

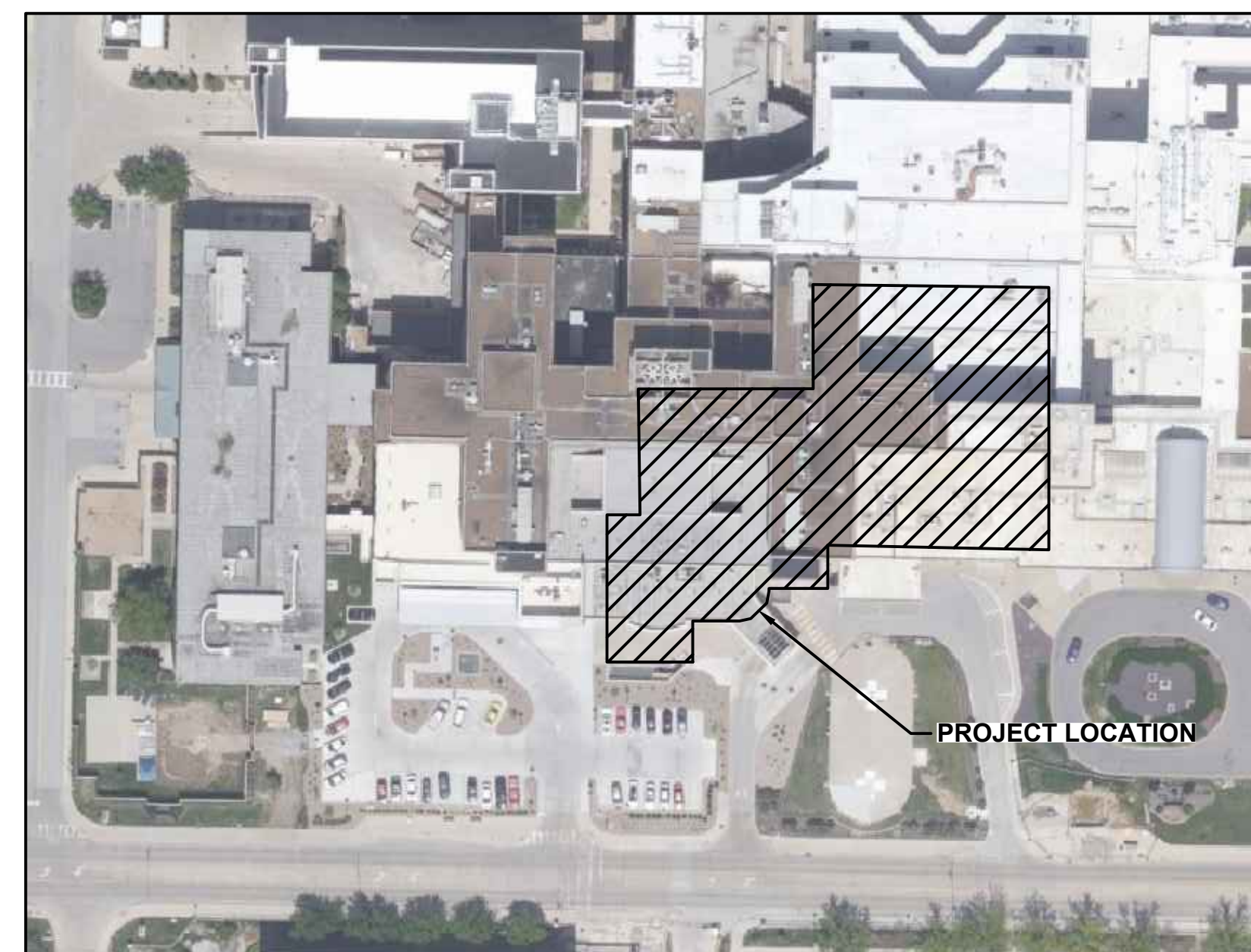


# CCA & TH EMERGENCY POWER MODIFICATIONS

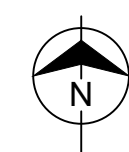
UNIVERSITY OF MISSOURI  
COLUMBIA, MISSOURI  
MU PROJECT NUMBER CP210961  
BMCD #128966

