPE DROP INTO
	PIPE TAP INTO BOTTOM
	2-LINE PIPE DOWN
	2-LINE PIPE UP
S	SOLENOID VALVE
	END CAP
	BLIND FLANGE
	DIRECTION OF FLOW
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
	BALANCING VALVE
	MULTI-PURPOSE VALVE
	CHECK VALVE
	BUTTERFLY VALVE
	3-WAY MODULATING VALVE (ATC)
	2-WAY MODULATING VALVE (ATC)
	PRESSURE REDUCING VALVE
	NEEDLE VALVE
	PRESSURE RELIEF OR SAFETY VALVE
	HOSE END DRAIN VALVE
	STRAINER W/HOSE END DRAIN VALVE & CAP
	AUTOMATIC AIR VENT
	FLOW METER FITTING
	COMBINATION SHUT-OFF/BALANCING VALVE
	UNION
	FLANGE
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	FLEXIBLE CONNECTION (PIPING)
	MANUAL AIR VENT
	THERMOMETER
	PRESSURE GAUGE W/NEEDLE VALVE
	AUTOMATIC FLOW CONTROL VALVE
DPT	DIFFERENTIAL PRESSURE TRANSMITTER

MECHANICAL ABBREVIATIONS

ABBREV	DESCRIPTION
A	AMPS
AAV	AUTOMATIC AIR VENT
ABR	ABOVE FINISHED ROOF
ACCH	AIR-COOLED CHILLER
ACU	AIR CONDITIONING UNIT
ACV	AUTOMATIC CONTROL VALVE
AD	ACCESS DOOR
ADJ	ADJACENT/ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AMS	AIR FLOW MEASURING STATION
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ANC	ANCHOR
APD	AIR PRESSURE DROP
APG	AIR PRESSURE GAUGE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AS	AIRFLOW SENSOR/AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROLS
AV	ACID VENT/AIR VENT
AVG	AVERAGE
AW	ACID WASTE
BAS	BUILDING AUTOMATION SYSTEM
BFP	BACKFLOW PREVENTOR
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BWF	BYPASS WATERFILTER
BWV	BACK WATER VALVE
CAP	CAPACITY
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CIP	CAST IRON PIPE
CIRC	CIRCULATING
CL	CENTERLINE
CLG	CEILING/COOLING
CO	CLEANOUT/CARBON MONOXIDE SENSOR
CO_2	CARBON DIOXIDE SENSOR
COMB	COMBUSTION
COMP	COMPRESSOR
COND	CONDENSATE/CONDENSER/CONDENSING
COP	COEFFICIENT OF PERFORMANCE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY/CURRENT SENSOR
CV	CONSTANT VOLUME
CW	COLD WATER
D	DAMPER/DEEP/DIA/DROP
DB	DECIBEL/DRY BULB
DEG	DEGREES
DESIG	DESIGNATION
DIA	DIAMETER
DN	DOWN
DOAS	DEDICATED OUTSIDE AIR SYSTEM
DP	DEW POINT/DIFFERENTIAL PRESSURE
DPS	DIFFERENTIAL PRESSURE SWITCH/SENSOR
DSHP	DUCTLESS SPLIT HEAT PUMP
DSS	DUCTLESS SPLIT SYSTEM
DWG	DRAWING
DWGS	DRAWINGS
DWH	DOMESTIC WATER HEATER
E	EAST/ELECTRICAL
EA	EACH/EXHAUST AIR
EAF	EXHAUST AIR FAN
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EFT	ENTERING FLUID TEMPERATURE
EL	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
ELEV	ELEVATION/ELEVATOR
EMER	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EMERGENCY STATION
ESP	EXTERNAL STATIC PRESSURE
ESS	EMERGENCY SHUTDOWN SWITCH
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EVAP	EVAPORATOR
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT/FAN/FIRE/FIRE LINE/FREEZESTAT
FA	FACE AREA/FREE AREA
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FIRE DAMPER/FLOOR DRAIN
FDV	FIRE DEPARTMENT VALVE
FF	FINISHED FLOOR
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER/FACTORY MUTUAL GLOBAL
FOB	FLAT ON BOTTOM
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FPD	FLUID PRESSURE DROP
FPM	FEET PER MINUTE
FS	FLOW SWITCH
FT	FEET/FOOT
FV	FACE VELOCITY
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
H	HEIGHT/HIGH/HUMIDITY SENSOR
HC	HEATING COIL
HD	HEAD
HOA	HAND-OFF-AUTOMATIC SWITCH
HP	HIGH PRESSURE/HORSEPOWER
HR	HEATING RETURN/HOUR
HS	HEATING SUPPLY/HIGH SCHOOL
HTG	HEATING
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HW	HOT WATER
HWG	HOT WATER GENERATOR
HWR	HOT WATER RETURN
HZ	HERTZ

MECHANICAL ABBREVIATIONS

ABBREV	DESCRIPTION
IN	INCH/INCHES
INSUL	INSULATION/INSULATED
INT	INTERIOR
INV	INVERT
IPLV	INTEGRATED PART LOAD VALUE
IPS	IRON PIPE SIZE
IT	INFORMATION TECHNOLOGY
IW	INDIRECT WASTE
KW	KILOWATT
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LFT	LEAVING FLUID TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWT	LEAVING WATER TEMPERATURE
M	MECHANICAL
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPS
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVERCURRENT PROTECTION
MOD	MOTOR-OPERATED DAMPER
MTD	MOUNTED
MTG	MOUNTING
MV	MIXING VALVE
N	NORTH
N/A	NOT APPLICIBLE
NC	NOISE CRITERIA/NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN/NUMBER
NOM	NOMINAL
NPLV	NON-STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NET POSITIVE SUCTION HEAD AVAILABLE
NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
OA	OUTDOOR AIR
OC	ON CENTER
OED	OPEN-END DUCT
OH	OVERHEAD
OPER	OPERATING/OPERATOR
OPP	OPPOSITE
P	PIPE/PLUMBING FIXTURE TYPE/PRESSURE
PD	PRESSURE DROP/PUMP DISCHARGE
PH	PHASE
PHC	PREHEAT COIL
PL	PLATE/PILOT LIGHT
PPM	PARTS PER MILLION
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	PRESSURE-POUNDS PER SQUARE INCH
PSIG	PRESSURE-POUNDS PER SQUARE INCH, GAGE
PVC	POLYVINYL CHLORIDE
R	REGISTER/RISE
RA	RETURN AIR
RAD	RADIUS
RAF	RETURN AIR FAN
REFRIG	REFRIGERANT/REFRIGERATION
REG	REGISTER/REGULATOR
REQD	REQUIRED
RET	RETURN
RH	REHEAT/RELATIVE HUMIDITY
RHC	REHEAT COIL
RL	REFRIGERANT LIQUID
RLA	RUNNING LOAD AMPS
RM	ROOM
ROCP	RECOMMENDED OVERCURRENT PROTECTION
RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SENSOR/REFRIGERANT SUCTION
RTU	ROOFTOP UNIT
RV	RELIEF VALVE
RX	REMOVE EXISTING
S	SOUTH/SWITCH/SUCTION
SA	SOUND ATTENUATOR/SUPPLY AIR
SAN	SANITARY
SD	SMOKE DAMPER/SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE COOLING
SF	SQUARE FEET/SQUARE FOOT
SH	SHOWER
SHGC	SOLAR HEAT GAIN COEFFICIENT
SHR	SENSIBLE HEAT RATIO
SP	SPRINKLER PIPING/STATIC PRESSURE SENSOR
SQ	SQUARE
SS	SERVICE SINK/STAINLESS STEEL
SST	SATURATION SUCTION TEMPERATURE
STD	STANDARD
STL	STEEL
SW	STORM WATER
T	TEMPERATURE SENSOR
TAO	TRANSFER AIR OPENING
TEMP	TEMPERATURE/TEMPORARY
TOT	TOTAL
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UTE	UNEQUAL THROAT ELBOW
UV	ULTRA VIOLET/UNIT VENTILATOR
V	VACUUM/VALVE/VENT/VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VSD	VARIABLE SPEED DRIVE
WB	WET BULB
WH	WATER HEATER

PUMP SCHEDULE

UNIT P-X	AREA SERVED	GPM	FT OF HEAD	MOTOR HP	MOTOR RPM	MOTOR V/ø/Hz	EFFICIENCY %	SIZE (SxD)	REMARKS	BASED ON (TACO)
P-4	PRIMARY CHILLED WATER	875	40	20	1760	460/3/60	82	5x6x9.5	SPLIT CASE	TACO TA1224
P-5	PRIMARY CHILLED WATER (SB)	875	40	20	1760	460/3/60	82	5x6x9.5	SPLIT CASE	TACO TA1224
P-6	PRIMARY CHILLED WATER	875	40	20	1760	460/3/60	82	5x6x9.5	SPLIT CASE	TACO TA1224
P-7	SECONDARY CHILLED WATER	870	110	40	1760	460/3/60	78	5x6x12	SPLIT CASE	TACO TA1230
P-8	SECONDARY CHILLED WATER	870	110	40	1760	460/3/60	78	5x6x12	SPLIT CASE	TACO TA1230

NOTES:
1. PROVIDE VARIABLE SPEED DRIVES AND INVERTED DUTY MOTORS FOR PUMPS.
2. SB = STANDBY SERVICE.

AIR-COOLED CHILLER SCHEDULE

CHILLER Nº	TONS	MAX KW	No. OF COMP.	REFRIG. TYPE	FLUID	EFT (°F)	LFT (°F)	GPM	No. oF PASSES	MAX. FPD	EAT (°F)	PERFORMANCE EER (FL)	PERFORMANCE MAX IPLV (BTU/Wh)	SINGLE POINT ELECTRICAL RLA	LRA	MCA	MOCP	V	PH	Hz	REMARKS	BASIS OF DESIGN
1	400	468	2	R-513A	WATER	53	42	899.1	2	18.4	95.0	10.3	18.9	-	-	842	1000	460	3	60	1, 2, 3, 4	Carrier 30XV450S
2	400	468	2	R-513A	WATER	53	42	899.1	2	18.4	95.0	10.3	18.9	-	-	842	1000	480	3	60	1, 2, 3, 4	Carrier 30XV450S

NOTES:
1. COMP 1: 14.7A RLA; COMP 2: 14.7A RLA; COMP 3: 165A RLA.
2. EACH CONDENSER FAN: 2.8A FLA.
3. UNIT STARTERS SHALL BE VSD.
4. CHILLER WEIGHT: 27500 LBS

REVISIONS

NO.	DATE	DESCRIPTION

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 35222, EXPIRATION DATE: 01/05/2024.

STATE OF MARYLAND · MICHAEL NOTARANGELO · No. 35222 · PROFESSIONAL ENGINEER

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Consulting Engineers
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8719 Brooke Drive, Suite 2-5, Easton, Maryland 21601, Phone: 410/822-8688, Fax: 410/822-6306

WO# 22082

PROJECT MANAGER: MPN

DESIGNER: PGB

PSC#: 07.042.23

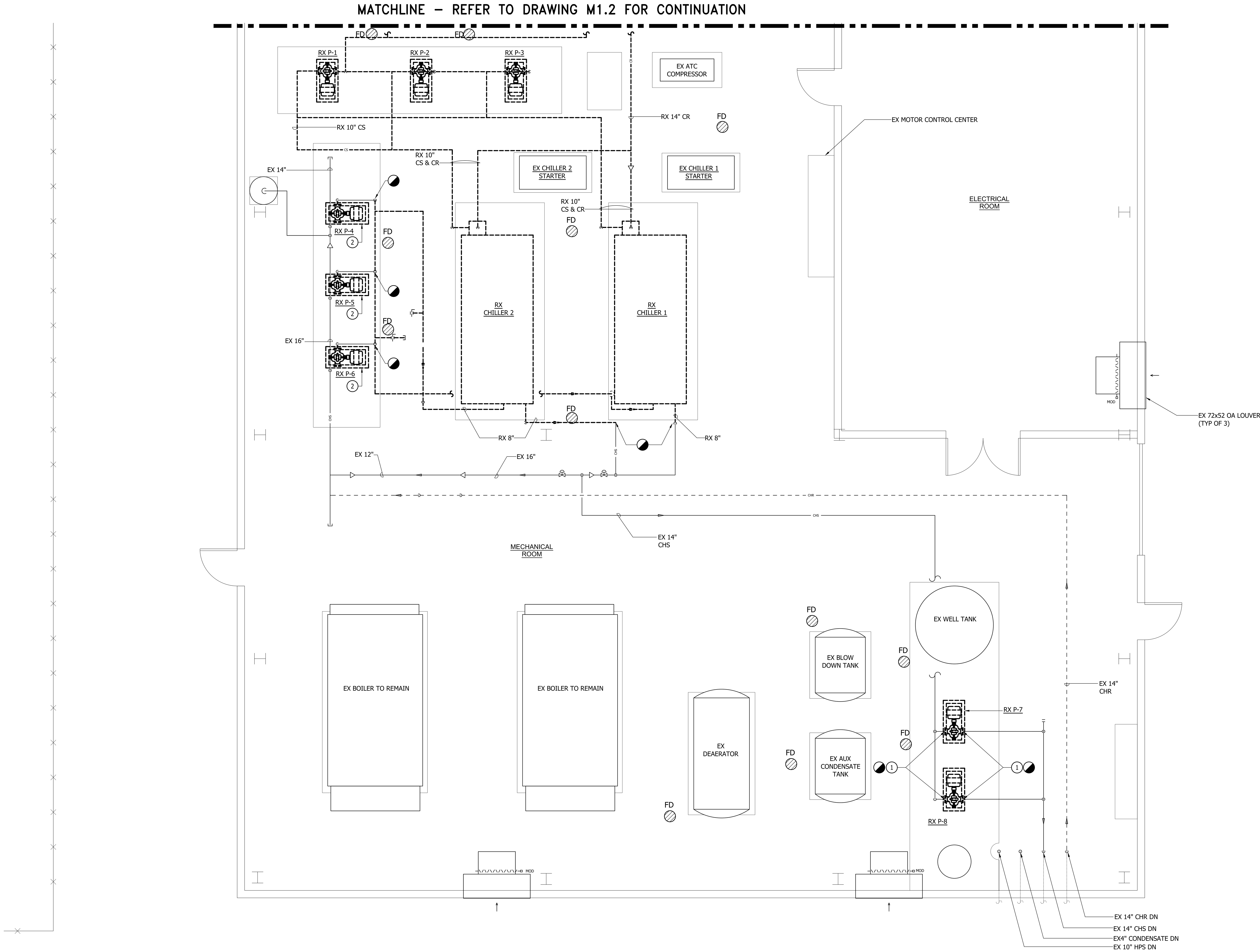
MECHANICAL LEGEND, SCHEDULES & ABBREVIATIONS
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

M0.0

DRAWING NOTES

1. REMOVE EXISTING PUMPS P-7 & P-8 AT PIPE CONNECTION.
2. REMOVE EXISTING PUMPS P-4, P-5, & P-6 AT PIPE CONNECTION.



1 / M1.1 MECHANICAL ROOM PART PLAN - DEMOLITION

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

4 0 4 8

REVISIONS		
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MECHANICAL ROOM PART PLAN - DEMOLITION
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

