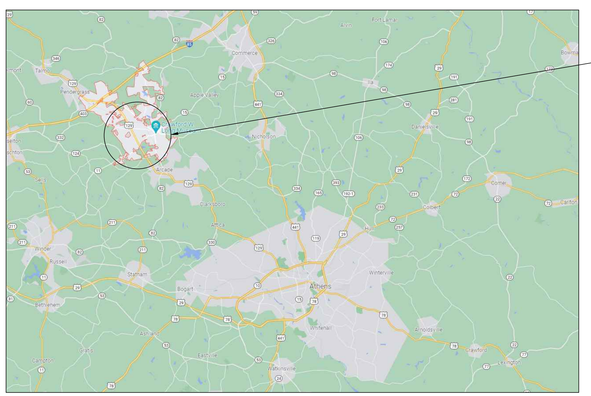
DRAWING INDEX		
SHEET NUMBER	SHEET TITLE	FOR CONSTRUCTION DOCUMENTS 4/1/2022
	GENERAL DRAWINGS	
COVER	COVER SHEET, MAP	X
	MECHANICAL DRAWINGS	
M000	HVAC GENERAL NOTES, LEGEND, SCHEDULES, AND DESIGN INTENT	X
M101	HVAC MECHANICAL ROOM PART PLAN – DEMOLITION	X
M201	HVAC MECHANICAL ROOM PART PLAN – NEW WORK	X
M301	HVAC SECTIONS	X
M401	HVAC SCHEDULES	X
M501	HVAC CONTROLS	X
	ELECTRICAL DRAWINGS	
E000	DRAWING INDEX, GENERAL NOTES, & LEGENDS	X
E021	MECHANICAL ROOM PART PLAN – POWER DEMO	X
E201	MECHANICAL ROOM PART PLAN – POWER NEW	X

Jackson County Government

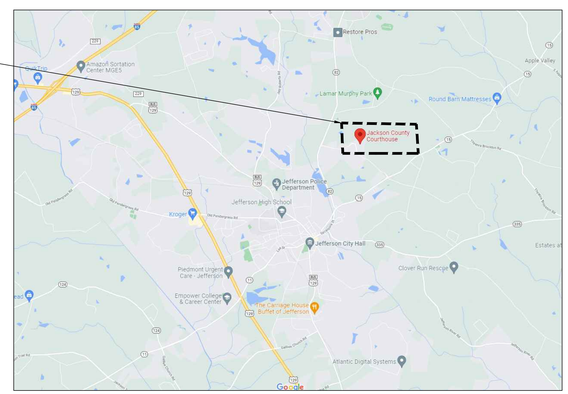
Jackson County Courthouse Chiller Replacement

at The Jackson County Courthouse
5000 Jackson Parkway
Jefferson, GA 30549

FOR CONSTRUCTION DOCUMENTS
April 1, 2022



VICINITY MAP
SCALE: NONE



SITE LOCATION MAP
SCALE: NONE

PRIME CONSULTANT / MECHANICAL ENGINEER

JOHNSON, SPELLMAN & ASSOCIATES, INC
350 RESEARCH COURT, SUITE 130
PEACHTREE CORNERS, GA 30092
CONTACT – TIM NORTH
PHONE – 678-336-5412

PROJECT MANAGER – BRAD WAGES
PHONE – 678-336-5419

ELECTRICAL ENGINEER

BARNETT CONSULTING ENGINEERS
655 ENGINEERING DRIVE, SUITE 150
NORCROSS, GA 30092
CONTACT – LEAH BENINCASA
PHONE – 404-382-9554

Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

JACKSON COUNTY COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA.
CHILLER REPLACEMENT

DATE
REVISIONS
NO.

COVER SHEET

JOB NUMBER	22JS07
DRAWN BY	HMN
CHECKED BY	BSW/TLN
DATE	04/1/22

DRAWING NUMBER

COVER

SHEETS

HVAC LEGEND & ABBREVIATIONS

SYMBOL	DESCRIPTION
OR	ECCENTRIC REDUCER FLAT SIDE ON BOTTOM OR FLAT SIDE ON TOP
	CONCENTRIC REDUCER
	PIPE UNION
	PIPE RISE
	PIPE DROP
	CAP ON END OF LINE
	GATE VALVE
	BUTTERFLY VALVE
	BALANCING VALVE
	TWO WAY MODULATING MOTORIZED CONTROL VALVE
	BALL VALVE
	RELIEF VALVE
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	TEST PLUG
	GAUGE COCK
	THERMOMETER
	PRESSURE GAUGE
	DRIP LEG
	THERMOMETER WELL
	PIPING OR EQUIPMENT TO BE REMOVED
	PIPE FLOW ARROW
UP OR DN	GRADE ARROW-INDICATES RISE OR DROP IN DUCT OR PIPE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
C	CONDENSATE DRAIN
RR	REFRIGERANT RELIEF
V	VENTILATION FAN STOP SWITCH
C	CHILLER STOP SWITCH
	EXTENT OF DEMO / CONNECT TO EXISTING
AFF	ABOVE FINISHED FLOOR
BOS	BOTTOM OF STRUCTURE
	REFRIGERANT DETECTOR
	AUDIO.VISUAL REFRIGERANT ALARM

GENERAL NOTES

1. EXISTING EQUIPMENT AND PIPING TO REMAIN, UNLESS NOTED TO BE REMOVED.
2. VERIFY LOCATIONS OF EXISTING PIPING AND EQUIPMENT PRIOR TO BEGINNING WORK.
3. REMOVE ALL CHILLED WATER, CONDENSER WATER, AND REFRIGERANT RELIEF PIPING TO EQUIPMENT AS NOTED.
4. ALL EXISTING EQUIPMENT AND PIPING IS SHOWN DASHED, NEW EQUIPMENT AND PIPING SHOWN SOLID.
5. ROUTE PIPING AS TIGHT TO STRUCTURE AS POSSIBLE, UNLESS OTHERWISE NOTED,
6. PROTECT ALL MATERIALS AND EQUIPMENT FROM DAMAGE.
7. CONTRACTOR SHALL VERIFY EQUIPMENT & PIPING'S AREA OF SERVICE PRIOR TO DEMOLISHING OR RELOCATING AND PIECE OF EQUIPMENT.
8. CONTRACTOR SHALL PROVIDE P/T PORTS AT ALL DP SENSORS, FLOW METERS AND/OR VALVES THAT REQUIRE TAB VERIFICATION. COORDINATE WITH TAB CONTRACTOR.

DESIGN INTENT

A. APPLICABLE CODES AND STANDARDS
1. INTERNATIONAL BUILDING CODE, 2018 EDITION, WITH GEORGIA AMENDMENTS (2020)(2022)
2. INTERNATIONAL RESIDENTIAL CODE, 2018 EDITION, WITH GEORGIA AMENDMENTS (2020)
3. INTERNATIONAL FIRE CODE, 2018 EDITION, WITH GEORGIA AMENDMENTS (2020)
4. INTERNATIONAL PLUMBING CODE, 2018 EDITION, WITH GEORGIA AMENDMENTS (2020)(2022)
5. INTERNATIONAL MECHANICAL CODE, 2018 EDITION, WITH GEORGIA AMENDMENTS (2020)
6. INTERNATIONAL FUEL GAS CODE, 2018 EDITION, WITH GEORGIA AMENDMENTS (2020)(2022)
7. NATIONAL ELECTRICAL CODE, 2020 EDITION, WITH GEORGIA AMENDMENTS (2021)
8. INTERNATIONAL ENERGY CONSERVATION CODE, 2015 EDITION, WITH GEORGIA SUPPLEMENTS AND AMENDMENTS (2020)(2022) OR ASHRAE 90.1-2013 ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS

B. PROJECT DESIGN SCOPE
1. The intent of the project is to demolish and replace one of two existing water cooled chillers (CHR-1). The new chiller shall be of equal capacity as the existing chillers. The new chiller shall be variable speed to allow chiller to operate down to 20% of full load tonnage. Existing chiller, CHR-2, is to remain as is. Balancing valve on new chiller piping shall be tested and balanced to provide the same pressure drop as CHR-2. Existing pumps are to remain and be rebalanced to flows shown in schedules. The existing refrigerant monitoring system shall continue to monitor both chillers and operate as currently programmed. New ventilation switch associated with refrigerant monitoring system shall be interlocked with existing ventilation fan to operate upon activation.

COOLING TOWER SCHEDULE

MARK	NOMINAL TONNAGE	NO. CELLS	EWT	LWT	GPM	WET BULB	FAN HP	VOLTAGE	DESIGN BASIS	REMARKS
CT-1	500	2	95°F	85°F	600	78°F	10	480v/3ø	EVAPCO AT 29-221	(1)

(1) EXISTING COOLING TOWER TO REMAIN AS IS.

FAN SCHEDULE

MARK	TYPE	SERVES	CFM	TSP	HP	FAN RPM	VOLTAGE	DESIGN BASIS	REMARKS
EF-1	INLINE CENTRIFUGAL	MECH ROOM	4300/2850	0.5"	2	1200	-	EXISTING	(1)

(1) EXISTING EXHAUST FAN TO REMAIN AS IS.
(2) NEW VENTILATION SWITCH ASSOCIATED WITH REFRIGERANT MONITORING SYSTEM SHALL BE INTERLOCKED WITH EXISTING VENTILATION FAN, EF-1 TO OPERATE UPON ACTIVATION

PUMP SCHEDULE

MARK	TYPE	SERVES	GPM	DEV. HEAD	HP	RPM	VOLTAGE	DESIGN BASIS	REMARKS
SP-1	HORIZONTAL SUNCTION	BUILDING CHILLED WATER	800	60	30	-	480v/3ø	B&G HSC3	(1)
TP-1	END SUCTION	COOLING TOWER	600	65	10	-	480v/3ø	B&G 4BC	(1)
TP-2	END SUCTION	COOLING TOWER	600	65	10	-	480v/3ø	B&G 4BC	(1)
CP-1	END SUCTION	CHILLER	480	30	10	-	480v/3ø	B&G 4AC	(1)
CP-2	END SUCTION	CHILLER	480	30	10	-	480v/3ø	B&G 4AC	(1)

(1) EXISTING PUMP TO REMAIN, BE RE-USED, AND REBALANCED TO FLOWS SHOWN IN SCHEDULE.

WATER COOLED CHILLER SCHEDULE

MARK	NOMINAL CAPACITY	COOLER					CONDENSER					KW MAX	NPLV	VOLTAGE	DESIGN BASIS	REMARKS
		EWT	LWT	GPM	PRESS. LOSS	PASSES	EWT	LWT	GPM	PRESS. LOSS	PASSES					
CHR-1	200	53.7°F	44°F	480	14.3 FT. W.G.	2	85°F	94.3°F	600	17.6 FT. W.G.	2	128.9	0..38	480v/3ø	YORK YWACDCG	(2)(3)(4)
CHR-2	200	54°F	44°F	480	19 FT. W.G.	2	85°F	95°F	600	11.8 FT. W.G.	2	127	-	480v/3ø	YORK YRTBTCT0	(1)(5)

(1) EXISTING WATER COOLED CHILLER TO REMAIN AS IS.
(2) CHILLER SHALL UTILIZE R134A.
(3) SEE DRAWINGS FOR INLET/OUTLET LOCATIONS.
(4) SEE SPECIFICATIONS FOR ADDITIONAL OPTIONS.
(5) BALANCE EXISTING CHILLER AS REQUIRED. EXISTING ISOLATION VALVES SHALL BE USED AS NEEDED.

