UPGRADE HVAC AND BAS
COMMUNITY SUPERVISION CENTER
MISSOURI DEPARTMENT OF CORRECTIONS
POPLAR BLUFF, MISSOURI

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR
DEPARTMENT OF CORRECTIONS
AND SECONDARY EDUCATION

PROJECT MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

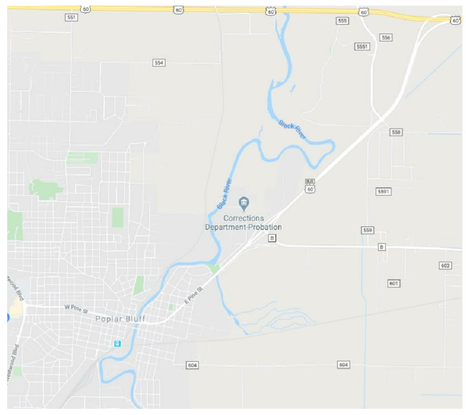
BRiC PARTNERSHIP, LLC
CONSULTING ENGINEERS

DESIGNER: BRIC PARTNERSHIP, LLC
3636 S. GEYER,
SUITE 204
ST. LOUIS, MISSOURI 63126

PROJECT NUMBER: C1911-01

VICINITY MAP

LOCATION MAP



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STATE OF MISSOURI
MICHAEL R. HOFF
NUMBER PE2012000571
PROFESSIONAL ENGINEER
4-24-20

STATE OF MISSOURI
CARL V. HAUCK
NUMBER E-16688
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT, DESIGN AND
CONSTRUCTION

DEPARTMENT OF MENTAL
HEALTH

PROJECT TITLE:

HVAC AND BAS UPGRADE,
POPLAR BLUFF

1441 BLACK RIVER IND. PARK
POPLAR BLUFF, MO

PROJECT # C1911-01

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CAD DWG FILE:
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G-000

12/30/2019

GENERAL NOTES (DEMOLITION)

1. THESE PLANS ARE DIAGRAMMATIC IN NATURE. SINCE THEY REFLECT ONLY THE AVAILABLE INFORMATION OBTAINED FROM EXISTING PLANS, SPECIFICATIONS, AND FIELD SURVEYS. THE EXACT LOCATION OF EXISTING DUCTWORK, PIPING, AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL BE PREPARED TO MAKE SOME ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT ACTUAL JOB CONDITIONS.
2. ITEMS SHOWN BOLD AND/OR DASHED ON THE DEMOLITION SHEETS INDICATE ITEMS TO BE REMOVED.
3. CROSS HATCHING INDICATES ITEMS TO BE REMOVED.
4. OWNER HAS FIRST RIGHT OF REFUSAL FOR ALL EQUIPMENT BEING REMOVED. CONTRACTOR TO DISPOSE OF EQUIPMENT BEING REMOVED BUT NOT RETAINED BY OWNER.

GENERAL NOTES (HYDRONIC)

1. THE CONTRACTOR SHALL COORDINATE SYSTEM SHUT-DOWNS WITH THE FACILITY. PROVIDE A MINIMUM TWO DAY NOTICE PRIOR TO ANY SYSTEM SHUT-DOWN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DRAINING, FILLING, AND VENTING OF ALL HYDRONIC SYSTEMS IMPACTED BY THIS PROJECT.

GENERAL NOTES

1. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THEY REFLECT ONLY THE AVAILABLE INFORMATION OBTAINED FROM EXISTING PLANS, SPECIFICATIONS, AND FIELD SURVEYS. THE EXACT LOCATION OF EXISTING PIPING, AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE PREPARED TO MAKE SOME ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT ACTUAL JOB CONDITIONS.
2. ANY HOLES LEFT IN EXISTING WALL CONSTRUCTION DUE TO DEMOLITION OR NEW WORK SHALL BE PATCHED TO MATCH EXISTING CONDITIONS.
3. CONTRACTOR TO FIRESTOP ALL PENETRATIONS THROUGH FIRE-RATED FLOORS AND WALLS CREATED BY DEMOLITION OR NEW WORK WITH "SPECSEAL SSS" OR EQUAL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ANY FRAMING REVISIONS, EQUIPMENT LOCATIONS, ADDITION OF CONTROLS, ELECTRICAL CIRCUITING REVISIONS, ETC. THAT RESULT FROM USING EQUIPMENT OTHER THAN INDICATED ON THE DRAWINGS, APPROVAL OF THE SHOP DRAWINGS BY THE ENGINEER WILL NOT WAIVE THE CONTRACTOR OF THIS RESPONSIBILITY.
5. THE CONTRACTOR SHALL HAVE THE FINAL RESPONSIBILITY FOR SYSTEM START UP AND TURN OVER TO THE OWNER.
6. ALL ITEMS INCLUDED ON THESE DRAWINGS AND THE SPECIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID. IF THE CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS OR IS NOT SURE OF THEIR MEANING, THE CONTRACTOR SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND INTERPRETATION PRIOR TO BID TIME. THE CONTRACTOR WILL BE HELD TO THE INTERPRETATION OF THE ENGINEER.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL TEMPERATURE CONTROL SYSTEM REQUIREMENTS.
8. ROUTE LINE SIZE PVC CONDENSATE DRAIN PIPING FROM AIR HANDLING UNIT TO NEAREST FLOOR DRAIN. PROVIDE TRAP AT CONNECTION TO AIR HANDLING UNIT.
9. ANY DAMAGE TO THE SITE (SIDEWALKS, CURBS, ETC) OR TO THE BUILDING AS A RESULT OF WORK PERFORMED UNDER THIS CONTRACT SHALL BE FIXED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF ROOFS/WALLS AND CORE DRILLS REQUIRED TO COMPLETE THEIR RESPECTIVE WORK.
11. THE OWNER SHALL HAVE FIRST SALVAGE RIGHTS OF EQUIPMENT AND MATERIALS REMOVED. ALL EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES BY THE CONTRACTORS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY TEMPORARY FENCING AROUND THE LIFT SITE DURING LIFTS.

HEATING AND AIR CONDITIONING

SA	SOUND ATTENUATOR	
FC	FLEXIBLE CONNECTION	
	SPLITTER DAMPER	
VD	VOLUME DAMPER	
TV	TURNING VANES	TV
	RETURN, EXHAUST, OR OUTSIDE AIR DUCT	
	DISCHARGE OR SUPPLY AIR DUCT	
	INCLINED DROP IN THE DIRECTION OF AIR FLOW	
	INCLINED RISE IN THE DIRECTION OF AIR FLOW	
	FIRE DAMPER (F) SMOKE DAMPER (S)	
MD	MOTORIZED DAMPER (ELECTRIC OR PNEUMATIC)	M
FXD	FLEXIBLE DUCT	
	CEILING AIR DEVICE	
	SIDEWALL AIR DEVICE	
24" x 12"	DUCT SIZE DESIGNATION: (1st FIGURE SIDE SHOWN. SIDE SHOWN IS SHEET METAL SIZE, ALLOWANCE HAS BEEN MADE FOR INTERIOR INSULATION WHERE SPECIFIED.)	
(H)	HUMIDISTAT	
(T) T	THERMOSTAT	
(N) TN	THERMOSTAT NITE	
CWS	CONDENSING WATER SUPPLY	
CWR	CONDENSING WATER RETURN	
DTS	DUAL TEMPERATURE SUPPLY	
DTR	DUAL TEMPERATURE RETURN	
FOS	FUEL OIL SUPPLY	
FOR	FUEL OIL RETURN	
FOV	FUEL OIL VENT	
MWL	MAKE - UP WATER LINE	
D	DRAIN LINE (OTHER THAN PLUMBING)	
VL	VENT LINE (OTHER THAN PLUMBING)	
RD	REFRIGERANT DISCHARGE	
RL	REFRIGERANT LIQUID	
RS	REFRIGERANT SUCTION	
G	GAS	
C	CHILLED WATER SUPPLY	
CR	CHILLED WATER RETURN	
A	COMPRESSED AIR	
LPS	LOW PRESSURE STEAM	
MPS	MEDIUM PRESSURE STEAM	
LPC	LOW PRESSURE CONDENSATE	
MPC	MEDIUM PRESSURE CONDENSATE	
HPS	HIGH PRESSURE STEAM	
HPC	HIGH PRESSURE CONDENSATE	
CPD	CONDENSATE PUMP DISCHARGE	
H	HOT WATER SUPPLY	
HR	HOT WATER RETURN	

PIPING SPECIALTIES

GV	GATE VALVE
CV	CHECK VALVE
GLV	GLOBE VALVE
BLV	BALL VALVE
STR	STRAINER
U	UNION
BC	BALANCING COCK
SOC	SHUT-OFF COCK
SLV	SOLENOID VALVE
BFV	BUTTERFLY VALVE
FS	FLOW SWITCH
	VALVE W/ SUPERVISORY SWITCH
FCV	FLOW CONTROL VALVE (GPM INDICATED)
T&PR	TEMPERATURE AND PRESSURE RELIEF VALVE
PG	PRESSURE GAUGE
TH	THERMOMETER (TUBE OR DIAL AS INDICATED)
PRV	PRESSURE REDUCING VALVE
	DIRECTION OF FLOW
	ANCHORS
	PIPE GUIDES
MV	MOTORIZED VALVE
DV	DIAPHRAM VALVE
LPV	LUBRICATED VALVE
HEV	HOSE END VALVE
SWV	STOP AND WASTE VALVE
TWV	3 - WAY VALVE (MIXING OR BY-PASS AS INDICATED)
	PETES PLUG
RV	RELIEF VALVE
FC	FLEXIBLE PIPE CONNECTION
AVM	AIR VENT (MANUAL)
AVA	AIR VENT (AUTOMATIC)
EX	EXPANSION JOINT
CCR	CONCENTRIC REDUCER
	TEE (SIDE OUTLET UP)
	TEE (SIDE OUTLET DOWN)
	ELBOW (TURNED UP)
	ELBOW (TURNED DOWN)
BMD	COMBINATION BALANCING & MEASURING DEVICE
ECR	ECCENTRIC REDUCER
FMD	FLOW MEASURING DEVICE
	STEAM TRAP

ABBREVIATIONS

F.F.E.	FINISH FLOOR ELEVATION
A.F.F.	ABOVE FINISH FLOOR
T.E	TOP ELEVATION
B.E	BOTTOM ELEVATION
F.L.	FLOW LINE
INV.	INVERT ELEVATION
℄	CENTER LINE
G.C.C.	GENERAL CONSTRUCTION CONTRACTOR
H.A.C	HEATING & AIR CONDITIONING CONTRACTOR
P.C.	PLUMBING CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
A.C.S.	AUTOMATIC CONTROL SUB-CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
H.S.C	HALON SUB-CONTRACTOR
K.E.C.	KITCHEN EQUIPMENT CONTRACTOR

MISCELLANEOUS

	EQUIPMENT OR PLUMBING FIXTURE DESIGNATION
	(RISER INDICATION P=PLUMBING, P =KITCHEN, P =ACID) RISER DESIGNATION (RISER NUMBER)
	(DETAIL NUMBER) DETAIL DESIGNATION (SHEET NUMBER WHERE DETAIL IS FOUND)
	(SECTION NUMBER) SECTION DESIGNATION (SHEET NUMBER WHERE SECTION IS FOUND)
	KEYED NOTES
	REVISIONS
AP	ACCESS PANEL
	NEW CONNECTION

NOTE: NOT ALL SYMBOLS OR ABBREVIATIONS MAY BE USED.