M1.1

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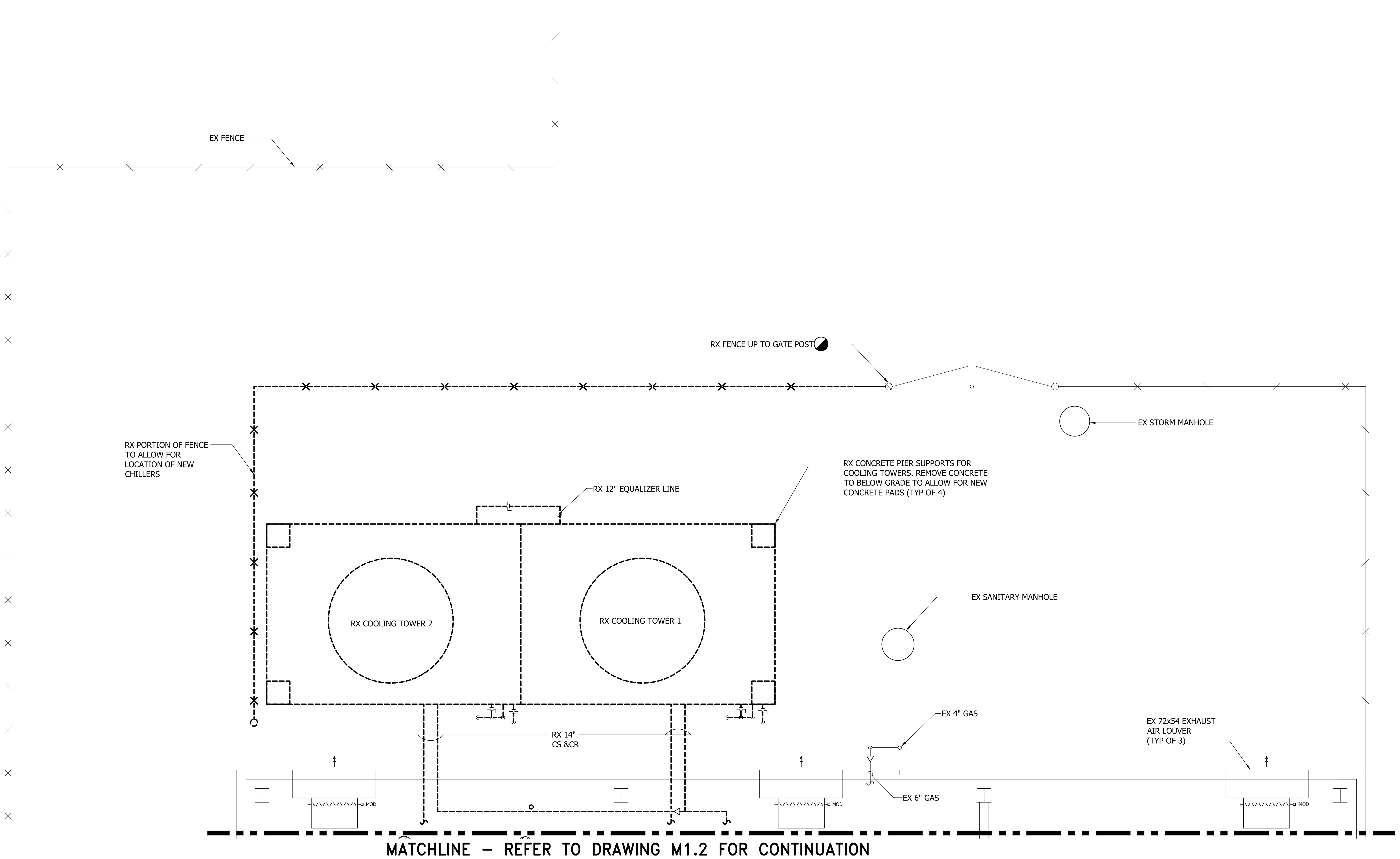

1 / M1.2 **COURTYARD PART PLAN - DEMOLITION**
SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"
4 0 4 8

REVISIONS

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WO# 22082

PROJECT MANAGER	MPN
DESIGNER	PGB
PSC#:	07.042.23

COURTYARD PART PLAN - DEMOLITION
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

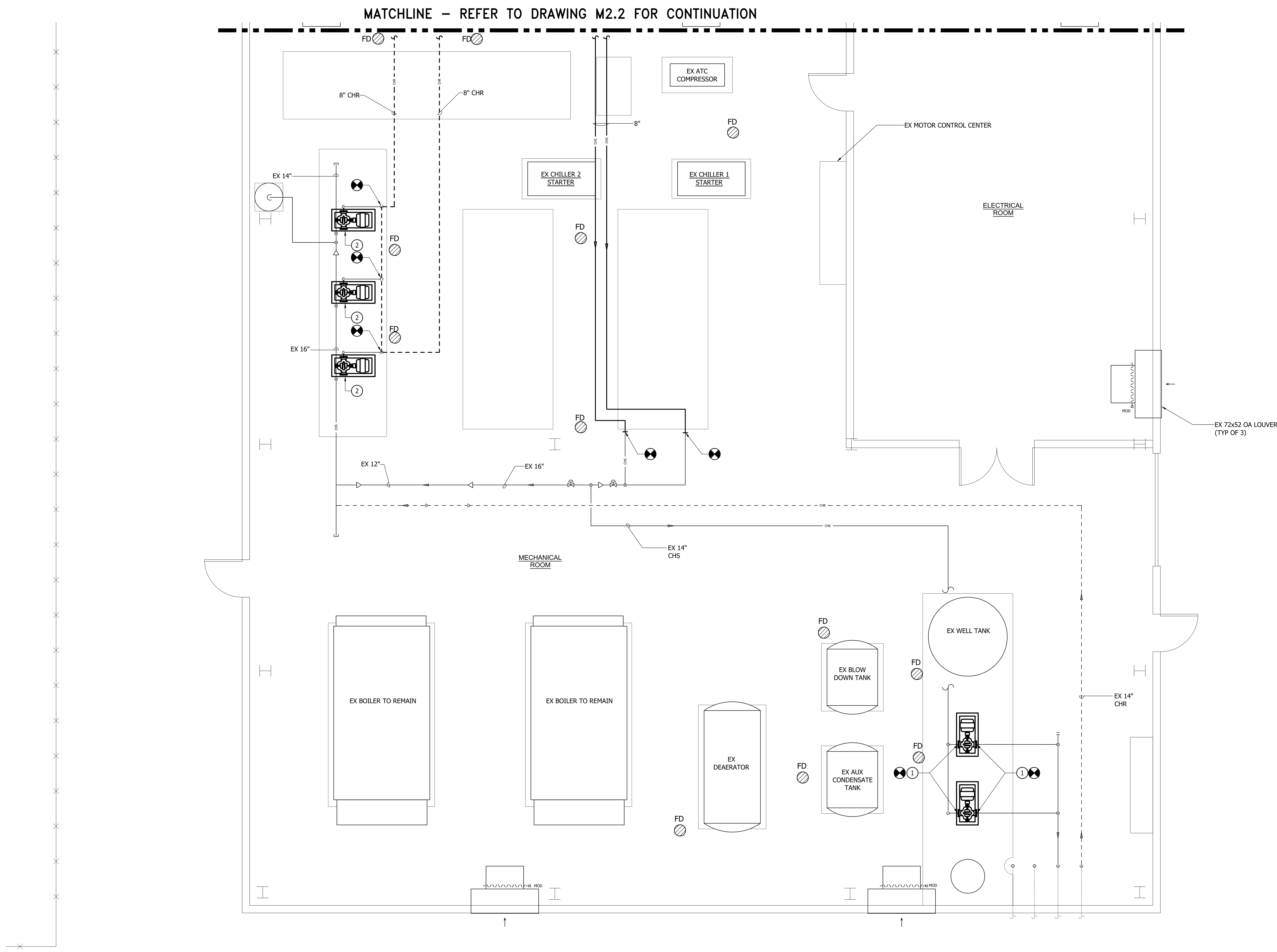
100% IAC SUBMISSION 03/24/2023

M1.2

DRAWING NOTES

1. CONNECT PUMPS P-7 & P-8 TO EXISTING PIPE CONNECTION.
2. CONNECT PUMPS P-4, P-5, & P-6 TO EXISTING PIPING.

MATCHLINE – REFER TO DRAWING M2.2 FOR CONTINUATION



1 / M2.1 MECHANICAL ROOM PART PLAN - NEW WORK

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

4 0 4 8

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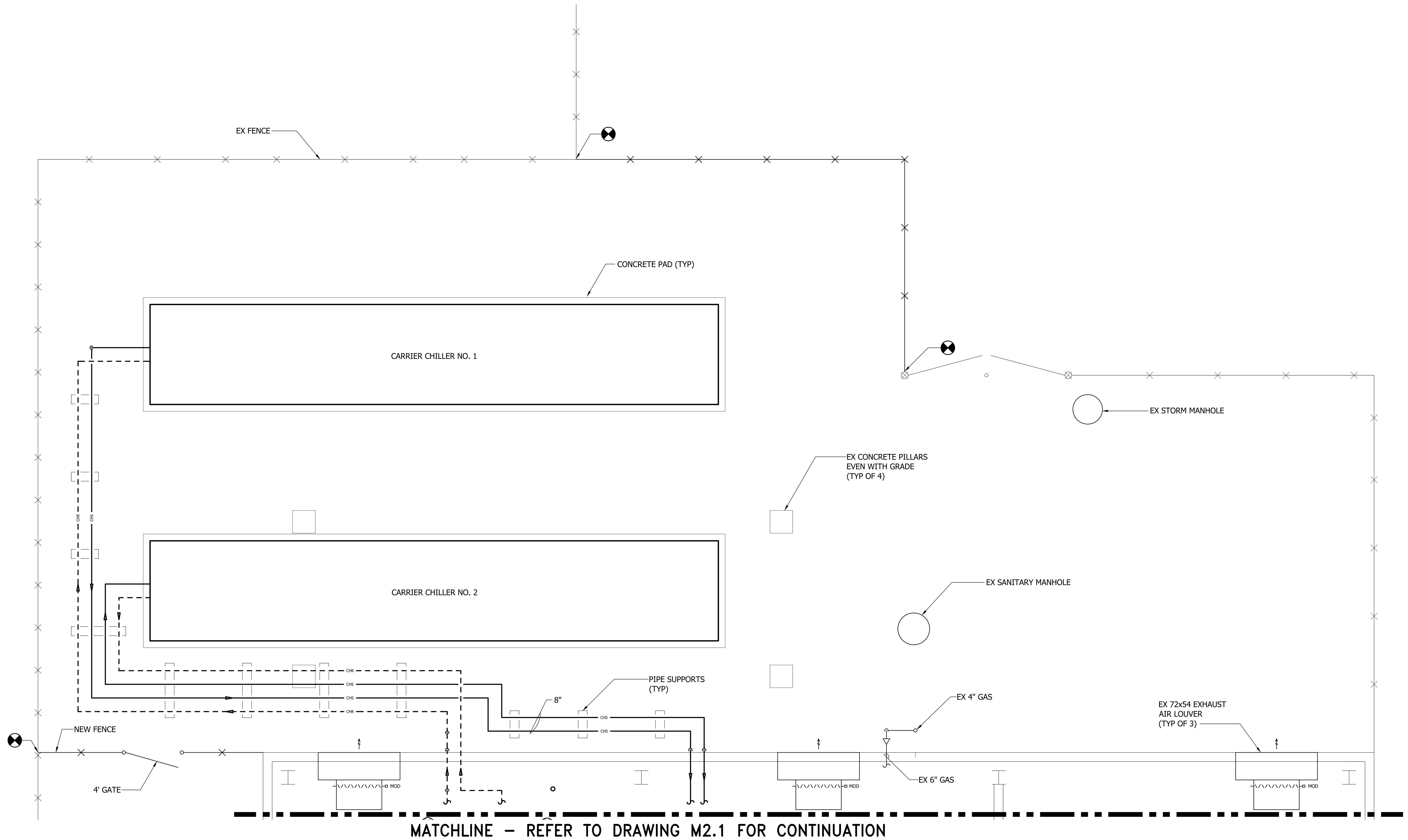
MECHANICAL ROOM PART PLAN - NEW WORK
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION
03/24/2023

M2.1

P:\Jobs\2022\22082 Cecil Co PS Sch of Tech\4 DWGS\1 HVAC\22082-M2.1.dwg 03/24/2023 10:58:01 AM pbevan



1
M2.2

COURTYARD PART PLAN - DEMOLITION

SCALE: 1/4" = 1'-0"

N

SCALE: 1/4" = 1'-0"

4 0 4 8

REVISIONS		
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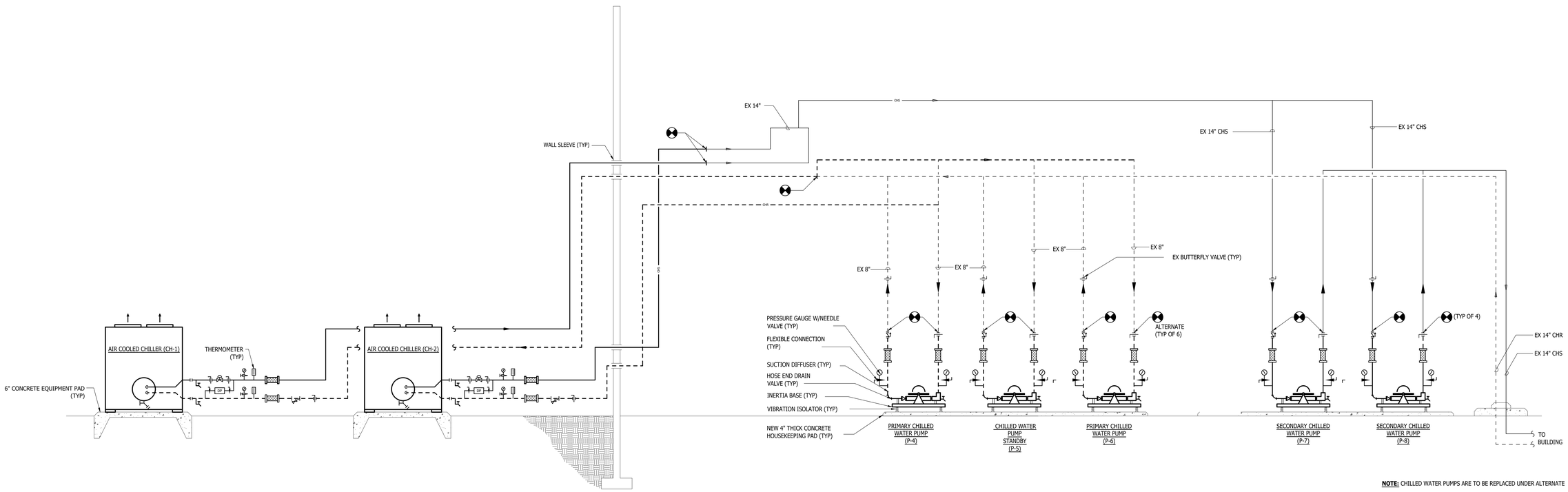
COURTYARD PART PLAN - NEW WORK
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC
SUBMISSION
03/24/2023

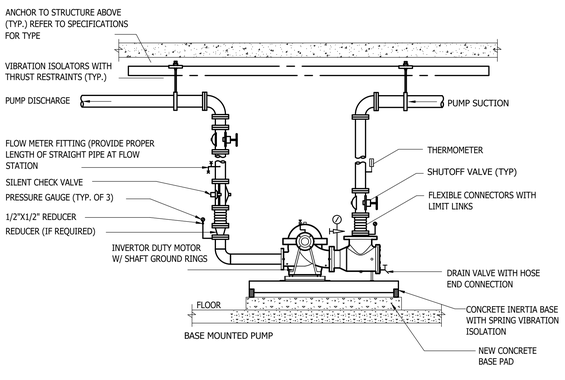
M2.2



NOTE: CHILLED WATER PUMPS ARE TO BE REPLACED UNDER ALTERNATE

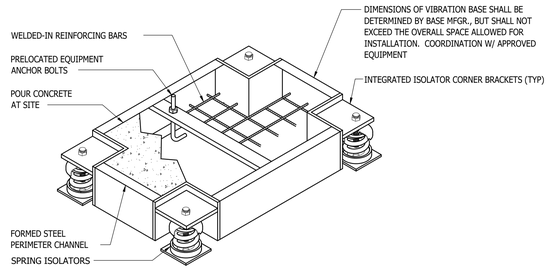
1 CHILLED WATER SYSTEM PIPING SCHEMATIC

SCALE: NONE



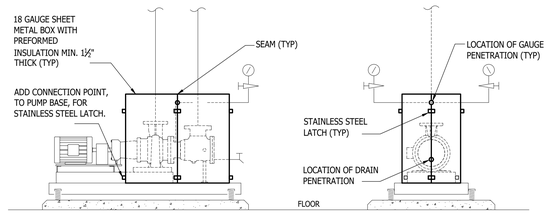
2 BASE MOUNTED VARIABLE SPEED END SUCTION PUMP DETAIL

SCALE: NONE



3 BASE MOUNTED CONSTANT SPEED END SUCTION PUMP DETAIL

SCALE: NONE

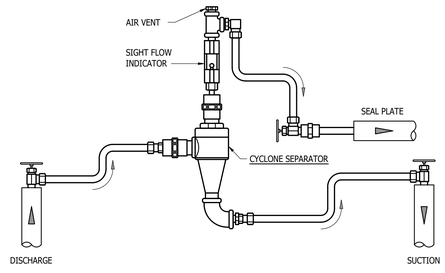


NOTE:

ALL FOUR SECTIONS TO BE EASILY REMOVED TO SERVICE PUMP.