JSA CONSULTING ENGINEERS
Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

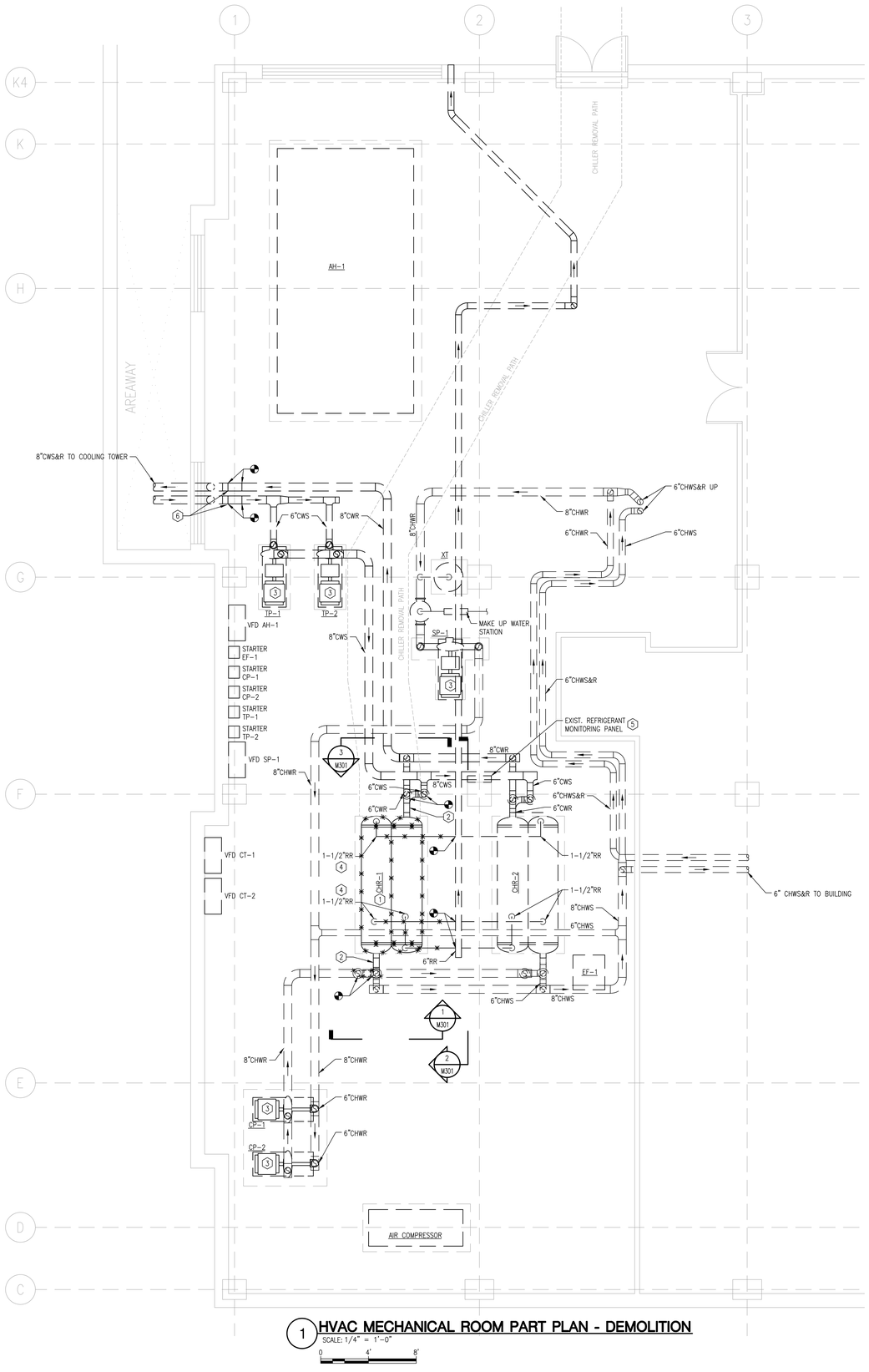
JACKSON COUNTY GEORGIA

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA.
CHILLER REPLACEMENT

DATE | REVISIONS | NO.

HVAC GENERAL NOTES, LEGEND, SCHEDULES AND DESIGN INTENT

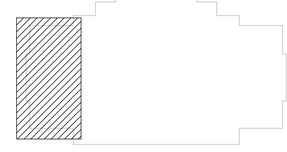
JOB NUMBER	22JS07
DRAWN BY	HMN
CHECKED BY	BSW/TLN
DATE	04/1/22
DRAWING NUMBER	M000



1 HVAC MECHANICAL ROOM PART PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"
0 4' 8'

KEY NOTES

1. EXISTING CHILLER TO BE DEMOLISHED. COORDINATE WITH NEW WORK.
2. DEMOLISH EXISTING CHILLED WATER & CONDENSER WATER PIPING TO EXTENTS SHOWN.
3. EXISTING PUMP TO REMAIN AND BE REBALANCED TO FLOWS SHOWN ON SCHEDULES ON SHEET M000.
4. DEMOLISH EXISTING REFRIGERANT RELIEF PIPING TO EXTENTS SHOWN. COORDINATE WITH NEW WORK.
5. EXISTING REFRIGERANT MONITORING PANEL TO REMAIN.
6. DEMOLISH EXISTING CONDENSER WATER PIPING TO EXTENTS SHOWN.



KEY PLAN
SCALE: NOT TO SCALE

Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA.
CHILLER REPLACEMENT

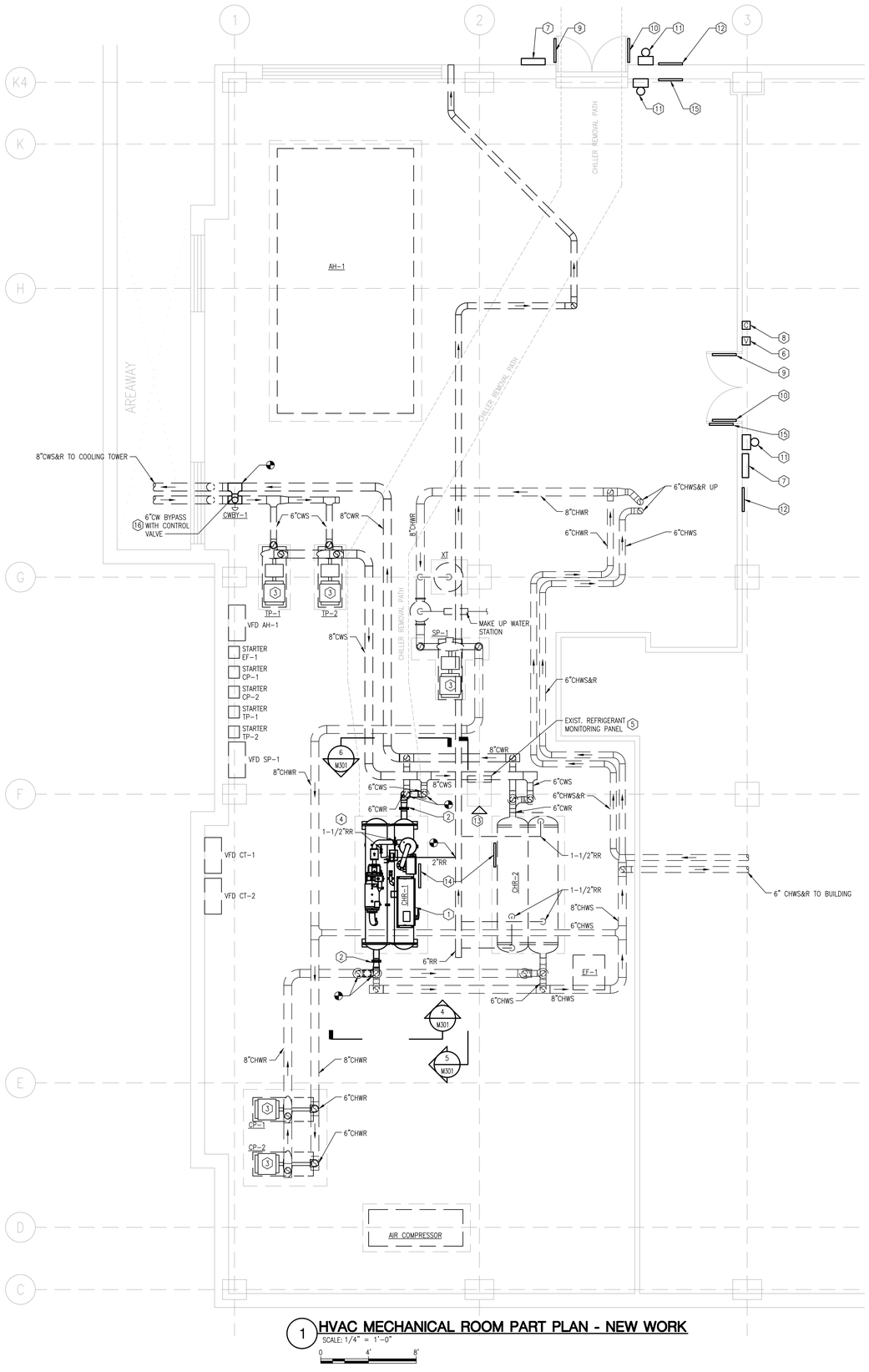
NO.	REVISIONS	DATE

HVAC MECHANICAL ROOM PART PLAN - DEMOLITION

JOB NUMBER	22JS07
DRAWN BY	HMN
CHECKED BY	BSW/TLN
DATE	04/1/22

DRAWING NUMBER

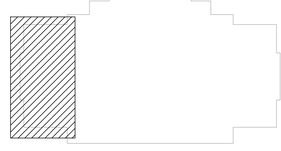
M101



1 HVAC MECHANICAL ROOM PART PLAN - NEW WORK
SCALE: 1/4" = 1'-0"
0 4' 8'

KEY NOTES

1. NEW CHILLER. SEE SCHEDULES AND DETAILS 1/M000 AND 3/M000 FOR MORE INFORMATION.
2. NEW CHILLED WATER AND CONDENSER WATER PIPING. CONNECT TO EXISTING AS SHOWN.
3. EXISTING PUMP TO REMAIN AND BE REBALANCED TO FLOWS SHOWN ON SCHEDULES ON SHEET M000.
4. NEW REFRIGERANT RELIEF PIPING TO BE CONNECTED TO EXISTING REFRIGERANT RELIEF MAIN AS SHOWN.
5. EXISTING REFRIGERANT MONITORING PANEL TO REMAIN.
6. NEW VENTILATION FAN SWITCH. SEE DETAIL 10/M401. NEW VENTILATION SWITCH ASSOCIATED WITH REFRIGERANT MONITORING SYSTEM SHALL BE INTERLOCKED WITH EXISTING VENTILATION FAN EF-1 TO OPERATE UPON ACTIVATION
7. NEW REFRIGERANT MONITORING CONTROL PANEL – EXTERIOR.
8. NEW CHILLER STOP SWITCH. SEE DETAIL 9/M401.
9. REFRIGERANT MACHINERY ROOM WARNING SIGN – EXTERIOR. SEE DETAIL 7/M401.
10. MACHINERY ROOM SIGN. SEE DETAIL 5/M401.
11. NEW AUDIO/VISUAL REFRIGERANT ALARM. TYPICAL OF 3, INTERIOR AND EXTERIOR OF CHILLER ROOM.
12. REFRIGERANT LEAK EMERGENCY SIGN. SEE DETAIL 8/M401.
13. NEW REFRIGERANT DETECTOR, INSTALL 12" AFF.
14. CHILLER REFRIGERANT DATA SIGN. SEE DETAIL 6/M401.
15. REFRIGERANT MACHINERY ROOM WARNING SIGN – INTERIOR. SEE DETAIL 4/M401.
16. INSTALL NEW CONDENSER WATER PIPING WITH NEW BYPASS CONTROL VALVE AS SHOWN.