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4-24-20

MICHAEL HOFF
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CAD DWG FILE:
DRAWN BY: MRH
CHECKED BY: MRH
DESIGNED BY: MRH

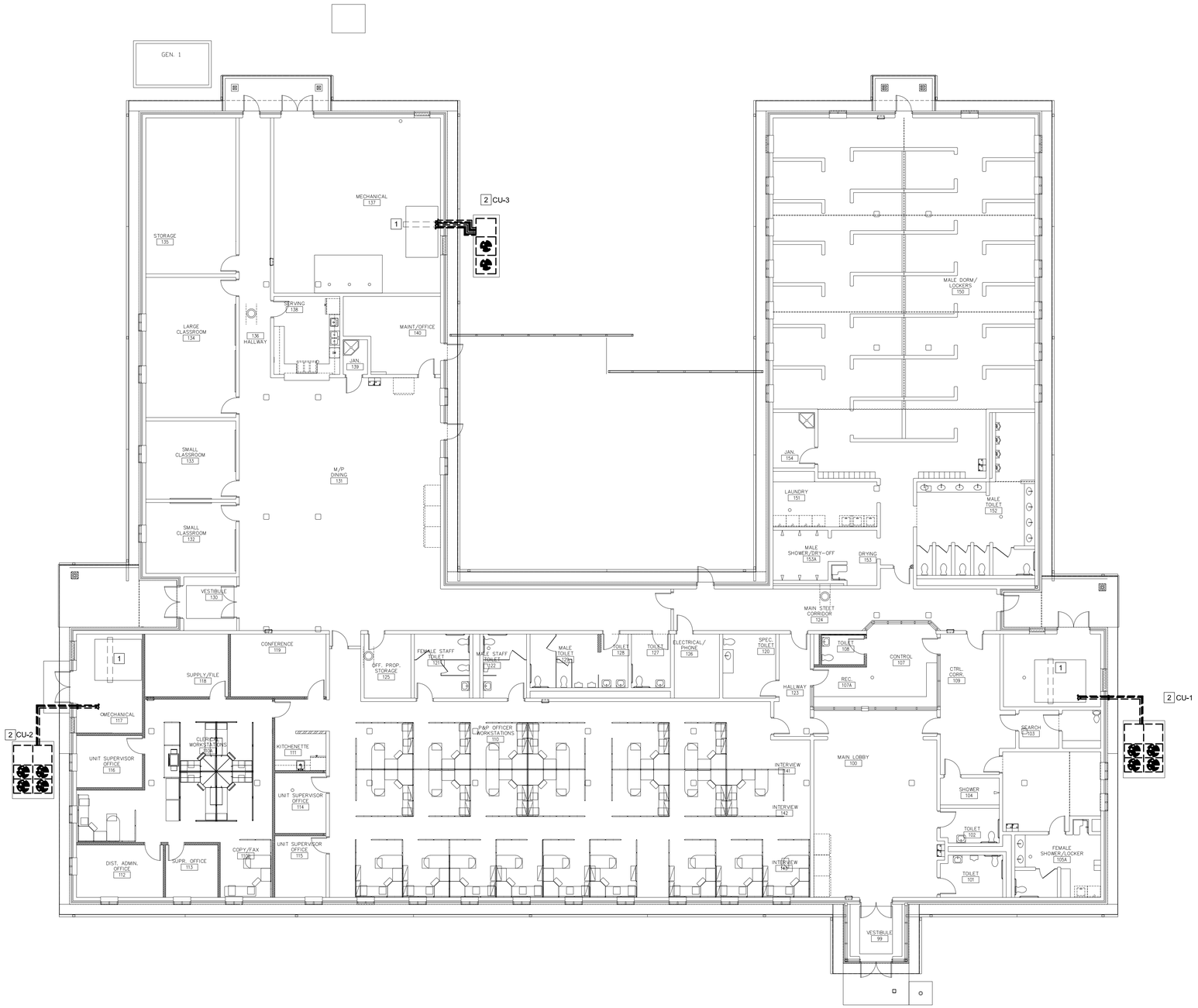
SHEET TITLE:

MECHANICAL SYMBOLS AND LEGEND

SHEET NUMBER:

M-001

12/30/2019



MECHANICAL FLOOR PLAN

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

KEYED NOTES

1. DISCONNECT AND REMOVE EXISTING DX COOLING COIL IN AIR HANDLING UNIT. A NEW CHILLED WATER COIL WILL BE INSTALLED IN THIS AIR HANDLING UNIT. SEE NEW WORK DRAWINGS.
2. DISCONNECT AND REMOVE EXISTING DX CONDENSING UNIT, AND ALL ASSOCIATED REFRIGERANT PIPING AND CONTROLS. REMOVE EXISTING CONCRETE PAD.

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CAD DWG FILE:
DRAWN BY: MRH
CHECKED BY: CF
DESIGNED BY: MRH

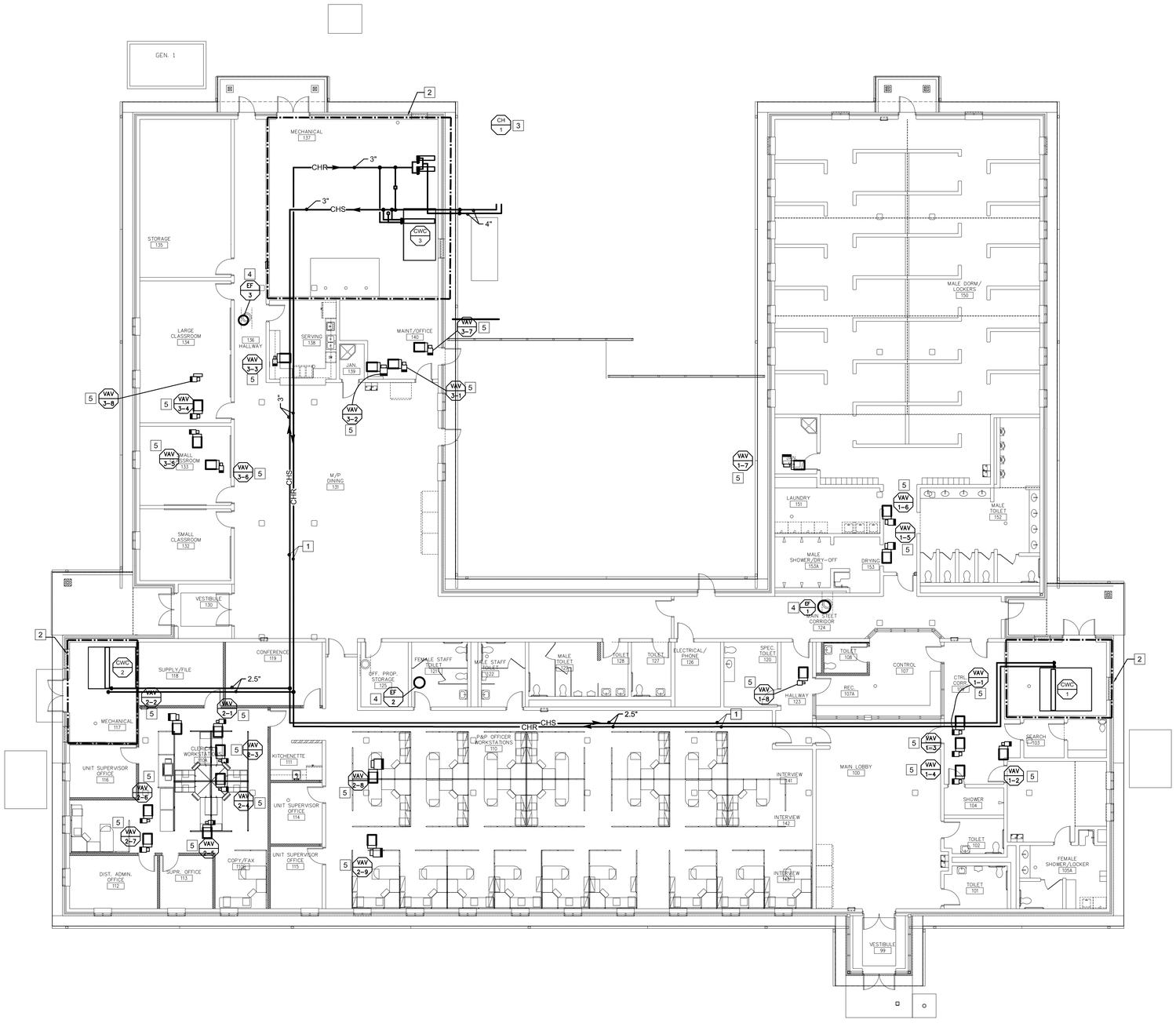
SHEET TITLE:

MECHANICAL DEMOLITION

SHEET NUMBER:

MD-101

12/30/2019



MECHANICAL FLOOR PLAN

SCALE: 3/32" = 1'-0"

KEYED NOTES

1. CHILLED WATER PIPING ROUTED THROUGH ATTIC SPACE. SEAL WALL PENETRATIONS THROUGH FIRE WALLS TO MAINTAIN FIRE RATING.
2. SEE MECHANICAL ROOM DETAILS ON M-401
3. NEW CHILLER ON NEW CONCRETE PAD
4. CONNECT EXISTING EXHAUST FAN TO BMS
5. CONNECT EXISTING VAV TO BMS. EXSITING CONTROLLER, WIRING AND TSTAT MAY REMAIN.

