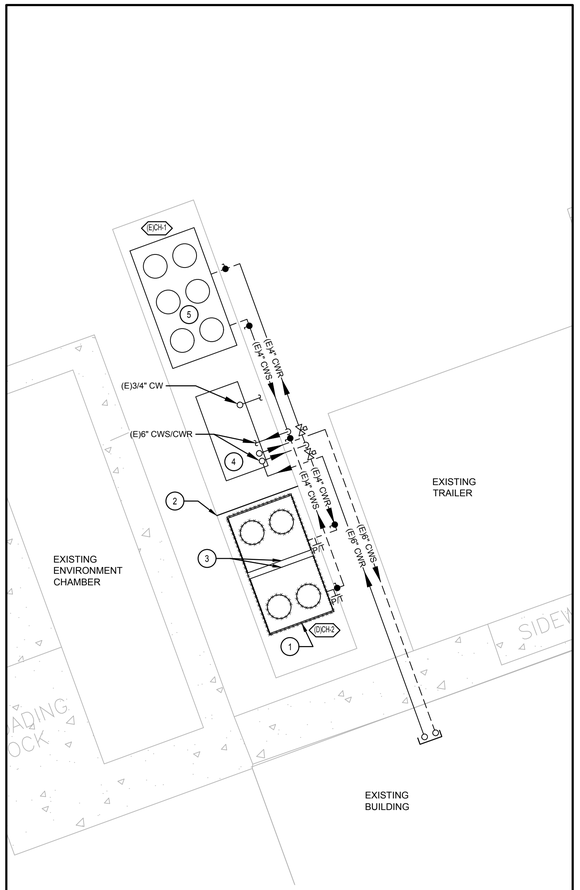
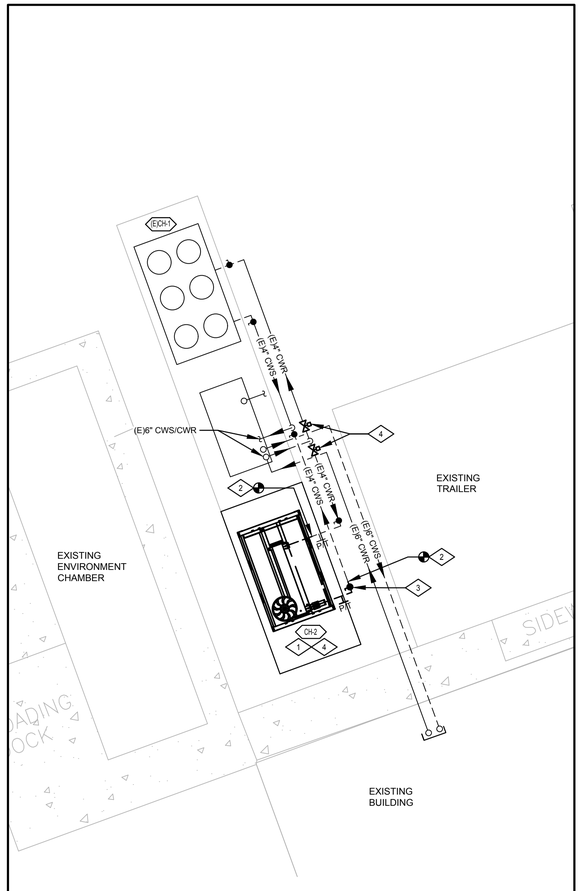


DEMO ENLARGED CHILLER SITE PLAN

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



NEW ENLARGED CHILLER SITE PLAN

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

GENERAL NOTES

1. ALL EXISTING HVAC EQUIPMENT AND DEVICES TO REMAIN UNLESS NOTED OTHERWISE. PROTECT DURING DEMOLITION.
2. COORDINATE DISPOSAL/RETURN TO BUILDING STOCK OF ALL DEMOLISHED HVAC MATERIALS WITH PROPERTY MANAGER.
3. CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES THAT MAY AFFECT THE HVAC SYSTEM.
4. CONTRACTOR SHALL PERFORM A SITE VISIT PRIOR TO PROVIDING AN INSTALLATION BID.

◯ DRAWING NOTES (DEMO)

1. ISOLATE CH-2 FROM EXISTING SYSTEM. DRAIN AND RECLAIM GLYCOL FROM ISOLATED CHILLER. DISCONNECT ALL PIPING AND ELECTRICAL CONNECTIONS AND REMOVE EXISTING UNIT; PROVIDING PROTECTION OF SURROUNDING STRUCTURES AND EQUIPMENT TO REMAIN DURING DEMOLITION. PREPARE EXISTING CHILLED WATER SUPPLY AND RETURN LINES FOR RECONNECTION TO NEW EQUIPMENT.
2. SAW CUT AND REMOVE EXISTING CONCRETE PAD. COMPACT/LEVEL GRADE AND PROVIDE NEW CONCRETE PAD TO MATCH EXISTING. (EXISTING 6" THICK CONCRETE SLAB ON 2" SAND BASE , REINFORCED WITH W1.4xW1.4-6x6 WELDED WIRE FABRIC.) COORDINATE WITH CIVIL AND STRUCTURAL AS REQUIRED.
3. REMOVE EXISTING SOUND SHROUDS AND PRESERVE FOR REUSE.
4. EXISTING PUMP HOUSE TO REMAIN. PROTECT DURING DEMOLITION.
5. EXISTING CHILLER TO REMAIN. PROTECT DURING DEMOLITION.

◇ DRAWING NOTES

1. INSTALL NEW CHILLER ON CONCRETE PAD WITH NEW SPRING ISOLATORS. PROVIDE UNIT WITH MANUFACTURERS RECOMMENDED CLEARANCES.
2. EXTEND AND RECONNECT EXISTING CHILLED WATER SUPPLY AND RETURN LINES TO NEW UNIT CONNECTIONS. PROVIDE VIBRATION ELIMINATORS, P/T TAPS, STRAINER AND TRANSITION PIPE SIZE AS REQUIRED FOR 6"Ø VICTAULIC CONNECTION TO NEW CHILLER. REFILL SYSTEM WITH 50% PROPYLENE GLYCOL SOLUTION.
3. PROVIDE NEW ISOLATION BALL VALVES.
4. NEW ACTUATOR AND VALVE, TIE-IN TO MIGRATED BAS CONTROL PANEL LOCATED IN EXISTING PUMP HOUSE AND INTERLOCKING CHILLER TO PERFORM PER EXISTING SEQUENCE OF OPERATION PROVIDED AND PERFORMED BY CONTROLS CONTRACTOR (SIEMANS). NEW VALVE AND ACTUATOR PROVIDED BY SIEMANS, INSTALLED BY MECHANICAL CONTRACTOR.
5. FOR SOUND ATTENUATION, EXISTING SOUND SHROUD TO BE REUSED. CONTRACTOR SHALL MODIFY AND TRANSITION ATTENUATORS AS REQUIRED FOR RECONNECTION TO NEW UNIT; VERIFYING UNIT FANS AND AIRFLOW REMAINS UNOBSTRUCTED.