4 BASE MOUNTED END SUCTION PUMP INSULATION BOX DETAIL

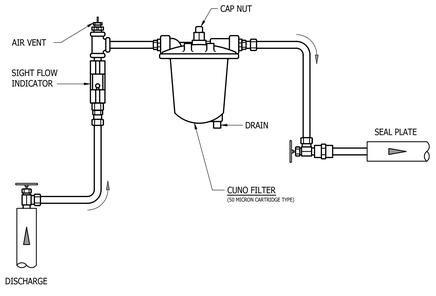
SCALE: NONE



NOTE: FOR USE ON PUMPS LESS THAN 220°F & >30 PSI (DIFFERENTIAL PRESSURE ACROSS THE PUMP).

5 CYCLONE SEPARATOR w/ SIGHT FLOW INDICATOR DETAIL

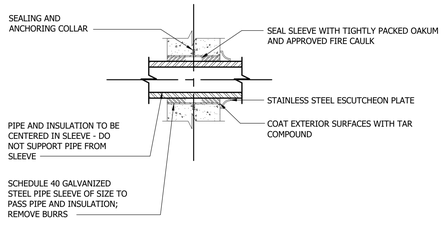
SCALE: NONE



NOTE: FOR USE ON PUMPS LESS THAN 220°F & <30 PSI (DIFFERENTIAL PRESSURE ACROSS THE PUMP).

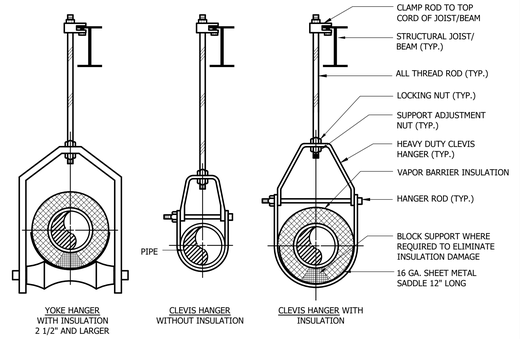
6 CUNO FILTER w/ SIGHT FLOW INDICATOR DETAIL

SCALE: NONE



7 TYPICAL PIPE SLEEVE THRU EXTERIOR WALL ABOVE GRADE DETAIL

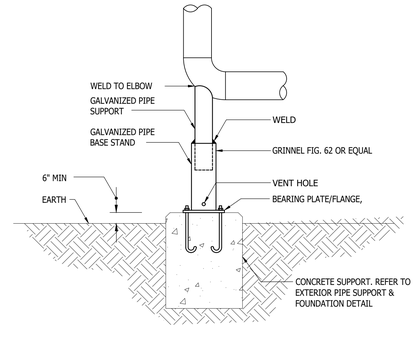
SCALE: NONE



NOTE: REFER TO SPECIFICATIONS FOR PIPE HANGER APPLICATIONS.

8 TYPICAL PIPE SUPPORT DETAIL

SCALE: NONE



NOTE : 1. ALL SUPPORTS SHALL BE GALVANIZED STEEL.
2. ALL BOLTS, NUTS, THREAD RODS, WASHERS, ETC. SHALL BE STAINLESS STEEL.
3. PROVIDE ¾" THICK ARMAFLEX INSULATION ON PIPE STANDS.

9 TYPICAL EXTERIOR PIPE STANCHION DETAIL

SCALE: NONE

REVISIONS

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STATE OF MARYLAND · MICHAEL P. GIBBONS · 33222 · PROFESSIONAL ENGINEER