FOR THE CURATORS OF THE UNIVERSITY OF MISSOURI

ISSUED FOR BID  
JULY 9, 2021



**KEYPLAN**  
N.T.S.



### DRAWING INDEX

<b>GENERAL</b>	
G-001	COVER SHEET
G-101	CONTRACTOR ACCESS PLANS
<b>ELECTRICAL</b>	
E-001	ELECTRICAL LEGEND
E-101	GROUND FLOOR ELECTRICAL PLAN - PHASE 1
E-102	GROUND FLOOR ELECTRICAL PLAN - PHASE 2
E-103	SITE ELECTRICAL PLAN - PHASE 2
E-104	GROUND FLOOR ELECTRICAL PLAN - PHASE 3
E-105	CCA GROUND FLOOR ELECTRICAL PLAN - PHASE 3
E-106	FIRST FLOOR ELECTRICAL PLAN - PHASE 3
E-107	SECOND FLOOR ELECTRICAL PLAN - PHASE 3
E-108	THIRD FLOOR ELECTRICAL PLAN - PHASE 3
E-501	ELECTRICAL RISER DIAGRAM - PHASE 1
E-502	ELECTRICAL RISER DIAGRAM - PHASE 2
E-503	ELECTRICAL RISER DIAGRAM - PHASE 3
E-601	ELECTRICAL SCHEDULES
E-602	ELECTRICAL SCHEDULES
E-701	ELECTRICAL DETAILS
E-702	ELECTRICAL DETAILS

### ADOPTED CODES:

- INTERNATIONAL BUILDING CODE - 2018
- INTERNATIONAL PLUMBING CODE - 2018
- INTERNATIONAL MECHANICAL CODE - 2018
- INTERNATIONAL EXISTING BUILDING CODE - 2018 (LEVEL 1 & LEVEL 2 ALTERATIONS ONLY WITH PRE-APPROVAL OF AHJ)
- INTERNATIONAL FIRE CODE - 2018
- INTERNATIONAL FUEL GAS CODE - 2018
- NATIONAL ELECTRIC CODE / NFPA 70 - 2011 & 2017 (WHICHEVER IS MOST STRINGENT)
- NFPA 110 STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS - 2010 & 2016 (WHICHEVER IS MOST STRINGENT)
- NFPA 101 LIFE SAFETY CODE - 2012
- NFPA 99 STANDARD FOR HEALTH CARE FACILITIES - 2012
- NFPA 90A INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS - 2012 & 2018 (WHICHEVER IS MOST STRINGENT)
- NFPA 72 NATIONAL FIRE ALARM CODE - 2010 & 2016 (WHICHEVER IS MOST STRINGENT)
- NFPA 51B STANDARD FOR FIRE PREVENTION DURING WELDING, CUTTING, AND OTHER HOT WORK - 2014
- ASME A17.1 SAFETY CODE FOR ELEVATORS AND ESCALATORS (PER STATE OF MISSOURI)
- AMERICANS WITH DISABILITIES ACT - STANDARDS FOR ACCESSIBLE DESIGN 2010
- FACILITY GUIDELINES INSTITUTE -2018

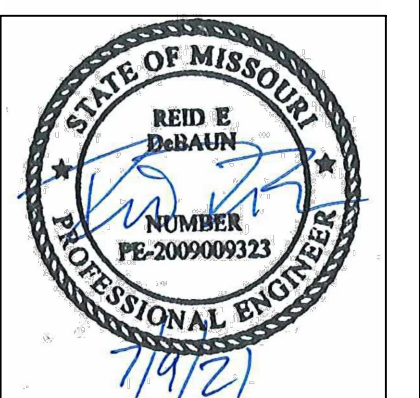
### CERTIFICATION:



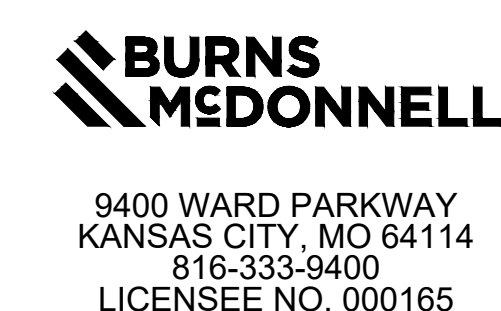
ELECTRICAL

"I HEREBY CERTIFY THESE DRAWINGS AND/OR SPECIFICATIONS HAVE BEEN PREPARED BY ME, OR UNDER MY SUPERVISION. I FURTHER CERTIFY THAT TO THE BEST OF MY KNOWLEDGE THESE DRAWINGS AND/OR SPECIFICATIONS ARE AS REQUIRED BY AND IN COMPLIANCE WITH THE BUILDING CODES OF THE UNIVERSITY OF MISSOURI"

SIGNATURE:



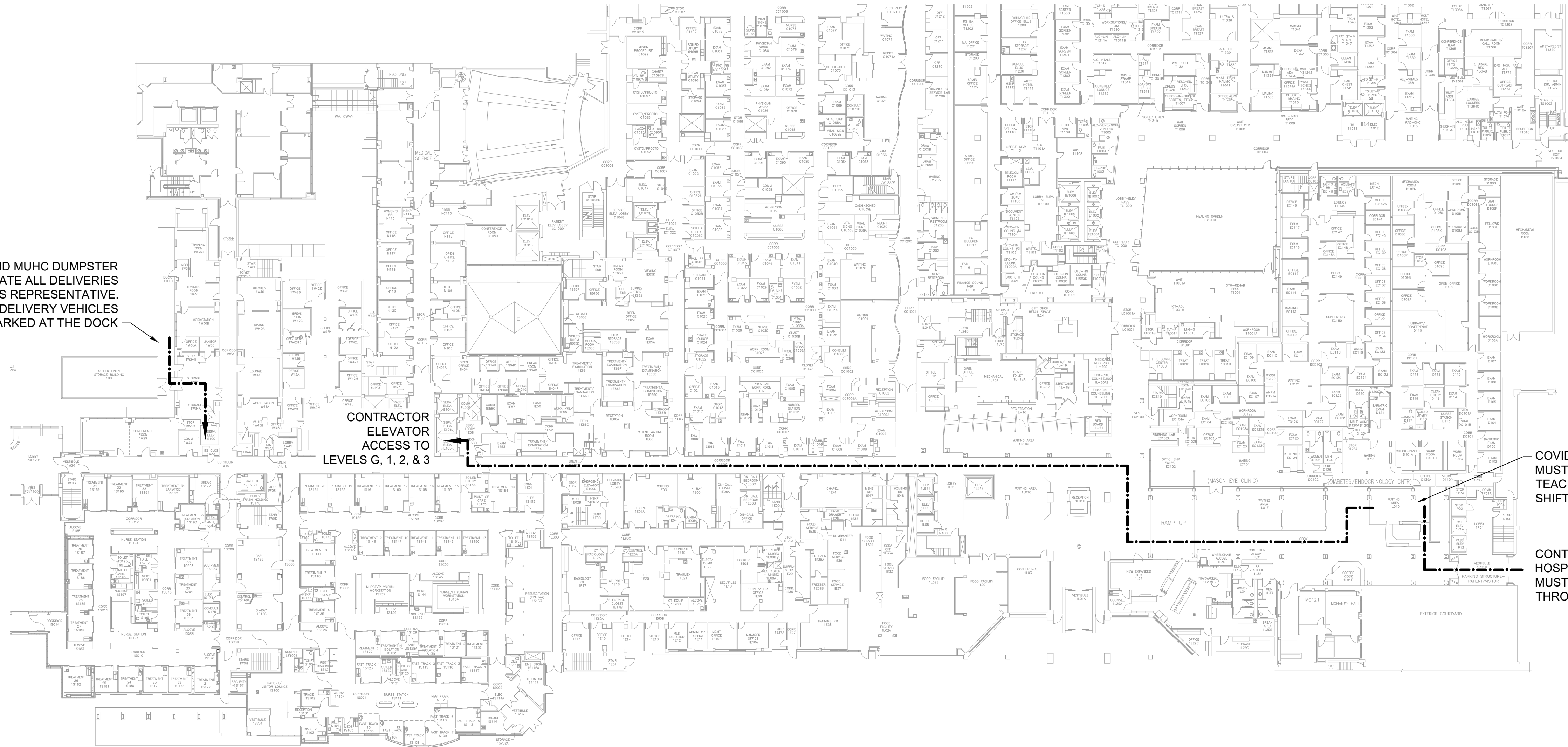
no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