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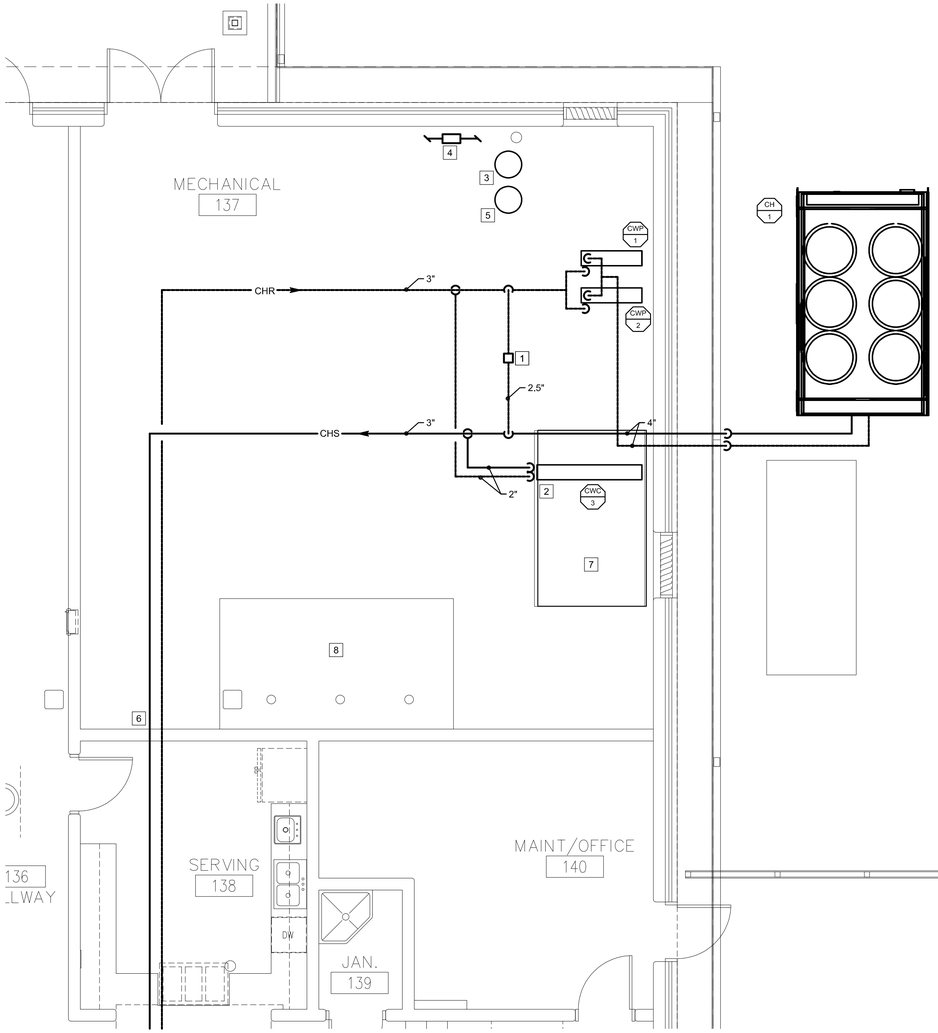
DESIGNED BY: MRH

SHEET TITLE:
MECHANICAL FLOORPLAN

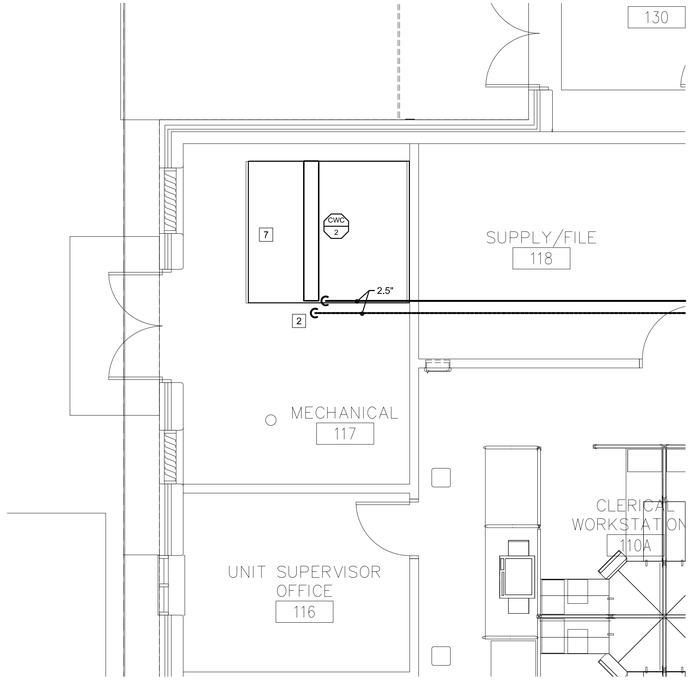
SHEET NUMBER
M-201

12/30/2019



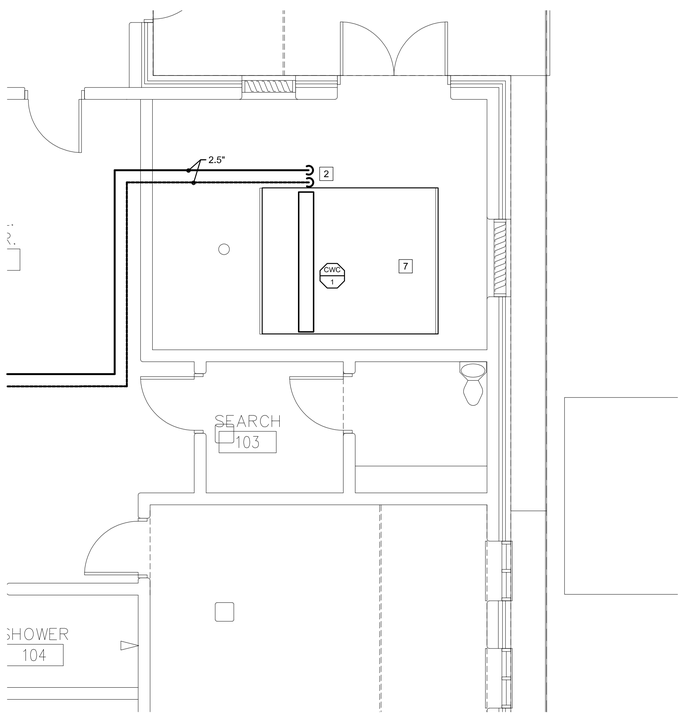
ENLARGED MECH RM - MECHANICAL

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



ENLARGED PLAN - MECHANICAL

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



ENLARGED PLAN - MECHANICAL

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

KEY NOTES

1. CHILLED WATER BYPASS WITH MODULATING CONTROL VALVE.
2. NEW CHILLED WATER COIL IN EXISTING AHU. SEE DETAIL.
3. CHILLED WATER GLYCOL FILL STATION. SEE DETAIL.
4. PROVIDE DEDICATED 3/4" BACKFLOW PREVENTER FOR MECHANICAL MAKEUP WATER. SHALL INCLUDE A 3/4" SHUT OFF BALL VALVE, A 3/4" PRESSURE REDUCING VALVE, A 3/4 " WATTS 909 BACKFLOW PREVENTER AND A PRESSURE GAUGE ON THE MECHANICAL DISCHARGE PIPING. TIE INTO EXITING 3" DOMESTIC WATER LINE.
5. CHILLED WATER BUFFER TANK. TANK SHALL BE WESSELS MODEL CBT-200 WITH INTERNAL BAFFLE AND TOP AIR VENT CONNECTION. PROVIDE AIR VENT. SECURE TANK TO FLOOR WITH SEISMIC ANCHORS.
6. CHILLED WATER PIPING THROUGH WALL INTO ATTIC SPACE.
7. EACH AHU WILL REQUIRE NEW BMS CONTROLLER
8. CONNECT EXISTING HW SYSTEM (BOILERS AND PUMPS) TO NEW BMS

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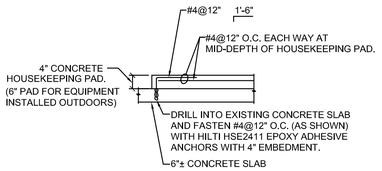
SHEET TITLE:

ENLARGED PLANS - MECHANICAL

SHEET NUMBER:

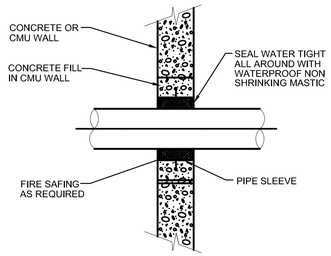
M-401

12/30/2019



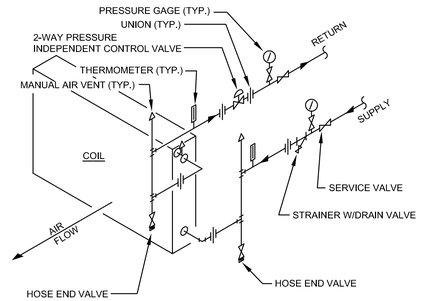
NEW HOUSEKEEPING PAD

NO SCALE



PIPE PENETRATION THRU WALL

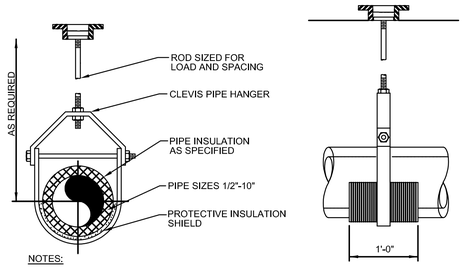
NO SCALE



NOTE:
ARRANGE RISERS SUCH THAT COIL MAY BE REMOVED
WITHOUT DISTURBING RISERS.

CHILLED WATER COIL DETAIL

NO SCALE

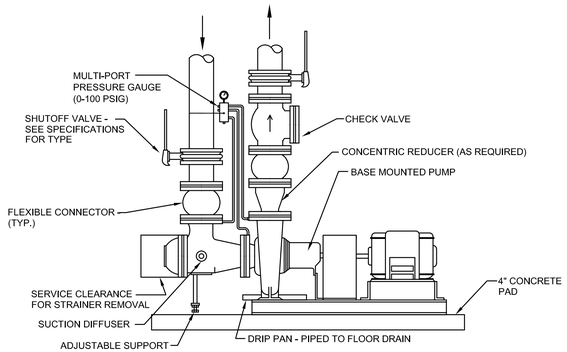


NOTES:

1. PIPE HANGERS SHALL BE OVERSIZED AS REQUIRED TO ACCOMMODATE. THICKNESS OF INSULATION SPECIFIED. HANGER SHALL NOT COME INTO CONTACT WITH THE INSULATION DIRECTLY, EITHER AT THE VERTICAL YOKE OR AT THE POINT OF SUPPORT. FOR REQUIREMENTS ON INSULATION SHIELD USED WITH PIPE HANGERS, SEE SPECIFICATIONS.