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WO# 22082

PROJECT MANAGER	MPN
DESIGNER	PGB
PSC#:	07.042.23

MECHANICAL DETAILS
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

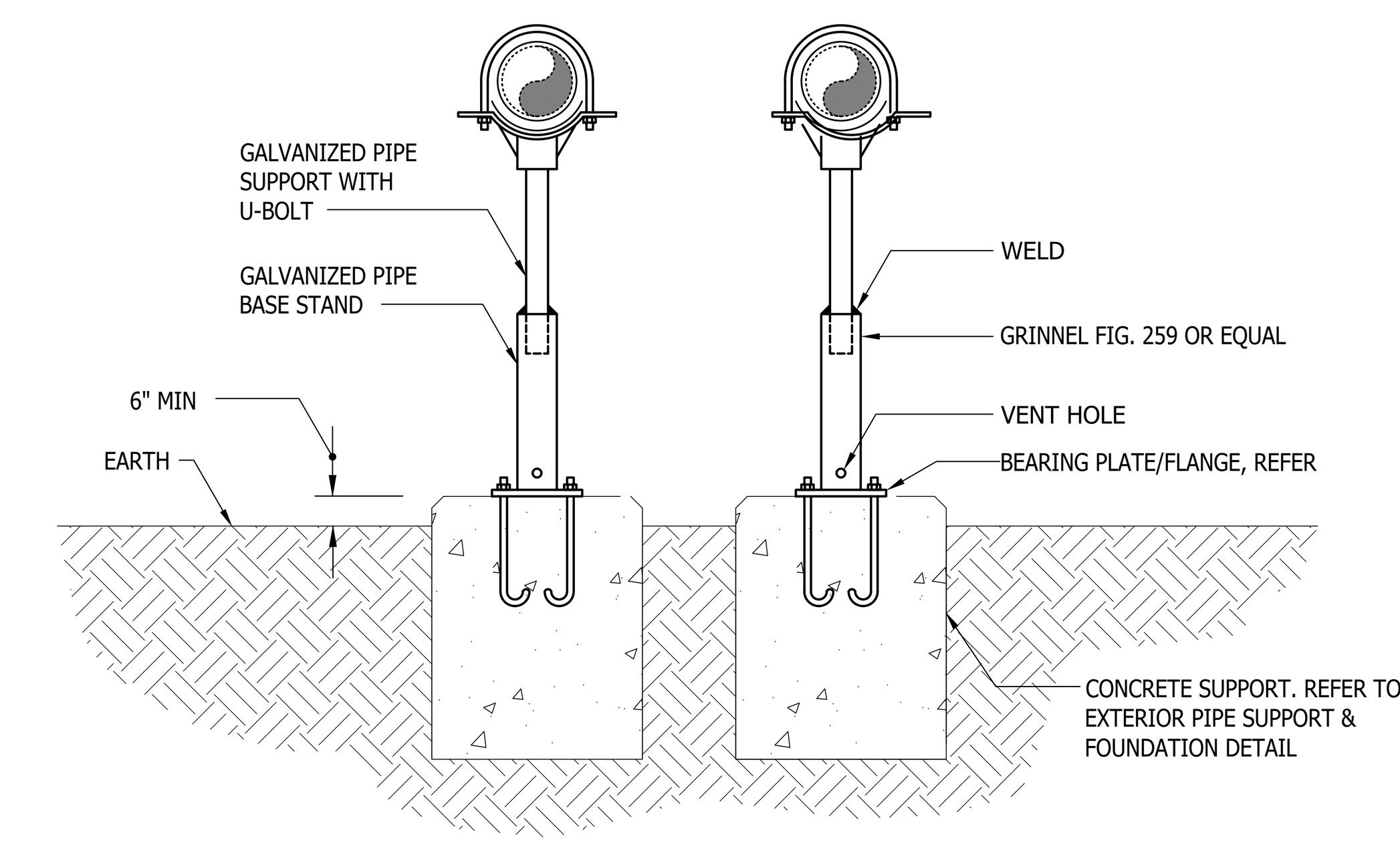
100% IAC SUBMISSION
03/24/2023

M4.1

(10) NOT USED SCALE: NONE

(11) NOT USED SCALE: NONE

(12) NOT USED SCALE: NONE

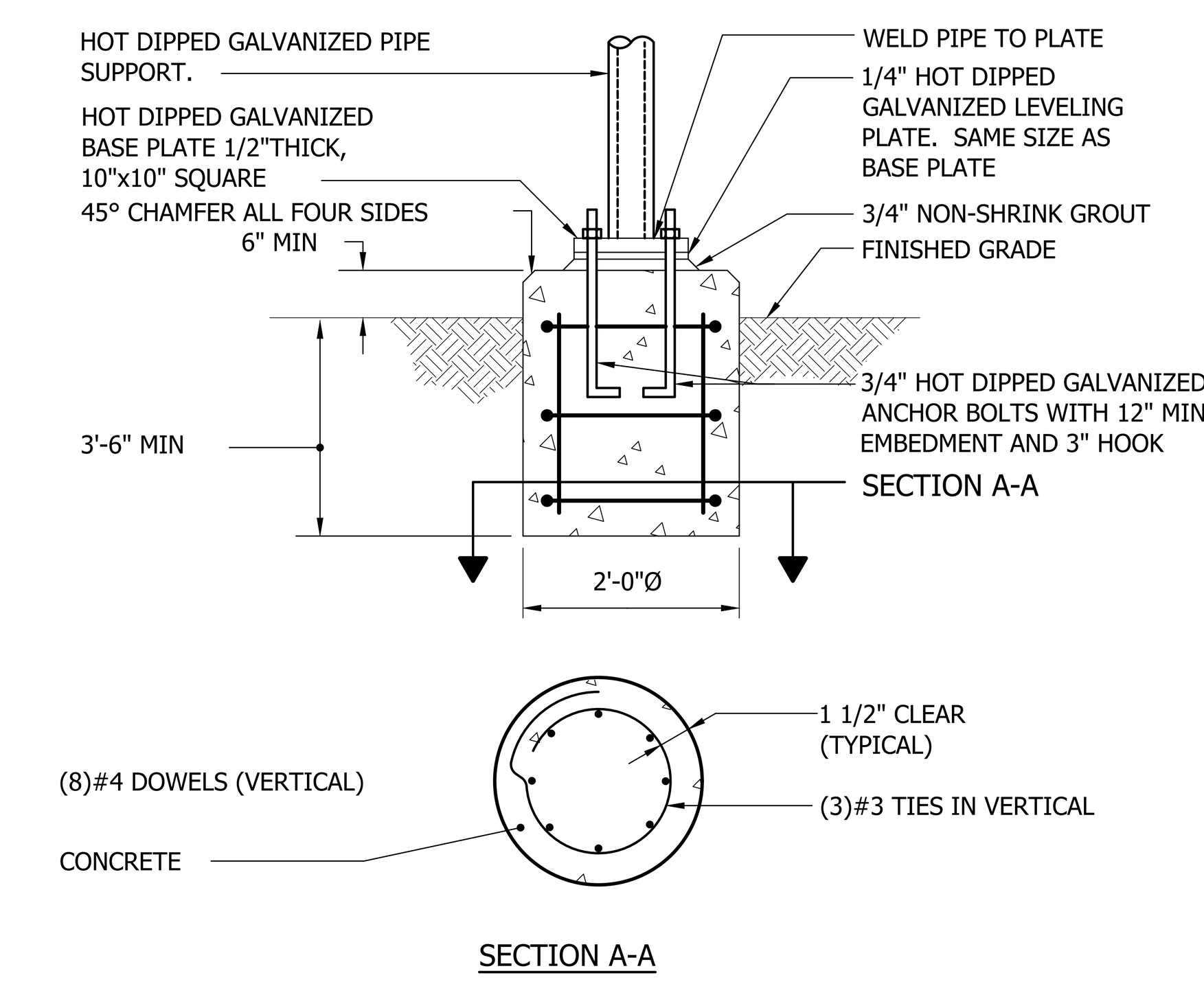


(13) TYPICAL EXTERIOR PIPE SUPPORT DETAIL SCALE: NONE

(14) NOT USED SCALE: NONE

(15) NOT USED SCALE: NONE

(16) NOT USED SCALE: NONE

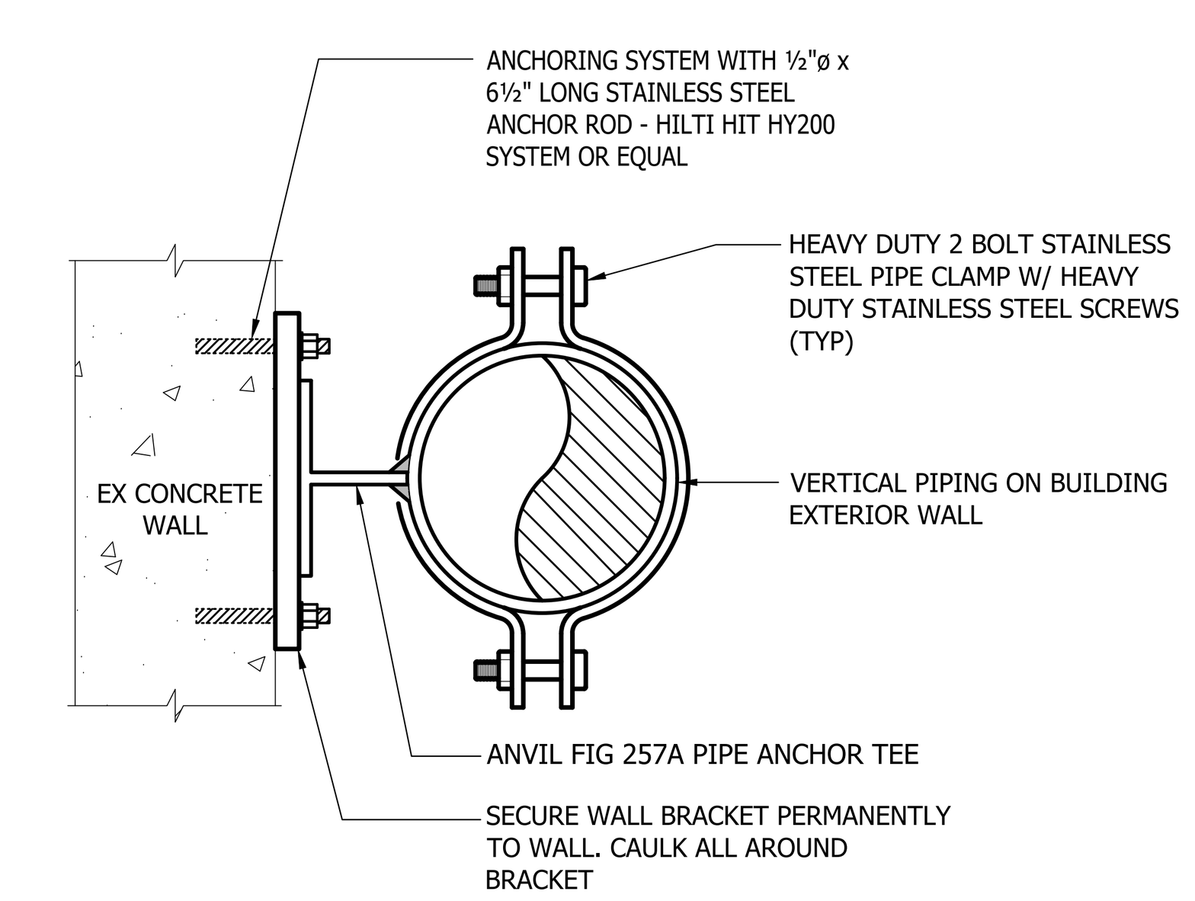


(17) TYPICAL EXTERIOR PIPE SUPPORT FOUNDATION DETAIL SCALE: NONE

(18) NOT USED SCALE: NONE

(19) NOT USED SCALE: NONE

(20) NOT USED SCALE: NONE

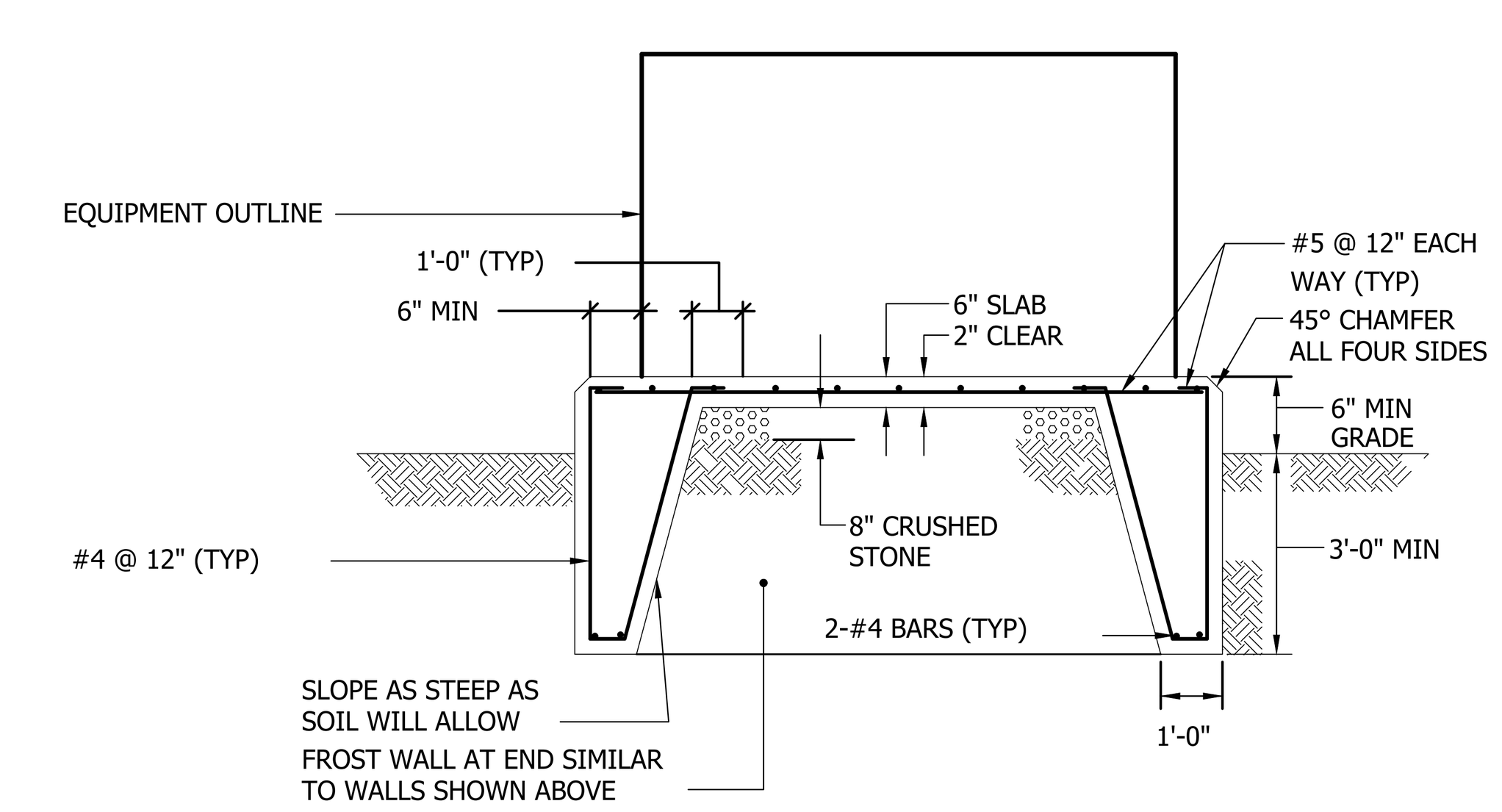


(21) TYPICAL EXTERIOR VERTICAL PIPE SUPPORT FROM CONCRETE WALL DETAIL SCALE: NONE

(22) NOT USED SCALE: NONE

(23) NOT USED SCALE: NONE

(24) NOT USED SCALE: NONE



(25) CONCRETE EQUIPMENT PAD DETAIL SCALE: NONE

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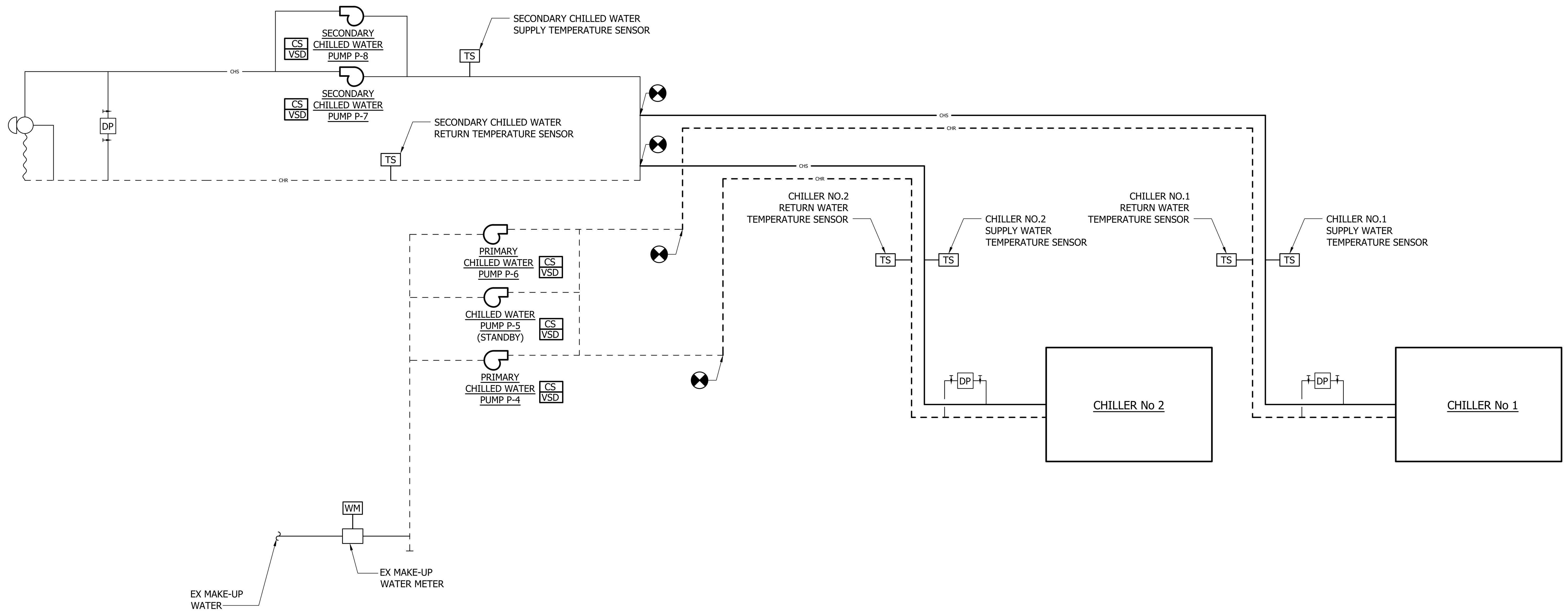
WO# 22082

PROJECT MANAGER	MPN
DESIGNER	PGB
PSC#:	07.042.23

MECHANICAL DETAILS
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

M4.2



CHILLED WATER SYSTEM CONTROL DIAGRAM

1. GENERAL:

   A. THE CHILLED WATER SYSTEM SHALL BE STARTED AND STOPPED THROUGH THE ENERGY MANAGEMENT SYSTEM (EMS). PROVIDE A HAND-OFF-AUTOMATIC (H-O-A) SWITCH THAT LOCALLY OVERRIDES THE EMS TO MANUALLY START OR STOP THE SYSTEM ON THE ATC PANEL. WHEN THE SWITCH IS INDEXED TO THE "HAND" OR "OFF" POSITION THE CHILLER AND ASSOCIATED CHILLED WATER PUMP SHALL START OR STOP RESPECTFULLY. WHEN THE H-O-A SWITCH IS INDEXED TO THE "AUTOMATIC" POSITION THE SYSTEM SHALL AUTOMATICALLY START THE CHILLER TO MAINTAIN CAPACITY AS REQUIRED BY THE SEQUENCE OF OPERATION. THE SYSTEM H-O-A SWITCH SHALL BE MONITORED THROUGH THE EMS.

   B. THE CHILLED WATER LOOP SHALL BE PROVIDED WITH A FLOW METER. THE FLOW METER IN CONJUNCTION WITH ASSOCIATED TEMPERATURE SENSORS SHALL BE USED TO CALCULATE THE CAPACITY OF THE EQUIPMENT AND/OR LOOP.

   C. COORDINATE ALL CONTROLS WITH EQUIPMENT MANUFACTURERS INCLUDING CHILLER(S), VARIABLE SPEED DRIVE(S), DIFFERENTIAL PRESSURE SENSORS, FLOW METERS, ETC.

   D. COORDINATE AND INTERLOCK ALL CONTROLS WITH THE CHILLER CONTROL PANEL AND CHILLER MANUFACTURER RECOMMENDATIONS. THE ATC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING FOR THE VARIABLE SPEED DRIVES AND ALL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

   E. EACH PUMP SHALL BE PROVIDED WITH A LOCAL HAND - OFF - AUTOMATIC SWITCH ON THE ATC PANEL.

   F. WHEN THE CHILLER IS SHUTDOWN MANUALLY OR AUTOMATICALLY, THE CHILLED WATER PUMP SHALL REMAIN ENERGIZED AN ADDITIONAL 5 MINUTES (ADJ) AFTER THE CHILLER COMPRESSORS HAVE BEEN DE-ENERGIZED.

2. CHILLED WATER SYSTEM CONTROL:

   A. WHEN THE SYSTEM IS STARTED, THE LEAD CHILLED WATER PUMP SHALL SOFT START THROUGH THE ASSOCIATED VARIABLE SPEED DRIVE. IF THE LEAD CHILLED WATER PUMP FAILS AS SENSED BY CURRENT SENSOR, THE LAG PUMP (STANDBY) SHALL START AFTER A 15 SECOND TIME DELAY AND AN ALARM CONDITION SHALL BE SENT TO THE EMS. PROVIDE A MANUAL SOFTWARE SELECTOR SWITCH TO AUTOMATICALLY ALTERNATE LEAD/LAG PUMP CONTROL BASED ON RUNTIME OR THROUGH TIME OF DAY SCHEDULING (DAILY, WEEKLY, MONTHLY).

3. CHILLED WATER SYSTEM CONTROL:

   A. THE CHILLED WATER SYSTEM SHALL BE STARTED WHEN THE OUTSIDE AIR TEMPERATURE IS 55°F OR ABOVE (ADJ.), WHEN THE BUILDING (OR ANY ZONE IN THE BUILDING) IS IN THE "OCCUPIED" MODE OR WHEN AN EXISTING AIR HANDLING UNIT STARTS IN THE "UNOCCUPIED" MODE. WHEN THE CHILLED WATER SYSTEM IS STARTED, EITHER LOCALLY, REMOTELY THROUGH THE EMS, OR THROUGH AN INTERLOCK WITH ANY EXISTING AIR HANDLING UNIT REQUIRING COOLING, THE LEAD CHILLED WATER PUMP SHALL START AND ONCE THE FLOW IS PROVEN BY DIFFERENTIAL PRESSURE SENSOR THE CHILLER SHALL START.

4. EXISTING AHU "UNOCCUPIED" MODE CONTROL:

   A. IF ANY EXISTING AIR HANDLING UNIT IS STARTED IN "UNOCCUPIED" MODE AND THE OUTSIDE AIR TEMPERATURE IS 55°F OR ABOVE (ADJ), THE CHILLED WATER PLANT SHALL START. CHILLED WATER SYSTEM SHALL HAVE A 20-MINUTE DEADBAND.

