



POUDRE SCHOOL DISTRICT

FORT COLLINS HIGH SCHOOL

CHILLER REPLACEMENT

300 LAMBKIN WAY
FORT COLLINS, COLORADO 80525



REVISIONS

No.	Date	Description

PSD FCHS - CHILLER REPLACEMENT
 300 LAMBKIN WAY
 FORT COLLINS, CO 80525

PROJECT COVER SHEET

JOB NO. 220099
 DATE 5/25/22
 DRAWN BY JDB
 CHECKED BY CMR

ME000

DRAWING INDEX:

ME000	PROJECT COVER SHEET
MP001	MECHANICAL COVER SHEET
MD101	MECHANICAL DEMOLITION PLAN
M101	MECHANICAL PLAN
M102	OVERALL MECHANICAL PLAN
M501	HVAC DETAILS
M601	CONTROL DETAILS
M701	MECHANICAL SCHEDULES
E001	ELECTRICAL GENERAL NOTES AND SYMBOLS
E101	POWER PLAN

OWNER:

POUDRE SCHOOL DISTRICT
 2445 LAPORTE AVENUE
 FORT COLLINS, COLORADO 80521
 PHONE: 970 | 490 | 3017
 EMAIL: jlee@psdschools.org

Jason Lee
 Construction Manager

MECHANICAL:

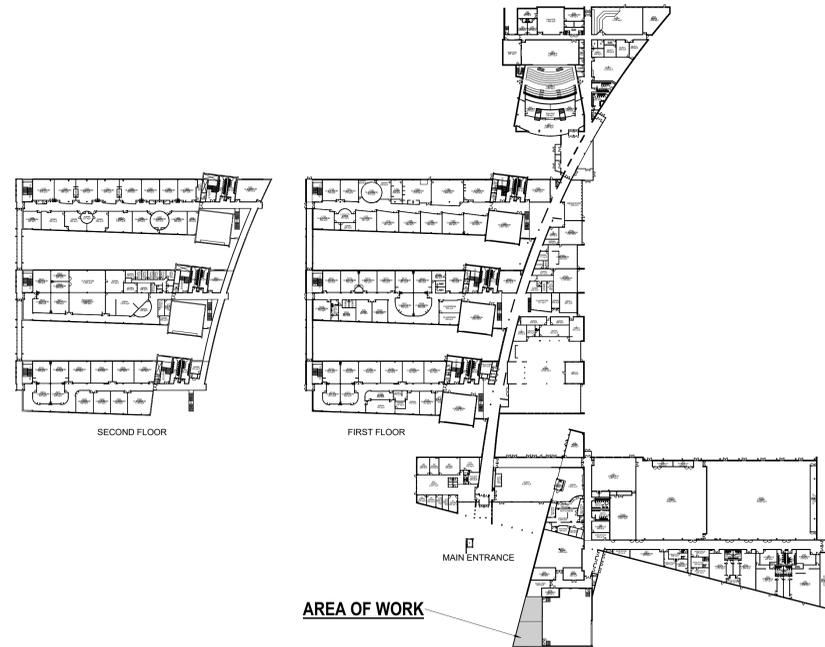
PEC | PA
 351 LINDEN STREET | SUITE 100
 FORT COLLINS, COLORADO 80524
 PHONE: 970 | 232 | 9558
 EMAIL: jake.brown@pec1.com

Jake Brown
 Mechanical Engineer

ELECTRICAL:

PEC | PA
 351 LINDEN STREET | SUITE 100
 FORT COLLINS, COLORADO 80524
 PHONE: 970 | 232 | 9558
 EMAIL: mitchell.hanson@pec1.com

Mitchell Hanson
 Electrical Engineer



CODE USED:

2021 IBC, IFC, IMC, IEBC, IECC, IRC, 2018 IFCG, 2020 NEC, 2021 NFPA 170,
 2018 COLORADO PLUMBING CODE, 2018 COLORADO FUEL GAS CODE,
 ICC/ANSI A117.1 -2017 ACC. STANDARDS
 POUDRE SCHOOL DISTRICT

BUILDING OWNER:
 BUILDING OCCUPANCY: E
 BUILDING AREA: 285,000
 BUILDING TYPE: II-B
 NUMBER OF STORIES: 2
 BUILDING HEIGHT: VARIES
 FIRE RATED ASSEMBLIES: NO ARCHITECTURAL WORK BEING PERFORMED. MECHANICAL EQUIPMENT REPLACEMENT ONLY
 FULLY SPRINKLERED THROUGHOUT
 FIRE SPRINKLERS: EXISTING HORN AND STROBE NOTIFICATION
 FIRE ALARM: EXISTING HORN AND STROBE NOTIFICATION
 AREA OF WORK: 2,100 SF +/-
 ALTERATION LEVEL: LEVEL 1 ALTERATION PER 2021 IEBC CHAPTER 6, 602.1
 IEBC 301.3.2 AREA OF WORK COMPLIANCE METHOD:
 CHAPTER 7 ALTERATIONS - LEVEL 1
 2021 IECC C401.2.2 ASHRAE 90.1 METHOD (HVAC COMCHECK)

KEY PLAN AND CODE INFORMATION:



VICINITY MAP:



HVAC & PLUMBING SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(P)	REFER TO PLAN NOTES	(111)	ROOM CALLOUT
(E)	EXISTING EQUIPMENT OR MATERIAL DESIGNATION	△	REVISION NUMBER
---	EXISTING COMPONENT PEN WEIGHT	○	CONNECT NEW TO EXISTING. VERIFY EXACT LOCATION.
---	DEMOLITION PEN WEIGHT - COMPONENT MAY ALSO BE SHADED	○	DISCONNECT FROM EXISTING. VERIFY EXACT LOCATION.
TCC	TEMPERATURE CONTROL CONTRACTOR	GC	GENERAL CONTRACTOR
EC	ELECTRICAL CONTRACTOR	MC	MECHANICAL CONTRACTOR
PC	PLUMBING CONTRACTOR	TYP. / (TYP)	TYPICAL ALL INSTANCES
UNO	UNLESS NOTED OTHERWISE	ETR	EXISTING TO REMAIN
---	CWS	---	CS
---	CHILLED WATER SUPPLY LINE (CWS)	---	COOLING TOWER WATER SUPPLY (CS)
---	CWR	---	CR
---	CHILLED WATER RETURN LINE (CWR)	---	COOLING TOWER WATER RETURN (CR)
---	CWP / CWTP	---	CP
---	CHILLED WATER PRIMARY PUMP / SECONDARY PUMP	---	CHILLED WATER PUMP
---	DOUBLE CHECK BACKFLOW ASSEMBLY	---	BALL VALVE
---	REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY	---	CIRCUIT SETTER - CALIBRATED BALANCE VALVE
---	GAS COCK / GLOBE VALVE	---	BUTTERFLY VALVE
---	VALVE IN DROP / VALVE IN RISER	---	2-WAY / 3-WAY CONTROL VALVE (PNEUMATIC)
---	GATE VALVE - SHUT OFF VALVE	---	2-WAY / 3-WAY CONTROL VALVE (ELECTRIC)
---	3 PIECE BALL VALVE / HYDRAULIC VALVE	---	CHECK VALVE
---	EMERGENCY VALVE WITH FIRE LINK	---	PRESSURE REDUCING VALVE (PRV) / WAFER CHECK VALVE
---	STRAINER / UNION OR FLANGE CONNECTION	---	AUTOMATIC FLOW CONTROL VALVE
---	PLUG VALVE	---	CALIBRATED ORIFICE PLATE FLOW METER
---	SPRING HANGER / PIPE HANGER	---	THERMOMETER / PRESSURE GAUGE
---	CAP / CAPPED OUTLET	---	CONCENTRIC REDUCER OR INCREASER / ECCENTRIC REDUCER
---	PIPE DROP / PIPE RISE	---	TOP CONNECTION, 45° OR 90° / BOTTOM CONNECTION, 45° OR 90°
---	DIRECTION OF FLOW / ANCHOR	---	SIDE CONNECTION
---	DOMESTIC COLD WATER LINE (CW)	---	ABOVE FLOOR WASTE LINE (W)
---	DOMESTIC HOT WATER LINE (HW)	---	BELOW FLOOR WASTE LINE (W)
---	HOT WATER RECIRC LINE (HWC)	---	PLUMBING VENT LINE (V)
NOT ALL MAY BE USED ON PROJECT			