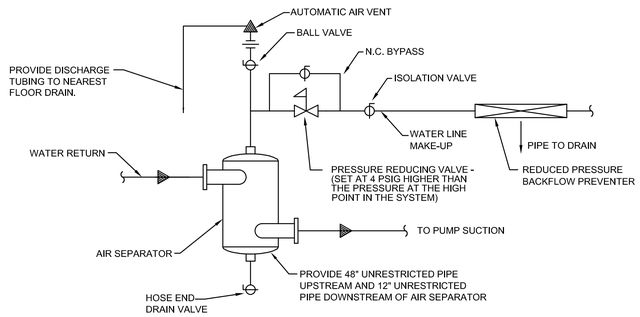
PIPE HANGER DETAIL

NO SCALE



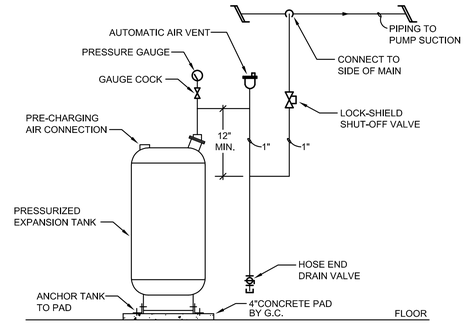
END SUCTION PUMP PIPING DETAIL

NO SCALE



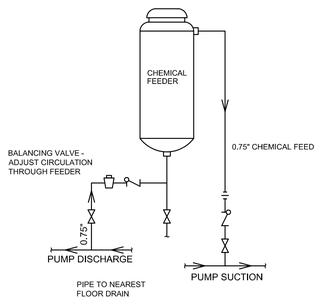
AIR SEPARATOR DETAIL-AS-1

NO SCALE



BUFFER TANK DETAIL-XT-1

NO SCALE



BYPASS CHEMICAL SHOT FEEDER DETAIL

NO SCALE

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DESIGNED BY: MRH

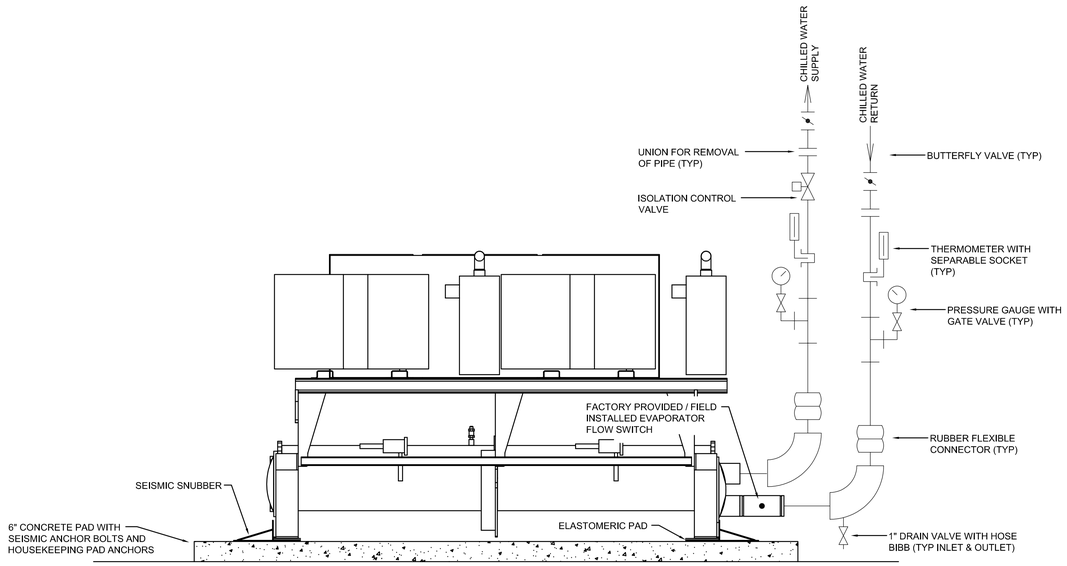
SHEET TITLE:

MECHANICAL
DETAILS

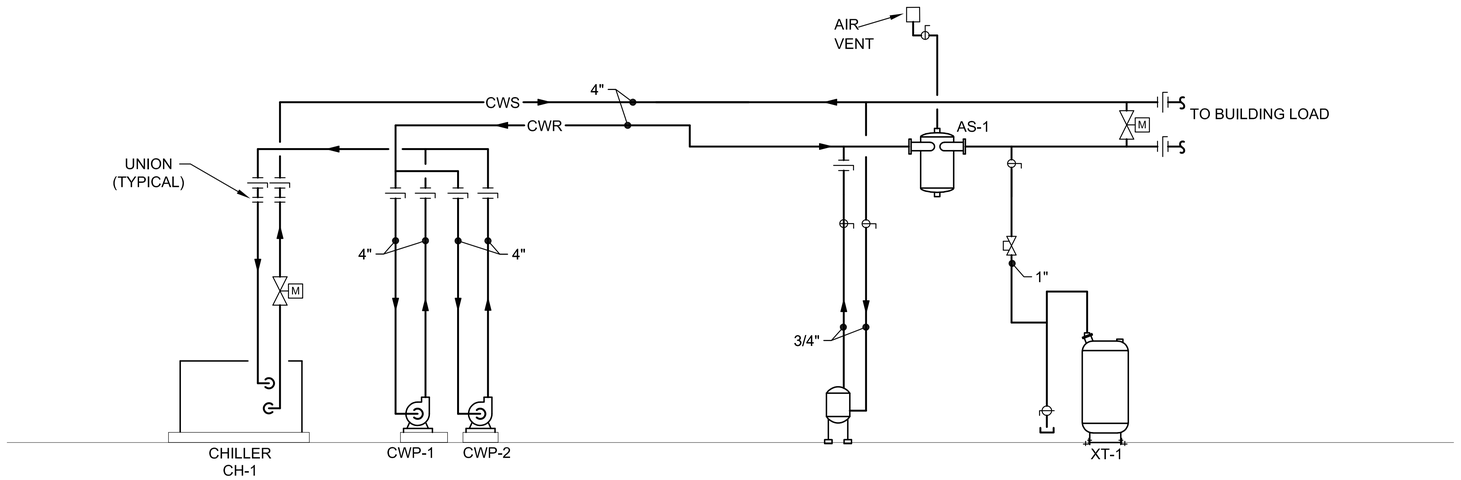
SHEET NUMBER:

M-501

12/30/2019



1 CHILLED WATER SCHEMATIC
NO SCALE



2 CHILLED WATER SCHEMATIC
NO SCALE

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
MICHAEL R. HOFF
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MICHAEL HOFF
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
DEPARTMENT OF MENTAL HEALTH

PROJECT TITLE:

HVAC AND BAS UPGRADE, POPLAR BLUFF

1441 BLACK RIVER IND. PARK
POPLAR BLUFF, MO

PROJECT # C1911-01

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SHEET TITLE:

CHILLED WATER SCHEMATIC

SHEET NUMBER:

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12/30/2019

CHILLER SCHEDULE

CH

PLAN MARK	MANUFACTURER	MODEL NO.	CAPACITY				EVAPORATOR						COMPRESSOR			ELECTRICAL			WEIGHTS		NOTES
			TONS	FULL LOAD KW/TON	IPLV KW/TON	ERR	WATER FLOW GPM	EWT°F	LWT°F	P.D. (FT. OF HD.)	FOULING FACTOR	MIN. WATER FLOW GPM	QTY	RATED-LOAD AMPS	LOCKED-ROTOR AMPS	VOLT/PH	MCA	MOP	SHIPPING	OPERATING	
CH-1	TRANE	CGAM	50	-	-	-	171	52	42	-	-	80	-	-	-	208/3	316	350	-	-	ALL

NOTES:

1. SINGLE POINT POWER CONNECTION WITH DISCONNECT.
2. MINIMUM 14 IPLV.
3. FACTORY INSTALLED THERMAL DISPERSION FLOW SWITCH ON EVAPORATOR.
4. FACTORY CONTROL PANEL WITH TOUCHSCREEN AND BACNET INTERFACE.
5. FACTORY INSULATION PACKAGE.
6. HIGH EFFICIENCY/PERFORMANCE.
7. STANDARD COOLING APPLICATION.
8. REFRIGERANT SERVICE VALVES
9. FAN VFD CONTROL
10. RATINGS BASED ON 30% POLYPROPYLENE

SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS

PRODUCT LISTED IS BASIS OF DESIGN ONLY

CHILLED WATER COIL

CWC

PLAN MARK	MANUFACTURER	MODEL	AIRFLOW	TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	AIR TEMPERATURE		FACE VELOCITY	AIR PD (WG)	H2O TEMPERATURE		GPM	H2O PD (WG)	PROP. GLYCOL	ROWS	FPI	TUBE DIAMETER	TUBE MATERIAL	FIN MATERIAL	WEIGHT	DIMENSIONS	REMARKS
						EDB/EWB	LDB/LWB			EWT	LWT											
CWC-1	MARLO	6W22-51-5609F-11.8-H-1.0-R-B	5785	269	170	82.1/69.1	55.0/54.3	490	0.5"	42	52	57.4	16.6"	30%	6	9	5/8	CU .035	AL .010	335	51"L X 33.4"H	ALL
CWC-2	MARLO	6W22-51-5609F-11.8-H-1.0-R-B	5785	269	170	82.1/69.1	55.0/54.3	490	0.5"	42	52	57.4	16.6"	30%	6	9	5/8	CU .035	AL .010	335	51"L X 33.4"H	ALL
CWC-3	MARLO	6W22-51-5609F-11.8-H-1.0-R-B	5785	269	170	82.1/69.1	55.0/54.3	490	0.5"	42	52	57.4	16.6"	30%	6	9	5/8	CU .035	AL .010	335	51"L X 33.4"H	ALL

NOTES:

1. CONTRACTOR TO VERIFY UNIT SIZES
2. ALTERNATE MANUFACTURERS HEATCRAFT AND USA COIL
3. COILS SELECTED BASED ON 30% PROPYLENE GLYCOL

SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS

PRODUCT LISTED IS BASIS OF DESIGN ONLY

PUMP SCHEDULE

CWP

PLAN MARK	MANUFACTURER	MODEL	TYPE	GPM	HEAD IN FT	MOTOR HP	PUMP RPM	ELECTRICAL VOLT/PH	WEIGHT (lbs)	REMARKS
CWP-1	TACO	2009D	CLOSE-COUPLED FOOT MOUNTED END SUCTION	171	40	5	1750	208/3	343	ALL
CWP-2	TACO	2009D	CLOSE-COUPLED FOOT MOUNTED END SUCTION	171	40	5	1750	208/3	343	ALL

NOTES:

1. VARIABLE SPEED DRIVE.
2. SUCTION DIFFUSER.
3. HEAVY DUTY BASE PLATE.

SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS

PRODUCT LISTED IS BASIS OF DESIGN ONLY

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MICHAEL HOFF
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MECHANICAL SCHEDULES