KEY PLAN
SCALE: NOT TO SCALE

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Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

LIBERTY COUNTY GEORGIA

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA.
CHILLER REPLACEMENT

NO.	REVISIONS	DATE

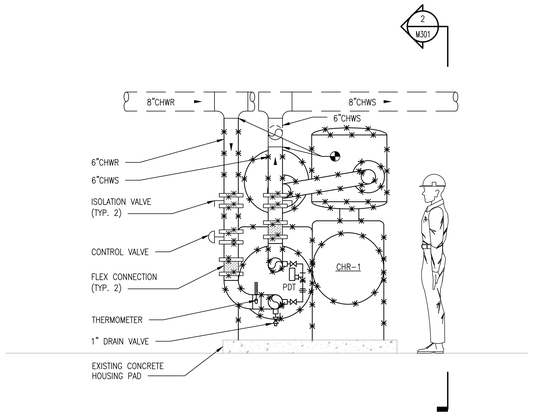
HVAC MECHANICAL ROOM PART PLAN - NEW WORK

JOB NUMBER	22JS07
DRAWN BY	HMN
CHECKED BY	BSW/TLN
DATE	04/1/22

DRAWING NUMBER

M201

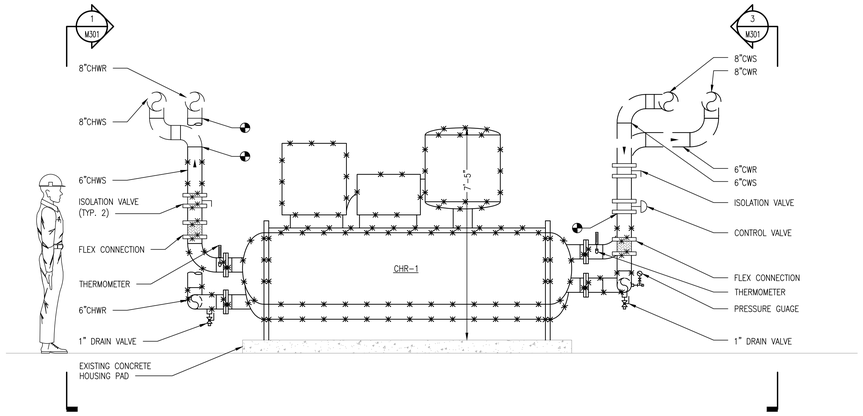
3 OF 6 SHEETS



1 CHR-1 CHILLED WATER SECTION - DEMOLITION

SCALE: 1/2" = 1'-0"

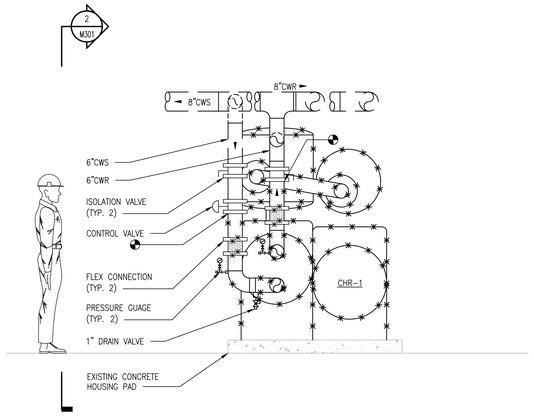
0 2' 4'



2 CHR-1 SIDE SECTION - DEMOLITION

SCALE: 1/2" = 1'-0"

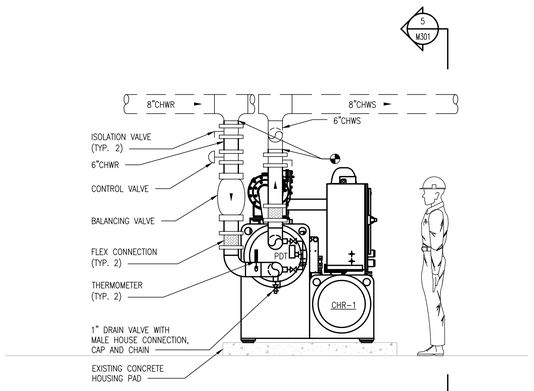
0 2' 4'



3 CHR-1 CONDENSER WATER SECTION - DEMOLITION

SCALE: 1/2" = 1'-0"

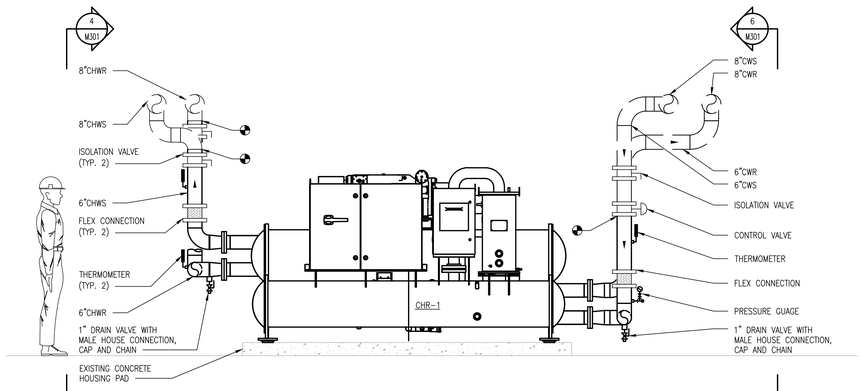
0 2' 4'



4 CHR-1 CHILLED WATER SECTION - NEW WORK

SCALE: 1/2" = 1'-0"

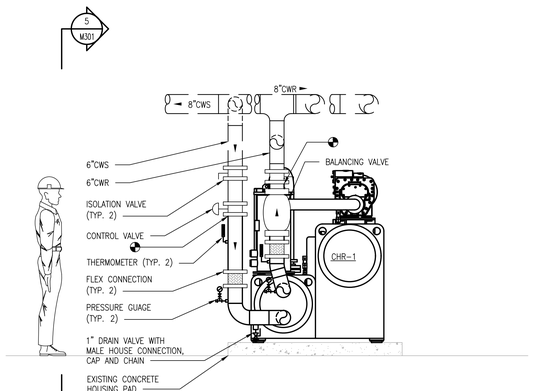
0 2' 4'



5 CHR-1 SIDE SECTION - NEW WORK

SCALE: 1/2" = 1'-0"

0 2' 4'



6 CHR-1 CONDENSER WATER SECTION - NEW WORK

SCALE: 1/2" = 1'-0"

0 2' 4'

Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsaca.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
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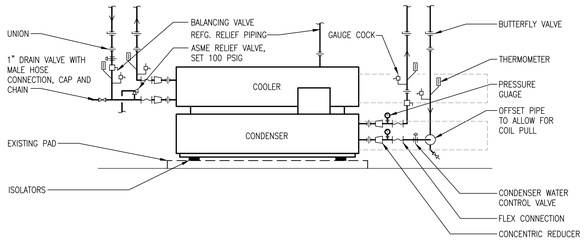
HVAC SECTIONS

JOB NUMBER	22JS07
DRAWN BY	HMN
CHECKED BY	BSW/TLN
DATE	04/1/22
DRAWING NUMBER	

M301

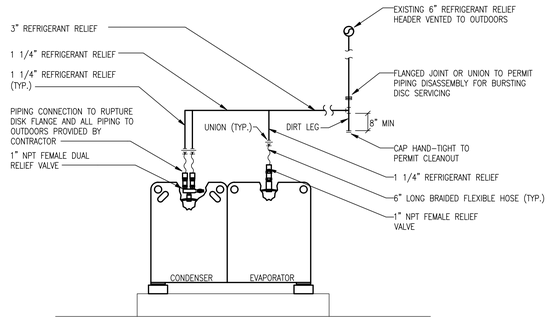


1 CHILLER PIPING DIAGRAM

SCALE: NOT TO SCALE

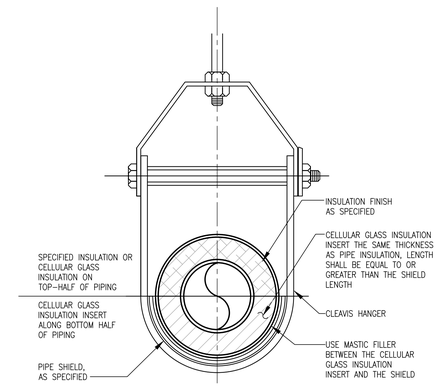
NOTE: ACTUAL CHILLER PIPING CONNECTION LOCATIONS MAY VARY. SEE DRAWINGS FOR MORE INFORMATION.

PROVIDE DP SENSOR PIPING ARRANGEMENT SIMILAR TO EXISTING.



2 REFRIGERANT VENT PIPING DETAIL

SCALE: NOT TO SCALE



3 WATER PIPING SUPPORT DETAIL: CELLULAR GLASS INSERT

SCALE: NOT TO SCALE

NOTE: FOR ALL WATER PIPING 2" AND LARGER.

4 REFRIGERANT MACHINERY ROOM WARNING SIGN - INTERIOR

SCALE: NOT TO SCALE

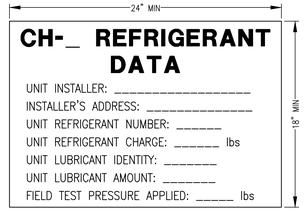
NOTES: 1. FORMAT FOR WARNING SIGNAL PANEL SHALL BE BLACK LETTERS ON SAFETY ORANGE BACKGROUND.

2. 1" & 1-3/4" TALL BLACK LETTERING ON WHITE BACKGROUND. SILKSCREENED ALUMINUM OR ENGRAVED PLASTIC.

5 MACHINERY ROOM SIGN

SCALE: NOT TO SCALE

NOTE: 1" & 1-3/4" TALL WHITE LETTERING ON RED BACKGROUND. SILKSCREENED ALUMINUM OR ENGRAVED PLASTIC.



6 CHILLER REFRIGERANT DATA SIGN

SCALE: NOT TO SCALE

NOTE: 1" & 1-3/4" TALL WHITE LETTERING ON RED BACKGROUND. SILKSCREENED ALUMINUM OR ENGRAVED PLASTIC.

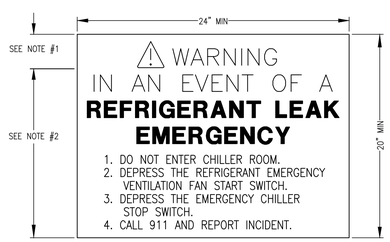
CONTRACTOR TO FURNISH ALL DATA NEEDED TO FILL IN REQUIRED INFORMATION. ALL DATA TO BE COMPLETED BY THE CONTRACTOR TO BE MIN. 0.5" IN HEIGHT AND PERMANENTLY PLACED ON SIGN.

7 REFRIGERANT MACHINERY ROOM WARNING SIGN - EXTERIOR

SCALE: NOT TO SCALE

NOTES: 1. FORMAT FOR WARNING SIGNAL PANEL SHALL BE BLACK LETTERS ON SAFETY ORANGE BACKGROUND.

2. 1" & 1-3/4" TALL BLACK LETTERING ON WHITE BACKGROUND. SILKSCREENED ALUMINUM OR ENGRAVED PLASTIC.

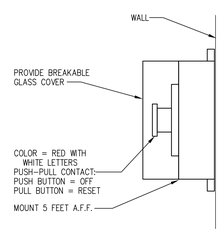


8 REFRIGERANT LEAK EMERGENCY SIGN

SCALE: NOT TO SCALE

NOTES: 1. FORMAT FOR WARNING SIGNAL PANEL SHALL BE BLACK LETTERS ON SAFETY ORANGE BACKGROUND.