GENERAL NOTES

- VERIFY JOB SITE CONDITIONS AND DIMENSIONS BEFORE BEGINNING WORK. PLANS ARE SCHEMATIC IN NATURE. LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS.
- NO PIPING SHALL PENETRATE STRUCTURAL MEMBERS.
- PROVIDE MISCELLANEOUS CUTTING, PATCHING AND REPAIRING OF FINISHES, ROOF, WALLS, ETC., AS REQUIRED TO ACCOMMODATE THE NEW WORK.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT LOCATION, CONFIGURATION AND ROUTING OF EXISTING SYSTEMS REQUIRED TO REMAIN IN OPERATION DURING THE PROJECT TO PREVENT DAMAGE DURING DEMOLITION AND PHASING.
- REMOVE ALL EXISTING EQUIPMENT AND PIPING THAT IS NOT REQUIRED FOR A WORKING INSTALLATION.
- COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
- ALL CUTTING AND PATCHINGS SHALL BE CLOSELY COORDINATED WITH THE G.C.
- COORDINATE ROUTING OF PLUMBING, AND HVAC PIPING WITH DUCTWORK, LIGHTS, ARCHITECTURAL CEILING AND STRUCTURAL ELEMENTS. PIPING SHALL RISE AND DROP, JOG OR OFFSET AS REQUIRED TO AVOID CONFLICTS. DUCTWORK SHALL TAKE PRECEDENCE OVER ALL PIPING, EXCEPT WHERE GRADE MUST BE MAINTAINED FOR DRAINAGE. REWORK OF INSTALLED WORK TO RESOLVE CONFLICTS ARISING FROM LACK OF COORDINATION SHALL NOT JUSTIFY AN INCREASE IN THE CONTRACT AMOUNT.
- ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRE STOPPED BY THE TRADE MAKING THE PENETRATION. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
- DO NOT ROUTE PIPING OVER ELECTRICAL PANELS OR EQUIPMENT. PIPING SHALL NOT BE ROUTED THROUGH ELECTRICAL ROOMS, TELECOM ROOMS OR ELEVATOR EQUIPMENT ROOMS UNLESS SPECIFICALLY SERVING THAT ROOM. COORDINATE WITH E.C. PROVIDE WATERTIGHT DRIP PAN WITH DRAIN TO NEAREST APPROVED RECEPTOR WHERE REQUIRED.
- COORDINATE SIZE AND LOCATION OF MECHANICAL EQUIPMENT PADS WITH G.C.
- ALL WORK IS TO CONFORM WITH APPLICABLE CODES AND STANDARDS.
- ALL EQUIPMENT SUPPORT STANDS SHALL BE PRIMED AND PAINTED WITH EPOXY ENAMEL.
- WHERE HYDRONIC RUNOUT SIZES ARE NOT INDICATED, SIZE PER THE FOLLOWING:
UP TO 3 GPM - 3/4"; UP TO 6 GPM - 1"; UP TO 10 GPM - 1-1/4"; UP TO 17 GPM - 1-1/2"
- HYDRONIC PIPING SHALL BE MAINTAINED FULL SIZE UP TO COIL CONNECTIONS, SHUT-OFF VALVES, STRAINERS, BALANCE VALVES, ETC. WILL NOT BE ALLOWED TO REDUCE FROM LINE/RUNOUT SIZE. CONTROL VALVES MAY BE DOWN SIZED FOR FLOW RATE, NOT TO EXCEED 4 PSIG PRESSURE DROP AT DESIGN FLOW.
- TEMPERATURE CONTROLS CONTRACTOR (T.C.C.) SHALL FURNISH AND INSTALL ALL LOW VOLTAGE WIRING AND ASSOCIATED CONDUIT REQUIRED FOR MECHANICAL CONTROL SYSTEM. WIRING SHALL BE IN CONDUIT INSIDE WALLS, IN ROOMS WITH EXPOSED CEILINGS, AND ABOVE HARD CEILINGS. LINE VOLTAGE WIRING AND ASSOCIATED CONDUIT SHALL BE PROVIDED AND INSTALLED BY E.C. CONTROL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATIONS.
- CONTRACTOR TO INSTALL TEMPORARY FILTERS OVER ALL RETURN AND EXHAUST GRILLES IN WORK AREA DURING CONSTRUCTION.
- THESE DRAWINGS ARE ACCOMPANIED BY SPECIFICATIONS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
- HYDRONIC AND PLUMBING VALVES, CIRCUIT SETTERS AND OTHER ACCESSORIES REQUIRING ACCESS SHALL BE ACCESSIBLE VIA A STANDARD LADDER SO COMPONENTS MAY BE REPLACED, REPAIRED, OR UTILIZED WITHOUT THE NEED FOR EXTENSIVE CEILING REMOVAL, SCAFFOLDING OR A MAN LIFT. WHERE POSSIBLE NO MORE THAN 48" ABOVE THE FINISHED CEILING.

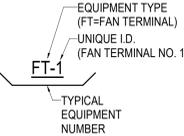
SHEET LIST

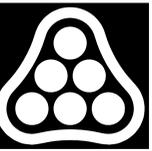
ME000	PROJECT COVER SHEET
MP001	MECHANICAL COVER SHEET
MD101	MECHANICAL DEMOLITION PLAN
M101	MECHANICAL PLAN
M102	OVERALL PLAN
M501	HVAC DETAILS
M601	CONTROL DETAILS
M701	MECHANICAL SCHEDULES