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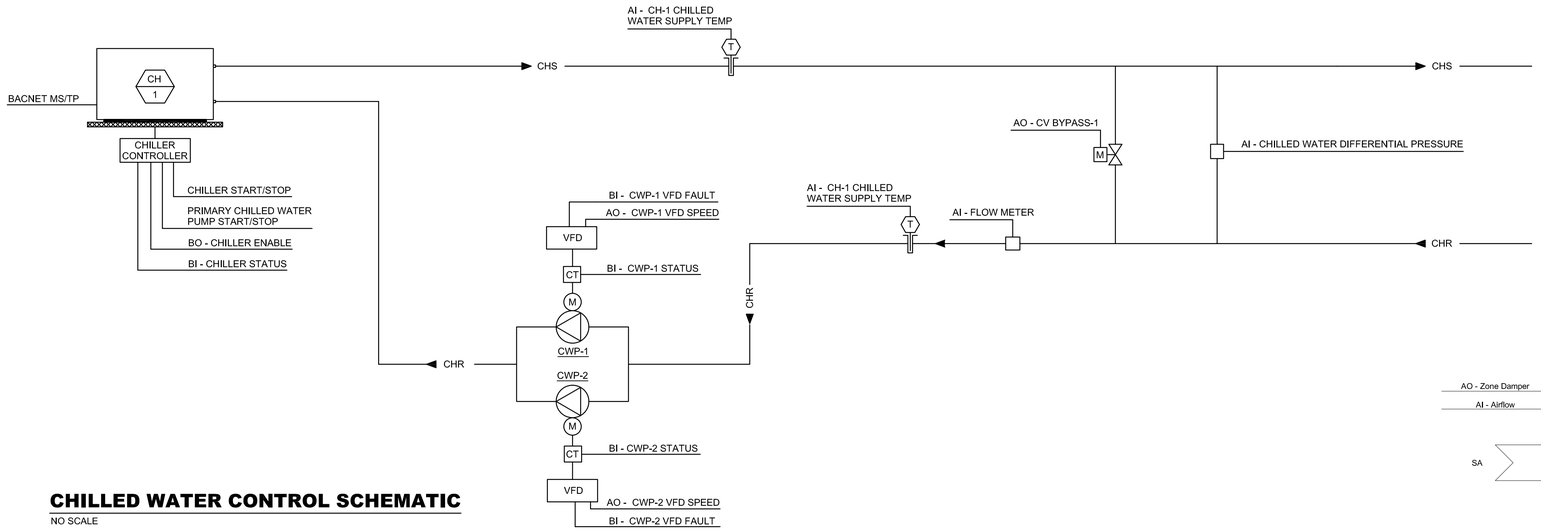
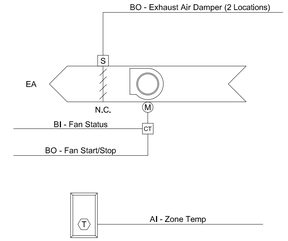


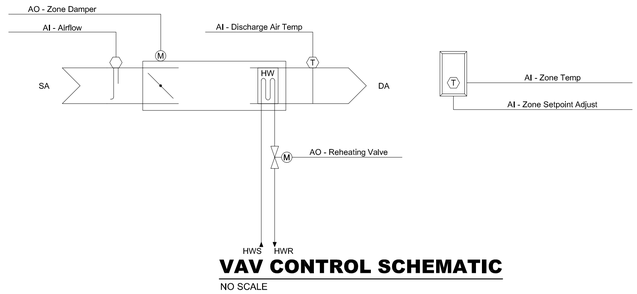
CHILLED WATER CONTROL SCHEMATIC

NO SCALE



EF CONTROL SCHEMATIC

NO SCALE



VAV CONTROL SCHEMATIC

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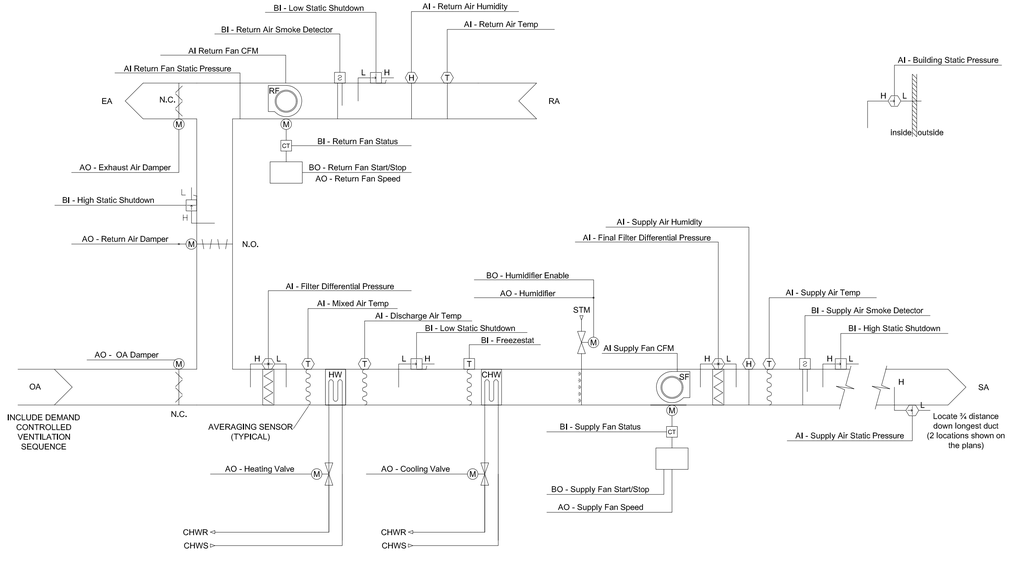

AHU CONTROL SCHEMATIC

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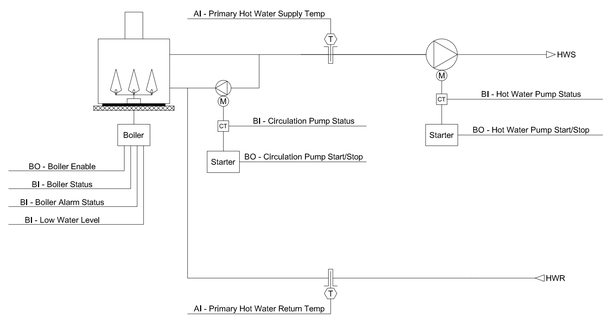
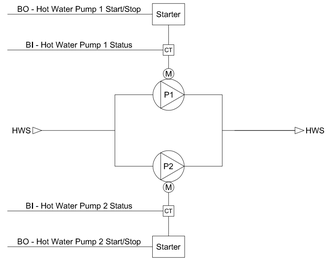


BOILER CONTROL SCHEMATIC

NO SCALE



HWP CONTROL SCHEMATIC

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ELECTRICAL LEGEND AND ABBREVIATIONS (SEE SPECIFICATIONS & SCHEDULES)

NOTES:
1. NOT ALL SYMBOLS AND ABBREVIATIONS ARE USED ON THESE PLANS.
2. ALL MOUNTING HEIGHTS ARE TO CENTERLINE OF DEVICES AND EQUIPMENT U.O.N.
3. IN GENERAL, SYMBOLS SHOWN WITH LIGHT LINES DENOTE EXISTING WORK. SYMBOLS SHOWN WITH HEAVY LINES DENOTE PROPOSED WORK.

JUNCTION AND PULL BOXES

- J — JUNCTION BOX
- P — PULL BOX

WIRING PLANS

- CONDUIT RUN CONCEALED IN CEILING OR WALL CONSTRUCTION
- CONDUIT RUN IN FLOOR CONSTRUCTION OR UNDERGROUND
- CONDUIT RUN EXPOSED
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- FLEXIBLE CONDUIT
- CONDUIT CAPPED FOR FUTURE.
- E — EMERGENCY (LIFE SAFETY) CONDUIT SYSTEM
- CONDUIT SEAL
- CABLE TRAY
- BUSWAY
- HOMERUN TO PANEL OR DESTINATION NOTED
- HACHURES INDICATE NUMBER OF CONDUCTORS IN CONDUIT
  NOTE: LONG HACHURE - NEUTRAL CONDUCTOR
  SHORT HACHURE - HOT OR SWITCHED CONDUCTORS
  LONG HACHURE WITH DOT - GROUND CONDUCTOR
  LONG HACHURE WITH DOT & RETURN LINE - ISOLATED GROUND CONDUCTOR. WHEN HACHURES ARE NOT SHOWN AND WIRING IS FOR POWER OR LIGHTING CIRCUITS, PROVIDE HOT, NEUTRAL AND GROUND. WHEN FOR MULTIPLE CIRCUITS, PROVIDE NO. OF PHASE CONDUCTORS, NEUTRAL CONDUCTORS AND A GROUND CONDUCTOR. HACHURES ARE SHOWN AS A GUIDE AND MAY NOT BE EXACT COUNTS IN ALL CASES. PROVIDE WIRING REQUIRED BY THE CIRCUITING AND SWITCHING REQUIREMENTS FOR THE PARTICULAR CIRCUITS INVOLVED.

ONE-LINE DIAGRAM SYMBOLS

- XX/XX — FUSIBLE SWITCH (SIZE/FUSE)
- DRAWOUT CIRCUIT BREAKER
- XX/XX — CIRCUIT BREAKER (FRAME/TRIP)
  (3 POLE UNITS U.O.N.)
- (V) WATTMETER
- (KW) KILOWATT DEMAND METER
- (KH) KILOWATT HOUR METER
- (AM) AMMETER
- (AS) AMMETER SWITCH
- (GF) GROUND FAULT
- (VM) VOLTMETER
- (VS) VOLTMETER SWITCH
- MB DM — MICROPROCESSOR BASED DIGITAL MONITOR
- MOTOR STARTER
- CONTACTOR
  (3 POLE UNITS U.O.N.)
- (GEN) GENERATOR
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- POWER TRANSFORMER
- G — GROUND BUS
- N — NEUTRAL BUS
- GROUND
- K — KEY-INTERLOCK
- CAPACITOR
- (M) — MOTOR OPERATED MEDIUM VOLTAGE LOAD INTERRUPTER SWITCH
- GAP TYPE SURGE ARRESTOR
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- M — ELECTRICAL SERVICE METER

LIGHTING FIXTURES

- A 1a — LIGHTING FIXTURE
  (A - DESIGNATES FIXTURE TYPE
  1 - DESIGNATES CIRCUIT NUMBER
  a - DESIGNATES CONTROLLING SWITCH)
- A 1a — LIGHTING FIXTURE - EMERGENCY POWER
- A 1a / a — LIGHTING FIXTURE - CRITICAL BRANCH
- A 1a / a — LIGHTING FIXTURE - LIFE SAFETY BRANCH
- B 1a — WALL MOUNTED LIGHTING FIXTURE. HEIGHT AS NOTED.
- A 1a — RECESSED OR SURFACE LIGHTING FIXTURE EMERGENCY, CRITICAL OR LIFE SAFETY IF SHADED AS ABOVE
- WALL MOUNTED LIGHTING FIXTURE EMERGENCY, CRITICAL OR LIFE SAFETY IF SHADED AS ABOVE
- A 1a — STRIP FIXTURE
- A 1a — STRIP FIXTURE EMERGENCY POWER
- BATTERY OPERATED EMERGENCY LIGHTING UNIT
- EXTERIOR LIGHTING FIXTURE - POLE MOUNTED TYPES AND DETAILS AS NOTED
- CLG / WALL — EXIT SIGN DOUBLE-SIDED FIXTURE DIRECTIONAL ARROWS AS INDICATED
- EXIT SIGN SINGLE-SIDED FIXTURE DIRECTIONAL ARROWS AS INDICATED
  (SHADING INDICATES FACE(S))