5. CHILLED WATER RESET CONTROL:

   A. CHILLED WATER SUPPLY TEMPERATURE SHALL BE RESET IN ACCORDANCE WITH THE CHILLED WATER RESET SCHEDULE.

6. CONTROLS:

   A. COORDINATE AND INTERLOCK CONTROLS WITH CHILLER'S CONTROL PANEL AND CHILLER MANUFACTURER'S RECOMMENDATIONS. THE ATC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING FOR THE VARIABLE SPEED DRIVES AND ALL OTHER DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

CHILLED WATER SYSTEM SEQUENCE OF OPERATION

RESET SCHEDULE	
OUTSIDE AIR TEMPERATURE	SECONDARY SUPPLY WATER TEMPERATURE
≥60°F	44°F
<60°F	48°F

1. ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH SOFTWARE
2. RESET SHALL BE LINEAR TYPE

CHILLED WATER RESET SCHEDULE

CHILLED WATER SYSTEM INPUT/OUTPUT SUMMARY

INPUT – ANALOG

SYSTEM	SPACE TEMPERATURE	DUCT/COIL/UNIT TEMPERATURE	WATER TEMPERATURE	OA TEMPERATURE (GLOBAL)	CONCRETE TEMPERATURE	DEWPOINT/HUMIDITY/ENTHALPY	DIFFERENTIAL PRESSURE	REFRIGERANT PRESSURE	STEAM PRESSURE	CARBON DIOXIDE	CARBON MONOXIDE	NITROGEN DIOXIDE	FLOW (TOTALIZED)	VARIABLE SPEED (HZ)	BTU	MODULATING ACTUATOR	KW (TOTALIZED)
CHILLED WATER SYSTEM				●									●		●		

INPUT – BINARY

SYSTEM	FLOW SWITCH	STATIC PRESSURE	DIFFERENTIAL PRESSURE	STATUS	END SWITCH	SWITCH POSITION	LOW TEMPERATURE CUTOFF	LOW WATER CUTOFF	STATUS
CHILLED WATER SYSTEM									

OUTPUTS – ANALOG / BINARY / 3-POINT FLOATING

SYSTEM	VARIABLE SPEED	MODULATING ACTUATOR	MODULATING VALVE	E/P TRANSDUCER	SUMMER-WINTER	CONTROL RELAY	SOLENOID	START/STOP	2-POSITION VALVE	2-POSITION MOTOR OPERATED DAMPER	OCCUPIED/UNOCCUPIED	MERCURY RELAY	FEED/BLEED SAV
CHILLED WATER SYSTEM								●					

ALARMS

SYSTEM	HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	TROUBLE MESSAGE	FIRE/SMOKE	SECURITY SYSTEM
CHILLED WATER SYSTEM							

FEATURES

SYSTEM	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START/STOP	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE	RESET BASED ON OA TEMP	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	LEAD/LAG
CHILLED WATER SYSTEM	●		●					●		●		●		●	●

CHILLED WATER SYSTEM INPUT/OUTPUT SUMMARY

P:\Jobs\2022\22082 Cecil Co PS Sch of Tech\4 DWGS\1 HVAC\22082-M5.xControls.dwg 03/24/2023 10:58:10 AM pbevan

REVISIONS

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WO# 22082

PROJECT MANAGER: MPN

DESIGNER: PGB

PSC#: 07.042.23

CHILLED WATER SYSTEM CONTROL DIAGRAM
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

M5.1

ELECTRICAL LEGEND

(MOUNTING HEIGHTS ARE TO CENTERLINE OF WALL MOUNTED DEVICES AND TO THE BOTTOM OF LIGHTING FIXTURES UNLESS OTHERWISE NOTED.)

POWER

PANELBOARD - SURFACE, RECESSED MOUNTED, M.H. 6'-6" AFF TO TOP OF PANEL

SAFETY SWITCH, FUSED OR NON-FUSED, SIZE AS INDICATED ON DRAWINGS. ENCLOSURE SHALL BE NEMA 1 UNLESS OTHERWISE NOTED, MOUNT 5'-6" AFF TO TOP UNLESS OTHERWISE NOTED

STARTER, COMBINATION STARTER FVNR TYPE NEMA SIZE 1 UNLESS OTHERWISE NOTED, WITH NON-FUSED DISCONNECT SWITCH, H.O.A. SELECTOR SWITCH, RED & GREEN INDICATING LIGHTS AND CONTROL POWER TRANSFORMER IN NEMA 1 ENCLOSURE UON, M.H. 5'-6" AFF TO TOP.

MOTOR

JUNCTION BOX - CEILING, WALL MOUNTED

EMERGENCY POWER OFF BUTTON

C# — CONTACTOR; SIZE AS NOTED; IN NEMA 1 ENCLOSURE UON; MOUNT AT 5'-6" AFF TO TOP UON

S^M — 1P, 20A MANUAL MOTOR STARTER

UNIT HEATER

VFD — VARIABLE FREQUENCY DRIVE (FURNISHED UNDER DIVISION 23), INSTALLED UNDER DIVISION 26

FM — FLOW METER

GF — GROUND FAULT PROTECTION

ERMS — ENERGY REDUCTION MAINTENANCE SWITCH

OUTLETS

DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; MOUNT 1'-6" AFF UON.

DOUBLE DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; MOUNT 1'-6" AFF UON.

DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; GROUND FAULT INTERRUPTING WITH WEATHERPROOF COVER. MOUNT AT 1'-6" AFF UON.

TELECOMMUNICATIONS

SPEAKER; CEILING MOUNTED, WALL MOUNTED AT 7'-6" AFF UON
WP - WEATHERRESISTANT, H - HORN TYPE

LIGHTING

SUSPENDED LIGHT FIXTURE

EXIT SIGN

EMERGENCY WALL PACK

$ $^3 $^4 — SWITCH; SINGLE LOAD, 3-WAY, 4-WAY; SUBSCRIPT INDICATES FIXTURES/OUTLETS CONTROLLED; MOUNT AT 4'-0" AFF TO TOP

FIRE ALARM

FIRE ALARM ANNUNCIATOR/FIRE ALARM CONTROL PANEL AS NOTED, MOUNT 56" AFF TO TOP

F — FIRE ALARM PULL STATION; MOUNT AT 4'-0" AFF TO TOP

WALL MOUNTED FIRE ALARM HORN/STROBE LIGHT; CANDELA RATING AS INDICATED; WALL MOUNTED 80" AFF TO TOP OR 12" BELOW CEILING, WHICHEVER IS LOWER.

CONDUIT

HOMERUN TO PANELBOARD; NUMBER OF ARROWHEADS INDICATE NUMBER OF CIRCUITS; REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES

CONDUIT OR WIRE CONCEALED IN CEILING SPACE, WALL OR SURFACE MOUNTED WHERE NO CEILING EXISTS

CONDUIT OR WIRE ROUTED IN OR BELOW FLOOR SLAB.

MISCELLANEOUS

(1) — DENOTES REFERENCE TO DRAWING NOTE

ITEMS SHOWN SOLID AND LIGHT ARE EXISTING TO REMAIN.

ITEMS SHOWN DARK AND DASHED ARE TO BE REMOVED. REMOVE ALL ASSOCIATED ELECTRICAL WORK BACK TO SOURCE UNLESS OTHERWISE NOTED.

ITEMS SHOWN DARK AND SOLID ARE NEW.

GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE DRAWINGS OF ALL OTHER TRADES ON THE PROJECT. ELECTRICAL OR SYSTEMS CONNECTIONS INDICATED ON MECHANICAL DRAWINGS WHICH ARE PART OF THIS PROJECT, SHALL BE CONSIDERED A PART OF THIS CONTRACT AND SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AT NO EXTRA COST TO THE OWNER.
2. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND AS SUCH SHALL NOT BE SCALED. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF DEVICES AND EQUIPMENT AND DIMENSIONAL INFORMATION PRIOR TO ROUGH-IN. COORDINATE LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN OF SERVICE EQUIPMENT AND WIRING.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT ROUTING OF WIRING AND CONDUITS AND SHALL BE RESPONSIBLE FOR SIZING ALL BRANCH CIRCUIT WIRING TO LIMIT VOLTAGE DROP TO 3%. CONTRACTOR SHALL SIZE CONDUIT TO ACCOMMODATE WIRING PER NEC. 20 AMPERE CIRCUITS SHALL BE SIZED AS FOLLOWS:

20 AMPERE CIRCUITS				
120 VOLT		277 VOLT		MINIMUM CONDUIT SIZE
WIRING LENGTH	WIRE SIZE	WIRING LENGTH	WIRE SIZE	
0' - 60'	#12	0' - 130'	#12	3/4"
60' - 100'	#10	130' - 210'	#10	3/4"
100' - 150'	#8	210' - 340'	#8	3/4"
150' - 240'	#6	340' - 540'	#6	3/4"
OVER 240'	#4	OVER 540'	#4	1"

NOTES:
BRANCH CIRCUITS IN PANELBOARDS WITH 200% RATED NEUTRAL BUS, ECM MOTORS AND ALL DIMMED LIGHTING CIRCUITS SHALL HAVE DEDICATED NEUTRAL CONDUCTORS.

WIRING AND CONDUIT SIZES INDICATED IN PANEL SCHEDULES ARE MINIMUM ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT WIRING AND CONDUIT SIZES. CONTRACTOR SHALL PROVIDE SPLICE BLOCKS AND REDUCING PINS AS REQUIRED TO TERMINATE WIRING AND MAKE FINAL CONNECTIONS.

4. REMOVE AND REINSTALL EX SUSPENDED LIGHT FIXTURES AS REQUIRED TO ACCOMODATE NEW MECHANICAL WORK. ADJUST FIXTURE HEIGHT AND/OR LOCATION(S) AS REQUIRED TO SUIT NEW CONFIGURATION, EXTEND ASSOCIATED CONDUIT AND WIRE AS REQUIRED.
5. NEW CIRCUITS CONNECTED TO EXISTING CIRCUIT BREAKERS ARE INDICATED IN EXISTING PANELS (SHOWN BOLD IN SCHEDULE).

DEMOLITION NOTES:

1. DEMOLITION DRAWING IS DIAGRAMMATIC IN NATURE; NO ATTEMPT HAS BEEN MADE TO SHOW ALL EXISTING ELECTRICAL WORK. IN AREAS INDICATED TO BE RENOVATED. ALL EXISTING ELECTRICAL WORK SHALL REMAIN UNLESS OTHERWISE NOTED. WHEN AN ITEM IS INDICATED TO BE REMOVED, REMOVE ALL ASSOCIATED ELECTRICAL WORK BACK TO POINT OF SOURCE UON.
2. WHERE WORK PASSES THROUGH THE RENOVATION AREA TO SERVE OTHER PORTIONS OF THE BUILDING, OR WORK IN THE RENOVATION AREA INDICATED TO REMAIN, IT SHALL BE SUITABLY RELOCATED AND THE SYSTEMS RESTORED TO NORMAL, COORDINATE ANY OUTAGES WITH OWNER 15 DAYS IN ADVANCE.
3. WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED AGAINST DAMAGE.
4. DISCONNECT AND REMOVE ALL ELECTRICAL WORK ASSOCIATED WITH MECHANICAL EQUIPMENT INDICATED TO BE REMOVED UNDER DIVISION 23, UON.

ABBREVIATIONS

A	AMPERE, AMPERES
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CLG	CEILING, CEILING MOUNTED
DIA	DIAMETER
DWG	DRAWING
E	EMERGENCY
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
	EMERGENCY POWER OFF
EPO	EXISTING TO REMAIN
ETR	EXISTING
EX	FIRE ALARM
FA	FIRE ALARM ANNUNCIATOR PANEL
FAAP	FIRE ALARM CONTROL PANEL
FACP	FULL LOAD AMPERES
FLA	FUSED SAFETY SWITCH
FSS	GROUND FAULT INTERRUPTING
GFI	GROUND
G	GROUND WIRE
GW	HIGH
H HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
IMC	INTERMEDIATE METAL CONDUIT
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KW	KILOWATT
L	LOW
LRA	LOCKED ROTOR AMPERES
MCA	MINIMUM CIRCUIT AMPERES
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MH	MOUNTING HEIGHT/MANHOLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF/SS	NONFUSED SAFETY SWITCH
NIC	NOT IN CONTRACT
NO	NUMBER
OC	ON CENTERS
P	POLE, POLES
ø	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
RAF	RETURN AIR FAN
RGS	RIGID GALVANIZED STEEL
RX	REMOVE EXISTING
TAP	TAP SECTION
TR	TAMPER RESISTANT
TYP	TYPICAL
UH	UNIT HEATER
V	VOLT, VOLTS
VR	VANDAL RESISTANT
WP	WEATHERPROOF
W	WATTS, WIRE, WIRES
XFMR	TRANSFORMER
TTB	TELEPHONE TERMINAL BOARD
UON	UNLESS OTHERWISE NOTED

REVISIONS

NO.	DATE	DESCRIPTION

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 34699, EXPIRATION DATE: 07/16/2023.

STATE OF MARYLAND · ROBERT T. CURRERI · 34699 · PROFESSIONAL ENGINEER

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WO# 22082

PROJECT MANAGER: KTC

DESIGNER: KTC

PSC#: 07.042.23

LEGEND, SCHEDULES & ABBREVIATIONS

CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT

CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

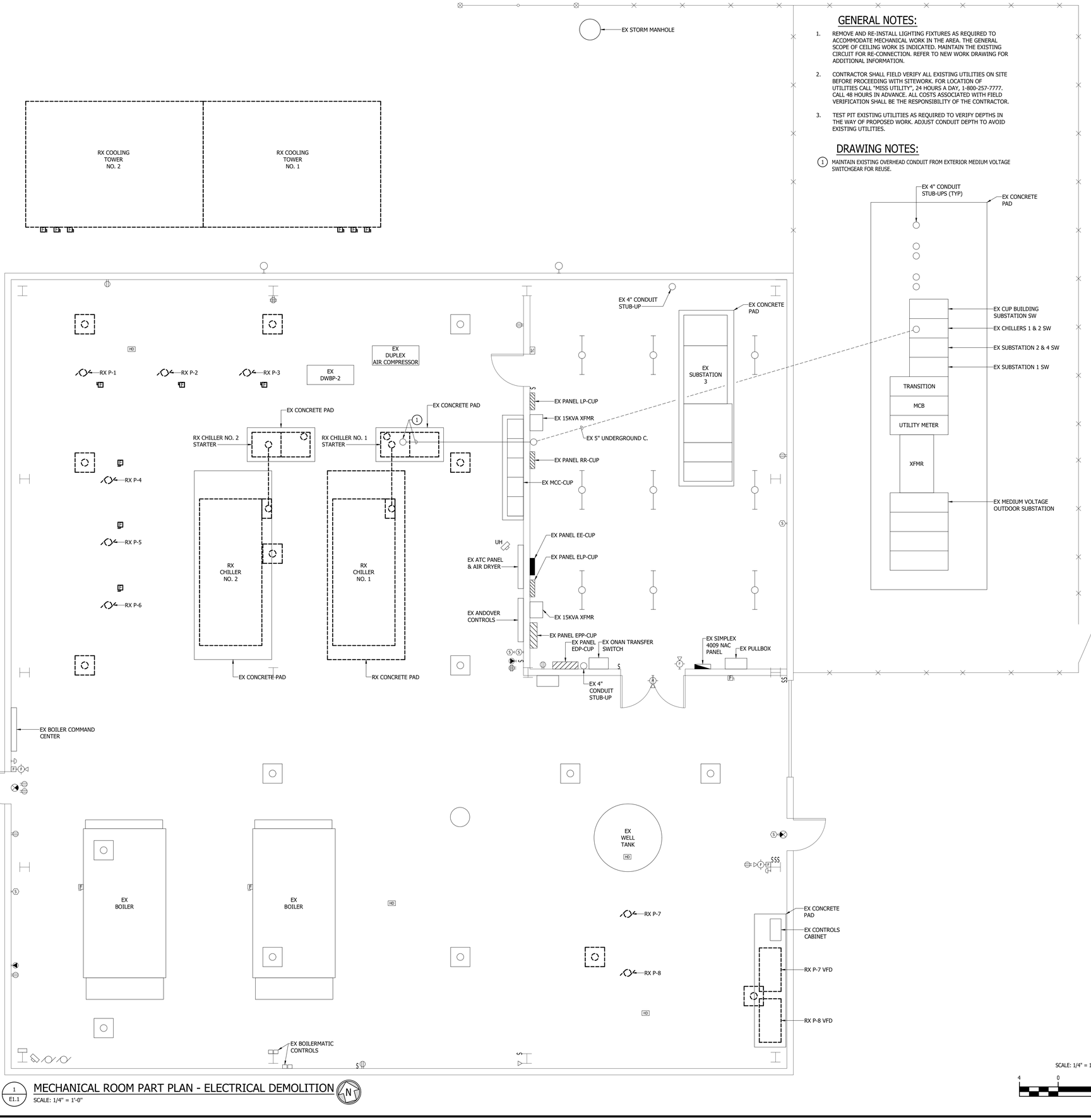
E0.0

GENERAL NOTES:

1. REMOVE AND RE-INSTALL LIGHTING FIXTURES AS REQUIRED TO ACCOMMODATE MECHANICAL WORK IN THE AREA. THE GENERAL SCOPE OF CEILING WORK IS INDICATED. MAINTAIN THE EXISTING CIRCUIT FOR RE-CONNECTION. REFER TO NEW WORK DRAWING FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES ON SITE BEFORE PROCEEDING WITH SITEWORK. FOR LOCATION OF UTILITIES CALL "MISS UTILITY", 24 HOURS A DAY, 1-800-257-7777. CALL 48 HOURS IN ADVANCE. ALL COSTS ASSOCIATED WITH FIELD VERIFICATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. TEST PIT EXISTING UTILITIES AS REQUIRED TO VERIFY DEPTHS IN THE WAY OF PROPOSED WORK. ADJUST CONDUIT DEPTH TO AVOID EXISTING UTILITIES.