GENERAL DEMOLITION NOTES

- VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. BRING ANY DISCREPANCIES FROM THE DRAWINGS AND NOTES TO THE ARCHITECT IMMEDIATELY. MINOR CHANGES IN THE SCOPE OF THE DEMOLITION WORK SHALL NOT JUSTIFY AN ADDITIONAL COST.
- REMOVAL OF EXISTING FIXTURES AND EQUIPMENT WILL REQUIRE ISOLATING THE PIPING RISERS OR MAINS VIA SHUT-OFF VALVES. INSTALL NEW ISOLATION VALVES WHERE REQUIRED FOR COMPLETION OF WORK.
- REMOVAL OF EXISTING PLUMBING FIXTURES AND EQUIPMENT, ETC. WILL REQUIRE CAPPING AND SEALING EXISTING MAINS OR BRANCHES AS NECESSARY AND REQUIRED TO ALLOW THE REMAINING SYSTEMS TO FULLY OPERATE WITHOUT DEGRADATION.
- CONTRACTOR SHALL PROVIDE PROTECTIVE PLASTIC DROP CLOTHS TO PROTECT THE EXISTING OCCUPIED AREAS AND EQUIPMENT FROM DUST AND DEBRIS DURING THE CONSTRUCTION WORK, AND SHALL CLEAN THE AREAS OF ALL CONSTRUCTION DIRT DAILY, AND UPON COMPLETION OF THE WORK.
- ALL DRAINED PIPING RISERS AND MAINS SHALL BE REFILLED WITH PROPER FLUID AND PROPERLY VENTED BY THIS CONTRACTOR, ONCE NEW WORK HAS BEEN INSTALLED.
- COORDINATE WITH GENERAL CONTRACTOR THE REMOVAL AND REPLACEMENT OF ALL EXISTING CEILINGS, WALLS, ETC. AS REQUIRED FOR MECHANICAL DEMOLITION WORK.
- EXISTING PIPING AND EQUIPMENT, ETC., NOT TO BE UTILIZED IN THE COMPLETED BUILDING SHALL BE DISCONTINUED OR REMOVED AS REQUIRED. ALL ENDS OF DISCONTINUED PIPING SHALL BE CAPPED IN THE NEAREST WALL, CEILING OR FLOOR SO THAT THEY ARE COMPLETELY CONCEALED. OPENINGS LEFT IN WALLS, CEILINGS, ETC., WHERE EQUIPMENT AND PIPE, ETC., ARE REMOVED AND NOT REPLACED, SHALL BE PATCHED NEATLY WITH SIMILAR MATERIAL TO ADJACENT CONSTRUCTION. REFER TO DRAWINGS DELINEATING NEW WORK FOR ADDITIONAL INFORMATION REGARDING SYSTEMS OR PORTIONS OF SYSTEMS WHERE USE IS TO BE DISCONTINUED.
- EXISTING PIPING, FIXTURES AND EQUIPMENT THAT ARE NOT TO BE REUSED SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE OWNER IF THEY WISH TO RETAIN OWNERSHIP OF SAME. IF NOT, EQUIPMENT SHALL BECOME THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AS SOON AS PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.
- ALL CUTTING AND CHANNELING OF EXISTING BUILDING SHALL BE ACCOMPLISHED IN A NEAT AND WORKMANLIKE MANNER WITHOUT REMOVAL OF EXCESS MATERIALS. THIS CONTRACTOR SHALL PATCH AND REPLACE WITH MATERIAL SIMILAR TO ADJACENT CONSTRUCTION.
- PORTIONS OF EXISTING SYSTEMS MAY BE SHOWN FOR CLARITY EVEN THOUGH IT MAY NOT BE NECESSARY TO MODIFY OR REVISE THEM. ALL EXISTING SYSTEMS ARE SHOWN BASED ON ORIGINAL OR REMODEL BUILDING DRAWINGS. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS.
- ALL WORK MUST BE COORDINATED AND SCHEDULED WITH THE OWNER AND OCCUPANTS OF THIS BUILDING SO AS TO PROVIDE THE LEAST AMOUNT OF DISRUPTION OF BUILDING ACTIVITIES AS POSSIBLE. MAINTAIN CONDITIONED SPACE FOR ALL OWNER OCCUPIED AREAS DURING CONSTRUCTION.
- ALL ACCESSIBLE ABANDONED PIPING AND DUCTWORK SHALL BE REMOVED AND PROPERLY DISPOSED OF.
- CAP ALL EXISTING PIPING AND DUCTWORK SHOWN TO BE DISCONNECTED AND NOT REUSED AT MAIN. ALL ACCESSIBLE PIPING SHALL BE REMOVED.
- RELOCATE EXISTING DUCTWORK, PIPING, ELECTRICAL CONDUITS, AND CABLING AS NECESSARY TO ACCOMPLISH FINAL INSTALLATION AS SHOWN. ALERT ENGINEER TO ANY MAJOR RELOCATIONS REQUIRED.