SWITCHES - LIGHTING CONTROL

TYPICAL MOUNTING HEIGHT - 48" AFF

- $ $ $ $ — SWITCHES - SINGLE POLE, 2 POLE, 3-WAY, 4-WAY
- $ $3 — KEY SWITCHES - SINGLE POLE, 3-WAY, ETC.
- $ — SWITCH WITH PILOT LIGHT
- $ — COMBINATION SINGLE POLE SWITCH AND SINGLE RECEP.
- $MS — MOMENTARY CONTACT SWITCH
- $LV — LOW VOLTAGE SWITCH
- $D — DIMMER SWITCH
- $M — MANUAL MOTOR STARTER WITH PILOT LIGHT
- $VS — WALL MOUNTED VACANCY SENSOR (MANUAL ON/AUTO OFF), DUAL TECHNOLOGY TYPE
- $OS — WALL MOUNTED OCCUPANCY SENSOR (AUTO ON/AUTO OFF), DUAL TECHNOLOGY TYPE
- (DT) — DUAL TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR WITH WIDE ANGLE LENS
- PP — LIGHTING CONTROL POWER PACK

DRAWING REFERENCES

- 2 / SC-8 — DETAIL NUMBER / PLAN DETAIL REFERENCE TITLE / DRAWING NUMBER
- 3 — KEYED NOTE DESIGNATION
- NORTH ARROW
- XXXX — ROOM NUMBERS
- 1 / E-1 — SECTION NUMBER / SECTION REFERENCE TITLE / DRAWING NUMBER

GROUNDING SYMBOLS

- GROUND ROD WITH EXOTHERMIC CABLE CONNECTION
- GC — GROUNDING CONDUCTOR
- GC — BURIED GROUND CONDUCTOR

POWER EQUIPMENT

- MOTOR - SEE EQUIPMENT DATA SCHEDULE FOR HORSEPOWER
- STARTERS (MANUAL, MAGNETIC & COMB. MAGNETIC WITH DISC.)
- MCC — MOTOR CONTROL CENTER
- SWITCHBOARD
- 1LL1 — PANELBOARD
  - SEQUENCE NUMBER
  - TYPE: L - LIGHTING; P - POWER; E - EMERGENCY/EQUIPMENT BRANCH; LS- LIFE SAFETY BRANCH; C - CRITICAL BRANCH; X - X-RAY
  - VOLTAGE: H - 480V; L - 240V OR 208/120V
  - FLOOR
- CONTROL CABINET
- PIPE WITH ELECTRIC HEAT TRACING
- ELECTRIC HEATING EQUIPMENT
- TRANSFORMER
- UPS — UNINTERRUPTABLE POWER SUPPLY SYSTEM
- DISCONNECT SWITCH. FUSED OR UNFUSED AS NOTED
- HH — HANDHOLE
- MH — MANHOLE
- M — ELECTRICAL SERVICE METER

RECEPTACLES

TYPICAL MOUNTING HEIGHT - 18" AFF

- SPECIAL PURPOSE OUTLET AS NOTED
- SINGLE RECEPTACLE OUTLET
- DUPLEX RECEPTACLE OUTLET MOUNTED +8" ABOVE COUNTER
- GFI — DUPLEX RECEPTACLE OUTLET MOUNTED +8" ABOVE COUNTER - GROUND FAULT TYPE
- DUPLEX RECEPTACLE OUTLET
- DUPLEX RECEPTACLE OUTLET - GROUND FAULT TYPE
- DOUBLE DUPLEX RECEPTACLE OUTLET
- I.G. — DUPLEX RECEPTACLE OUTLET WITH ISOLATED GROUND
- USB — DUPLEX RECEPTACLE OUTLET WITH UNIVERSAL SERIAL BUS CHARGING PORTS
- DUPLEX RECEPTACLE WITH ONE OUTLET SWITCHED
- FLOOR BOX - SYMBOL DESIGNATES TYPE OF SERVICE
- FLOOR BOX - ROUGH IN ONLY WITH BLANK COVER
- TV — COMBINATION DUPLEX RECEPTACLE AND TV OUTLET (SEE TV SYMBOL UNDER "SPECIAL SYSTEMS"). MOUNT 1'-3" A.F.F. U.O.N.

PHASING NOTE:

THE JOB SHALL BE PHASED SUCH THAT ONLY ONE AIR HANDLING UNIT SHALL BE DOWN AT A TIME.

ABBREVIATIONS

A.C.S.	-	ACCESS CONTROL SYSTEM
A.F.F.	-	ABOVE FINISHED FLOOR
ATS	-	AUTOMATIC TRANSFER SWITCH
B.C.	-	BELOW CEILING
C	-	CONDUIT
CAM	-	CAMERA
CB	-	CIRCUIT BREAKER
CC	-	CONTROL CONTACTOR
CCTV	-	CLOSED CIRCUIT TELEVISION
CCW	-	COUNTER CLOCKWISE
CW	-	CLOCKWISE
DCU	-	DISTRIBUTED CONTROLLER UNIT
DN	-	DOWN
DP	-	DISTRIBUTION PANEL
DR	-	DOCTORS REGISTER
DT	-	DUSTTIGHT
DWG	-	DRAWING
E.C.	-	ELECTRICAL CONTRACTOR
ELEC	-	ELECTRIC OR ELECTRICAL
EMT	-	ELECTRICAL METALLIC TUBING
ER	-	EXISTING RELOCATED
ETR	-	EXISTING TO REMAIN
EWC	-	ELECTRIC WATER COOLER
FA	-	FIRE ALARM
FM	-	F/O MODEM
F/O	-	FIBER OPTIC
FS	-	FUSIBLE SWITCH
G.C.	-	GENERAL CONTRACTOR
GF	-	GROUND FAULT
GFCI	-	GROUND FAULT CIRCUIT INTERRUPTER
GRD	-	GROUND
GRS	-	GALVANIZED RIGID STEEL
HH	-	HANDHOLE
ILSM	-	INTERIM LIFE SAFETY MEASURES
IMC	-	INTERMEDIATE METAL CONDUIT
I/O	-	INPUT/OUTPUT
LAN	-	LOCAL AREA NETWORK
LP	-	LIGHTING PANEL
MATV	-	MASTER ANTENNA TELEVISION
MC	-	METAL CLAD
MCC	-	MOTOR CONTROL CENTER
MCP	-	MOTOR CONTROL PANEL
MH	-	MANHOLE
MT	-	EMPTY CONDUIT
NC	-	NURSE CALL
NL	-	NIGHT LIGHT
PA	-	PUBLIC ADDRESS
PI	-	PORTABLE INTERFACE
P.I.R.	-	PASSIVE INFRA RED
PP	-	POWER PANEL
PR.	-	PAIR
PVC	-	POLYVINYL CHLORIDE CONDUIT
R	-	RECESSED
RF	-	RADIO FREQUENCY
RGS	-	RIGID GALVANISED STEEL
RT	-	RAINTIGHT
SHLD	-	SHIELDED (AS IN CABLE)
SWBD	-	SWITCHBOARD
T	-	TELEPHONE
TYP.	-	TYPICAL
UNG	-	UNGROUNDED
UPS	-	UNINTERUPTIBLE POWER SUPPLY
U.O.N.	-	UNLESS OTHERWISE NOTED
VFD	-	VARIABLE FREQUENCY DRIVE
VT	-	VAPORTIGHT
WT	-	WATERTIGHT
XP	-	EXPLOSION PROOF
WP		WEATHER-PROOF

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
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NUMBER E-16688
REGISTERED PROFESSIONAL ENGINEER
4/24/20

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ELECTRICAL SYMBOLS AND LEGEND

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E-001

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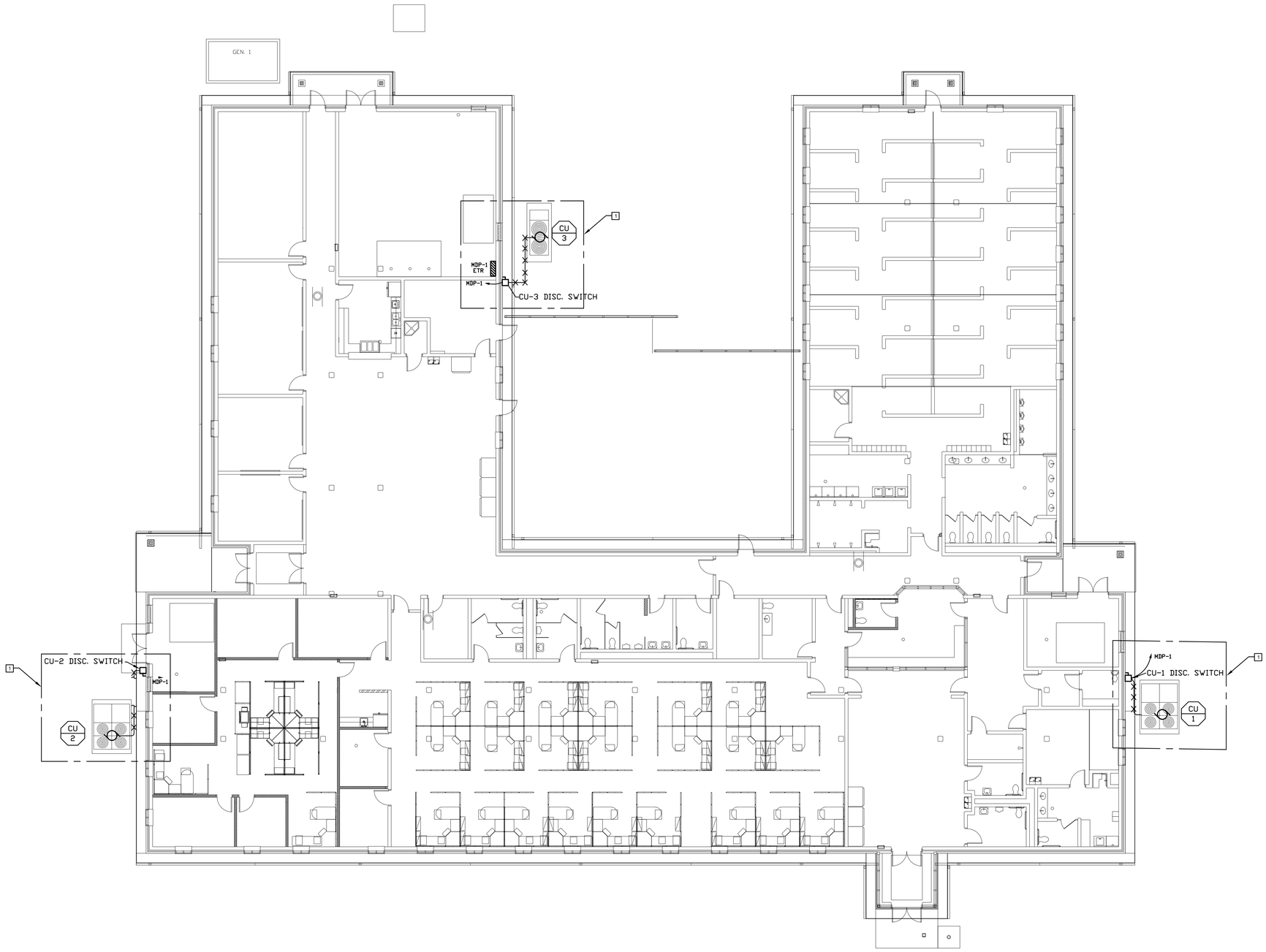