MECHANICAL LEGEND

NOT ALL ITEMS LISTED BELOW ARE USED ON THIS SET OF MECHANICAL DRAWINGS

GENERAL	
SYMBOL	DESCRIPTION
DTL / SHT	REFERENCE BUBBLE
EQUIP#	MECHANICAL/ELECTRICAL EQUIPMENT DESIGNATION
	REMOVE EXISTING
	UNDERCUT DOOR
	AIR FLOW
	CONNECT NEW TO EXISTING

DOUBLE LINE DUCTWORK	
SYMBOL	DESCRIPTION
	RECTANGULAR SUPPLY AIR DUCT UP
	RECTANGULAR SUPPLY AIR DUCT DOWN
	RECTANGULAR RETURN AIR / EXHAUST DUCT UP
	RECTANGULAR RETURN AIR / EXHAUST DUCT DOWN
	ROUND DUCT UP
	ROUND DUCT DOWN
	BRANCH DUCT 45° TAKE-OFF
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW RECTANGULAR/ROUND DUCT
	DUCT TRANSITION
	FLEX CONNECTION

SINGLE LINE DUCTWORK	
SYMBOL	DESCRIPTION
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW RECTANGULAR/ROUND DUCT
	DUCT TRANSITION
	CONICAL SPIN-IN FITTING
	CONICAL SPIN-IN FITTING W/DAMPER
	FLEXIBLE DUCT

CONTROL DEVICES AND DAMPERS	
SYMBOL	DESCRIPTION
H	HUMIDISTAT
PS	PRESSURE SENSOR
S	SENSOR
T	WALL MOUNTED THERMOSTAT
T	UNIT MOUNTED THERMOSTAT
S	SWITCH
	FIRE DAMPER
FR	RADIATION DAMPER
FS	SMOKE DAMPER
	COMBINATION FIRE AND SMOKE DAMPER
	MANUAL VOLUME DAMPER W/LOCKING QUADRANT
	MOTORIZED DAMPER

PIPING		
SYMBOL	ABBV.	DESCRIPTION
HS	HS	HOT WATER SUPPLY
HR	HR	HOT WATER RETURN
CHS	CHS	CHILLED WATER SUPPLY
CHR	CHR	CHILLED WATER RETURN
CS	CS	CONDENSER SUPPLY
CR	CR	CONDENSER RETURN
HPS	HPS	HIGH PRESSURE STEAM
HPC	HPC	HIGH PRESSURE CONDENSATE
PC	PC	PUMPED CONDENSATE
D	D	EQUIPMENT DRAIN
RL	RL	REFRIGERANT LIQUID
RS	RS	REFRIGERANT SUCTION

PIPING SYMBOLS	
SYMBOL	DESCRIPTION
	ARROW IN LINE INDICATES DIRECTION OF FLOW
XX	INDICATES PIPE SLOPE DOWN
	BOTTOM PIPE CONNECTION
	PIPING UP
	PIPING DOWN
	FIXTURE TRAP OR DRAIN TRAP
	PIPING CAP OR PLUG
	PUMP
BA	BALANCING VALVE/ FLOW MEASURING DEVICE
	CALIBRATED BALANCING VALVE
	BALL VALVE
	PLUG VALVE
	GATE VALVE
	CHECK VALVE
	BUTTERFLY VALVE
	FLOW SWITCH
	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	3-WAY TEMPERATURE CONTROL VALVE
	2-WAY TEMPERATURE CONTROL VALVE
	RELIEF VALVE
	STRAINER
	STRAINER WITH BLOW-OFF VALVE
	UNION
	PRESSURE GUAGE
	THERMOMETER
P/T	PRESSURE AND TEMPERATURE TAP
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	FLEXIBLE CONNECTOR
	HOSE END DRAIN VALVE
	MANUAL AIR VENT

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MC	MECHANICAL CONTRACTOR	RA	RETURN AIR
AP	ACCESS PANEL	(N)	NEW	RE	REFER TO
C	COMMON	NC	NORMALLY CLOSED	SA	SUPPLY AIR
(E)	EXISTING	NIC	NOT IN CONTRACT	SRV	SAFETY RELIEF VALVE
EC	ELECTRICAL CONTRACTOR	NO	NORMALLY OPEN	TCC	TEMPERATURE CONTROL CONTRACTOR
ELEV	ELEVATION	NTS	NOT TO SCALE	TYP	TYPICAL
EQ	EQUIPMENT	OA	OUTSIDE AIR		
GC	GENERAL CONTRACTOR	PRV	PRESSURE REDUCING VALVE		

NOTE:

PACKAGED AIR COOLED CHILLER

SYMBOL	MANUFACTURER	MODEL	NOMINAL TONS	COOLING CAPACITY	EVAPORATOR EWT (F)	EVAPORATOR LWT (F)	EVAPORATOR WPD (INWG)	EVAPORATOR GPM	EVAPORATOR MINIMUM FLOW GPM	EVAPORATOR GLYCOL %	EVAPORATOR FOULING FACTOR	CONDENSER EAT (F)	CONDENSER CFM	CONDENSER NUMBER OF FANS	CONDENSER KW	COMPRESSOR TYPE	COMPRESSOR NO. STAGES UNLOADED	REFRIGERANT TYPE	REFRIGERANT CHARGE CIRCUIT A	REFRIGERANT CHARGE CIRCUIT B	ELECTRICAL KW	ELECTRICAL ELEC VOLT/PHASE	ELECTRICAL MCA	ELECTRICAL MOCP	ELECTRICAL IPLV	ELECTRICAL AIC RATING	ELECTRICAL Isc AVAILABLE	ELECTRICAL DATE CALCULATED	ELECTRICAL INTEGRAL DISCONNECT	APPROX DIM(IN)	APPROX OPER WT (LBS)	ISOLATION	REMARKS
CH-2	CARRIER	30RB110	110	90.51	55	45	19.7	246	157.1	50	0.0001	105	74,400	6	12.93	SCROLL	5	R-410A	40	53	142	460/3P	224.1	250.0	13.9	13,449	14,000	11/13/2019	NON-FUSED	142x89	6,027	SPRING	1, 2

NOTES:

1 EQUIPMENT SELECTION BASED ON CARRIER.
2 ACCEPTABLE MANUFACTURER'S INCLUDE CARRIER, MCQUAY, TRANE AND YORK.
3 COOLING COIL CAPACITY BASED ON ARI STANDARD CONDITIONS: 105 F AMBIENT AT CONDENSER.
4 PROVIDE WITH FREEZE PROTECTION, LOW AMBIENT HEAD PRESSURE CONTROL, CONDENSER COIL TRIM PANELS AND FULL HAIL GUARDS.
5 PROVIDE BACNET COMMUNICATIONS CONTROLS FOR MS/TP.