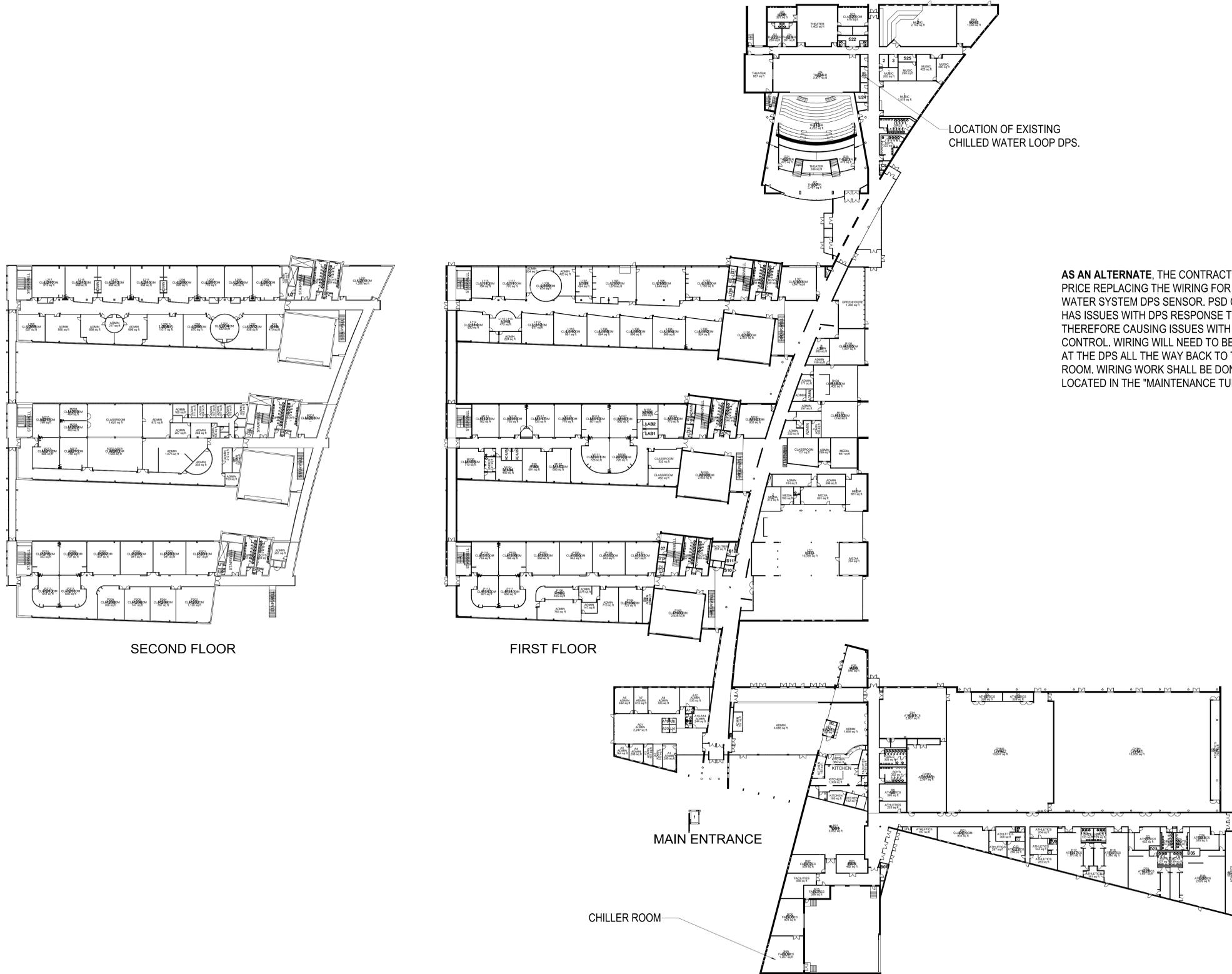
DRAWING SYMBOLS

EQUIPMENT CALLOUT	SECTIONS	DETAILS
 <p>EQUIPMENT TYPE (FT-FAN TERMINAL) UNIQUE I.D. (FAN TERMINAL NO. 1) TYPICAL EQUIPMENT NUMBER</p>	 <p>SECTION LETTER</p>  <p>SHEET NUMBER WHERE DRAWN SECTION LETTER</p>  <p>SHEET NUMBER WHERE DRAWN SHEET NUMBER WHERE REFERENCED</p>	 <p>DETAIL NUMBER</p>  <p>SHEET NUMBER WHERE DRAWN</p>  <p>DETAIL NUMBER SHEET NUMBER WHERE DRAWN SHEET NUMBER WHERE REFERENCED</p>



PEC

PROFESSIONAL ENGINEERING CONSULTANTS
351 LINDEN ST., SUITE 100
FT. COLLINS, CO 80524
970-232-9558 www.pec1.com



AS AN ALTERNATE, THE CONTRACTOR SHALL PRICE REPLACING THE WIRING FOR THE CHILLED WATER SYSTEM DPS SENSOR. PSD CURRENTLY HAS ISSUES WITH DPS RESPONSE TIME, THEREFORE CAUSING ISSUES WITH CWTP-1 CONTROL. WIRING WILL NEED TO BE REPLACED AT THE DPS ALL THE WAY BACK TO THE CHILLER ROOM. WIRING WORK SHALL BE DONE AND BE LOCATED IN THE "MAINTENANCE TUNNEL" .

REVISIONS

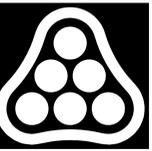
No.	Date	Description

PSD FCHS - CHILLER REPLACEMENT
300 LAMBKIN WAY
FORT COLLINS, CO 80525

OVERALL PLAN

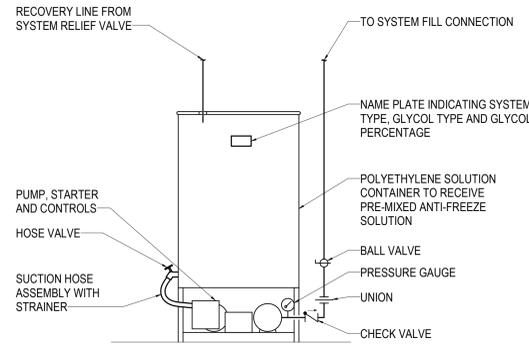
JOB NO. 220099
DATE 5/25/22
DRAWN BY JDB
CHECKED BY CMR

M102

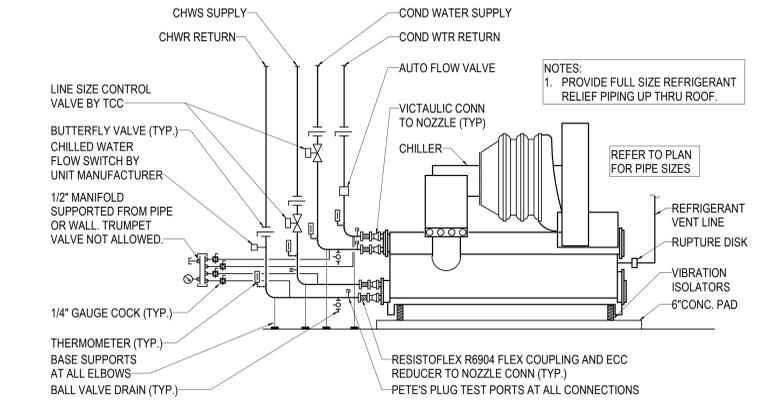


PEC

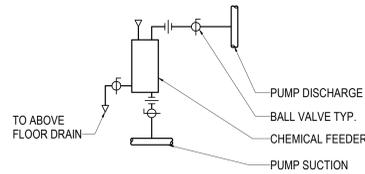
PROFESSIONAL ENGINEERING CONSULTANTS
351 LINDEN ST., SUITE 100
FT. COLLINS, CO 80524
970-232-9558 www.pec1.com



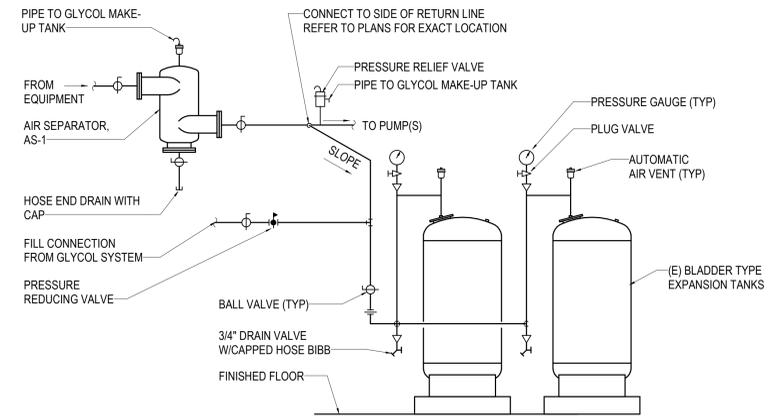
4 GLYCOL AUTOMATIC MAKE-UP PACKAGE DETAIL
NO SCALE



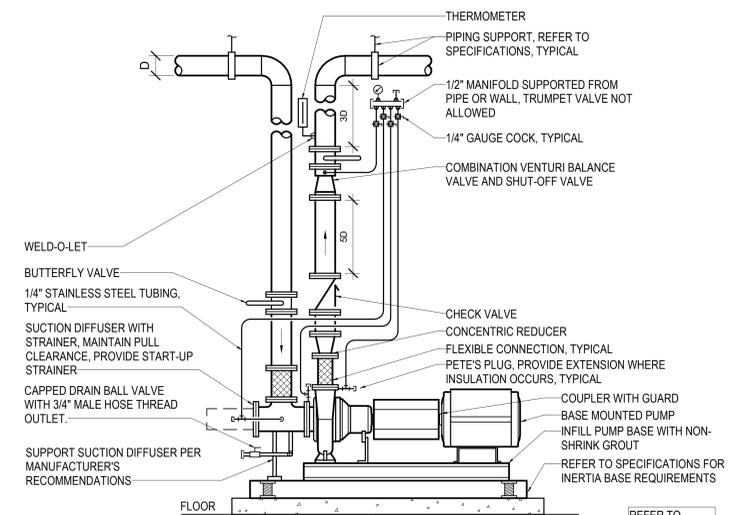
2 CHILLER PIPING DETAIL - WATER COOLED, CENTRIFUGAL
NO SCALE



1 CHEMICAL FEEDER DETAIL
NO SCALE



3 EXPANSION TANK/AIR SEPARATOR DETAIL - GLYCOL MAKE-UP
NO SCALE



5 PUMP PIPING DETAIL - BASE MOUNTED END SUCTION
NO SCALE

NOTES:
1. PUMPS CONTROLLED BY VFD'S SHALL HAVE INVERTER DUTY RATED MOTORS AND 1,600 VOLT INSULATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. REFER TO SPECIFICATIONS FOR INERTIA BASE REQUIREMENTS.