2. 1" & 1-3/4" TALL BLACK LETTERING ON WHITE BACKGROUND. SILKSCREENED ALUMINUM OR ENGRAVED PLASTIC.

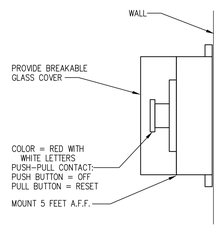


LABEL ASSEMBLY PANEL TO READ AS FOLLOWS: "EMERGENCY CHILLER STOP"
LABEL BUTTON TO READ AS FOLLOWS: "PULL TO RESET"

9 CHILLER STOP SWITCH DETAIL

SCALE: NOT TO SCALE

COMPLETE EMERGENCY POWER OFF PUSH BUTTON PILLA MODEL SERIES ST120



LABEL ASSEMBLY PANEL TO READ AS FOLLOWS: "REFRIGERANT EMERGENCY VENTILATION FAN START"
LABEL BUTTON TO READ AS FOLLOWS: "PULL TO RESET"

10 EMERGENCY VENTILATION SWITCH DETAIL

SCALE: NOT TO SCALE

COMPLETE EMERGENCY POWER OFF PUSH BUTTON PILLA MODEL SERIES ST120SL

JSA CONSULTING ENGINEERS
Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

LOWNDES COUNTY GEORGIA

JACKSON COUNTY COURTHOUSE CHILLER REPLACEMENT
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CHILLER REPLACEMENT

NO.	REVISIONS	DATE

HVAC DETAILS

JOB NUMBER	22JS07
DRAWN BY	HWN
CHECKED BY	BSW/TLN
DATE	04/1/22

DRAWING NUMBER

M401

5 OF 6 SHEETS

CONTROL SEQUENCES

EXISTING CHILLER PLANT:

A. Existing Chiller Plant control sequences as provided by the Nottingham Brook & Pennington 2003 design documents are noted below. All existing Chiller Plant control sequences are to remain as is other than the addition of a new Condenser Water Bypass sequence as noted below.

B. General: The DDC System shall fully control the chilled water systems and equipment and provide monitoring and diagnostic information for management purposes.

C. Cooling Enable: Cooling shall be enabled above 60°F or when any chilled water valve opens to more than 50% continuously for 15 min. (adj.) or whenever manually enabled by the operator at the operator interface.

D. Chilled Water Load Determination
1. Chilled water load shall be calculated instantaneously from the flow and temperature difference of the following loops:
   a. Individual secondary circuits
2. Chilled water load for the purposes of the staging the chillers shall be calculated as the 10 min. average of the "average secondary chilled water supply temperature" (ASCHINST).

E. Proof of Chiller Operation: The DDC System shall prove the operation of the chillers via chiller status and alarm points. When a chiller is assessed as failed, the run command shall be locked out and require manual acknowledgment at the operator interrace before it is restarted. The DDC system shall then start the next chiller in rotation. The flowing conditions shall result in the assessment that the chiller has failed
1. Loss of chiller status for more than 15 secs (adj.) while it is requested
2. Closure of chiller failure input
3. Leaving chilled water temperature exceeds chiller setpoint plus 8°F for 10 min. continuously
4. Chiller environment is unacceptable for 10 min. as specified below.

F. Chiller Environment Monitoring: The DDC System shall monitor the environment of all active (not starting or stoppers) chillers and remove the run command when the environment is assessed as acceptable. An unacceptable environment will include any or the following:
1. Loss of status on the associated primary pump (pump proof debounce time shall not apply).
2. Condenser water entering temperature below CHW supply plus 15°F or above 100°F.
3. Chiller head pressure below 70°F equivalent condensing temperature.
4. Condenser water flow below minimum required by the manufacturer.
5. Chilled water flow to the chiller below a minimum setpoint value.
6. Chilled water entering temperature greater than 90°F.

G. In the event that the environment is assessed as unacceptable, the DDC System shall enunciate an alarm, remove chiller run command (not the chiller request; all supporting equipment shall continue to operate) and start a timer. If the environment is still unacceptable after 10 min. (Adj.), fail the chiller.

H. Chiller Failure Indicators: Any chiller system failure recognized by the control system software will be indicated by a chiller failure light located on a control cabinet. The chiller system will remain off until reset by an operator by individual push button switches next to the failure indicators located on a control cabinet. Provide for each chiller.

I. Chiller Request: A chiller request is the request for a chiller and the associated equipment. A chiller request is issued before the actual run command to the chiller which is the closure of the physical point that enables the chiller.

J. Chiller Staging: The DDC System shall control the starting and stopping of chillers to meet the demands of the secondary chilled water systems. Chillers shall be started per the chiller start sequence and stopped per the chiller stop sequence specified below. Once the conditions merit starting or stopping a chiller, the DDC System shall complete the starting or stopping sequence regardless of temperature fluctuations during the sequence. Additional chillers shall be started based on secondary CHW supply temperature as follows:
1. For the purposes of chiller staging control, a virtual point called "average secondary chilled water supply temperature" (ASCHWST) shall be continuously calculated and displayed. This value shall be the 10 minute average of the instantaneously sensed secondary chilled water supply temperature.
2. An additional chiller shall be requested and started per the chiller start sequence specified below when:
   a. The ASCHWST rises more than 3°F above the secondary chilled water supply set point for 5 min. (adj.) continuously,
   b. AND when more than 30 min. (adj.) has elapsed since the start of the last chiller.
   c. Chillers shall be stopped, per the chiller stop sequence specified below, based on the averaged cooling load as follows:
      - One chiller shall be stopped when the load falls below (Total Nominal Capacity–(Nominal Capacity of Last Chiller),
      - AND when a minimum of 15 min. has elapsed since a chiller has been stopped
      - AND when a minimum of 30 min. has elapsed since this chiller has been started.

K. Chilled Water Temperature Control:
1. The DDC System shall reset the setpoint of the active chillers to maintain the secondary chilled water setpoint. Specifically, this shall be accomplished as follows:
   a. The DDC System shall reset the set point of active chillers unit mounted control 2°F below (adj.) the SCHW setpoint or to maintain the SCHW setpoint with a minimum of 42°F.

L. Primary CHW Pump Control – CP–1/CP–2: Primary pumps shall be started to serve their respective chiller when it is requested to run per the chiller start and stop sequences specified. Pumps shall run continuously when the respective chiller is requested. The DDC System shall prove operation of the pump.

M. Secondary CHW Pump (with VFD) Control – SP–1: Lead secondary pump shall run continuously whenever any AH is ON and ODT is above 55. The DDC System shall vary the speed of the pumps to maintain the differential pressure setpoint across the remote differential pressure sensor. The differential pressure setpoint shall be initially 10 psi (adj.) with optimal value determined by the balancing and controls contractor. The DDC System shall prove operation of the pump.

N. Condenser Water Pump Control TP–1/TP–2:
1. Pumps shall be started per the chiller start and stop sequences specified to serve their respective chiller when it is requested to run. Pumps shall run continuously when their chiller is requested. The DDC System shall prove operation of the pumps.
2. The N.C. butterfly isolation valve at each tower shall open prior to start of respective pump.

O. Condenser Water Bypass:
1. On a call for first stage cooling and the condenser water supply temperature is less than 75°F (adjustable), all existing cooling tower isolation valves shall close, and the new tower bypass valve, CWBY–1, shall remain open until condenser water supply temperature (flow to the chiller) reaches 7 degrees above ambient wet bulb. Bypass valve shall then begin to modulate closed, the lead tower inlet valve shall open 100%, and the lead tower outlet valve shall modulate proportionally open. The lag tower inlet and outlet valves shall remain closed during first stage cooling. Upon the lead tower return valve reaching the fully–open position, the DDC system shall enable the lead cooling tower fan to start. Cooling tower supply water shall be maintained at approximately 7 degrees above ambient wet bulb between the limits of 75°F and 85°F (as recommended by the chiller manufacturer). The lead cooling tower cell fan speed shall modulate via the associated variable frequency drive to maintain condenser water supply temperature. On a drop in fan speed below 30% of rated speed, fan shall stop. If cooling tower supply water temperature continues to drop after cooling tower fan has stopped, bypass and lead tower outlet valves shall modulate to maintain minimum temperature setpoint. Lead tower fan shall restart on a rise in condenser water supply temperature 2°F (adjustable) above set point.

P. Cooling Tower Control:
1. The DDC System shall enable, per the chiller start and stop sequence specified below, all towers that are not locked out in "Maintenance Mode" or failed whenever cooling is enabled. When enabled, the DDC System shall open the isolation valves to allow flow and control the fans as follows:
   a. The DDC System shall use a PID loop to maintain a leaving tower water temperature of 75°F. The output of this loop shall control the starting, stopping, and speed of the fans on all towers. This PID loop shall be set up with functionally a 16°F throttling range and only a small/slow integral gain.
   b. The output of the PID loop shall control the VSD's of all active cells at the same speed.
   c. On a PID output of greater than 90% for 1 min (adj.), the DDC System shall increment up one fan stage and start the respective stage fan. The new cell shall ramp to speed per adjustable acceleration rates. If the output remains above 60% for 5 min (adj.) after a stage has been started, the next stage shall be started.
   d. On a PID output of less than 10% for 1 min (adj.), the DDC System shall decrement down one fan stage and stop the respective stage fan. Once disabled the stage shall remain disabled for a minimum of 1 min. (adj.)
   e. The DDC System shall prove operation of each fan individually
   f. Program each tower for fan VFD to skip tower resonant frequencies and maintain minimum fan/drive RPM required by the tower manufacturers. Provide programming to cycle fan if VFD malfunctions.

Q. Chiller Priority Selection:
1. The DDC System shall automatically prioritize the chillers for starting order. One of the following methods shall be employed to rotate, and reprioritize the chillers.
   a. The chiller with the least run time shall be started first and the chiller with the greatest runtime shall be stopped first.
   b. The DDC System shall provide a graphic screen to support the manual selection of chiller priorities.
   c. The chiller priorities shall be rotated based on a predetermined schedule. Owner shall dictate a regular schedule for the priorities to be switched.

2. Operators shall be able to lock out chillers in Maintenance Mode. This means that the requests for this chiller and associated appurtenances shall be bypassed. This shall be done through a graphic icon associated with a virtual point indicating whether the maintenance mode is active or via a property associated with the chiller icon.

R. Chiller Start Sequence:
1. On a request for a chiller to start as specified above under "Chiller Staging", the following sequence shall occur:
   a. Wait one minute (adj.).
   b. Enable additional cooling towers as specified (if applicable). Command the tower isolation valve to open.
   c. Gradually reset the demand limit to all active chillers from 100% to 50% (adj.) of max. amps
   d. Enable condenser water head pressure control (start at minimum flow position and gradually modulate open to maintain head pressure after chiller is started.)
   e. Request the start of the applicable condenser water pump and prove operation.
   f. After condenser pump operation is proven, the DDC System shall start the applicable primary chilled water pump and prove operation.
   g. Wait a maximum of 5 min. after the command to start the condenser pump for the chiller environment as specified above (except for head pressure – allow an additional 5 minutes after chiller start for head pressure control) to be acceptable. As soon as the environment is assessed as acceptable, continue the start sequence. If after 5 min. the environment is not acceptable, fail the chiller and start the next chiller.
   h. Command the chiller to start under its own control.
   i. Regulate condenser water valve to maintain head pressure per the requirements above.
   j. Monitor chiller status and prove operation. If status is not indicated within 3 minutes (adj.) of a command to start, enunciate an alarm, disable and lock out chiller.
   k. After status is proven, gradually reset current limit to all active chillers to 100%.