FIRST FLOOR PLAN – POWER & SYSTEMS
SCALE: 3/32" = 1'-0"

GENERAL NOTES

1. REFER TO SHEET ED-401 FOR FURTHER ELECTRICAL DEMO INFORMATION.
2. PLANS ARE DIAGRAMMATIC IN NATURE. THEY REFLECT THE AVAILABLE INFORMATION OBTAINED FROM FIELD OBSERVATION AND EXISTING DOCUMENTATION. ACTUAL LOCATION OF ELEMENTS AND EQUIPMENT MAY DEVIATE FROM THE LOCATION AND QUANTITIES SHOWN.
3. EXISTING WIRING TO REMAIN SHALL BE TEMPORARILY SUPPORTED AND PROTECTED. IF WIRE IS DAMAGED DURING THE CONSTRUCTION PROCESS, CONTRACTOR SHALL REPLACE WIRE WITH NEW PER SPECIFICATIONS.
4. WHILE MOST DEMOLITION WORK IS CONFINED TO CERTAIN AREAS OF THE BUILDING, WORK FOR ELECTRICAL SYSTEMS MAY BE EXTENDED TO INCLUDE OTHER AREAS OUTSIDE THE SCOPE OF WORK. PLAN IN ADVANCE TO PERFORM WORK IN OTHER AREAS TO MINIMIZE INTERRUPTIONS.
5. DEMOLITION REFERS TO THE DISCONNECTION AND REMOVAL OF EQUIPMENT, WIRING, AND COMPONENTS BACK TO SOURCE.
6. CONTRACTORS SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR EXECUTION OF DEMOLITION WORK AND INSTALLATION OF NEW WORK.
7. COORDINATE THE DISCONNECTION AND REMOVAL OF ALL ITEMS WITH ASSOCIATED TRADES. ENSURE SERVICES THAT ARE REQUIRED TO REMAIN ACTIVE ARE ACTIVE DURING AND AFTER DEMOLITION IS COMPLETED.

KEYED NOTES

[1] SEE ENLARGED DEMO PLANS SHEET ED-401 FOR DEMO WORK IN THIS AREA.

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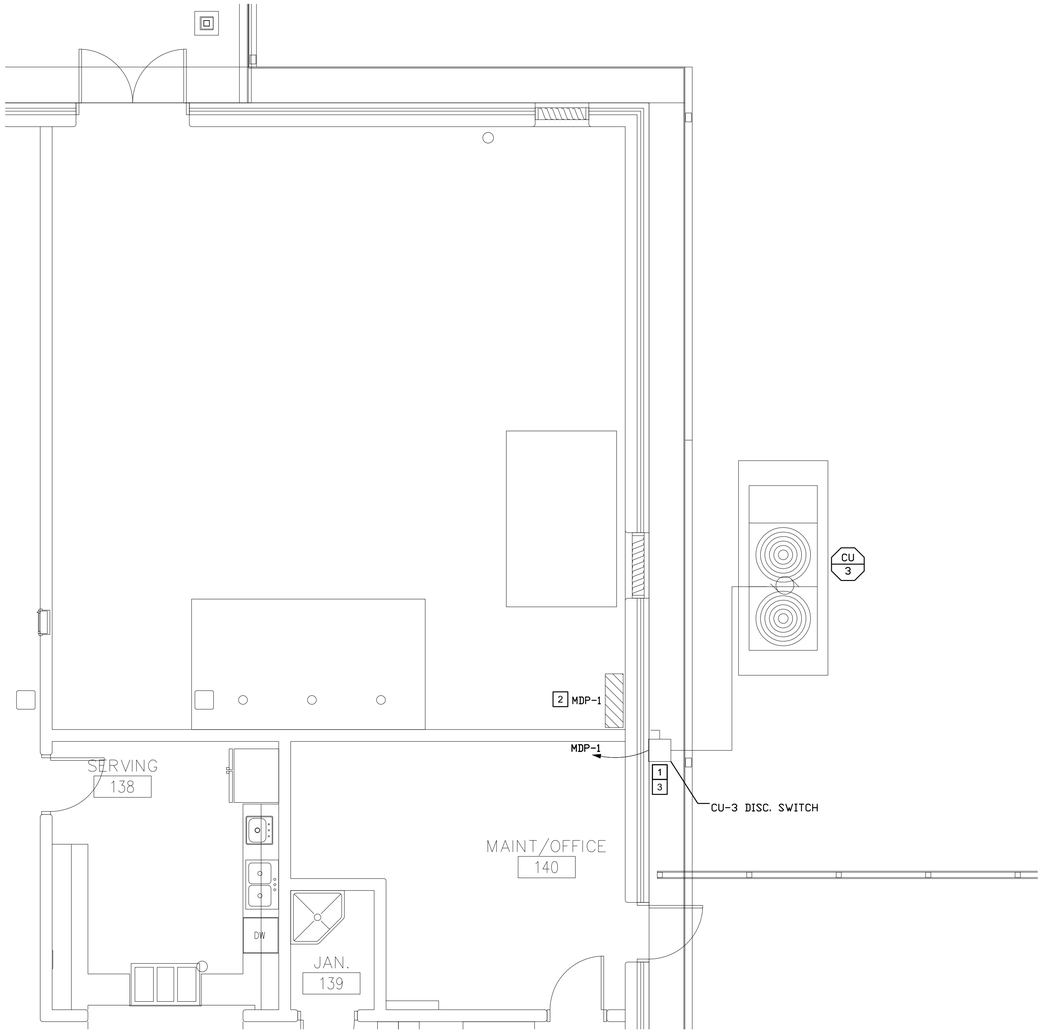
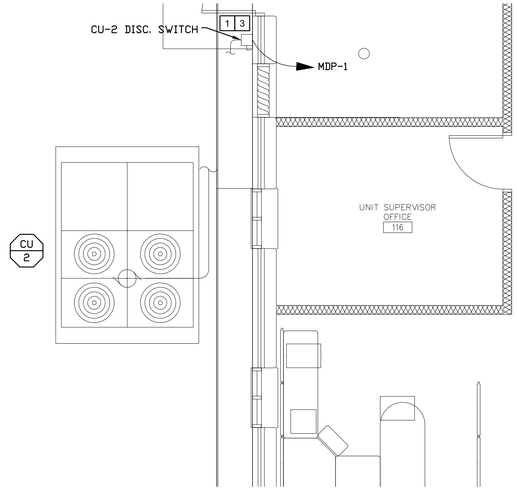
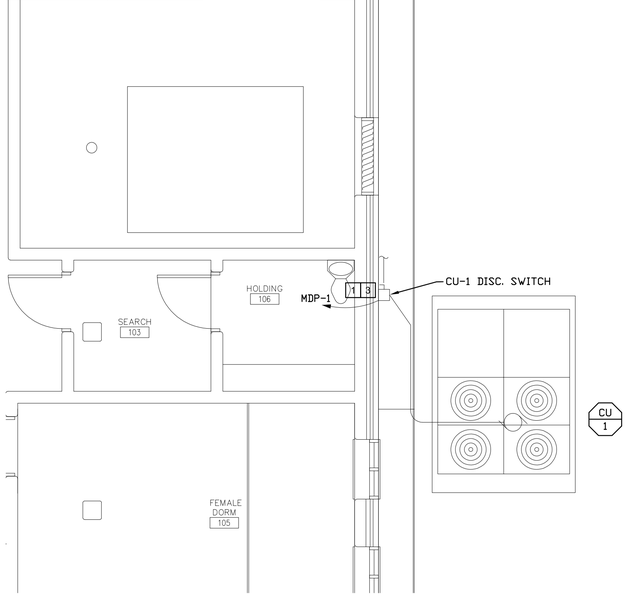


ENLARGED MECH RM – ELECTRICAL
SCALE: 1/4" = 1'-0"



ENLARGED PLAN – ELECTRICAL
SCALE: 1/4" = 1'-0"



ENLARGED PLAN – ELECTRICAL
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. PLANS ARE DIAGRAMMATIC IN NATURE. THEY REFLECT THE AVAILABLE INFORMATION OBTAINED FROM FIELD OBSERVATION AND EXISTING DOCUMENTATION. ACTUAL LOCATION OF ELEMENTS AND EQUIPMENT MAY DEVIATE FROM THE LOCATION AND QUANTITIES SHOWN.
2. EXISTING WIRING TO REMAIN SHALL BE TEMPORARILY SUPPORTED AND PROTECTED. IF WIRE IS DAMAGED DURING THE CONSTRUCTION PROCESS, CONTRACTOR SHALL REPLACE WIRE WITH NEW PER SPECIFICATIONS.
3. WHILE MOST DEMOLITION WORK IS CONFINED TO CERTAIN AREAS OF THE BUILDING, WORK FOR ELECTRICAL SYSTEMS MAY BE EXTENDED TO INCLUDE OTHER AREAS OUTSIDE THE SCOPE OF WORK. PLAN IN ADVANCE TO PERFORM WORK IN OTHER AREAS TO MINIMIZE INTERRUPTIONS.
4. DEMOLITION REFERS TO THE DISCONNECTION AND REMOVAL OF EQUIPMENT, WIRING, AND COMPONENTS BACK TO SOURCE.
5. CONTRACTORS SHALL PROVIDE ALL CUTTING AND PATCHING AS REQUIRED FOR EXECUTION OF DEMOLITION WORK AND INSTALLATION OF NEW WORK.
6. COORDINATE THE DISCONNECTION AND REMOVAL OF ALL ITEMS WITH ASSOCIATED TRADES. ENSURE SERVICES THAT ARE REQUIRED TO REMAIN ACTIVE ARE ACTIVE DURING AND AFTER DEMOLITION IS COMPLETED.

KEYED NOTES

1. REMOVE EXISTING DISCONNECT, REMOVE EXISTING FEEDERS, AND REMOVE EXISTING ACCESSIBLE CONDUIT BACK TO MDP-1.
2. REMOVE EXISTING 200A FUSED SWITCHES FOR CU-1, CU-2, AND CU-3.
3. REMOVE CONDUIT AND WIRES FROM DISCONNECT TO CONDENSING UNIT.