SPECIFICATION CH-2

A. UNIT SHALL INCLUDE COMPLETELY WEATHERPROOF PAINTED STEEL CABINET, FULL HAIL GUARD.
B. CONDENSER FANS: DIRECT DRIVEN, 9-BLADE SHROUDED-AXIAL.
C. COMPRESSORS :FULLY HERMETIC SCROLL, MOTOR TEMPERATURE SENSOR,EXTERNAL VIBRATION ISOLATION RUBBER-IN-SHEAR WITH CRANKCASE HEATER. PROVIDED WITH ULTRA LOW SOUND REDUCTION ACOUSTIC BLANKET.
D. COOLER: TWO INDEPENDENT SEAMLESS COPPER SHELL-AND-TUBE DIRECT EXPANSION REGIRGERANT CIRCUITS. REPLACEABLE-CORE FILTER DRIER, MOISTURE SIGHT GLASS, ELECTRONIC EXPANSION DEVICE AND FLOW SWITCH.
E. CONDENSER: AIR-COOLED NOVATION HEAT EXCHANGER WITH TWO PASS MICROCHANNEL COILS.
F. CONTROLS: BACNET COMMUNICATIONS; ON/OFF CONTROL SWITCH, REPLACEABLE SOLID STATE CONTROLLERS, LOW AMBIENT HEAD PRESSURE CONTROL.

DIVISION 23 - MECHANICAL SPECIFICATIONS

BASIC MECHANICAL REQUIREMENTS

QUALITY ASSURANCE:
1. IF MANUFACTURER'S MATERIAL OR EQUIPMENT IS LISTED IN SCHEDULES OR ON DRAWINGS, THEY ARE TYPES TO BE PROVIDED FOR ESTABLISHMENT OF SIZE, CAPACITY, GRADE, AND QUALITY. IF OTHER ACCEPTABLE MANUFACTURERS ARE USED, COST OF ANY CHANGE IN CONSTRUCTION REQUIRED BY THEIR USE SHALL BE BORNE BY CONTRACTOR.
2. EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.

INTENT AND INTERPRETATIONS:
1. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
2. DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, OFFSET, TRANSITION, ETC. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
3. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH. IF THERE IS A CONFLICT IN THE CONTRACT DOCUMENTS, THE MORE DEMANDING AND COSTLY DESIGN SHALL BE SELECTED FOR BIDDING PURPOSES. THE CONTRACTOR SHALL IMMEDIATELY PRESENT THE CONFLICT FOUND IN THE CONTRACT DOCUMENTS TO THE ARCHITECT/ENGINEER FOR RESOLUTION. IF THE RESOLUTION FAVORS A LESS COSTLY DESIGN, THE CONTRACTOR WILL BE REQUIRED TO REIMBURSE THE DIFFERENCE IN COST.
4. DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.
5. BEFORE ANY WORK IS INSTALLED, DETERMINE THAT EQUIPMENT WILL PROPERLY FIT THE SPACE, THAT REQUIRED CLEARANCES CAN BE MAINTAINED AND THAT EQUIPMENT CAN BE LOCATED WITHOUT INTERFERENCES BETWEEN SYSTEMS, WITH STRUCTURAL ELEMENTS, OR WITH THE WORK OF OTHER TRADES.

SUBMITTALS AND SHOP DRAWINGS:
1. CONFORM TO REQUIREMENTS OF DIVISION 1 AND FOLLOWING PARAGRAPHS.
2. SUBMITTALS SHALL INCLUDE CATALOG CUT-SHEETS AND MANUFACTURER'S DATA SHEETS.
3. PRIOR TO ORDERING EQUIPMENT OR BEGINNING INSTALLATION WORK, ASSEMBLE, PREPARE, AND FURNISH SUBMITTALS AND SHOP DRAWINGS REQUIRED FOR PROJECT. FURNISH SUBMITTALS AND SHOP DRAWINGS AS REQUIRED BY INDIVIDUAL SECTIONS OF SPECIFICATIONS.
4. CONTRACTOR SHALL THOROUGHLY CHECK SUBCONTRACTORS' OR VENDORS' SUBMITTALS AND SHOP DRAWINGS AND, AFTER APPROVING THEM, SUBMIT THEM FOR REVIEW. SUBMITTALS AND SHOP DRAWINGS THAT DO NOT BEAR CONTRACTOR'S REVIEW STAMP WILL BE RETURNED NOT REVIEWED.
5. IF DISCREPANCIES BETWEEN SUBMITTALS, SHOP DRAWINGS, AND CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SUBMITTALS AND SHOP DRAWINGS ARE REVIEWED, REQUIREMENTS OF CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. SUBMITTALS AND SHOP DRAWINGS WHICH ARE SUBMITTED, BUT WHICH ARE NOT REQUIRED BY CONTRACT DOCUMENTS, WILL BE RETURNED NOT REVIEWED.
6. SUBMITTALS AND SHOP DRAWINGS SHALL IDENTIFY SPECIFIC EQUIPMENT WITH NUMBERS OR LETTERS IDENTICAL TO THOSE LISTED OR SCHEDULED ON THE DRAWINGS OR SPECIFICATIONS.

RECORD DOCUMENTS:
1. KEEP IN CUSTODY DURING ENTIRE PERIOD OF CONSTRUCTION, A CURRENT SET OF DOCUMENTS INDICATING CHANGES THAT HAVE BEEN MADE TO THE CONTRACT DOCUMENTS.
2. UPON COMPLETION OF WORK, SUBMIT THE COMPLETE SET OF RECORD DOCUMENTS TO THE ARCHITECT.

PROTECTION OF EQUIPMENT:
1. PROTECT MATERIALS AND EQUIPMENT FROM PHYSICAL DAMAGE, CONSTRUCTION DIRT, AND THE ELEMENTS FROM TIME OF SHIPMENT TO TIME INSTALLATION IS ACCEPTED BY OWNER.

GUARANTEE:
1. GUARANTEE MATERIALS, WORKMANSHIP, AND OPERATION OF EQUIPMENT INSTALLED FOR PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF ENTIRE WORK. REPAIR OR REPLACE ANY PART OF WORK WHICH SHOWS DEFECT DURING THAT TIME.
2. BE RESPONSIBLE FOR DAMAGE TO PROPERTY OF OWNER OR TO WORK OF OTHER CONTRACTORS DURING CONSTRUCTION AND GUARANTEE PERIOD.
3. FURNISH EQUIPMENT WARRANTIES TO OWNER.

MECHANICAL EQUIPMENT WIRING AND CONNECTIONS:
1. VOLTAGE CHARACTERISTICS SHALL BE AS IN ELECTRICAL DIVISION OF SPECIFICATIONS AND ON ELECTRICAL DRAWINGS.

TEMPORARY FACILITIES:
1. USE OF EXISTING EQUIPMENT FOR TEMPORARY HEATING OR COOLING: DO NOT USE NEW OR EXISTING BUILDING EQUIPMENT WITHOUT WRITTEN PERMISSION FROM OWNER.

INSPECTIONS:
1. DO NOT COVER UP OR ENCLOSE WORK UNTIL INSPECTED, TESTED, AND APPROVED. ANY WORK ENCLOSED OR COVERED UP BEFORE SUCH APPROVAL SHALL BE UNCOVERED, TESTED, AND APPROVED.

SUPERVISION:
1. SUPERVISE WORK TO PROCEED IN PROPER SEQUENCE WITHOUT DELAY TO OTHER CONTRACTORS. KEEP SUPERVISOR ON PREMISES AT ALL TIMES TO ENSURE THAT INTENT OF DRAWINGS AND SPECIFICATIONS IS BEING FOLLOWED.