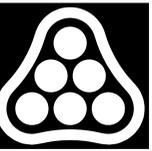
REVISIONS
No. Date Description

PSD FCHS - CHILLER REPLACEMENT
300 LAMBKIN WAY
FORT COLLINS, CO 80525

HVAC DETAILS

JOB NO. 220099
DATE 5/25/22
DRAWN BY JDB
CHECKED BY CMR

M501



PEC

PROFESSIONAL ENGINEERING CONSULTANTS
351 LINDEN ST., SUITE 100
FT. COLLINS, CO 80524
970-232-9558 www.pec1.com

CHILLER SCHEDULE - WATER COOLED

REMARKS:

1. BASIS OF DESIGN IS YORK.

MARK	MFR	MODEL	TOTAL CAPACITY (MBH)	kW/TON	NPLV (KW/Ton)	EVAPORATOR					CONDENSER					ELECTRICAL				FLUID TYPE		UNIT WT (LBS)	REMARKS
						FLOW (GPM)	PASS (IN WC)	WPD (FT WC)	EWT (°F)	LWT (°F)	FLOW (GPM)	PASS	WPD (FT WC)	EWT (°F)	LWT (°F)	VOLT	PHASE	MCA	MOP	WATER/GLYCOL	%		
CH-1	YORK	YKCCQI06-EJHS	350	0.5127	0.3518	860	2	12.8	54	44	1,064	2	17.2	80	89	460	3	313	500	PROPYLENE	15	15,389	

PUMP SCHEDULE - HVAC

REMARKS:

1. NPSHr FOR CP-1 = 8 FT.

MARK	LOC. AT ROOM	MFR.	MODEL	TYPE	FLUID	MIN. CAPACITY			MIN. SIZE CONN.		MOTOR (BY MC)					REMARKS
						FLOW (GPM)	FEET HEAD	EFF	SUCTION (IN)	DISCH. (IN)	HP	RPM	SPEED	ELECT	STARTER	
CP-1	CHILLER ROOM	BELL AND GOSSETT	e-1510 6G	BASE MOUNTED END SUCTION	WATER	1,100	54	83.7	8"ø	6"ø	20	1,150	1,200	460/3	STARTER	COOLING TOWER PUMP - CONSTANT VOLUME
CWP-1	CHILLER ROOM	BELL AND GOSSETT	e-1510 6E	BASE MOUNTED END SUCTION	PROP GLYCOL	875	40	82.7	8"ø	6"ø	15	1,150	1,200	460/3	STARTER	CHILLER PRIMARY PUMP - CONSTANT VOLUME
CWTP-1	CHILLER ROOM	BELL AND GOSSETT	e-1510 4GC	BASE MOUNTED END SUCTION	PROP GLYCOL	840	90	73.5	5"ø	4"ø	30	1,729	1,800	460/3	VFD	PROVIDE NEW VFD FOR PUMP CONTROL

MISCELLANEOUS EQUIPMENT SCHEDULE

REMARKS:

1. PROVIDE WITH RIA10-1-SAA LOW LEVEL ALARM PANEL C/W REMOTE MONITORING DRY CONTACTS AND SELECTABLE AUDIBLE ALARM.
2. TANK VOLUME = 5 GALLONS. ASME RATED
3. 8"ø COMBINATION AIR/DIRT SEPARATOR.

MARK	EQUIPMENT	MFR.	MODEL	DESCRIPTION
AS-1	AIR/DIRT SEPARATOR	SPIROTHERM	VDT8	REMARK 3
CPF-1	CHEMICAL POT FEEDER	WESSELS	CPFTA-5	REMARK 2
GF-1	GLYCOL FEEDER	AXIOM	SF100-L	REMARK 1

COOLING TOWER SCHEDULE

REMARKS:

1. PROVIDE WITH INTERNAL SERVICE PLATFORM, INTERNAL WALKWAY AND LADDER, SAFETY CAGE AND HANDRAIL.
2. COOLING TOWER TO BE INSTALLED ON EXISTING STRUCTURAL PLATFORM.
3. PROVIDE NEW VFD FOR COOLING TOWER. INSTALL IN MECHANICAL ROOM. REFER TO DRAWINGS FOR LOCATION.

MARK	MFR.	MODEL	TYPE	EVAPORATOR			ENT. AIR WETBULB (°F)	RUNOUTS		MOTOR				UNIT WT. (LBS.)	REMARKS
				WATER				SUPPLY (IN)	RETURN (IN)	HP	SPEED (RPM)	ELECT.	START.		
				FLOW (GPM)	EWT (°F)	LWT (°F)									
CT-1	BAC	XES3E-8518-05K	CROSS FLOW	1,100	90	80	65	6" (2 INLETS)	8"	10	VARIABLE	460/3	VFD	15,050	

REVISIONS

No.	Date	Description
-----	------	-------------

PSD FCHS - CHILLER REPLACEMENT

300 LAMBKIN WAY
FORT COLLINS, CO 80525

MECHANICAL SCHEDULES

JOB NO. 220099
DATE 5/25/22
DRAWN BY JDB
CHECKED BY CMR

M701

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET TITLE
E-001	ELECTRICAL GENERAL NOTES AND SYMBOLS
E-101	POWER PLAN