# G-001



LOADING DOCK AND MUHC DUMPSTER LOCATION. COORDINATE ALL DELIVERIES WITH OWNER'S REPRESENTATIVE. CONTRACTOR AND/OR DELIVERY VEHICLES CANNOT REMAIN PARKED AT THE DOCK

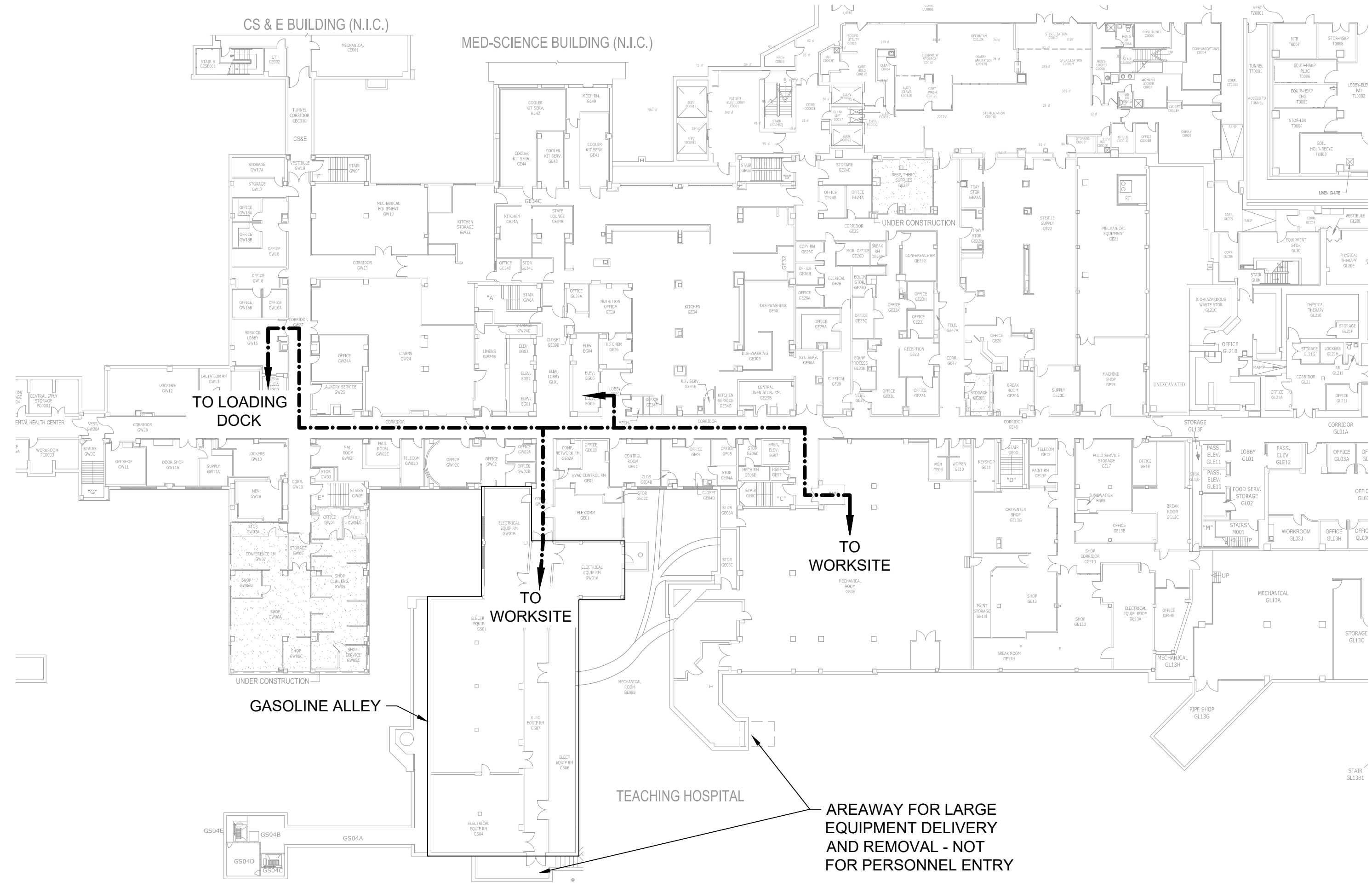
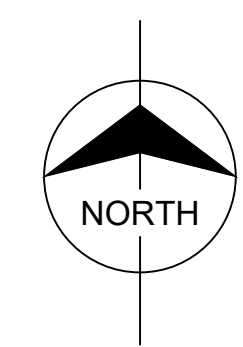