INSTALLATION:
1. WORKMANSHIP SHALL BE FIRST QUALITY. APPEARANCE OF WORK SHALL BE OF EQUAL IMPORTANCE TO ITS MECHANICAL OPERATION. LACK OF QUALITY WORKMANSHIP SHALL BE REASON FOR REJECTION OF SYSTEM IN PART OR IN WHOLE.
2. INSTALL SO THAT ALL VALVES AND EQUIPMENT CAN BE EASILY ACCESSED AND SERVICED BY ADEQUATE CLEARANCE, INSTALLATION OF ACCESS DOORS, UNIONS IN PIPING, OR OTHER METHODS.
3. COMPLETE INSTALLATION SHALL FUNCTION SMOOTHLY AND NOISELESSLY.
4. INSTALL EQUIPMENT AND MATERIALS PER MANUFACTURERS' RECOMMENDATIONS AND LOCAL CODES OR REGULATIONS.
5. PLACE OR REPLACE ALL EQUIPMENT NAMEPLATES WHERE THEY CAN BE SEEN AND READ WITHOUT DIFFICULTY.

COMPLETION:
1. CLEAN INSULATION COVERING, DUCTS, PIPES, EQUIPMENT, AND ACCESSORIES TO RECEIVE PRIME COAT OF PAINT. CLEAN EQUIPMENT RECEIVED WITH PRIME COAT TO RECEIVE FINAL COAT.
2. REPLACE AIR FILTERS IF UNITS WERE OPERATED DURING CONSTRUCTION. CLEAN DUCTS, BLOWERS, AND COILS IF UNITS WERE OPERATED WITHOUT FILTERS DURING CONSTRUCTION.
3. INSTRUCT OWNER IN OPERATION AND MAINTENANCE OF MECHANICAL SYSTEMS. MINIMUM PARTICIPANTS SHALL INCLUDE MECHANICAL CONTRACTOR AND CONTROLS CONTRACTOR REPRESENTATIVES.
4. AFTER TESTS AND ADJUSTMENTS HAVE BEEN MADE AND SYSTEMS PRONOUNCED SATISFACTORY FOR PERMANENT OPERATION, REFINISH DAMAGED FINISH AND LEAVE EVERYTHING IN PROPER WORKING ORDER AND APPEARANCE.
5. ON COMPLETION OF WORK, REMOVE TOOLS, SCAFFOLDING, DEBRIS, ETC., FROM GROUNDS AND LEAVE PREMISES CLEAN.

OPERATION AND MAINTENANCE MANUALS:
1. PRIOR TO COMPLETION OF PROJECT, SUBMIT THREE (3) SETS OF MAINTENANCE MANUALS COVERING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT WITH MOVING OR MOVABLE PARTS. INSTRUCTIONS SHALL BE IN PAMPHLET OR TYPEWRITTEN FORM IN THREE RING BINDERS. INSTRUCTIONS FOR EACH UNIT SHALL BE INDICATED BY SEPARATE TAB.
2. INCLUDE TEST AND BALANCE REPORT.
3. INCLUDE STARTING, STOPPING, LUBRICATION, PREVENTATIVE MAINTENANCE SCHEDULE, AND ADJUSTMENT INFORMATION FOR EACH PIECE OF EQUIPMENT.
4. INCLUDE GUARANTEES AND WARRANTIES OF ALL EQUIPMENT.

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UCD: Perinatal Research

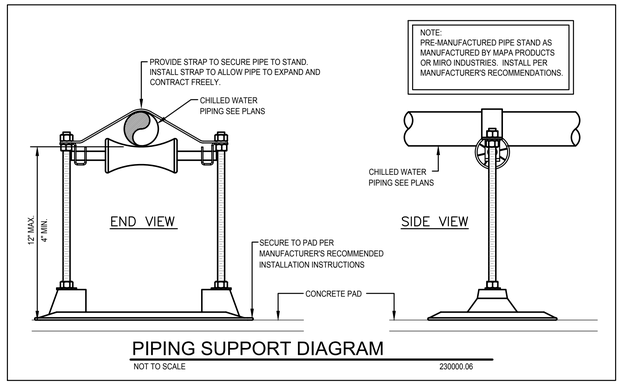
13243 East 23rd Street
Aurora, CO 80045
Perinatal Research - Chiller Replacement

ISSUE	DATE
Construction Documents	1/24/2020

MEP JOB: 19461
DESIGNED: ADS
CHECKED: TJT

COLORADO LICENSED PROFESSIONAL ENGINEER 36751 1-28-20

M-1



PIPING SUPPORT DIAGRAM

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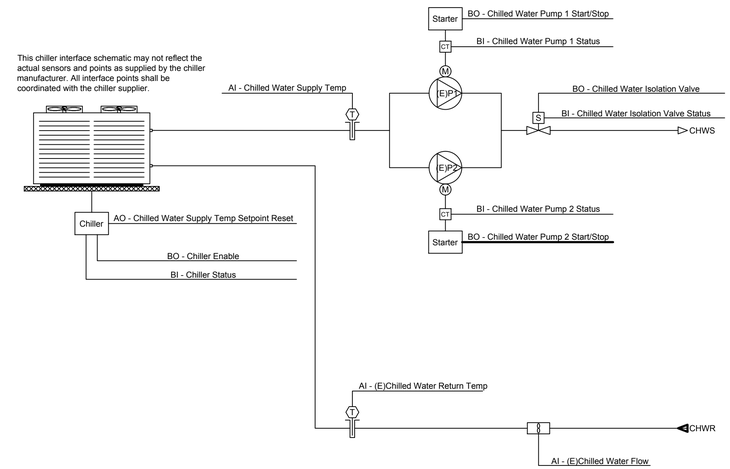

SEQUENCE OF OPERATIONS: AIR COOLED CHILLER

GENERAL:
CHILLER SHALL RUN SUBJECT TO ALL INTERNAL CONTROLS AND SAFETIES. THE FOLLOWING SAFETIES SHALL BE MONITORED BY THE BAS. SEQUENCING FOR THE CHILLED WATER SYSTEM SHALL CONFORM TO THE UNIVERSITY METERING STANDARD.

RUN CONDITIONS:
THE LEAD CHILLER SHALL BE ENABLED TO RUN WHENEVER THE OUTSIDE AIR TEMPERATURE IS 55 DEG. F (ADJ.) OR GREATER. LAG CHILLER AND LAG PUMP SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE IS 75 DEG. F (ADJ) OR GREATER.

CHILLED PUMPS ((E)P-1 AND (E)P-2):
THE CHILLER PUMPS SHALL OPERATE IN A LEAD/LAG FASHION. THE LEAD PUMP SHALL RUN FIRST. ON FAILURE OF THE LEAD PUMP, THE LAG PUMP SHALL RUN, THE LEAD PUMP SHALL BE DE-ENERGIZED AND AN ALARM GENERATED. THE LEAD PUMP AND CHILL SHALL ALTERNATE WEEKLY.