GENERAL NOTES

- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) & THE AMERICANS WITH DISABILITIES ACT (ADA).
- REFER TO RELATED MECHANICAL DRAWINGS FOR RELATED INFORMATION.
- REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
- E.C. SHALL REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTION OF INTERLOCKING AND CONTROLS OF MECHANICAL UNITS AND THERMOSTAT LOCATIONS.
- COORDINATE OUTLET BOX LOCATIONS WITH MASONRY TO MINIMIZE CUTTING OF BRICK OR BLOCK.
- ALL MOUNTING HEIGHTS TO CENTERLINE OF ITEM UNLESS OTHERWISE NOTED. VERIFY ALL OUTLET LOCATIONS ON THE JOB PRIOR TO ROUGH-IN.
- CONDUIT RUN W/CONDUCTORS AS INDICATED & GROUND WIRE SIZED PER N.E.C. 250.122. CONDUIT SIZE AS REQUIRED.
- WHEN INCREASED CONDUCTOR SIZES ARE SHOWN ON THE PLANS, THE LARGER CONDUCTOR SIZE SHALL BE USED THROUGHOUT THE LENGTH OF THE CIRCUIT, INCLUDING NEUTRAL AND GROUND.
- "CT" INDICATED ADJACENT TO DEVICE INDICATES DEVICE MOUNTED ABOVE BACKSPASH OF COUNTER TOP. VERIFY EXACT HEIGHT WITH ARCHITECTURAL PLANS AND ELEVATIONS.
- BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.
- JUNCTION BOX OR RECEPTACLE FOR DRINKING FOUNTAINS SHALL BE LOCATED BEHIND THE EQUIPMENT SKIRT UNLESS OTHERWISE NOTED. COORDINATE CONNECTION TYPE AND LOCATION WITH EQUIPMENT PROVIDED.
- LABEL THE FRONT OF EACH RECEPTACLE COVERPLATE WITH PANEL DESIGNATION AND CIRCUIT NUMBER USING CLEAR THERMAL TRANSFER (ELECTRONIC DYMO) LABELS WITH 1/8" HIGH BLACK LETTERS (OR CONTRASTING COLOR IF COVERPLATES ARE BLACK OR BROWN). LABELS SHALL BE SUITABLE FOR INDOOR/OUTDOOR USE. LABEL THE BACK OF EACH LIGHT SWITCH COVERPLATE WITH PANEL DESIGNATION AND CIRCUIT NUMBER USING A FINE BLACK PERMANENT MARKER.
- PROVIDE 18" LONG (MIN.) CONDUIT SLEEVES THRU ALL WALLS WHERE CABLES ARE INDICATED OR REQUIRED TO PASS THRU WALLS. PROVIDE BUSHINGS ON BOTH ENDS. SIZE CONDUIT FOR CABLES INSTALLED. AT CABLE TRAYS, PROVIDE ONE 4" CONDUIT SLEEVE FOR EACH 4" WIDTH OF CABLE TRAY. MAXIMUMS SHALL BE:
1" C. = 10 CABLES
2 1/2" C. = 20 CABLES
3" C. = 30 CABLES
4" C. = 50 CABLES
- LOCATE CABLE TRAYS 6" ABOVE CEILING. OFFSET TRAY UP AND OVER LIGHT FIXTURES AND DUCTWORK (FIELD VERIFY AND PROVIDE AS REQUIRED). IF PHYSICALLY IMPOSSIBLE TO RUN CABLE TRAY UP AND OVER, THEN PROVIDE CABLE SUPPORT HOOKS FROM STRUCTURE ABOVE, SIZED AND RATED FOR INSTALLED CABLES PLUS 25% SPARE.

SYMBOL LIST

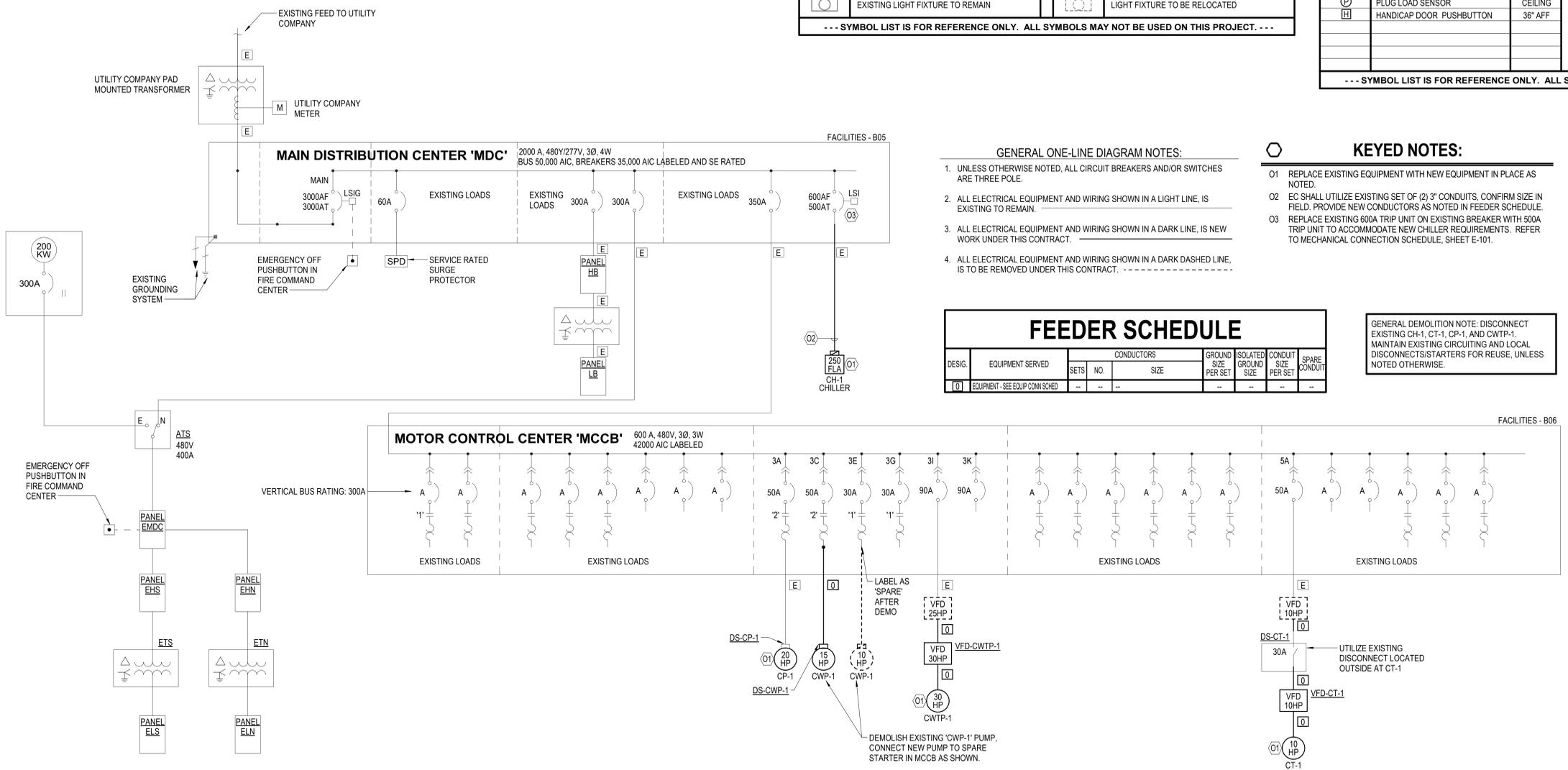
SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
ONE-LINE					
LSIG	CIRCUIT BREAKER ACCESSORIES: LSIG = LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND FAULT		# A 2P	FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES) (# OF POLES IF OTHER THAN 3)	
GFI	GROUND FAULT INDICATOR LIGHT(G=GREEN, R=RED)		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
ST	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
K	KIRK KEY INTERLOCK		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
II	CONTACTS (N.O., N.C.)		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
FUSE	FUSE		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	CIRCUIT BREAKER		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
	OVERLOADS		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	DRAWOUT CONTACTS		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
	DISCONNECT SWITCH (SEE EQUIP CONN SCHED)		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	(VOLTAGE / SWITCH SIZE / FUSE SIZE / # OF POLES - NOTED IF EQUIPMENT NOT SCHEDULED)		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
	STARTER (SEE EQUIP CONN SCHED) (VOLTAGE / STARTER SIZE / # OF POLES - NOTED IF EQUIPMENT NOT SCHEDULED)		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	GROUND CONNECTION		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
	LIGHTNING ARRESTOR		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	FEEDER DESIGNATION		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
	SURGE PROTECTIVE DEVICE		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	METER (UTILITY / PANEL MOUNTED)		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
	EQUIPMENT (SINGLE MOTOR / MULTI MOTOR OR OTHER TYPE AS NOTED)		# A 2P	STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	VARIABLE FREQUENCY DRIVE (HP SIZE IF NOT SCHEDULED)		# A 2P	CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP)	
PEN WEIGHT LEGEND					
ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK SOLID LINES ARE NEW TO BE INSTALLED			ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK DASHED LINES ARE EXISTING TO BE REMOVED		
NEW DUPLEX GROUNDED RECEPTACLE			DUPLEX GROUNDED REC TO BE REMOVED		
NEW LIGHT FIXTURE			LIGHT FIXTURE TO BE REMOVED		
ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN HALFTONE SOLID LINES ARE EXISTING TO REMAIN			ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT DASHED LINES ARE EXISTING TO BE RELOCATED		
EXISTING DUPLEX GROUNDED REC TO REMAIN			DUPLEX GROUNDED REC TO BE RELOCATED		
EXISTING LIGHT FIXTURE TO REMAIN			LIGHT FIXTURE TO BE RELOCATED		
--- SYMBOL LIST IS FOR REFERENCE ONLY. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT. ---					

SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
ABBREVIATIONS					
NL	NIGHT LIGHT - WIRE AHEAD OF CONTROLS		AFF	ABOVE FINISHED FLOOR	
EM	ON EMERGENCY POWER		AFG	ABOVE FINISHED GRADE	
WP	WEATHERPROOF		DF	DRINKING FOUNTAIN - SEE GENERAL NOTE 11	
CT	COUNTERTOP (SEE GEN. NOTE 9)		GAP	GENERATOR ANNUNCIATOR PANEL	
UON	UNLESS OTHERWISE NOTED				
W	WALL				
CONDUIT AND WIRING					
	EMERGENCY CIRCUIT	CLG/WALL		CONDUIT HOME RUN, 1 CIRCUIT, 2#12 & 1#12 GRD. - 1/2" C.	CLG/WALL
	MASTER/SLAVE FIXTURE WHIP	CEILING		CONDUIT HOME RUN, 2 CIRCUITS, 4#12 & 1#12 GRD. - 1/2" C.	CLG/WALL
	LOW VOLTAGE WIRING	CLG/WALL		CONDUIT HOME RUN, 3 CIRCUITS, 6#12 & 1#12 GRD. - 1/2" C.	CLG/WALL
	CDT RUN 2#12 & 1#12 GRD. - 1/2" C. OR CDT RUN AS NOTED ON PLAN	CLG/WALL		CONDUIT HOME RUN, 2 CIRCUITS PHASE CONDUCTORS/ NEUTRAL CONDUCTOR (#12 UON) SWITCH LEGS (#12 UON) GROUND CONDUCTOR (#12 UON)	CLG/WALL
	CDT RUN 2#12 & 1#12 GRD. - 3/4" C. OR CDT RUN AS NOTED ON PLAN	EARTH/ FLOOR			
	CONDUIT HOME RUN, 1 CIRCUIT, 2#10 & 1#10 GRD. (GEN. NOTES 7 & 8)	CLG/WALL			
	CONDUIT RUN PARTIAL CIRCUIT, 2#12 & 1#12 GRD. - 1/2" C.	CLG/WALL			
	MISC. EQUIPMENT CONNECTION				
	CONDUIT SEAL OFF				
POWER					
	SINGLE GROUNDED RECEPTACLE	18" AFF		BRANCH CIRCUIT PANEL AND PANEL DESIGNATION	72" TO TOP
	DUPLEX GROUNDED RECEPTACLE	18" AFF		ELECTRICAL DISTRIBUTION EQUIP	
	DUPLEX GROUNDED RECEPTACLE	CEILING		EQUIPMENT - SEE EQUIPMENT CONNECTION SCHEDULE	
	DOUBLE DUPLEX GROUNDED REC	18" AFF		CONDUIT SLEEVE (GEN NOTE 13)	
	GROUND FAULT DUPLEX REC	18" AFF		CABLE TRAY (GEN NOTE 14)	
	GRD FAULT DOUBLE DUPLEX REC	18" AFF		MOTOR	
	DUPLEX GRD REC BOTTOM SWITCHD	18" AFF		DISCONNECT SWITCH	
	TAMPER-PROOF DUPLEX REC	18" AFF		MANUAL STARTER	
	TAMPER-PROOF GFCI DUPLEX REC	18" AFF		CIRCUIT BREAKER	
				STARTER OR ATS (AS NOTED)	
	SPECIAL OUTLET (SEE SCHEDULE OR AS NOTED)	FLOOR/WALL		COMBINATION STARTER/DISC	
	SPECIAL DEVICE (AS NOTED)			RELAY	
	FEEDER DESIGNATION			PUSHBUTTON (1-BUTTON, 2-BUTTON)	46" AFF
	JUNCTION BOX - 1-GANG			BOX MOUNTED TRANSFORMER	
	JUNCTION BOX - 2-GANG			CONTACTOR	
	FUSTAT BUSS #SSY			METER	
	THERMOSTAT/TEMP SENSOR	46" AFF		PLUGMOLD SURFACE RACEWAY	WALL
	PLUG LOAD SENSOR	CEILING		BUSDUCT PLUG	
	HANDICAP DOOR PUSHBUTTON	36" AFF			
--- SYMBOL LIST IS FOR REFERENCE ONLY. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT. ---					



REVISIONS		
No.	Date	Description



1 EXISTING ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

PSD FCHS - CHILLER REPLACEMENT
3400 LAMBKIN WAY
FORT COLLINS, CO 80525

ELECTRICAL GENERAL NOTES AND SYMBOLS

5/25/2022 09:56:17 BIN 360/1220099-000 - FCHS Chiller Replacement/220099-000-MASTER ELEC-R21.rvt



REVISIONS		
No.	Date	Description

- POWER PLAN NOTES:**
- BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.
 - A GROUND CONDUCTOR SIZED PER N.E.C. ARTICLE 250 IS REQUIRED IN ALL CONDUITS.
 - FOR CONNECTION REQUIREMENTS TO MECHANICAL UNITS, SEE MECHANICAL EQUIPMENT CONNECTION SCHEDULE.
 - FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS, PROVIDE AN ASTM E814 COMPLIANT, U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM THAT IS SPECIFIC TO THE WALL OR CEILING CONSTRUCTION ASSEMBLY. INSTALL SYSTEM IN STRICT COMPLIANCE WITH THE U.L. ASSEMBLY INDICATED IN THE SPECIFICATIONS.
 - ALL PIPING, CONDUIT, AND OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) IN FIRE RATED WALLS OR CEILINGS SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIAL.
 - OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES OR PROTECTED BY OTHER MEANS ALLOWED BY THE SPECIFIC U.L. ASSEMBLY.
- KEYED NOTES:**
- D1 REMOVE EXISTING ALUMINUM FEEDERS TO EXISTING CHILLER. MAINTAIN PATHWAYS TO GREATEST EXTENT REASONABLE FOR REUSE WITH NEW FEEDERS.
 - P1 APPROXIMATE EXISTING CHILLER CONDUIT ROUTING (VERIFY IN FIELD). PROVIDE NEW COPPER CONDUCTORS, REFER TO ONE-LINE DIAGRAM, DETAIL 1, SHEET E-001.