S. Chiller Stop Sequence
1. When a chiller is no longer needed as specified in chiller staging, the following sequence shall occur:
   a. Remove chiller run command.
   b. Wait for status to clear and for the chiller to stop under control.
   c. Wait 1 min. (adj.) then stop associated chiller pump.
   d. Stop the condenser pump.
   e. Close applicable condenser flow valves and tower isolation valves.

T. Tower Basin Level Control:
1. Normal Levels: N.C. pneumatic make–up water valve shall open at lower and close at upper levels as controlled from the electronic level switch at the tower basin. Refer to now diagram.
2. Blowdown: A conductivity meter shall, when cooling water is flowing, hold bleed water valve open until water conductivity is reduced to an acceptable level.
3. Emergency Low Level Cutoff: Pump TP shall stop when this level is reached. A manual reset relay shall be provided in control panel to prevent automatic restarting.

U. Control Panel: Mount in Chiller Mechanical Room with the following items in the cover:
1. Alarms:
   a. Chiller failure indication and reset switch.
   b. Refrigerant monitor alarm indication and reset switch.
   c. Tower basin low level indication and reset switch.

V. Refrigerant Monitors: Dry contact closure of refrigerant monitor shall initiate "ALARM" ventilation sequences specified herein. Provide visual and audible alarm annunciation with manual reset. Reset shall restore "normal" ventilation sequences. New ventilation switch associated with refrigerant monitoring system shall be interlocked with existing ventilation fan EF–1 to operate upon activation.

W. Tower Chemical Feed Pumps: Water meter in the makeup water line with electric contact cycles pump(s) thru cycling timer.

CHILLER SERIAL INTERFACE POINTS

A. ANALOG MONITORING:
(1) LEAVING CHILLED WATER TEMP
(2) RETURN CHILLED WATER TEMP
(3) EVAPORATOR PRESSURE
(4) CONDENSER PRESSURE
(5) OIL PRESSURE DIFFERENTIAL
(6) RETURN CONDENSER LIQUID TEMP
(7) LEAVING CONDENSER LIQUID TEMP
(8) MOTOR CURRENT PERCENT FLA
(9) VFD PHASE A CURRENT
(10) VFD PHASE B CURRENT
(11) VFD PHASE C CURRENT
(12) LEAVING CHILLED LIQUID SETPOINT–SELECTED
(13) MOTOR CURRENT LIMIT SETPOINT–SELECTED
(14) EVAPORATOR SATURATION TEMP
(15) CONDENSER SATURATION TEMP
(16) DISCHARGE TEMP
(17) OIL SUMP TEMP
(18) REFRIGERANT LEVEL POSITION
(19) UNIT OPERATING HOURS
(20) UNIT SYSTEM STARTS
(21) OIL SUMP PRESSURE
(22) OIL PUMP PRESSURE
(23) ACC MAP PRV POSITION
(24) VFD OUTPUT VOLTAGE
(25) VFD INPUT POWER
(26) VFD KILOWATT HOURS
(27) VFD DC BUS VOLTAGE
(28) VFD INVERTER LINK CONTROL
(29) ACC SURGE COUNT
(30) VFD OUTPUT FREQUENCY
(31) HARMONIC FILTER MAX VOLTAGE TOTAL HARMONIC DISTORTION
(32) HARMONIC FILTER MAX VOLTAGE TOTAL DEMAND DISTORTION
(33) HARMONIC FILTER TOTAL SUPPLY KVA

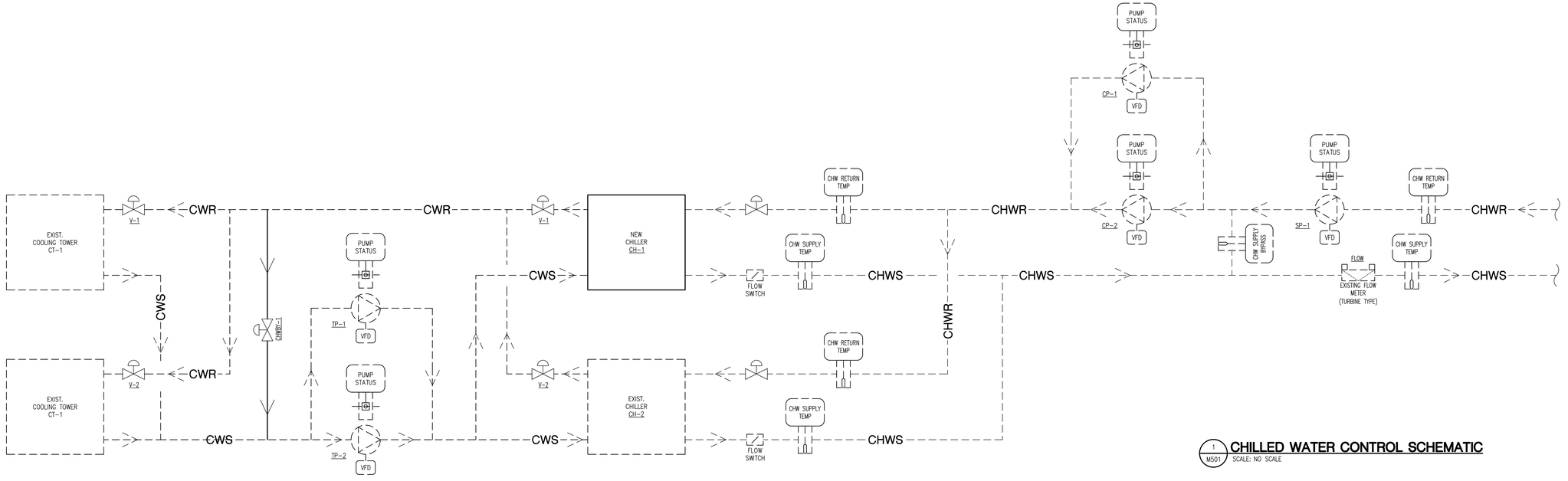
B. DIGITAL MONITORING:
(1) MOTOR RUN CONTACTS
(2) LIQUID LINE SOLENOID
(3) CHILLED LIQUID PUMP
(4) PANEL STOP SWITCH (START ENABLED/STOP)
(5) CHILLED LIQUID FLOW SWITCH
(6) ADAPTIVE CAPACITY CONTROL VSM (TRUE/FALSE)
(7) ADAPTIVE CAPACITY CONTROL NSP (TRUE/FALSE)
(8) VARIABLE SPEED DRIVE WATER PUMP RELAY
(9) HARMONIC FILTER INSTALLED
(10) ACC SURGE TYPE

C. CODE MONITORING:
(1) ANTI–RECYCLE TIME REMAINING
(2) UNIT WARNING FAULT CODE
(3) OPERATION CODE
(4) UNIT SAFETY FAULT CODE
(5) UNIT CYCLING FAULT CODE
(6) VFD INTERNAL AMBIENT TEMP
(7) VFD CONVERTER HEATSINK TEMP
(8) PRE ROTATION VANES POSITION
(9) ACC MAP OUTPUT FREQUENCY
(10) REFRIGERANT LEVEL SETPOINT
(11) HIGH SPEED THRUST BEARING PROXIMITY POSITION
(12) HIGH SPEED THRUST BEARING PROXIMITY REFERENCE

INPUT/ OUTPUT SUMMARY

	OUTPUTS					INPUTS										SOFTWARE							NOTES
	DIGITAL			ANALOG		DIGITAL				ANALOG						ALARM				SYSTEM MANAGEMENT			
	START/STOP	OPEN/CLOSE	ENABLE/DISABLE	ON/OFF	DDC MODULATION	SETPOINT ADJUST	DIFF. PRESS. SWITCH	CURRENT SWITCH	ON/OFF	OPEN/CLOSE CONTACT	ALARM CONTACT	GPM/GALLONS	POSITION FEEDBACK	FAN/PUMP SPEED	TEMPERATURE	CO_2 CONCENTRATION (PPM)	WATER LEVEL	AIRFLOW	CISTERN LEVEL (% FULL)	FAN/PUMP VFD FAILURE	EQUIPMENT FAILURE	HI/LO LIMIT	TEMPERATURE	SAFETY ALARM	WATER LEVEL/OVERFLOW	RUN TIME	EQUIP/VAL STATUS	RESET SCHEDULE	TREND DATA	
CHILLER CH–1																												X	(1)
COOLING TOWER CT–1 & CT–2			X																									X	
COOLING TOWER BYPASS VALVE CWBY–1				X									X						X									X	

(1) NEW CHILLER CH–1 SHALL BE PROVIDED WITH AND INTERFACE MONITORING POINTS BASED UPON YORK, VIA BACNET. SEE LIST OF ANALOG, DIGITAL & CODE MONITORING POINTS ABOVE.



1 M501 **CHILLED WATER CONTROL SCHEMATIC**
SCALE: NO SCALE

CONSULTING ENGINEERS
Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY L. NORTH

LITHONIA CONYERS ROCKDALE GEORGIA

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA.
CHILLER REPLACEMENT

REVISIONS
NO. | DATE

HVAC CONTROLS

JOB NUMBER	22JS07
DRAWN BY	HWN
CHECKED BY	BSW/TLN
DATE	04/1/22
DRAWING NUMBER	M501

6 OF 6 SHEETS

SYMBOLS LEGEND

ONE-LINE SYMBOL SCHEDULE

Symbol	Description
	ARC ENERGY REDUCING MAINTENANCE SWITCH
	AUTOMATIC TRANSFER SWITCH WITH BYPASS/ ISOLATION
	AUTOMATIC TRANSFER SWITCH, CLOSED TRANSITION
	AUTOMATIC TRANSFER SWITCH, OPEN TRANSITION
	BATTERY
	CIRCUIT BREAKER, BOLT-ON, FUSED
	CIRCUIT BREAKER, BOLT-ON, STARTER
	CIRCUIT BREAKER, BOLT-ON, STARTER-DISCONNECT
	CIRCUIT BREAKER, DRAW-OUT
	CIRCUIT BREAKER, DRAW-OUT, FUSED
	CIRCUIT BREAKER, FULL PLUG-IN
	CIRCUIT BREAKER, LINE SIDE PLUG-IN
	CIRCUIT BREAKER, MEDIUM VOLTAGE, DRAW-OUT
	CIRCUIT BREAKER, PLUG-IN
	CIRCUIT BREAKER, PLUG-IN, FUSED
	CIRCUIT CONTINUES TO "EQPM", ON DRAWING "#/E#.#"
	CONTACT, NORMALLY CLOSED
	CONTACT, NORMALLY OPEN
	CRADLE FOR DRAW-OUT CIRCUIT BREAKER
	CURRENT TRANSFORMER
	DC TO DC CONVERTER
	DELTA CONNECTION
	DISCONNECT SWITCH
	DISCONNECT SWITCH WITH FUSE
	DISCONNECT SWITCH WITH FUSE AND STARTER
	FEEDER ID – REFER TO FEEDER SCHEDULE
	FUSE
	FUSE, DRAW-OUT
	GENERATOR
	GROUND
Ground	
	GROUND FAULT
	INVERTER
	KIRK KEY
	LIGHTNING SURGE ARRESTOR
	LUG
	REACTOR
	RECTIFIER
	RESISTOR
	SHUNT TRIP
	STATIC SWITCH
	STATIC TRANSFER SWITCH
	THERMAL OVERLOAD TRIP
	TRANSFORMER
	UNDER VOLTAGE DEVICE
	UTILITY METER
	WYE CONNECTION
	WYE CONNECTION WITH RESISTOR GROUNDED NEUTRAL
	WYE CONNECTION WITH SOLID GROUNDED NEUTRAL