CHILLED WATER PUMP FLOW SHALL BE MAINTAINED CONTINUOUSLY. THE BAS SHALL ALTERNATE PUMPS WEEKLY BASED ON RUNTIME. SEQUENCING EQUIPMENT IN ORDER OF LEAST TO GREATEST ACCUMULATED YEARLY RUNTIME, WHERE THE LOWEST RUNTIME UNIT IS INDEXED AS LEAD/FIRST, AND THE HIGHEST RUNTIME UNIT IS INDEXED AS LAG/STANDBY.

CHILLER OPERATION:
WHEN THE CHILLED WATER SUPPLY TEMPERATURE RISES ABOVE THE SETPOINT, THE CHILLER SHALL STAGE ON AND CHILLED WATER RETURN LINE CONTROL VALVE (PROVIDED AND INSTALLED BY TC CONTRACTOR) SHALL MODULATE TO MAINTAIN THE PRIMARY CHILLED WATER SUPPLY TEMPERATURE SETPOINT. THE CHILLER MANAGER SHALL CYCLE THE COMPRESSORS, LOADERS AND FLOW RATES OF THE CHILLER FOR MAXIMUM EFFICIENCY. WHEN THE OUTSIDE AIR TEMPERATURE DROPS BELOW 55 DEG. F (ADJ.) THE CHILLER SHALL BE DISABLED AND AFTER A 5 MINUTE (ADJ) DELAY THE CHILLED WATER PUMP IS DISABLED.

CHILLED WATER SUPPLY TEMPERATURE SETPOINT
THE PRIMARY CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL 45 DEG. F (ADJ).

ALARMS:
CHILLER ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CHILLER ALARM
- LOW CHILLED WATER FLOW, IF THE CHILLED WATER FLOW IS 15% (ADJ.) LESS THAN SETPOINT
- CHILLER FAILURE, COMMANDED ON BUT STATUS OFF
- CHILLER IN HAND, COMMANDED OFF BUT STATUS ON

PUMP ALARMS SHALL BE PROVIDED AS FOLLOWS:

- PUMP FAILURE, COMMANDED ON BUT STATUS OFF
- PUMP IN HAND, COMMANDED OFF BUT STATUS ON

CHILLED WATER SYSTEM ALARMS

- HIGH CHILLED WATER SUPPLY TEMPERATURE, IF PRIMARY SUPPLY TEMPERATURE IS 55 DEG. F (ADJ.) OR GREATER.
- LOW CHILLED WATER SUPPLY TEMPERATURE, IF PRIMARY SUPPLY TEMPERATURE IS 38 DEG. F (ADJ.) OR LESS.

POINTS LIST: CHILLED WATER SYSTEM*

*POINTS LIST FOR REFERENCE ONLY AND DOES NOT INCLUDE POINTS FOR EXISTING CHILLER #1. TC CONTRACTOR TO COORDINATE FINAL POINTS LIST WITH EXISTING CONDITIONS AND UNIVERSITY STANDARDS.

POINT NAME	HARDWARE POINTS				SOFTWARE POINTS					SHOW ON GRAPHIC
	AI	AO	BI	BO	AV	BV	SCHED	TREND	ALARM	
CHILLED WATER FLOW	X							X		X
CHILLED WATER RETURN TEMPERATURE	X							X		X
CHILLED WATER SUPPLY TEMPERATURE	X							X		X
CHILLED WATER SUPPLY TEMP. SETPOINT RESET		X						X		X
CHILLED WATER PUMP 1 STATUS			X					X		X
CHILLED WATER PUMP 2 STATUS			X					X		X
CHILLER STATUS			X					X		X
CHILLED WATER PUMP 1 START/STOP				X						X
CHILLED WATER PUMP 2 START/STOP				X						X
CHILLER ENABLE				X						X
CHILLED WATER FLOW SETPOINT					X			X		X
OUTSIDE AIR TEMPERATURE					X					X
CHILLED WATER PUMP 1 FAILURE									X	
CHILLED WATER PUMP 1 RUNNING IN HAND									X	
CHILLED WATER PUMP 1 RUNTIME EXCEEDED									X	
CHILLED WATER PUMP 2 FAILURE									X	
CHILLED WATER PUMP 2 RUNNING IN HAND									X	
CHILLED WATER PUMP 2 RUNTIME EXCEEDED									X	
CHILLER FAILURE									X	
CHILLER RUNNING IN HAND									X	
CHILLER RUNTIME EXCEEDED									X	
HIGH CHILLED WATER SUPPLY TEMPERATURE									X	
LOW CHILLED WATER FLOW									X	
LOW CHILLED WATER SUPPLY TEMPERATURE									X	
TOTALS	3	1	4	3	2	0	0	9	13	13

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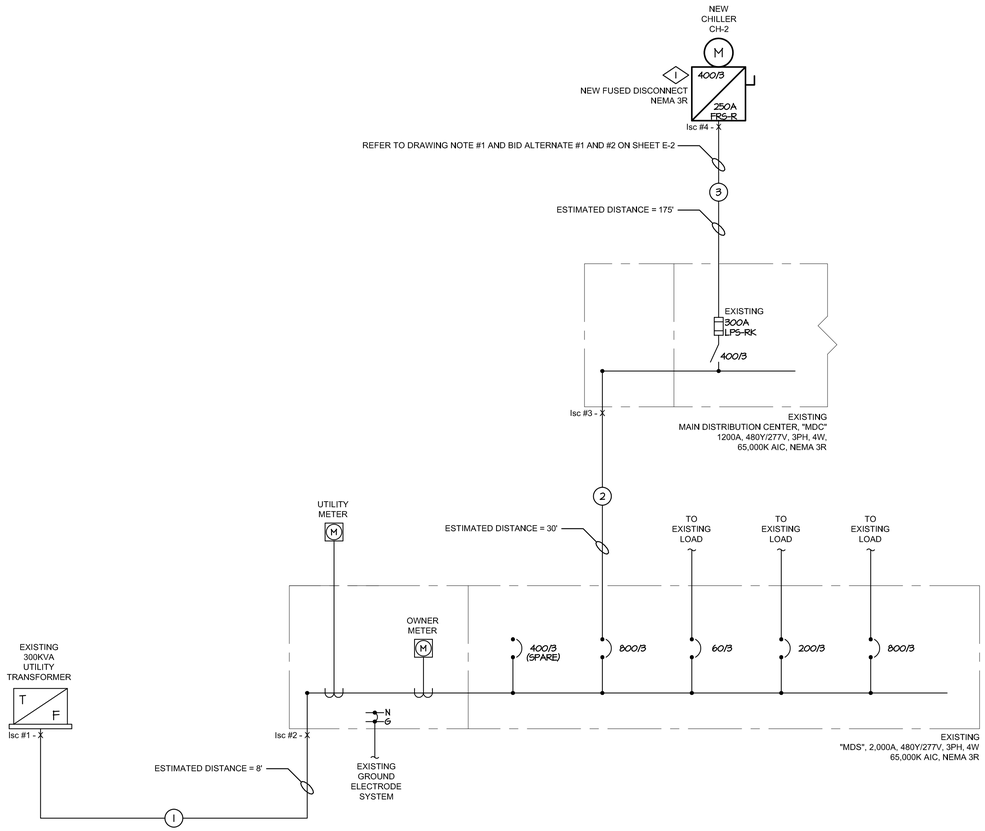