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4/24/20

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LICENSE #: 016688
EXP: 12/31/2021

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF MENTAL HEALTH

PROJECT TITLE:

HVAC AND BAS UPGRADE, POPLAR BLUFF

1441 BLACK RIVER IND. PARK
POPLAR BLUFF, MO

PROJECT # C1911-01

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ENLARGED DEMO PLANS - ELECTRICAL

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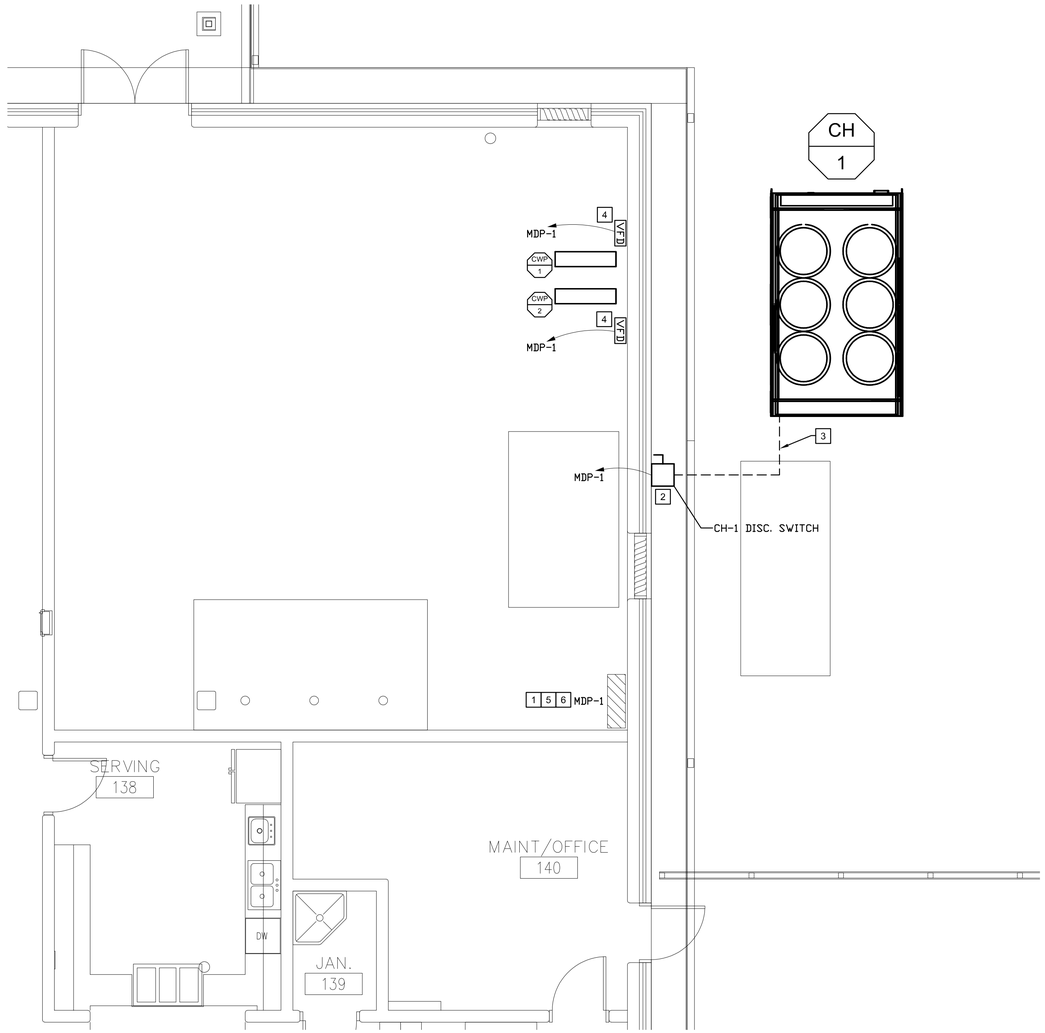
12/30/2019



ENLARGED MECH RM – ELECTRICAL

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

GENERAL NOTES

1. FOR FURTHER MECHANICAL INFORMATION, REFER TO SHEET M-601.
2. FOR FURTHER ELECTRICAL INFORMATION, REFER TO SHEET E-501.
3. THE CHILLER SHALL BE TEMPORARY FED FROM A 400 AMP FUSIBLE DISCONNECT, FED FROM EXISTING MECHANICAL EQUIPMENT DISTRIBUTION PANEL MDP-1. EXISTING FUSED SWITCHES FEEDING EXISTING THREE CONDENSING UNITS SHALL BE REMOVED FROM MDP-1. ONCE THE TRANSITION FROM THE CONDENSING UNITS TO THE NEW CHILLER SYSTEM IS COMPLETE, THE CHILLER SHALL BE FED FROM NEW ELECTRICAL FEEDER ROUTED TO EXISTING MECHANICAL EQUIPMENT DISTRIBUTION PANEL MDP-1. NEW FUSED SWITCH SHALL BE PROVIDED IN MDP-1 TO SERVE THE PROPOSED CHILLER.

KEYED NOTES

1. PROVIDE A 400 AMP 3-POLE FUSED-SWITCH, FUSED AT 300 AMP IN EXISTING PANEL MDP-1, FOR CH-1. PROVIDE ALL NECESSARY FILLER PANELS AND SPACE COVERS TO RETAIN DEADFRONT INTEGRITY.
2. PROVIDE A NEMA 3R 400 AMP DISCONNECT FOR CH-1.
3. PROVIDE (3) 500KCM AND (1) #2 GROUND IN 3" CONDUIT. EXTEND CH-1 CIRCUIT TO 400 AMP 3-POLE FUSED SWITCH REFERENCED IN KEYED NOTE #1.
4. PROVIDE A NEMA 1 VFD WITH INTEGRAL DISCONNECT FOR CHILLER PUMP. PROVIDE (3) #6 AND (1) #10 GROUND IN 3/4" CONDUIT. EXTEND CHILLER PUMP CIRCUIT TO EXISTING PANEL MDP-1, TO FUSED SPARE SWITCH DESCRIBED IN KEYED NOTE 5.
5. PROVIDE 40 AMP FUSES IN EXISTING SPARE FUSED SWITCHES IN PANEL MDP-1, FOR CWP-1 AND CWP-2.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE A TEMPORARY MEANS OF MAINTAINING POWER AND CIRCUIT PROTECTION TO THE THREE EXISTING CONDENSING UNITS. TWO OF THE EXISTING 200 AMP, 3 POLE FUSED DISCONNECTS IN MDP-1 SHALL BE REMOVED IN ORDER TO FACILITATE THE INSTALLATION OF NEW 400 AMP, 3 POLE FUSED DISCONNECT IN MDP-1 FOR THE NEW CHILLER CIRCUIT. TEMPORARY POWER MAY COME FROM MDP-1 BY MEANS OF TEMPORARY EXTERNAL 200 AMP, 3 POLE FUSED DISCONNECTS. AFTER THE NEW CHILLER BECOMES OPERATIONAL THE TEMPORARY EXTERNAL FUSED DISCONNECTS SHALL BE REMOVED.

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ENLARGED PLANS - ELECTRICAL

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EQUIPMENT DATA SCHEDULE

MARK	EQUIPMENT	LOCATION	FURNISH. BY (1)	MOTOR OR EQUIPMENT DATA			FED FROM	BRANCH CIRCUIT (3)	DISCONNECT SWITCH AT EQUIPMENT					STARTER								REMARKS (7)
				HP/KW/A (2)	VOLTS/ PHASE	INST.BY/ CONN.BY			TYPE (4)	NEMA ENCLOS. TYPE	SWITCH/ FUSE SIZE	FURNISH. BY	INST.BY/ CONN.BY	NEMA SIZE	NEMA ENCLOS. TYPE	TYPE (5)	SWITCH/ FUSE SIZE	ACCESS. (6)	FURNISH. BY	CONN.BY	CONTROL WIRING BY	
CH-1	CHILLER	OUTDOORS	23	257 MCA	208/3	23/26	MDP-1	SEE E-401	-	3R	400A/300A	26	26	-	-	-	-	-	26	26	23	(-)
CWP-1	PUMP	MECHANICAL ROOM 137	23	5 HP	208/3	23/26	MDP-1	SEE E-401	-	-	60A/40A	26	26	0	1	VFD	60A/40A	HOAP	26	26	23	(2)
CWP-2	PUMP	MECHANICAL ROOM 137	23	5 HP	208/3	23/26	MDP-1	SEE E-401	-	-	60A/40A	26	26	0	1	VFD	60A/40A	HOAP	26	26	23	(2)

(1) SPECIFICATION DIVISION NUMBER:
DIVISION 22 - PLUMBING
DIVISION 23 - MECHANICAL
DIVISION 26 - ELECTRICAL

(2) HORSEPOWER(HP) IS SHOWN UNLESS AMPS(A), KILOWATTS(KW), OR MINIMUM CIRCUIT AMPS (MCA) CALLED OUT.

(3) REFER TO FEEDER SCHEDULE WHEN THIS COLUMN CONTAINS A FEEDER DESIGNATION INSTEAD OF CONDUCTOR SIZE.

(4) NF - NON FUSED
F - FUSED
TOG - TOGGLE

(5) STARTER TYPE:
COMB1 - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH FUSED DISCONNECT SWITCH
COMB2 - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH UNFUSED DISCONNECT SWITCH
COMB3 - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER DISCONNECT
COMB4 - COMBINATION FULL VOTLAGE NON-REVERSING MAGNETIC STARTER WITH MAGNETIC ONLY MOLDED CASE CIRCUIT BREAKER DISCONNECT
FVNR - FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITHOUT DISCONNECT
MAN MANUAL STARTER WITH PILOT LIGHT
SDS - STAR DELTA STARTER
PWCP - PREWIRED CONTROL PANEL
VFD - VARIABLE FREQUENCY DRIVE
2S2W - 2 SPEED 2 WINDING
2S1W 2 SPEED SINGLE WINDING

(6) ACCESSORIES:
HOAP - HOA WITH PILOT LIGHT
PB - START/STOP PUSH BUTTON (MOMENTARY CONTACT)

(7) KEY TO REMARKS:
(1) FIRE ALARM INTERLOCK
(2) INTEGRAL DISCONNECT SWITCH
(3) MOUNT DISCONNECT SWITCH ON EQUIPMENT HOUSING
(4) INTEGRAL MOTOR STARTER
(5) INTEGRAL CONTROLLER
(6) VFD PROVIDED BY AHU MANUFACTURER

ALL MAGNETIC AND SOLID STATE STARTERS ARE TO BE EQUIPPED WITH AUXILIARY CONTACTS, PILOT LIGHTS AND FUSED CONTROL POWER TRANSFORMERS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

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SCHEDULES
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