DRAWING NOTES:

(1) MAINTAIN EXISTING OVERHEAD CONDUIT FROM EXTERIOR MEDIUM VOLTAGE SWITCHGEAR FOR REUSE.



1 E1.1 MECHANICAL ROOM PART PLAN - ELECTRICAL DEMOLITION

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

4 0 4 8

REVISIONS

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DESIGNER	KTC
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MECHANICAL ROOM PART PLAN
ELECTRICAL DEMOLITION
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION
03/24/2023

E1.1

GENERAL NOTES:

1. REFER TO PANEL SCHEDULES AND MECHANICAL EQUIPMENT CONNECTION SCHEDULE ON DRAWING E5.1 FOR ADDITIONAL INFORMATION.
2. CUT AND PATCH EXISTING FLOORS AS REQUIRED TO INSTALL GROUNDING.

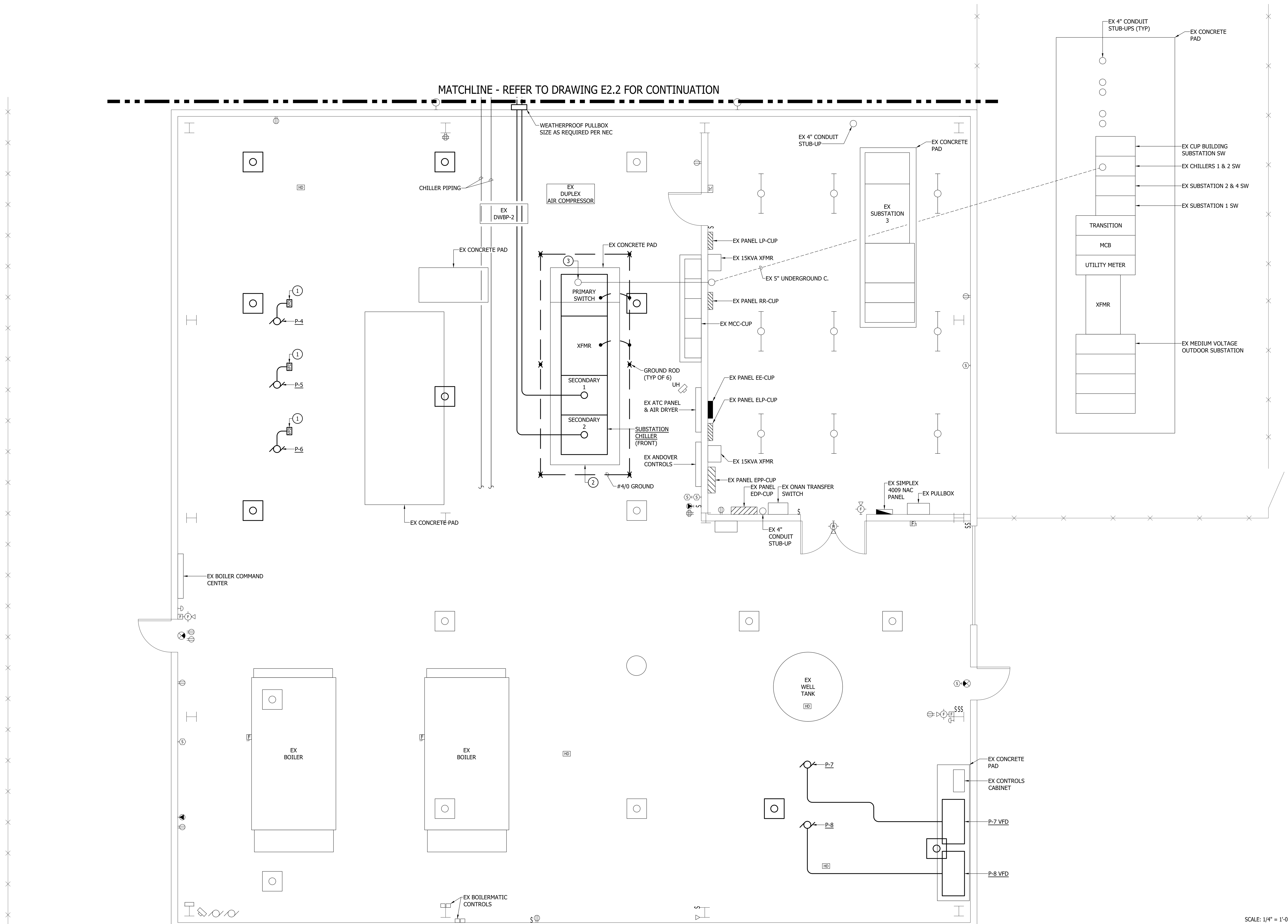
DRAWING NOTES:

(1) PROVIDE KINDORF SUPPORTS AS REQUIRED.

(2) MODIFY AND EXTEND CONCRETE PAD TO SUIT THE INSTALLATION OF THE SUBSTATION.

(3) COORDINATE SWITCHGEAR PLACEMENT WITH EXISTING INCOMING PRIMARY FEEDER. EXTEND CONDUITS AS REQUIRED.

(4) PROVIDE 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT AS REQUIRED AND MAKE ALL CONNECTIONS TO NEAREST EXTERIOR RECEPTACLE.



1 / E2.1 MECHANICAL ROOM PART PLAN - ELECTRICAL NEW WORK

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

4 0 4 8

REVISIONS

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WO# 22082

PROJECT MANAGER	KTC
DESIGNER	KTC
PSC#:	07.042.23

MECHANICAL ROOM PART PLAN
ELECTRICAL NEW WORK
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

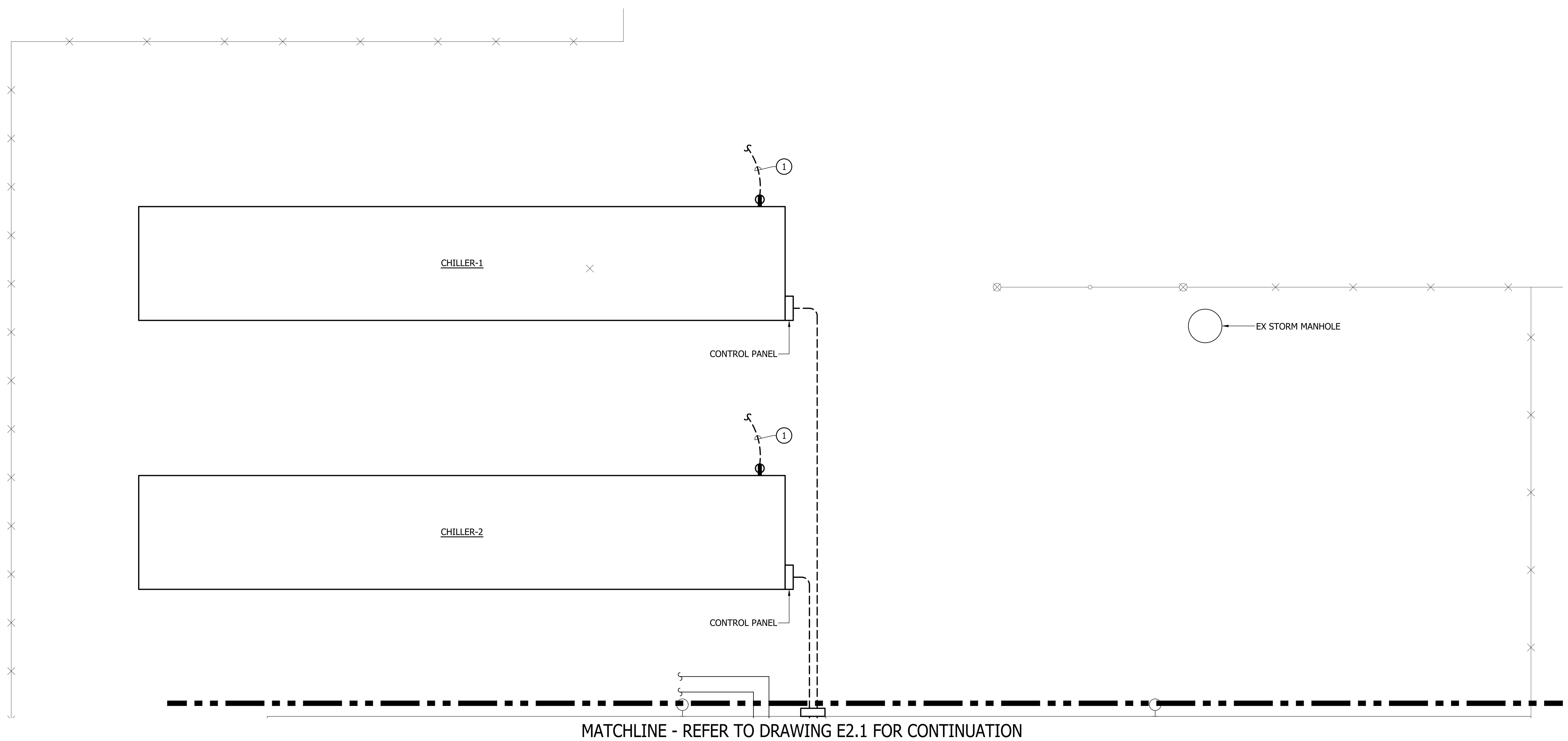
E2.1

GENERAL NOTES:

1. REFER TO PANEL SCHEDULES AND MECHANICAL EQUIPMENT CONNECTION SCHEDULE ON DRAWING E5.1 FOR ADDITIONAL INFORMATION.
2. CUT AND PATCH EXISTING FLOORS AS REQUIRED TO INSTALL GROUNDING.

DRAWING NOTES:

(1) PROVIDE 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT AS REQUIRED AND MAKE ALL CONNECTIONS TO NEAREST EXTERIOR RECEPTACLE.



1 / E2.2 COURTYARD PART PLAN - ELECTRICAL NEW WORK

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

4 0 4 8

REVISIONS		
NO.	DATE	DESCRIPTION

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WO# 22082

PROJECT MANAGER	KTC
DESIGNER	KTC
PSC#:	07.042.23

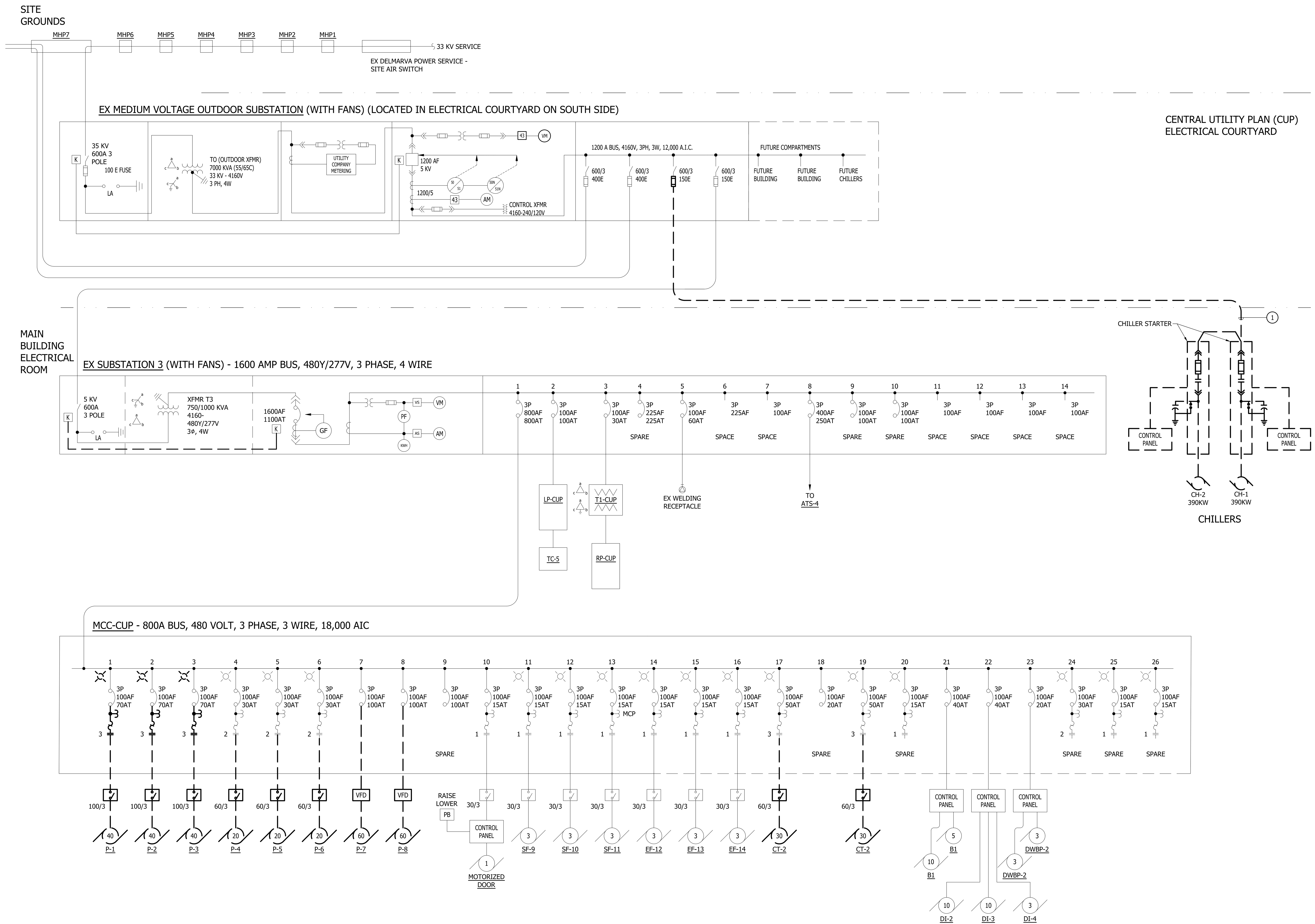
COURTYARD PART PLAN
ELECTRICAL NEW WORK
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

E2.2

DRAWING NOTES:

(1) UTILIZE EXISTING CONDUIT FOR ROUTING OF NEW FEEDER.