FEEDER SCHEDULE

1. 6 SETS [(4 - 400 KCMIL CU) 3"C]
2. 2 SETS [(4 - 500 KCMIL CU, 1- #1 CU GND) 3-1/2" C]
3. (3 - 350 KCMIL CU, 1- #3 CU GND) 3" C]

PARTIAL EXISTING ONE-LINE DIAGRAM

SCALE: NOT TO SCALE

ELECTRICAL GENERAL NOTES

1. PRIOR TO SUBMITTING BIDS, THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING ELECTRICAL EQUIPMENT CONDITIONS AND DIFFICULTIES THAT WILL AFFECT EXECUTION OF THE WORK. FIELD VERIFY QUANTITIES OF EXISTING ELECTRICAL DEVICES, AND ELECTRICAL EQUIPMENT. NOTIFY THE ENGINEER OF ANY EXISTING CONDITIONS, WHICH MODIFY THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR MOBILIZATION, LABOR, EQUIPMENT, AND/OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED.
2. ELECTRICAL CONTRACTOR SHALL FULLY COORDINATE WITH OWNER REPRESENTATIVES. ALL ELECTRICAL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM WITH LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, UNIFORM BUILDING CODE OR INTERNATIONAL BUILDING CODE, LOCAL BUILDING AND FIRE DEPARTMENT REQUIREMENTS. PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS OF OWNER.
3. ELECTRICAL CONTRACTOR SHALL MAINTAIN ON THE JOB AN UP TO DATE SET OF WORKING DRAWINGS, MARKED UP TO SHOW ELECTRICAL SYSTEMS AS INSTALLED. PROVIDE TENANT REPRESENTATIVES WITH ONE SET OF REPRODUCIBLES WITH "AS BUILT" PROJECT RECORD INFORMATION CLEARLY INDICATED. ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LOCAL FEES, PERMITS, AND SERVICES OF INSPECTION AUTHORITIES REQUIRED BY ELECTRICAL WORK FOR THIS ELECTRICAL CONSTRUCTION.
4. REFER TO MECHANICAL EQUIPMENT DRAWINGS FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT. DO NOT SCALE FROM THE ELECTRICAL PLANS. ADDITIONAL ELECTRICAL REQUIREMENTS ON MECHANICAL PLANS SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BID.
5. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SHALL BE SUBJECT TO MINOR MODIFICATIONS AS DIRECTED BY THE GENERAL CONTRACTOR AND OWNER REPRESENTATIVES. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT FITTING OF ALL MATERIALS, EQUIPMENT, ETC., IN THE BUILDING AND TENANT SPACE. ALL DIMENSIONS SHALL BE VERIFIED ON THE JOB. ELECTRICAL CONTRACTOR SHALL CUT, CHANNEL, CHASE, AND/OR DRILL FLOORS, WALLS, PARTITIONS, CEILINGS, OR OTHER SURFACES AS REQUIRED FOR INSTALLATION, SUPPORT, ANCHORAGE, ETC., OF WORK.
6. ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY CHANGES REQUIRED BY THE OWNER. DEMOLITION OR ABANDONING ANY ELECTRICAL AND COMMUNICATIONS CONDUIT, WIRING, CABLING, OR DEVICE MEANS TO REMOVE IN ITS ENTIRETY. REMOVE UNUSED CONDUITS IN AREAS OF WORK.
7. ELECTRICAL CONTRACTOR SHALL RE-USE EXISTING BRANCH CIRCUIT CONDUIT AND WIRING WHERE POSSIBLE. RE-ROUTE AND EXTEND AS NECESSARY FOR THIS CONSTRUCTION. PROVIDE ADDITIONAL NEW CONDUIT, WIRING, COMPONENTS, AND CONNECTIONS AS REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS, TYPICAL.
8. PROVIDE UPDATED, COMPLETE AND ACCURATE TYPED PANELBOARD CIRCUIT DIRECTORIES AT THE COMPLETION OF WORK. CLEAN EXPOSED PANELBOARD SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AS REQUIRED AND PROVIDE FILLER PLATES FOR VACANT SPACES.
9. PROVIDE UPDATED LABELING OF ALL NEW AND RELOCATED ELECTRICAL EQUIPMENT IN SCOPE OF WORK INCLUDING, BUT NOT LIMITED TO, PANELBOARDS, MOTOR CONTROL VFD'S, AND DISCONNECTS TO INDICATE THE AMPERE RATING, VOLTAGE RATING, PHASE, CONDUCTOR COLOR CODING WITHIN THE EQUIPMENT AND APPLICABLE AIC RATING.
10. ALL CONDUCTORS SHALL BE THHN/THWN INSULATED COPPER. PROVIDE WIRE COLOR CODING AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
11. ALL WIRING SHALL BE RUN CONCEALED AND IN CONDUIT. CONDUIT WITHIN MECHANICAL PENTHOUSE SHALL BE EMT. OUTDOOR CONDUIT TO BE GRC. CONNTECTIONS TO MOTORS INSIDE OF PENTHOUSE SHALL BE FLEXIBLE METAL CONDUIT. USE APPROVED TYPE COUPLINGS AND CONNECTORS. PROVIDE CONDUIT SUPPORTS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AS A MINIMUM. BOXES AND FITTINGS USED OUTDOORS SHALL BE CAST ALUMINUM WITH GASKETED WEATHER TIGHT COVERS.
12. ALL JUNCTION BOX COVERS SHALL BE INDELIBLY LABELED WITH PANEL DESIGNATION AND BRANCH CIRCUIT NUMBER OF EACH WIRE WITHIN THE JUNCTION BOX. ALL HOME RUNS SHALL BE IN EMT CONDUIT, TYPICAL.
13. NEUTRALS, RACEWAYS, AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE HARD WIRED GROUND CONNECTIONS TO ALL DEVICES AND SEPARATE INSULATED GROUND WIRE CONTINUOUS IN EACH CIRCUIT (#12 AWG CU MINIMUM "GREEN" TRACER GROUND).
14. MINIMUM WORKING CLEARANCES PER THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE SHALL BE PROVIDED AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT.
15. ALL CIRCUIT BREAKER LUGS SHALL BE RATED FOR A MINIMUM OF 75 DEGREE CELSIUS.

DRAWING NOTES

1. PROVIDE NEW 400A/3P FUSED DISCONNECT WITH 250A FRS-R FUSES. RE-USE EXISTING FEEDER. PROVIDE LOAD SIDE WHIP TO EQUIPMENT CONNECTION POINT. PROVIDE CONDUCTORS, CONDUIT, COMPONENTS AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.