CONTRACTOR ELEVATOR ACCESS TO LEVELS G, 1, 2, & 3

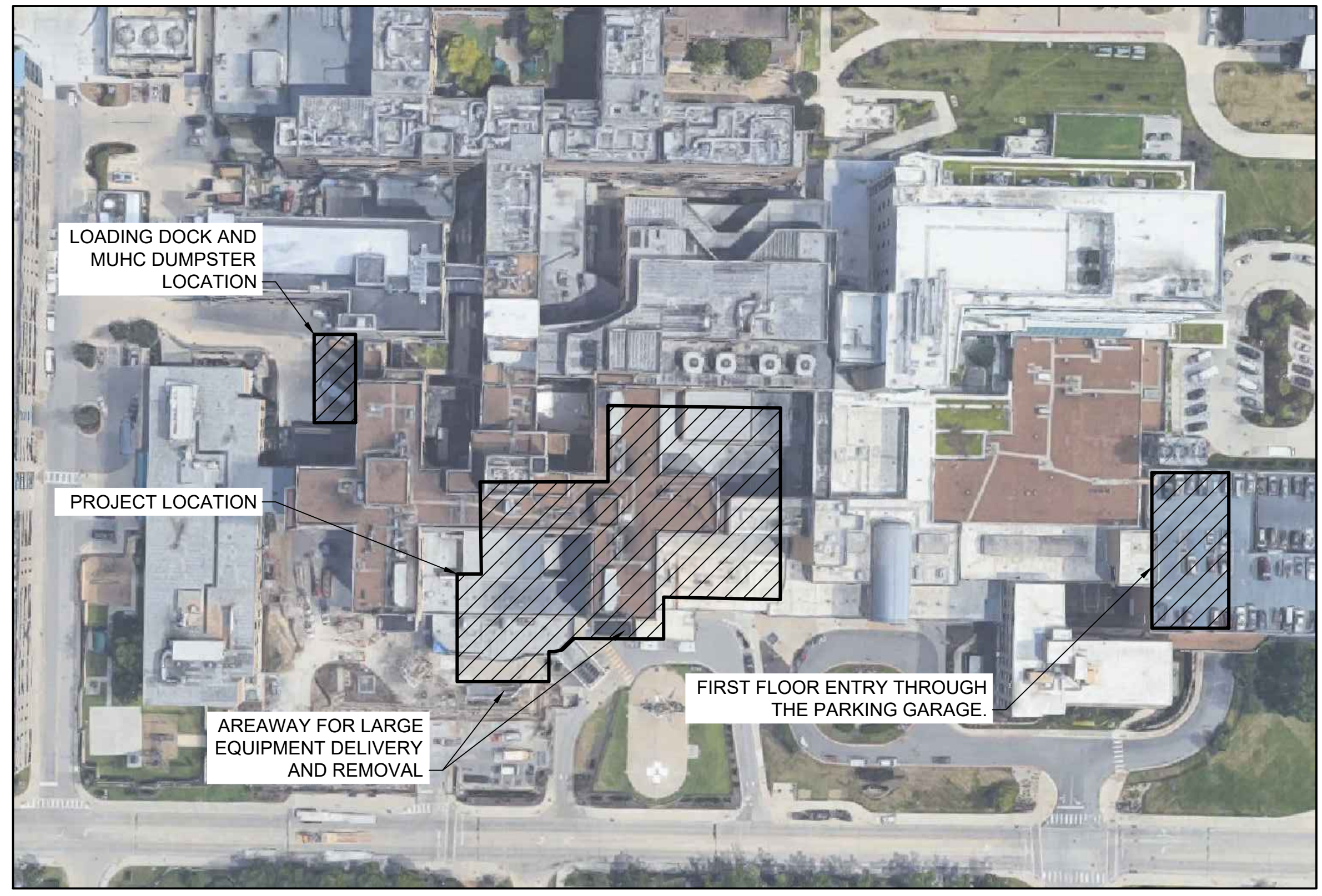
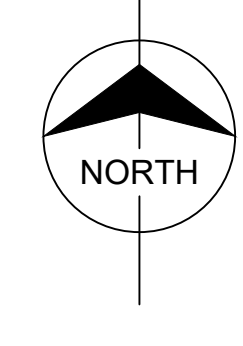
COVID-19 SCREENED AREA. ALL PERSONNEL MUST BE SCREENED PRIOR TO ENTERING THE TEACHING HOSPITAL COMPLEX EACH WORK SHIFT (SUBJECT TO CHANGE)