EQUIPMENT CONNECTION SCHEDULE													
MECHANICAL EQUIPMENT CONNECTIONS													
UNIT DESIG	UNIT VOLTAGE	LOAD		PANEL DEVICE			DEVICE AT UNIT			FEEDER DESCRIPTION OR SEE THE FEEDER SCHEDULE	REMARKS OR SEE THE INDICATED NOTES BELOW		
		H.P.	FLA	CIRCUIT NUMBER	BKR	SW	FUSE	BKR	SW			FUSE	
CH	CHILLER												
4	1	480/3	252A, 252.0	209	MDC	500		3	400	400	3	2 3 #250 kcmil THWN, #2 AWG GRD, 3°C	VFD WITH UNIT
CP	CONDENSER WATER PUMP												
5	1	480/3	20, 27.0	22.44	MCCB-3A	50		3	2"	60	3	1 3 #4 AWG THWN, #10 AWG GRD, 1-1/4°C	USE EXIST. DISC.
CT	COOLING TOWER												
6	1	480/3	10, 14.0	11.83	MCCB-5A	50		3	30	30	3	1 3 #10 AWG THWN, #10 AWG GRD, 3/4°C	USE EXIST. DISC.
CWP	CHILLED WATER PUMP												
5	1	480/3	15, 21.0	17.45	MCCB-3C	50		3	2"	60	3	3 #6 AWG THWN, #10 AWG GRD, 1°C	
CWTP	CHILLED WATER TRANSPORT PUMP												
6	1	480/3	30, 40.0	33.25	MCCB-3I	90		3				1 3 #2 AWG THWN, #8 AWG GRD, 1-1/4°C	
GF	GLYCOL FEEDER												
7	1	120/1	4.2	0.5	LB-26	20		1		1	1	1 2 #12 AWG THWN, #12 AWG GRD, 12°C	

① ALL CONNECTIONS AND ELECTRICAL EQUIPMENT LISTED IN SCHEDULE SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. FIELD VERIFY CONNECTION REQUIREMENTS AND EQUIPMENT PROVIDED BY OTHERS PRIOR TO ROUGH-IN.

② REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTIONS OF INTERLOCKING, THERMOSTAT LOCATIONS, EXHAUST FAN CONTROL SWITCHES, AND OTHER CONTROLS OF MECHANICAL EQUIPMENT.

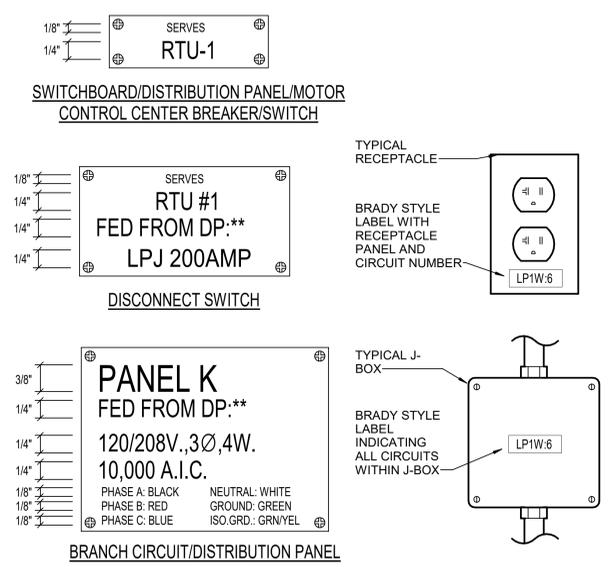
③ SIZE FUSES FOR MOTOR FUSISTS BASED ON 125% OF MANUFACTURER'S NAMEPLATE FULL LOAD AMPERAGE UNLESS OTHERWISE NOTED ON THE DRAWINGS.

④ UTILIZE EXISTING CONDUITS.

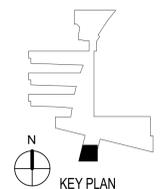
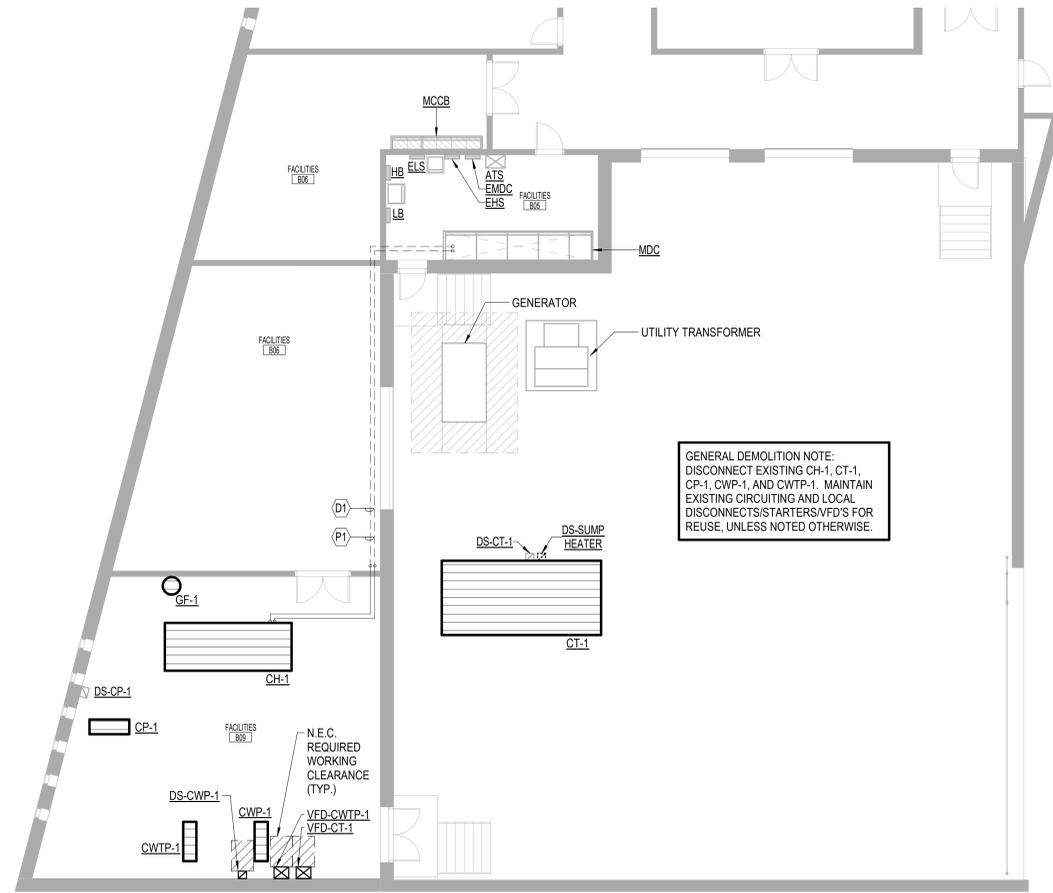
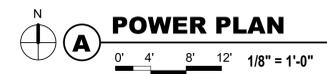
⑤ UTILIZE EXISTING STARTER IN MCCB AND EXISTING CONDUIT AND FEEDERS TO GREATEST EXTENT POSSIBLE. REPLACE EQUIPMENT IN PLACE.

⑥ UTILIZE EXISTING CIRCUIT BREAKER IN MCCB AND EXISTING CONDUIT AND FEEDERS TO GREATEST EXTENT POSSIBLE. REPLACE EQUIPMENT IN PLACE.

⑦ CONNECT TO EXISTING SPARE BREAKER AVAILABLE IN PANEL LB AS NOTED. UPDATE PANEL DIRECTORY.



1 MSC- TYPICAL NAME PLATES AND LABELS
NO SCALE



PSD FCHS - CHILLER REPLACEMENT
3400 LAMBKIN WAY
FORT COLLINS, CO 80525