ELECTRICAL SYMBOLS LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
HOMERUN, SOLID 120/208 V, OPEN 277/480 V		RECESSED FLUORESCENT FIXTURE	
CONDUIT RISER, TURNED UP, TURNED DOWN		SURFACE/PENDANT FLUORESCENT FIXTURE	
JUNCTION BOX, CEILING OR WALL	J	FLUORESCENT STRIP FIXTURE	
JUNCTION BOX, WITH COVER PLATE	C	DOWNLIGHT/PENDANT FIXTURE	
SIMPLEX RECEPTACLE		WALL MOUNTED FIXTURE	
DUPLEX RECEPTACLE		WALLWASH FIXTURE	
DOUBLE DUPLEX RECEPTACLE		EXIT SIGN WITH "FROG EYE"	
DUPLEX RECEPTACLE ON DEDICATED CIRCUIT		TRACK LIGHTING	
SPECIAL RECEPTACLE - AS NOTED ON PLANS		EXIT SIGN	
TELEPHONE OUTLET, SINGLE GANG BOX, 3/4" CONDUIT STUB TO ACCESSIBLE CEILING.		EMERGENCY BATTERY PACK, "FROG EYE"	
DATA OUTLET, SINGLE GANG BOX, 3/4" CONDUIT STUB TO ACCESSIBLE CEILING.		POLE MOUNTED OUTDOOR FIXTURE	
COMBINATION TELE/DATA OUTLET, SINGLE GANG BOX, 3/4" CONDUIT, STUB TO ACCESSIBLE CEILING.		SWITCH, SINGLE POLE	S
COMBINATION POWER/COMMUNICATIONS FLOOR BOX		TWO POLE SWITCH	S2
POKE THRU DEVICE		THREE WAY SWITCH	S3
COMBINATION TELEPHONE/DATA FLOOR BOX		FOUR WAY SWITCH	S4
TELEPHONE FLOOR BOX		KEYED SWITCH	SK
WATER HEATER	WH	DIMMER SWITCH	SD
PANELBOARD		THERMAL OVERLOAD SWITCH	STO
SWITCHBOARD		SWITCH WITH PILOT LIGHT	SP
DISCONNECT SWITCH, NON-FUSED		FIRE HORN WITH STROBE LIGHT	FH
DISCONNECT SWITCH, FUSED		MANUAL PULL STATION/FLOW AND TAMPER	
TRANSFORMER		SMOKE DETECTOR	S
MOTOR STARTER		HEAT DETECTOR	H
CARD READER	CR	CEILING MOUNTED FIRE ALARM SPEAKER	F
MOTOR	M	CEILING MOUNTED FIRE ALARM SPEAKER/STROBE	F
PULLBOX	PB	CEILING/WALL MOUNTED FIRE ALARM STROBE	
TIME CLOCK	TC	REMOTE LAMP	
METER		DUCT DETECTOR	F
DISCONNECT SWITCH & FUSE (DIAGRAMMATIC)		FIRE/SMOKE DAMPER	
CURRENT TRANSFORMER, CTS (DIAGRAMMATIC)		WALL MOUNTED OCCUPANCY SENSOR	OS
CIRCUIT BREAKER (DIAGRAMMATIC)		CEILING MOUNTED OCCUPANCY SENSOR	OS
PHOTOCELL	P	PAGING OR MUSIC SPEAKER	S
TELEVISION CABLE OUTLET			

ABBREVIATIONS:

AC	ABOVE COUNTER	GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER	T/D	TELE/DATA JUNCTION BOX
AFF	ABOVE FINISHED FLOOR	NL	NIGHT LIGHT	TR	TAMPER RESISTANT
EWH	ELECTRIC WATER HEATER	RL	RELOCATED DEVICE OR EQUIPMENT	WP	WEATHER PROOF
GND	GROUND	SM	SURFACE MOUNT		

Isc CALCULATION - 3 PHASE

Point #1 - At The Utility Transformer

Isc = 22,600

Point #2 - At the "MDS"

f = [1.732 X length X Isc(prev)] / [# runs X wire factor X voltage]
f = 1.732 X 8 X 22,600 / 6 X 24,246 X 480
f = 0.004

M = 1/(1+f)
M = 0.996

Isc = Isc(prev) x M
Isc = 22,499

Point #3 - At the Main Distribution Center "MDC"

f = [1.732 X length X Isc(prev)] / [# runs X wire factor X voltage]
f = 1.732 X 30 X 22,499 / 2 X 22,185 X 480
f = 0.055

M = 1/(1+f)
M = 0.948

Isc = Isc(prev) x M
Isc = 21,329

Point #4 - At Chiller CH-2

f = [1.732 X length X Isc(prev)] / [# runs X wire factor X voltage]
f = 1.732 X 150 X 21,329 / 1 X 19,103 X 480
f = 0.586

M = 1/(1+f)
M = 0.631

Isc = Isc(prev) x M
Isc = 13,449

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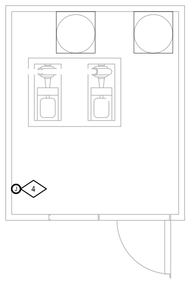
ISSUE	DATE
Construction Documents	1/24/2020