DEVICE SYMBOL LEGEND

FLOOR	CEILING	WALL STANDARD HEIGHT	WALL NON-STANDARD HEIGHT	DESCRIPTION
				JUNCTION BOX
				LOW VOLTAGE JUNCTION BOX
				SINGLE RECEPTACLE
				DUPLEX RECEPTACLE
				DUPLEX RECEPTACLE, SPLIT-WIRED
				DOUBLE DUPLEX RECEPTACLE
				DOUBLE DUPLEX RECEPTACLE, SPLIT-WIRED
				GFCI DUPLEX RECEPTACLE
				GFCI DOUBLE DUPLEX RECEPTACLE
				SPECIAL PURPOSE RECEPTACLE
				MULTI-SERVICE ASSEMBLY FLOOR OUTLET

POWER SYMBOL LEGEND

Symbol	Description
	COMBINATION STARTER
	DISCONNECT SWITCH. 30/3/F/WP INDICATES 30 AMP, 3-POLE, F=FUSED / NF=NOT-FUSED, WEATHERPROOF
	EQUIPMENT AS NOTED. DOUBLE LINE INDICATES FRONT OF EQUIPMENT
	MOTOR
	MOTOR RATED SWITCH
	MOTOR STARTER
	SURFACE MOUNTED PANELBOARD
	FLUSH MOUNTED PANELBOARD
	REVENUE METER
	SLEEVE THROUGH WALL
	PLYWOOD BACKBOARD
	SURFACE RACEWAY
	PUSHBUTTON
	BUSWAY RISER
	PULLBOX
KB	KNOX BOX

MISCELLANEOUS SYMBOLS

Symbol	Description
X	NOTE REFERENCE SYMBOL

ABBREVIATIONS

A	AMPERES
AB	ABOVE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHC	ABOVE HUNG CEILING
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ANN	ANNUNCIATOR
ASSD	AIR SAMPLING SMOKE DETECTION
ASTS	AUTOMATIC STATIC TRANSFER SWITCH
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BATT	BATTERY
BB	BACKBOARD
BC	BARE COPPER
BC/BF	DEVICES MOUNTED BELOW SUSPENDED CEILING AND BELOW RAISED FLOOR
BFF	BELOW FINISHED FLOOR
BKR	BREAKER
BLDG	BUILDING
BRF	BELOW RAISED FLOOR
BTM	BOTTOM
BW	BOTH WAYS
C	CONDUIT
CAB	CABINET
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CC	CCTV CAMERA
CKT	CIRCUIT
CL	CENTERLINE
CLG	CEILING
CO	COMPANY
COL	COLUMN
COMM	COMMUNICATIONS
CONC	CONCRETE
CONN	CONNECTION, CONNECT
CONTR	CONTRACTOR
COORD	COORDINATE
CT	CURRENT TRANSFORMER
CUH	CABINET UNIT HEATER
CW	COOL WHITE
D	DEEP
D Δ	DELTA CONNECTION
DB	DECIBEL
DC	DIRECT CURRENT
DET	DETECTOR
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DIV	DIVISION
DN	DOWN
DP	DISTRIBUTION PANEL
DWG	DRAWING
EA	EACH
EF	EXHAUST FAN
EG	EQUIPMENT GROUND
EL	ELEVATION
ELEC	ELECTRIC(AL)
ELU	EMERGENCY LIGHT UNIT
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EO	ELECTRONICALLY OPERATED
EPO	EMERGENCY POWER OFF
EPR	ETHYLENE PROPYLENE RUBBER INSULATION
EQ	EQUAL
EQUIP, EQPM	EQUIPMENT
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WALL HEATER
EX, EXIST	EXISTING
EXR	EXISTING RELOCATED TO LOCATION ON PLAN
EXT	EXTERIOR
F	FUSE(D)
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PAEL
FCU	FAN COIL UNIT
FIXT	FIXTURE
FL	FLOOR
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FLR	FLOOR
FLUOR	FLUORESCENT
FO	FIBER OPTIC
FRA	FIRE ALARM REMOTE ANNUNCIATOR
FURN	FURNISH
FUT	FUTURE
FVNR	FULL VOLTAGE NON-REVERSING
G, GND	GROUND
GALV	GALVANIZE(D)
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HD	HEAVY DUTY
HGT, HT	HEIGHT
HH	HAND HOLE
HID	HIGH INTENSITY DISCHARGE
HO	HIGH OUTPUT
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
IC	INTERCOMMUNICATION
ID	IDENTIFY, IDENTIFICATION
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
INSUL	INSULATION
IPS	INTERRUPTIBLE POWER SUPPLY
IR	PASSIVE INFRARED
JB, J-BOX	JUNCTION BOX
JCT	JUNCTION
KA	KILAMPERES
KCMIL	THOUSAND CIRCULAR MILS
KILO	THOUSAND
KV	KILOVOLTS
KVA	KILOVOLT-AMPERES
KVAR	KILOVARS
KW	KILOWATTS
LT(S)	LIGHT(S)
LTG	LIGHTING
MA	MILLIAMPERE
MAINT	MAINTAINED
MAN	MANUAL
MAX	MAXIMUM
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CETNER
MCM	THOUSAND CIRCULAR MILS
MDP	MAIN DISTRIBUTION PANEL
MEGA	MILLION
MFR	MANUFACTURER
MGB	MAIN GROUND BUS
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MO	MANUALLY OPERATED
MTD	MOUNT(ED)
MTR	MOTOR CONTROL CETNER
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
MW	MEGA WATTS
N	NORTH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OH	OVERHEAD
OHD	OVERHEAD DOOR OPERATOR
OL	OVERLOAD
P	POLE(S)
P/T/Z	PAN TILT ZOOM
PB	PUSHBUTTON
PB	PULLBOX
PC	PHOTOCELL
PF	POWER FACTOR
PH	PHASE
PL	PILOT LIGHT
PNL	PANEL
PR	PAIR
PRI	PRIMARY
PVC	POLYVINYL CHLORIDE
PWR	POWER
REC	RECEPTACLE
RECT	RECTIFIER
REFR	REFRIGERATOR
RGS	RIGID GALVANIZED STEEL CONDUIT
RHW	EPR INSULATED WIRE
RM	ROOM
SB	SWITCHBOARD
SCH	SCHEDULE
SEC	SECONDARY
SFL	SUB-FEED LUGS
SHT	SHEET
SPC	SPACE
SPKR	SPEAKER
SPR	SPARE
SQ	SQUARE
SS	STAINLESS STEEL
SSRVS	SOLID STATE REDUCED VOLTAGE STARTER
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
STS	STATIC TRANSFER SWITCH
SUSP	SUSPEND(ED)
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
T, TEL, TELE	TELEPHONE
T-STAT	THERMOSTAT
TB	TAP BOX
TBB	TELECOMMUNICATIONS BACKBOARD
TBD	TO BE DETERMINED
TC	TIME CLOCK
TEMP	TEMPORARY
TERM	TERMINAL, TERMINATE
THW	PVC INSULATED WIRE
THWN/ THHN	PVC & NYLON INSULATED WIRE
TSS	TWO SPEED STARTER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TWU	THROUGH-THE-WALL UNIT
TYP	TYPICAL
U	ULTRASONIC
UC	UNDER COUNTER
UG	UNDERGROUND
UH	UNIT HEATER
UON, UNO	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
UTP	UNSHIELDED TWISTED PAIR
V	VOLT(S)
VA	VOLT-AMPERES
VAR	REACTIVE VOLT AMPS
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
W	WATTS
W/	WITH
WP	WEATHERPROOF
WT	WATERTIGHT
XFMR	TRANSFORMER
XHHW	CROSS LINKED POLYETHYLENE INSULATED WIRE
XP	EXPLOSION PROOF
Y	WYE CONNECTION

DRAWING INDEX

GENERAL NOTES

A ELECTRICAL SCOPE OF WORK INCLUDES THE SUPPORT FOR EQUIPMENT REPLACED BY DIVISION 23.

B MAINTAIN CONTINUITY OF WIRING NOT SCHEDULED FOR REMOVAL, WHICH SERVES EQUIPMENT AND DEVICES SCHEDULED TO REMAIN.

C HOMERUN NUMBERS AND PANELBOARD SCHEDULES INDICATED ARE BASED ON FIELD OBSERVATION OF EXISTING PANELBOARDS AND EXISTING RECORD DRAWINGS. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS OF ELECTRICAL EQUIPMENT, DEVICES AND CIRCUITING TO BE IMPACTED BY PROJECT SCOPE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH WORK IF ANY DECREPANICIES OR ISSUES ARE DISCOVERED.

D PROVIDE REVISED PANELBOARD SCHEDULES FOR ALL PANELBOARDS MODIFIED DURING THE PROJECT.

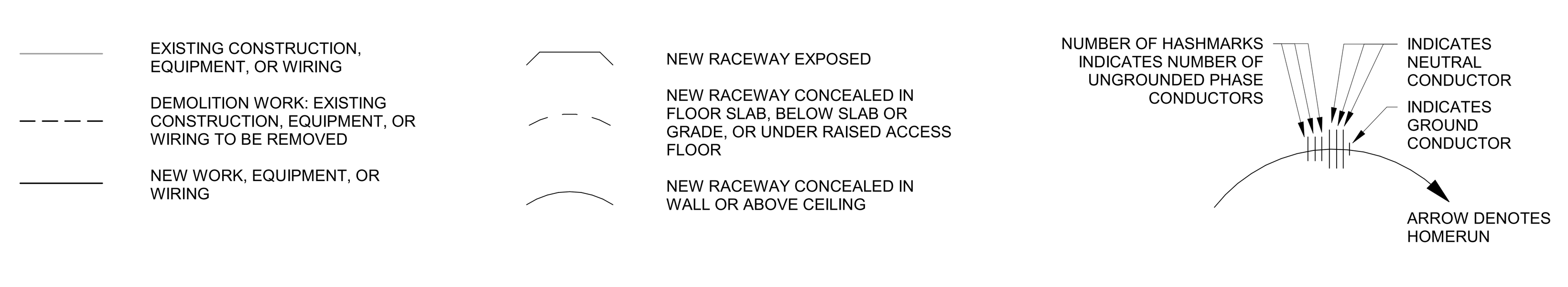
E COORDINATE WITH OTHER TRADES TO DISCONNECT MOTORS HEATERS, OR OTHER EQUIPMENT AS REQUIRED FOR THE DEMOLITION OF OTHER TRADES WORK. CUT OFF ALL IN FLOOR CONDUITS, GRIND SMOOTH WITH FLOOR AND PREPARE FOR PATCHING BY OTHERS.