PARTIAL SINGLE LINE DIAGRAM - DEMOLITION
NO SCALE

REVISIONS

NO.	DATE	DESCRIPTION

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WO# 22082

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DESIGNER	KTC
PSC#:	07.042.23

PARTIAL SINGELINE DIAGRAM - DEMOLITION
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

E3.1

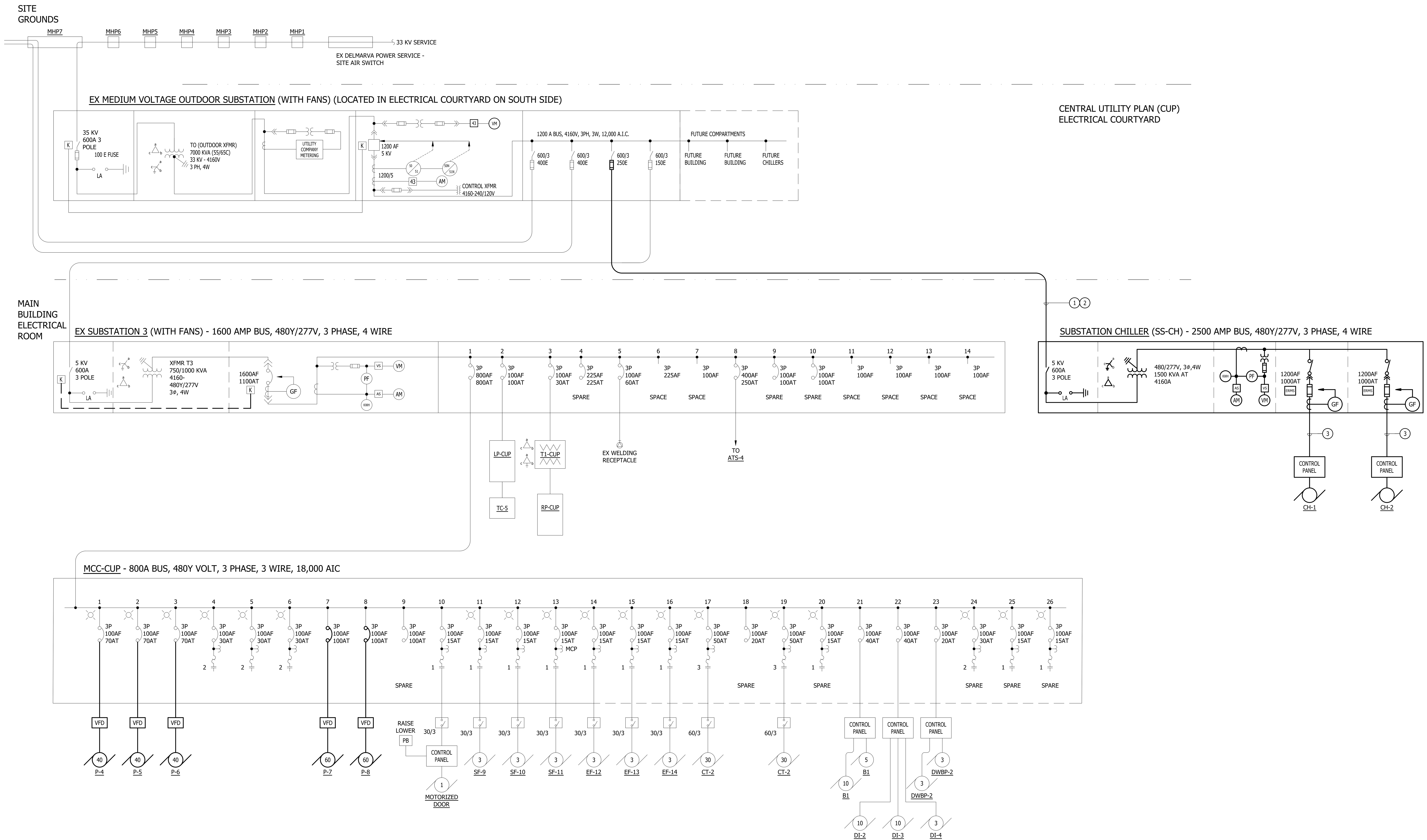
P:\Jobs\2022\22082 Cecil Co PS Sch of Tech\4 DWGS\4 ELEC\22082-E3.1.dwg 03/24/2023 2:45:38 PM tblazek

GENERAL NOTES:

1. REFER TO PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL REDUCE FEEDER SIZE (IF REQUIRED) WITHIN 5'-0" OF EQUIPMENT TO ACCOMMODATE LUG SIZES.

DRAWING NOTES:

1. UTILIZE EXISTING CONDUIT FOR ROUTING OF NEW FEEDER AND EXTEND AS REQUIRED.
2. 3# 3/0 ERP (5KV SHIELDED), 133% INSULATION COPPER CABLE, 1 #4 600V INSULATED GROUND.
3. 3 SETS (3#300KCMIL + 2/0GW IN 3" CONDUIT).



SITE GROUNDS
MHP7
MHP6
MHP5
MHP4
MHP3
MHP2
MHP1
33 KV SERVICE
EX DELMARVA POWER SERVICE - SITE AIR SWITCH
EX MEDIUM VOLTAGE OUTDOOR SUBSTATION (WITH FANS) (LOCATED IN ELECTRICAL COURTYARD ON SOUTH SIDE)
35 KV 600A 3 POLE
100 E FUSE
LA
TO (OUTDOOR XFMR) 7000 KVA (55/65C) 33 KV - 4160V 3 PH, 4W
UTILITY COMPANY METERING
1200 AF 5 KV
1200/5
CONTROL XFMR 4160-240/120V
1200 A BUS, 4160V, 3PH, 3W, 12,000 A.I.C.
600/3 400E
600/3 400E
600/3 250E
600/3 150E
FUTURE COMPARTMENTS
FUTURE BUILDING
FUTURE BUILDING
FUTURE CHILLERS
CENTRAL UTILITY PLAN (CUP) ELECTRICAL COURTYARD
MAIN BUILDING ELECTRICAL ROOM
EX SUBSTATION 3 (WITH FANS) - 1600 AMP BUS, 480Y/277V, 3 PHASE, 4 WIRE
5 KV 600A 3 POLE
XFMR T3 750/1000 KVA 4160-480Y/277V 3Ø, 4W
1600AF 1100AT
GF
VM
PF
AM
3P 800AF 800AT
3P 100AF 100AT
3P 100AF 30AT
3P 225AF 225AT
3P 100AF 60AT
3P 225AF
3P 100AF
3P 400AF 250AT
3P 100AF 100AT
3P 100AF 100AT
3P 100AF
3P 100AF
3P 100AF
3P 100AF
SPARE
SPACE
SPACE
SPARE
SPARE
SPACE
SPACE
SPACE
SPACE
LP-CUP
TC-5
T1-CUP
RP-CUP
EX WELDING RECEPTACLE
TO ATS-4
SUBSTATION CHILLER (SS-CH) - 2500 AMP BUS, 480Y/277V, 3 PHASE, 4 WIRE
5 KV 600A 3 POLE
480/277V, 3Ø,4W 1500 KVA AT 4160A
1200AF 1000AT
ERMS
1200AF 1000AT
ERMS
CONTROL PANEL
CH-1
CONTROL PANEL
CH-2
MCC-CUP - 800A BUS, 480Y VOLT, 3 PHASE, 3 WIRE, 18,000 AIC
3P 100AF 70AT
3P 100AF 70AT
3P 100AF 70AT
3P 100AF 30AT
3P 100AF 30AT
3P 100AF 30AT
3P 100AF 100AT
3P 100AF 100AT
3P 100AF 100AT
3P 100AF 15AT
3P 100AF 15AT
3P 100AF 15AT
3P 100AF 15AT MCP
3P 100AF 15AT
3P 100AF 15AT
3P 100AF 15AT
3P 100AF 50AT
3P 100AF 20AT
3P 100AF 50AT
3P 100AF 15AT
3P 100AF 40AT
3P 100AF 40AT
3P 100AF 20AT
3P 100AF 30AT
3P 100AF 15AT
3P 100AF 15AT
SPARE
VFD
P-4
P-5
P-6
P-7
P-8
RAISE LOWER
PB
CONTROL PANEL
MOTORIZED DOOR
30/3
60/3
SF-9
SF-10
SF-11
EF-12
EF-13
EF-14
CT-2
CT-2
B1
B1
DWBP-2
DWBP-2
DI-2
DI-3
DI-4

PARTIAL SINGLE LINE DIAGRAM - NEW WORK

NO SCALE

REVISIONS

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WO# 22082

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DESIGNER: KTC

PSC#: 07.042.23

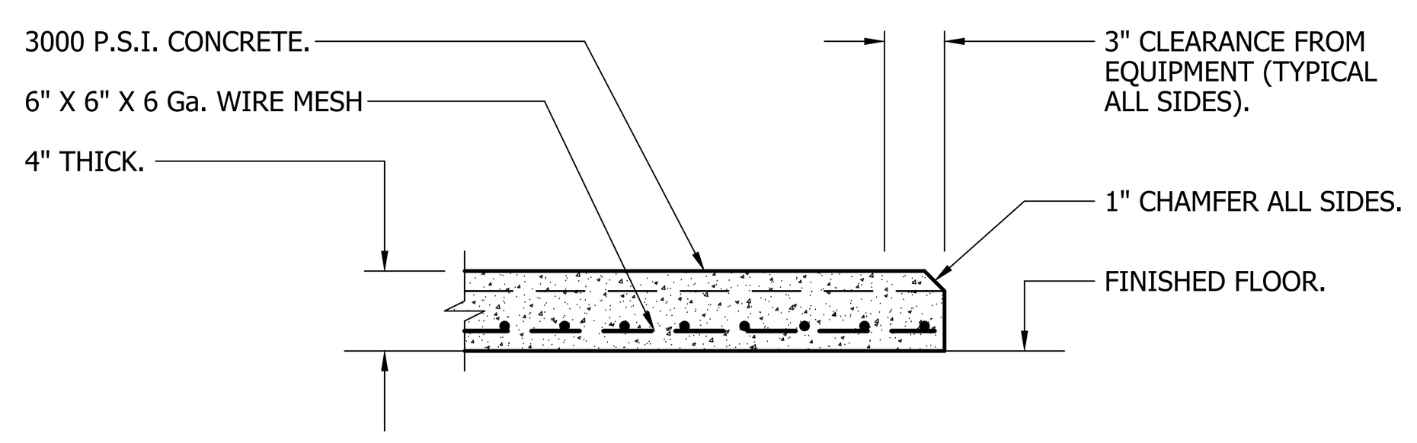
PARTIAL SINGE LINE DIAGRAM - NEW WORK

CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT

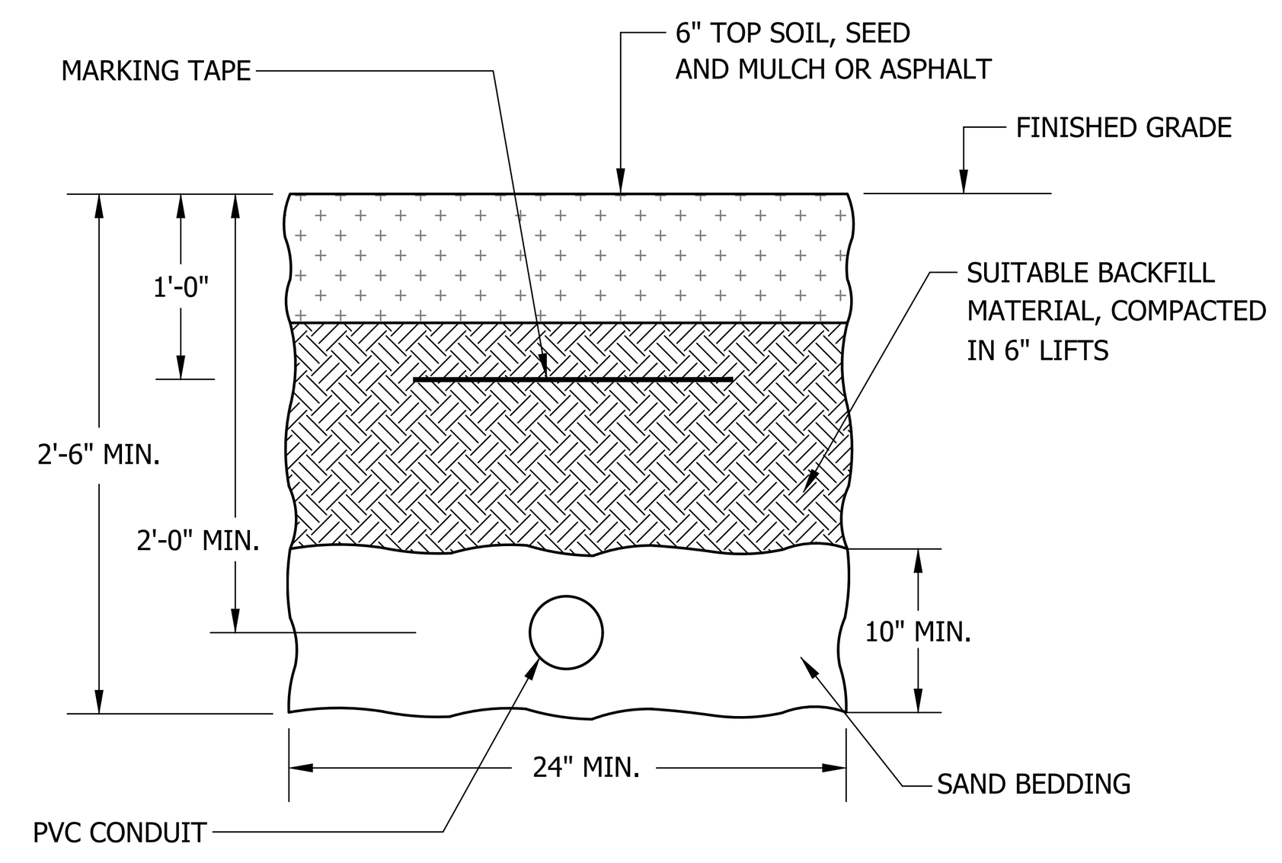
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