MEP JOB: 19461
DESIGNED: MTS
CHECKED: DGM

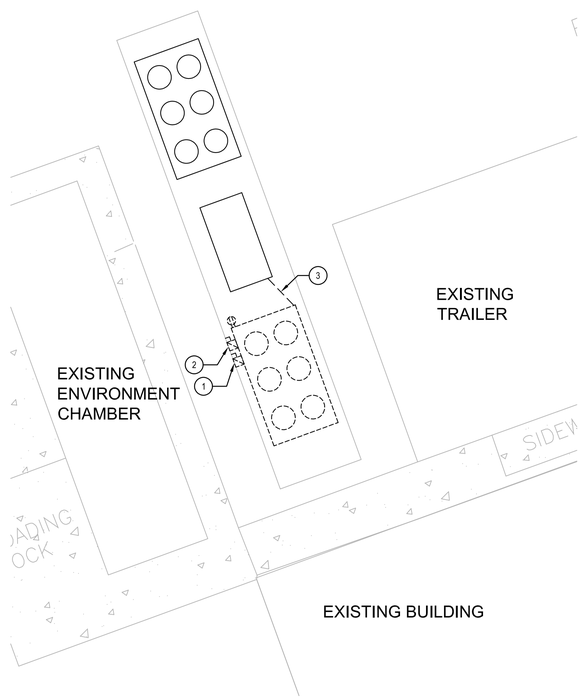
COLORADO REGISTERED PROFESSIONAL ENGINEER
DAVID G. GRAHAM
16134
1-24-20

E-1



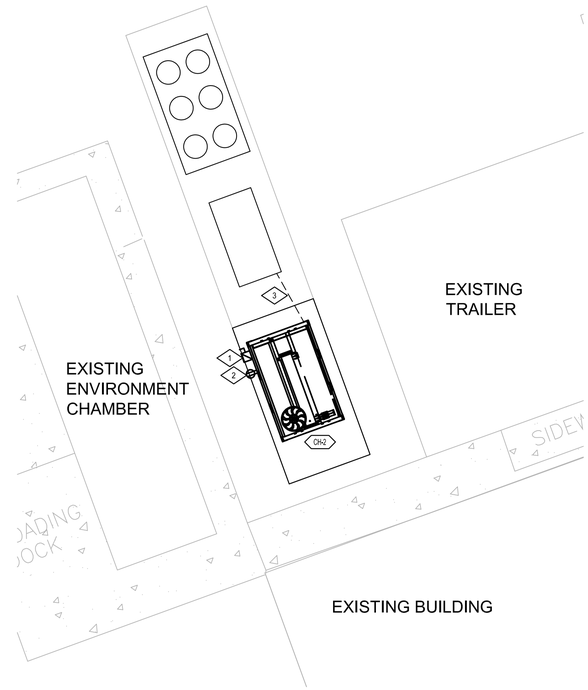
ENLARGED PUMP HOUSE PLAN

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



DEMO CHILLER SITE PLAN

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



NEW CHILLER SITE PLAN

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

MECHANICAL EQUIPMENT SCHEDULE

DESIGNATION	DESCRIPTION	VOLTAGE	PH	HP	kVA	FLA (MCA)	AIC (A)	Isc (A)	DATE	CONDUCTORS	CONDUIT	SWITCH	CB	FUSE SIZE/TYPE	REMARKS
CH-2	CHILLER	480	3	--	--	(224.1)	14,000	13,449	11/13/2019	(3-350 KCMIL, 1-#4 GND)	3"	400/3		250A FRS-R	1,2

REMARKS:

1. RE-USE THE EXISTING ELECTRICAL FEED FROM THE OLD CHILLER. OLD CONCRETE EQUIPMENT PAD IS GOING TO BE REMOVED AND REPLACED. ELECTRICAL FEEDER SHALL REMAIN IN PLACE DURING DEMOLITION OF OLD EQUIPMENT PAD, AND CONSTRUCTION OF NEW EQUIPMENT PAD. CONTRACTOR TO VERIFY CONTINUITY ON ALL PHASES AND GROUND BEFORE NEW EQUIPMENT PAD IS POURED. REPLACE CONDUCTORS IF NECESSARY. CONTRACTOR SHALL INCLUDE A SEPARATE LINE ITEM IN THE BID FOR REPLACEMENT OF THE UNDERGROUND FEEDERS BACK INTO THE BUILDING. COORDINATE EXACT LOCATION OF ELECTRICAL CONNECTION WITH CHILLER INSTALLER PRIOR TO ROUGH-IN.

2. REFER TO BID ALTERNATE #1 AND #2, THIS SHEET

◯ DEMOLITION DRAWING NOTES

1. DISCONNECT LINE SIDE OF 30A/3P DISCONNECT. ELECTRICAL FEEDER SHALL BE RE-USED TO FEED NEW DUPLEX RECEPTACLE ON NEW CHILLER. OLD CONCRETE EQUIPMENT PAD IS GOING TO BE REMOVED AND REPLACED. ELECTRICAL FEEDER SHALL REMAIN IN PLACE DURING DEMOLITION OF OLD EQUIPMENT PAD, AND CONSTRUCTION OF NEW EQUIPMENT PAD. COORDINATE WITH DEMOLITION OF EXISTING EQUIPMENT PAD TO ENSURE FEEDER REMAINS UN-DAMAGED.

2. DISCONNECT LINE SIDE OF 400A/3P DISCONNECT. ELECTRICAL FEEDER SHALL BE RE-USED TO FEED NEW CHILLER. OLD CONCRETE EQUIPMENT PAD IS GOING TO BE REMOVED AND REPLACED. ELECTRICAL FEEDER SHALL REMAIN IN PLACE DURING DEMOLITION OF OLD EQUIPMENT PAD, AND CONSTRUCTION OF NEW EQUIPMENT PAD. COORDINATE WITH DEMOLITION OF CONCRETE EQUIPMENT PAD TO ENSURE FEEDER REMAINS UN-DAMAGED.

3. EXISTING UNDERGROUND CONTROLS CONDUIT SHALL BE EXCAVATED BACK TO PUMP HOUSE. DO NOT REMOVE. CONTROLS CONDUIT WILL BE RE-USED WITH NEW CHILLER.

◇ DRAWING NOTES

1. PROVIDE NEW 400A/3P FUSED DISCONNECT WITH 250A FRS-R FUSES. RE-USE EXISTING FEEDER. CONTRACTOR TO MEGGER TEST THE EXISTING CONDUCTORS AND VERIFY CONTINUITY ON ALL PHASES AND GROUND BEFORE NEW EQUIPMENT PAD IS POURED. REPLACE CONDUCTORS IF NECESSARY. REFER TO BID ALTERNATE #1 AND #2, THIS SHEET. PROVIDE LOAD SIDE WHIP TO EQUIPMENT CONNECTION POINT. PROVIDE CONDUCTORS, CONDUIT, COMPONENTS AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE EXACT LOCATION OF ELECTRICAL CONNECTION WITH CHILLER INSTALLER PRIOR TO ROUGH-IN.

2. PROVIDE NEW GFCI RECEPTACLE IN WEATHER PROOF COVER. RE-USE 20A/1PH CIRCUIT SERVING OLD CHILLER CONTROL PANEL. CONTRACTOR TO VERIFY CONTINUITY ON THE PHASE CONDUCTOR, NEUTRAL AND GROUND BEFORE NEW EQUIPMENT PAD IS POURED. REPLACE CONDUCTORS IF NECESSARY. CONTRACTOR SHALL INCLUDE A SEPARATE LINE ITEM IN THE BID FOR REPLACEMENT OF THE UNDERGROUND FEEDERS BACK INTO THE BUILDING IF NECESSARY. PROVIDE CONDUCTORS, CONDUIT, COMPONENTS AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE EXACT LOCATION OF ELECTRICAL CONNECTION WITH CHILLER INSTALLER PRIOR TO ROUGH-IN.

3. EXTEND AND RE-CONNECT EXISTING CONTROLS CONDUIT TO NEW CHILLER. COORDINATE EXACT LOCATION AND INSTALLATION WITH CHILLER INSTALLER PRIOR TO ROUGH-IN.

4. RE-USE EXISTING CONTROL PANEL CIRCUIT TO FEED NEW CONTROL PANEL. COORDINATE EXACT LOCATION AND INSTALLATION WITH CONTROLS INSTALLER PRIOR TO ROUGH-IN. EXTEND CIRCUIT AS NECESSARY.

BID ALTERNATES

1. CONTRACTOR SHALL INCLUDE A SEPARATE LINE ITEM IN THE BID FOR REPLACEMENT OF THE 350 KCMIL UNDERGROUND FEEDERS WITH NEW (3-350 KCMIL CU, 1-#4 CU GND) CONDUCTORS IN EXISTING CONDUIT BACK INTO THE BUILDING MAIN DISTRIBUTION CENTER "MDC" IF NECESSARY.

2. CONTRACTOR SHALL INCLUDE A SEPARATE LINE ITEM IN THE BID FOR REPLACEMENT OF THE 350 KCMIL UNDERGROUND FEEDERS WITH NEW (3-250 KCMIL CU, 1-#4 CU GND) CONDUCTORS IN EXISTING CONDUIT BACK INTO THE BUILDING MAIN DISTRIBUTION CENTER "MDC". ADD PRICE FOR REPLACING 300A FUSES IN THE "MDC" WITH NEW 250A FUSES.

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