LOAD SUMMARY

JACKSON COUNTY COURTHOUSE
LOAD SUMMARY

EXISTING MAIN SWITCHBOARD (MSG - 4000A MCB, 480Y/277V, 3ph, 4W+G) CONNECTED LOAD		2,244.46 kVA	2700 A
CHILLER REMOVAL CHR-1		-154.60 kVA	-186 A
REPLACEMENT CHILLER CHR-1		152.07 kVA	183 A
	TOTAL CHANGE	-2.53 kVA	-3.00 A
	TOTAL:	**2241.9 kVA**	**2697.0 A**

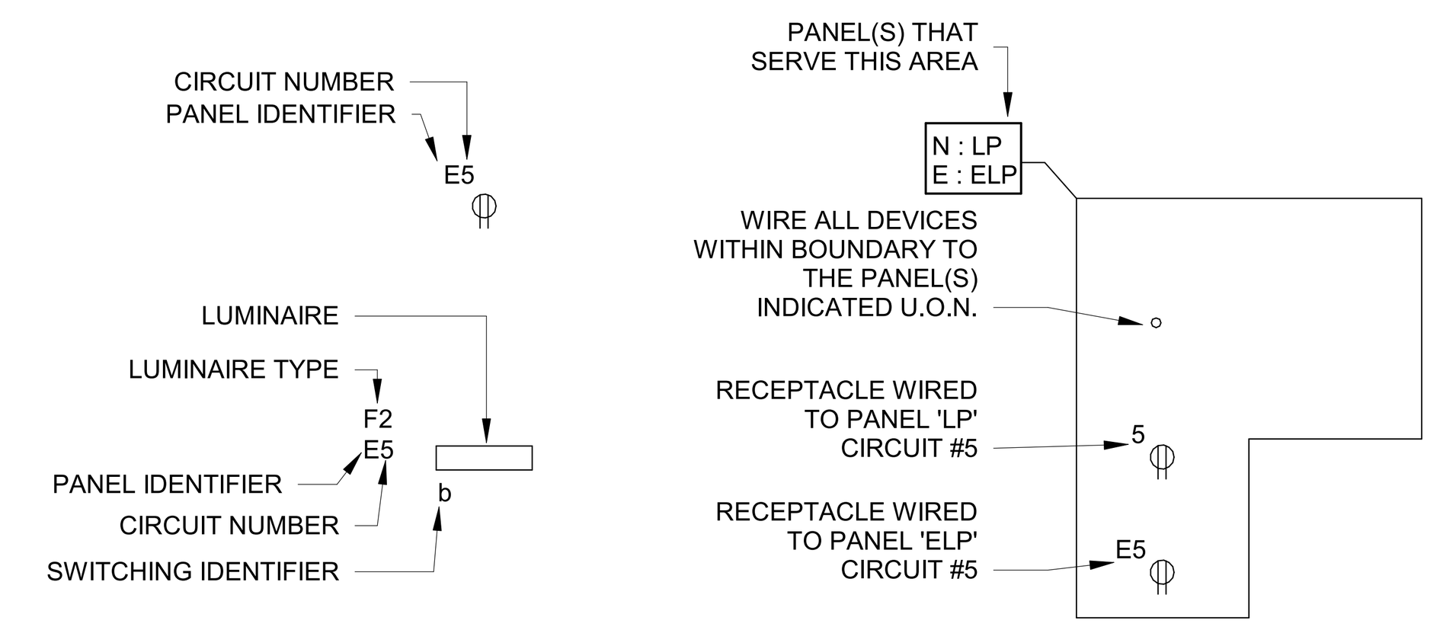
ELECTRICAL ANNOTATION



1 Electrical Line Types - Phasing
NOT TO SCALE

2 Electrical Line Types - Wiring
NOT TO SCALE

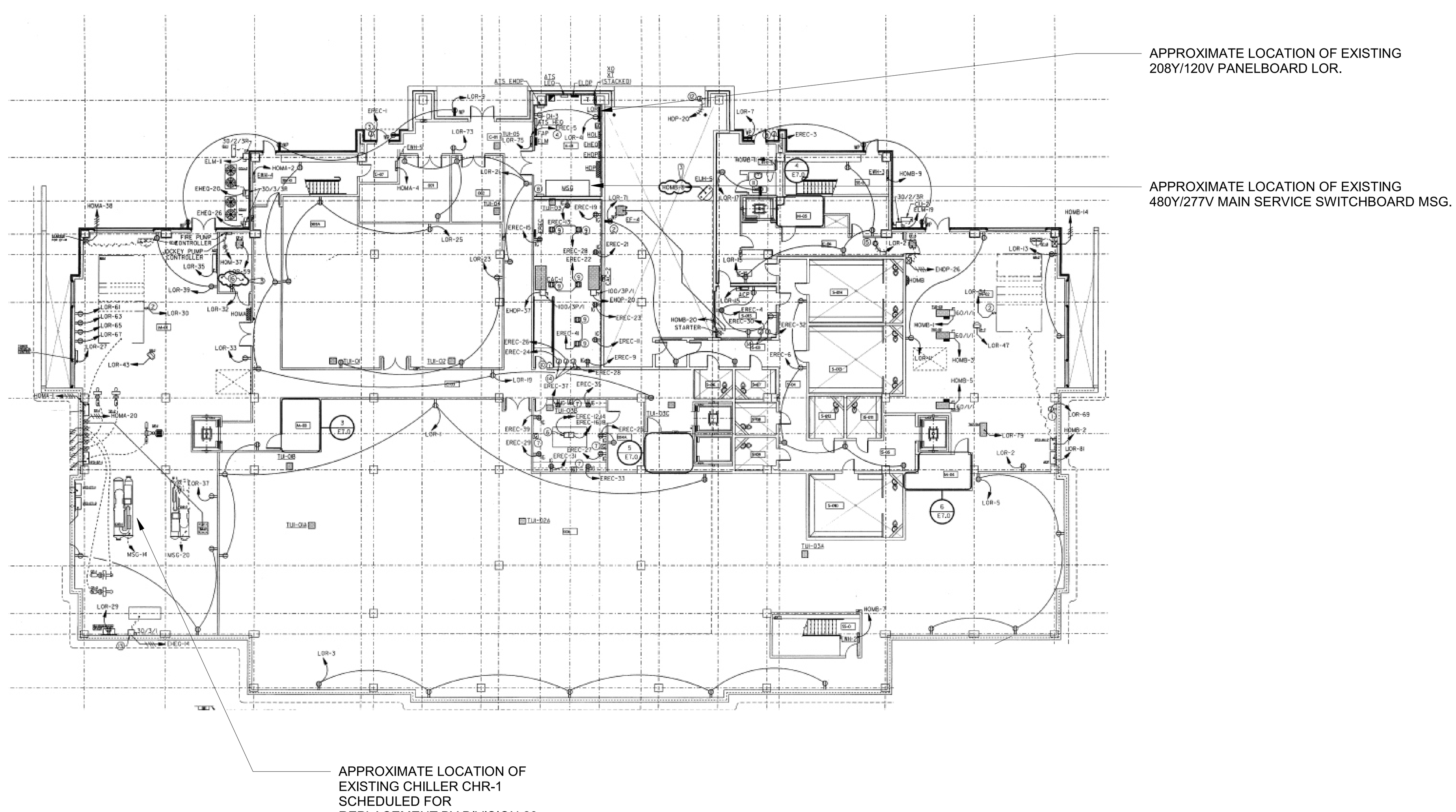
3 Wiring Annotation
NOT TO SCALE



4 Device/Eqpm Identification
NOT TO SCALE

5 Electrical Plan Annotation
NOT TO SCALE

KEY PLAN - PARTIAL BASEMENT



BCE
BARNETT CONSULTING ENGINEERS
655 Engineering Drive
Suite 150
Peachtree Corners, GA 30092
404.382.9550
www.bce-eng.com

JSA CONSULTING ENGINEERS
Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

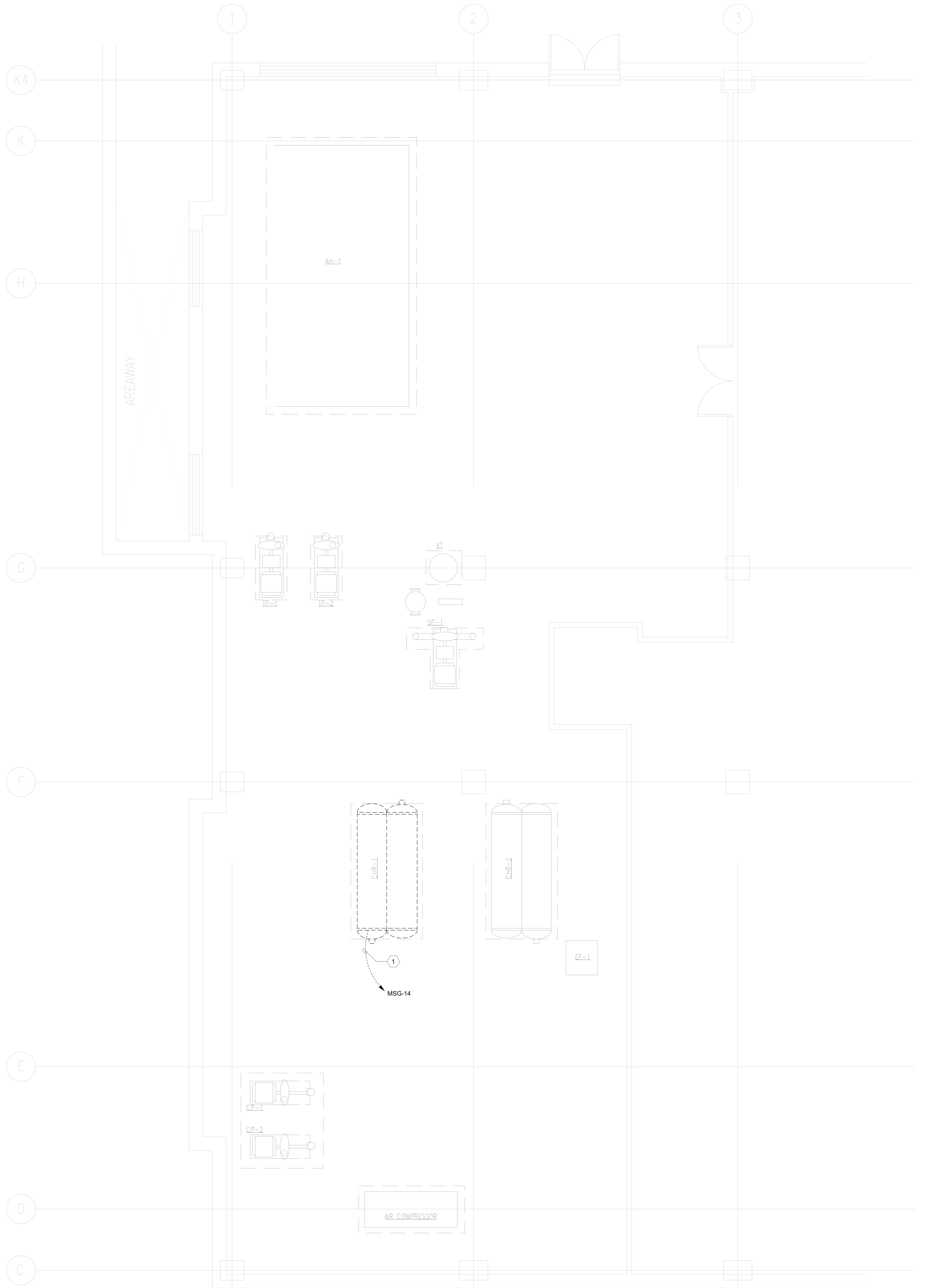
GEORGIA REGISTERED No.025417 PROFESSIONAL ENGINEER LEAH T. BENINCASA
4/1/2022

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA
CHILLER REPLACEMENT

NO.	REVISIONS	DATE

DRAWING INDEX, GENERAL NOTES, & LEGENDS

JOB NUMBER	21132
DRAWN BY	BCE
CHECKED BY	BCE
DATE	04/01/22
DRAWING NUMBER	E000



1 MECHANICAL ROOM PART PLAN - POWER DEMOLITION
1/4" = 1'-0"

0' 1' 2' 4' 8' 16'

GENERAL SHEET NOTES

A PROTECT EXISTING WORK INDICATED TO REMAIN.

B PRIOR TO BEGINNING WORK, FIELD-VERIFY EXISTING EQUIPMENT CONFIGURATION AND RATINGS. WHERE DISCREPANCIES EXIST, NOTIFY THE OWNER PRIOR TO PROCEEDING WITH THE WORK.