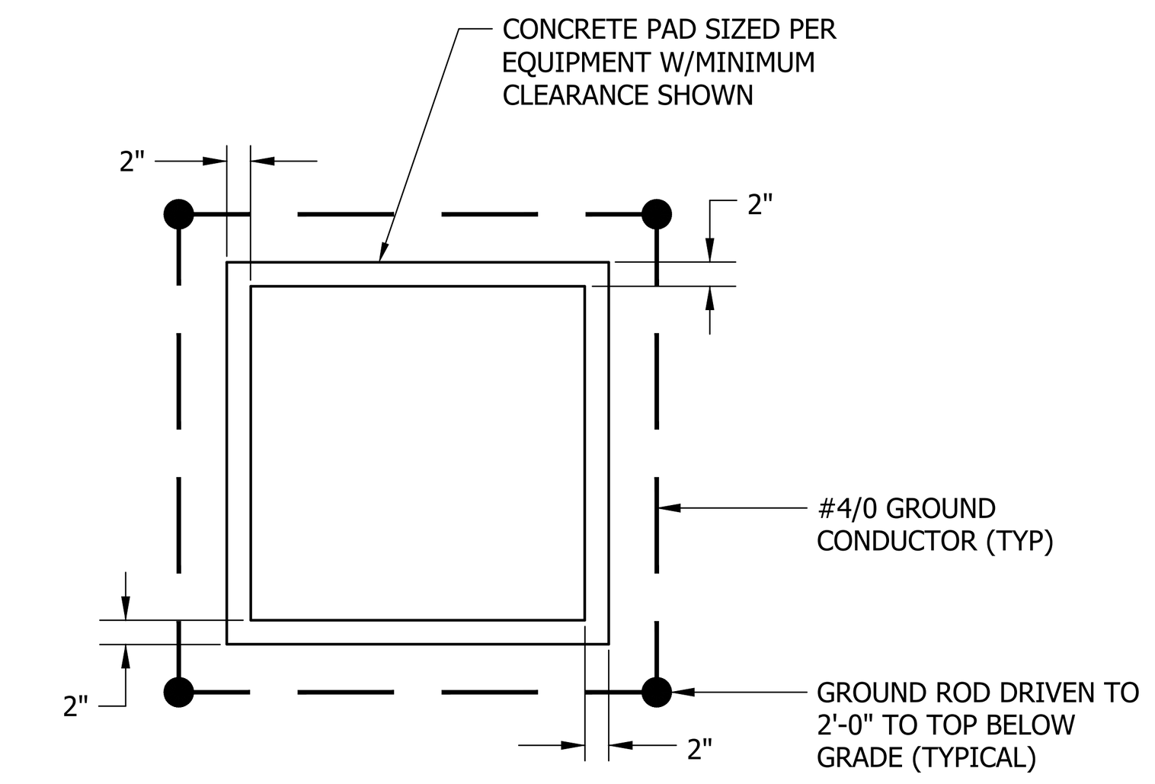
E3.2



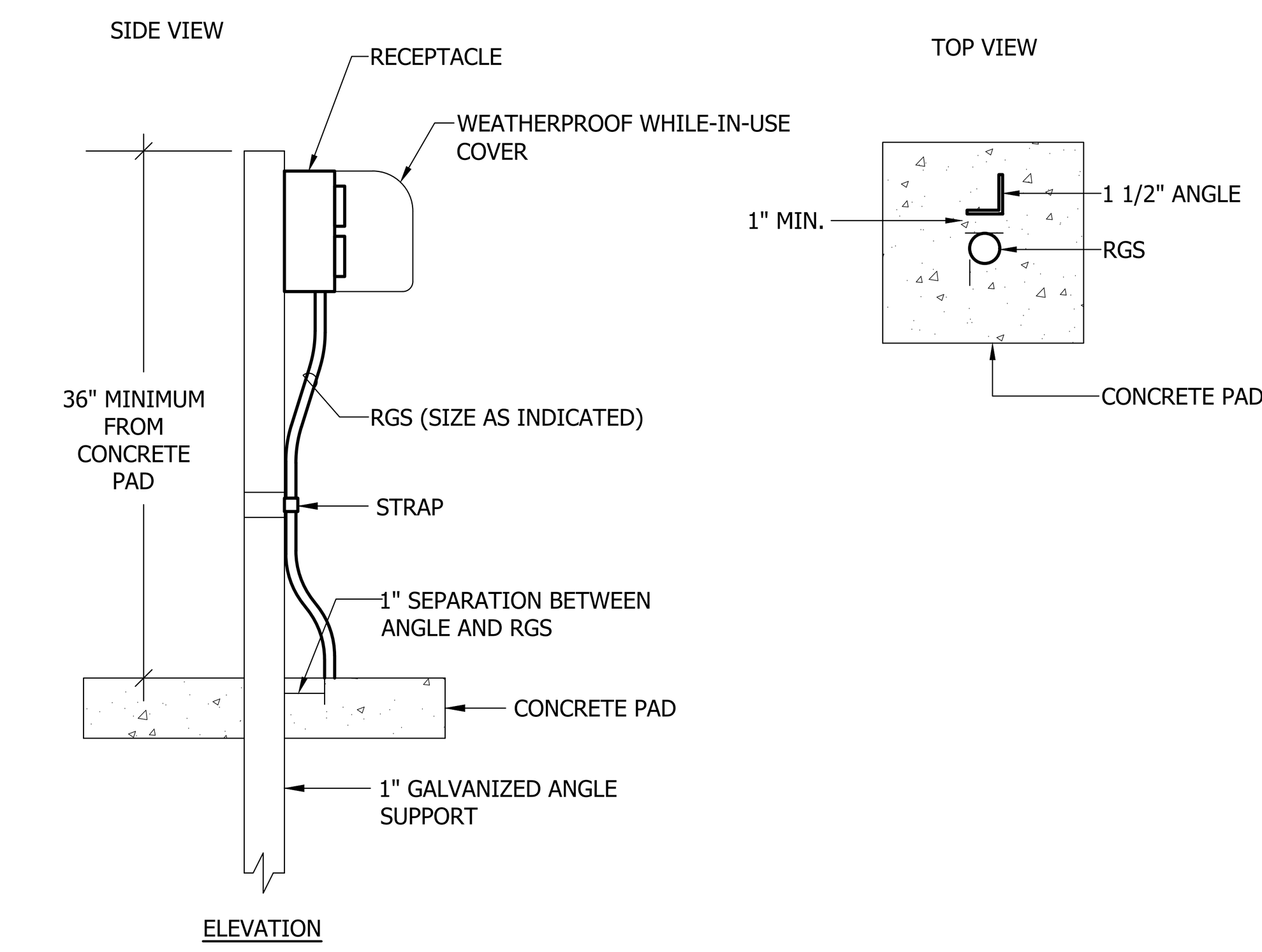
1 TYPICAL CONCRETE HOUSEKEEPING PAD
SCALE: NONE



2 TYPICAL DIRECT BURIED PVC CONDUIT
SCALE: NONE



3 EQUIPMENT GROUNDING DETAIL
SCALE: NONE



4 RECEPTACLE MOUNTING
SCALE: NONE

5 NOT USED
SCALE: NONE

6 NOT USED
SCALE: NONE

7 NOT USED
SCALE: NONE

8 NOT USED
SCALE: NONE

9 NOT USED
SCALE: NONE

10 NOT USED
SCALE: NONE

11 NOT USED
SCALE: NONE

12 NOT USED
SCALE: NONE

13 NOT USED
SCALE: NONE

14 NOT USED
SCALE: NONE

15 NOT USED
SCALE: NONE

16 NOT USED
SCALE: NONE

REVISIONS		
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DETAILS
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION
03/24/2023

E4.1

EX MEDIUM VOLTAGE SWITCHGEAR - SQUARE D

MOUNTING: FREE STANDING	A.I.C. RATING: 12,000	LOCATION: CUP COURTYARD
VOLTAGE: 4160, 3PHASE, 3 WIRE	1200 AMPERE MAIN BUS	1200 AMPERE MAIN CIRCUIT BREAKER

DISTRIBUTION SECTION

FDR		CIRCUIT BREAKER			WIRING						CONN
NO	SERVES	P	FRAME	TRIP	SETS	NO	SIZE	GND	C	REMARKS	KVA
1	EX SUBSTATION 1	3	600	400E							
2	EX SUBSTATION 2	3	600	400E							
3	EX CHILLER 1 AND CHILLER 2	3	600	150E							
4	EX SUBSTATION 3	3	600	150E							
5	FUTURE BUILDING										
6	FUTURE BUILDING										
7	FUTURE CHILLERS										

TOTAL CONNECTED LOAD: 0 KVA

EX MEDIUM VOLTAGE SWITCHGEAR (MODIFIED) - SQUARE D

MOUNTING: FREE STANDING	A.I.C. RATING: 12,000	LOCATION: CUP COURTYARD
VOLTAGE: 4160, 3PHASE, 3 WIRE	1200 AMPERE MAIN BUS	1200 AMPERE MAIN CIRCUIT BREAKER

DISTRIBUTION SECTION

FDR		CIRCUIT BREAKER			WIRING						CONN
NO	SERVES	P	FRAME	TRIP	SETS	NO	SIZE	GND	C	REMARKS	KVA
1	EX SUBSTATION 1	3	600	400E							
2	EX SUBSTATION 2	3	600	400E							
3	**SUBSTATION CHILLER**	3	600	**250E**	**REFER TO ONLINE DIAGRAM**					**MODIFY SWITCH AS REQUIRED**	
4	EX SUBSTATION 3	3	600	150E							
5	FUTURE BUILDING										
6	FUTURE BUILDING										
7	FUTURE CHILLERS										

TOTAL CONNECTED LOAD: 0 KVA

EX MOTOR CONTROL CENTER MCC-CUP - SQUARE D MODEL 5

VOLTAGE: 480, 3PH, 3W	HORIZONTAL BUS: 800A		A.I.C. RATING: 42,000
LOCATION: MECH RM 208	VERTICAL BUS: 800A		800 AMPERE MAIN LUGS ONLY

CKT				CIRCUIT BREAKER				WIRING				STARTER				CONN
NO	SERVES	HP	KW	P	FRAME	TRIP	SETS	NO	SIZE	GND	C	SIZE	TYPE	AUX	REMARKS	KVA
A1	SPARE			3	100							X				
A2	EX P-7 (CHW SEC.)			3	100	100										
A3	EX B-1			3	100	70										
A4	EX D-1			3	100	30										
A5	EX ATC-2			3	100	20										
A6	EX DWBP-2			3	100	20										
B1	EX P-6 (CHW PRI)			3	100	30						X				
B2	EX SF-11			3	100	100						X				
B3	EX EF-12			3	100	100						X				
B4	EX EF-13			3	100	15						X				
B5	EX P-8 (CHW SEC)			3	100	15										
C1	EX CT-1			3	100	50						X				
C2	EX MOTORIZED DOOR			3	100	15						X				
D1	EX CT-2			3	100	50						X				
D2	EX P-1 (CDW)			3	100	70						X				
E1	EX P-2 (CDW)			3	100	70						X				
E2	EX P-3 (CDW)			3	100	70						X				
E3	EX P-4 (CHW PRI)			3	100	30						X				
E4	EX P-5 (CHW PRI)			3	100	30						X				
E5	SPARE			3	100											
F1	EX EF-14			3	100	15						X				
F2	EX SF-9			3	100	15						X				
F3	EX SF-10			3	100	15						X				
F4	SPARE			3	100							X				
F5	SPARE			3	100							X				
F6	SPARE			3	100							X				

MOTOR STARTER AUXILIARY DEVICES

- A 120 VOLT CONTROL POWER TRANSFORMER
- B RED "ON" INDICATEING LIGHT
- C GREEN "OFF" INDICATING LIGHT
- D HAND-OFF-AUTOMATIC SELECTOR SWITCH
- E 2-NO, 2-NC AUXILIARY CONTACTS

TOTAL CONNECTED LOAD IN KVA: 0

EX MOTOR CONTROL CENTER MCC-CUP (MODIFIED) - SQUARE D MODEL 5

VOLTAGE: 480, 3PH, 3W	HORIZONTAL BUS: 800A		A.I.C. RATING: 42,000
LOCATION: MECH RM 208	VERTICAL BUS: 800A		800 AMPERE MAIN LUGS ONLY

CKT				CIRCUIT BREAKER				WIRING				STARTER				CONN
NO	SERVES	HP	KW	P	FRAME	TRIP	SETS	NO	SIZE	GND	C	SIZE	TYPE	AUX	REMARKS	KVA
A1	SPARE			3	100							X				
A2	**PUMP-7**			3	100	**100**	**1**	**3**	**6**	**8**	**1-1/4**				**NOTE 2**	**41.0**
A3	EX B-1			3	100	70										
A4	EX D-1			3	100	30										
A5	EX ATC-2			3	100	20										
A6	EX DWBP-2			3	100	20										
B1	**SPARE**			3	100	30						X				
B2	EX SF-11			3	100	100						X				
B3	EX EF-12			3	100	100						X				
B4	EX EF-13			3	100	15						X				
B5	**PUMP-8**			3	100	**100**	**1**	**3**	**6**	**8**	**1-1/4**					**41.0**
C1	EX CT-1			3	100	50						X				
C2	EX MOTORIZED DOOR			3	100	15						X				
D1	EX CT-2			3	100	50						X				
D2	**PUMP-4**			3	100	**60**	**1**	**3**	**8**	**10**	**3/4**	X			**NOTE 2**	**21.3**
E1	**PUMP-5 (STAND-BY)**			3	100	**60**	**1**	**3**	**8**	**10**	**3/4**	X			**NOTE 2**	
E2	**PUMP-6**			3	100	**60**	**1**	**3**	**8**	**10**	**3/4**	X			**NOTE 2**	**21.3**
E3	**SPARE**			3	100	30						X				
E4	**SPARE**			3	100	30						X				
E5	SPARE			3	100											
F1	EX EF-14			3	100	15						X				
F2	EX SF-9			3	100	15						X				
F3	EX SF-10			3	100	15						X				
F4	SPARE			3	100							X				
F5	SPARE			3	100							X				
F6	SPARE			3	100							X				

MOTOR STARTER AUXILIARY DEVICES

- A 120 VOLT CONTROL POWER TRANSFORMER
- B RED "ON" INDICATEING LIGHT
- C GREEN "OFF" INDICATING LIGHT
- D HAND-OFF-AUTOMATIC SELECTOR SWITCH
- E 2-NO, 2-NC AUXILIARY CONTACTS

NOTE 1: MODIFY BUCKET TO PROVIDE CIRCUIT BREAKER.
NOTE 2: MODIFY BUCKET AS REQUIRED TO ACCOMMODATE NEW CIRCUIT BREAKER.

TOTAL CONNECTED LOAD IN KVA: 124.6

GENERAL NOTES:

1. PROVIDE NEW CIRCUIT BREAKERS IN EXISTING TO REMAIN PANELS (SHOWN BOLD IN SCHEDULE). NEW CIRCUIT BREAKER SHALL MATCH EXISTING MANUFACTURER, STYLE, TYPE AND SHORT CIRCUIT RATING.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

	LOAD			SERVICE		CIRCUIT	NEMA	DISCONNECT				
EQUIPMENT	KW	HP	AMPS	VOLTS	PH	DESIGNATION	SIZE STARTER	POLE	AMPS	FUSE VERIFY W/ NAMEPLATE	NEMA ENCLOSURE	NOTES
CHILLER-1			842.1	480	3	SS-CH-1		3	1200	1000	NEMA 3R	1
CHILLER-2			842.1	480	3	SS-CH-2		3	1200	1000	NEMA 3R	1
P-4		20		480	3	MCC-D2						3
P-5 (STAND-BY)		20		480	3	MCC-E1						3
P-6		20		480	3	MCC-E2						3
P-7		40		480	3	MCC-A2						3
P-8		40		480	3	MCC-B5						3

MECHANICAL SCHEDULE NOTES:
1. SINGLE POINT CONNECTION. MAKE ALL CONNECTIONS TO UNIT AS REQUIRED
2. PROVIDE COMBINATION TYPE MOTOR STARTER FVNR WITH CONTROL TRANSFORMER, RED AND GREEN INDICATING LIGHTS, AND DISCONNECT.
3. INSTALL VFD (FURNISHED UNDER MECHANICAL DIVISION) MAKE ALL CONNECTIONS TO MOTOR AS REQUIRED
4. MAKE CONNECTION TO CONTROL PANEL FURNISHED WITH UNIT.

MVSWG | MCC-CUP | MECS
MVSWG(M) | MCC-CUP(M)

REVISIONS

NO.	DATE	DESCRIPTION

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 34699, EXPIRATION DATE: 07/16/2023.

Gipe Associates Inc.
Consulting Engineers
1220 East Joppa Road, Suite 223, Towson, MD. 21286, Phone: 410/832-2420, Fax: 410/832-2418
8719 Brooke Drive, Suite 2-5, Easton, Maryland 21601, Phone: 410/822-8688, Fax: 410/822-6306

WO# 22082

PROJECT MANAGER: KTC
DESIGNER: KTC
PSC#: 07.042.23

MECHANICAL EQUIPMENT CONNECTION AND PANELBOARD SCHEDULES
CECIL SCHOOL OF TECHNOLOGY CHILLER REPLACEMENT
CECIL COUNTY PUBLIC SCHOOLS

100% IAC SUBMISSION 03/24/2023

E5.1