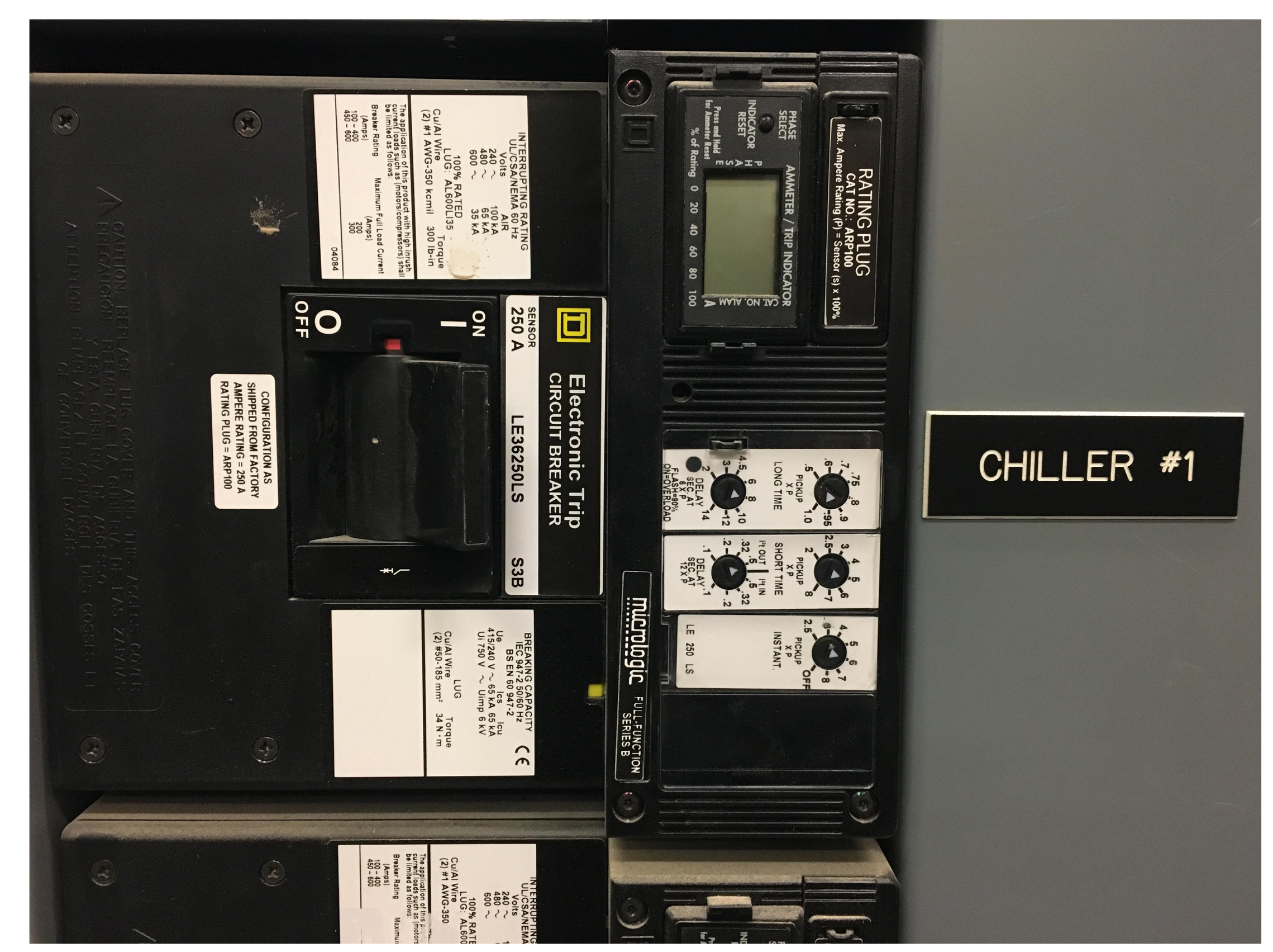
C COORDINATE WITH OTHER TRADES TO DISCONNECT MOTORS HEATERS, OR OTHER EQUIPMENT AS REQUIRED FOR THE DEMOLITION OF OTHER TRADES WORK. CUT OFF ALL IN FLOOR CONDUITS, GRIND SMOOTH WITH FLOOR AND PREPARE FOR PATCHING BY OTHERS.

SHEET KEYNOTES

1 COORDINATE WITH DIVISION 23 TO DISCONNECT POWER TO MECHANICAL EQUIPMENT SCHEDULED FOR REMOVAL. REMOVE WIRING BACK TO SWITCHBOARD. CONDUIT MAY BE REUSED, IF APPROPRIATE.

LOATION OF CHILLER #1 BREAKER SHOWN FOR REFERENCE.

EXISTING SWITCHBOARD MSG FRONT ELEVATION



EXISTING CHILLER CHR-1 BREAKER

CONSULTING ENGINEERS
Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED No.025417 PROFESSIONAL ENGINEER
4/1/2022

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA
CHILLER REPLACEMENT

DATE
REVISIONS
NO.

MECHANICAL ROOM PART PLAN - POWER DEMO

BCE
BARNETT CONSULTING ENGINEERS
655 Engineering Drive
Suite 150
Peachtree Corners, GA 30092
404.382.9550
www.bce-eng.com

JOB NUMBER	21132
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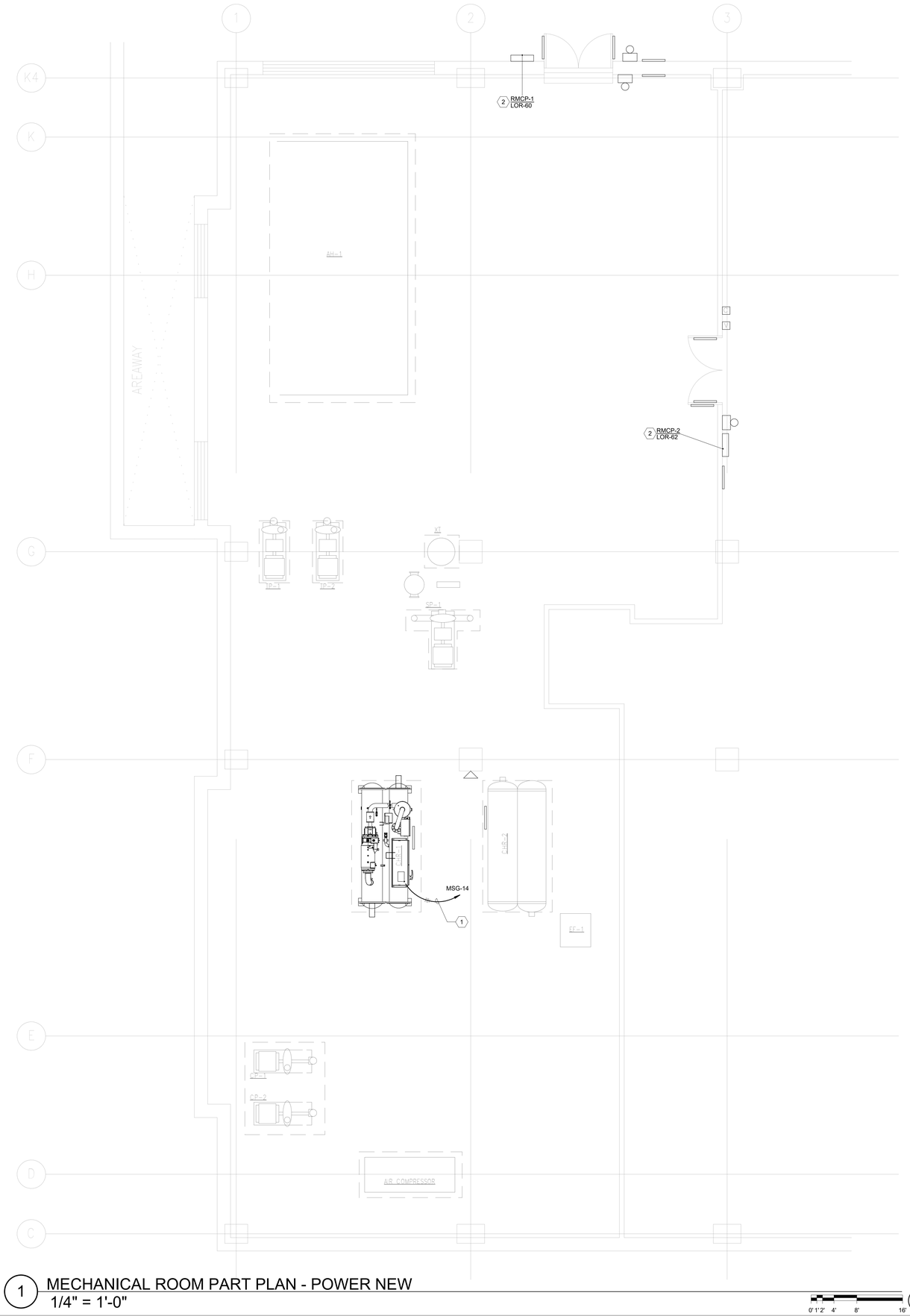
DATE	04/01/22
DRAWING NUMBER	E021



1 MECHANICAL ROOM PART PLAN - POWER NEW
1/4" = 1'-0"

0' 1'2' 4' 8' 16'

GENERAL SHEET NOTES

A PROTECT EXISTING EQUIPMENT SCHEDULED TO REMAIN.

SHEET KEYNOTES

1 PROVIDE NEW 480V FEEDER FOR REPLACEMENT CHILLER CHR-1: (3-500kCMIL + #3G IN 3"C). REPLACE EXISTING 100% RATED 250A/3P BREAKER WITH 100% RATED, 350A/3P BREAKER. COORDINATE WITH SHOP DRAWINGS PRIOR TO ROUGH-IN. COORDINATE WITH DIVISION 23.

2 PROVIDE 120V BRANCH CIRCUIT FOR REFRIGERANT MONITORING CONTROL PANEL: (2#10, #10G IN 0.75"C). PROVIDE 20A/1P BREAKER IN EXISTING SPACE. COORDINATE WITH DIVISION 23.

HVAC EQUIPMENT - ELECTRICAL CONNECTION SCHEDULE

EQUIPMENT ID	FED FROM	VOLTAGE	NUMBER OF POLES	Mech FLA BCE	Mech MCA BCE	Mech MOCP BCE	DISCONNECTING MEANS
REFRIGERANT MONITORING CONTROL PANEL							
RMCP-1	LOR - 60	120 V	1	5 A	16 A	20 A	DIVISION 23
RMCP-2	LOR - 62	120 V	1	5 A	16 A	20 A	DIVISION 23
REPLACEMENT CHILLER							
CHR-1	MSG - 14	480 V	3	183 A	217 A	350 A	DIVISION 23

JSA CONSULTING ENGINEERS
Johnson, Spellman & Associates, Inc.
350 Research Court, Suite 130
Peachtree Corners, Georgia 30092
Phone (770) 447-4555
visit us at www.jsace.com

GEORGIA REGISTERED No. 025417 PROFESSIONAL ENGINEER KEITH BENNETT
4/1/2022

JACKSON COUNTY
COURTHOUSE CHILLER REPLACEMENT
JEFFERSON, GA
CHILLER REPLACEMENT

NO.	REVISIONS	DATE

MECHANICAL ROOM PART PLAN - POWER NEW

JOB NUMBER	21132
DRAWN BY	BCE
CHECKED BY	BCE
DATE	04/01/22

DRAWING NUMBER
E201

3 OF 4 SHEETS

BCE
BARNETT CONSULTING ENGINEERS
655 Engineering Drive
Suite 150
Peachtree Corners, GA 30092
404.382.9550
www.bce-eng.com