CONTRACTOR ENTRY INTO TEACHING HOSPITAL COMPLEX. ALL PERSONNEL MUST ENTER THROUGH THE FIRST FLOOR THROUGH THE PARKING GARAGE

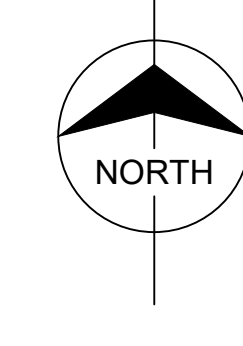
FIRST FLOOR CONTRACTOR ACCESS PLAN  
SCALE IN FEET



GROUND FLOOR CONTRACTOR ACCESS PLAN  
SCALE IN FEET



OVERALL CONTRACTOR ACCESS PLAN  
NOT TO SCALE



REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323



9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



UNIVERSITY HOSPITAL  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

CCA & TH EMERGENCY  
POWER MODIFICATIONS  
CONTRACTOR  
ACCESS PLAN

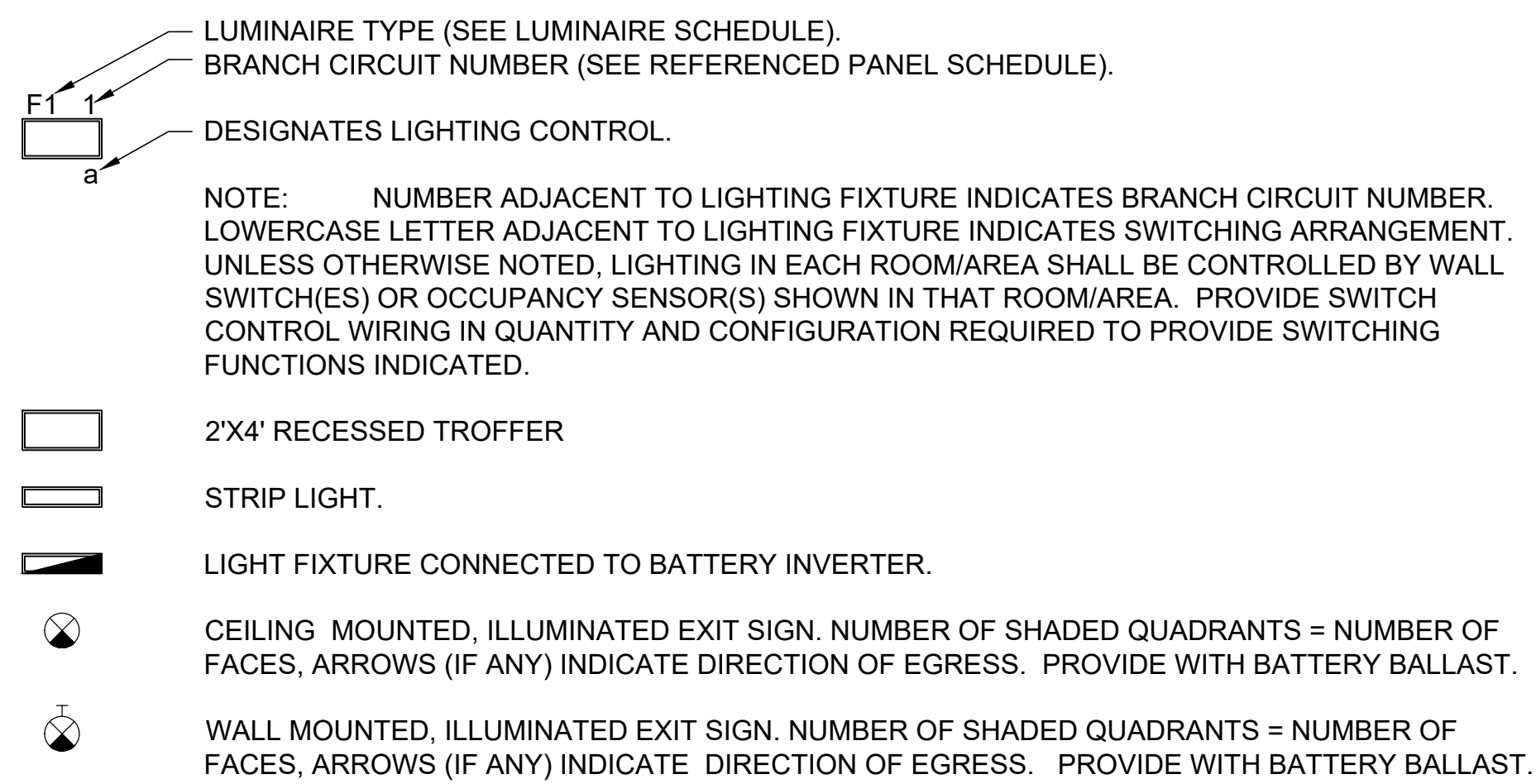
project	128966	contract	CP210961
drawing	G-101	rev.	0
sheet	of	sheet	of
file	128966	G-101.DWG	



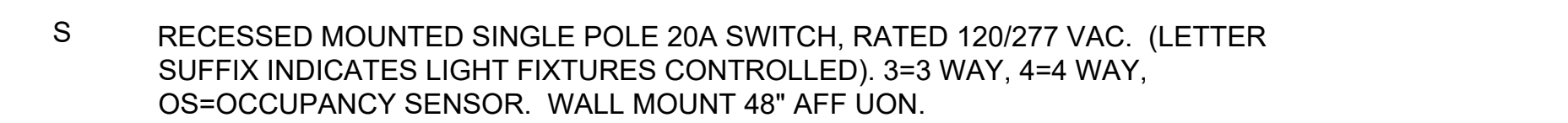
# ELECTRICAL LEGEND

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID

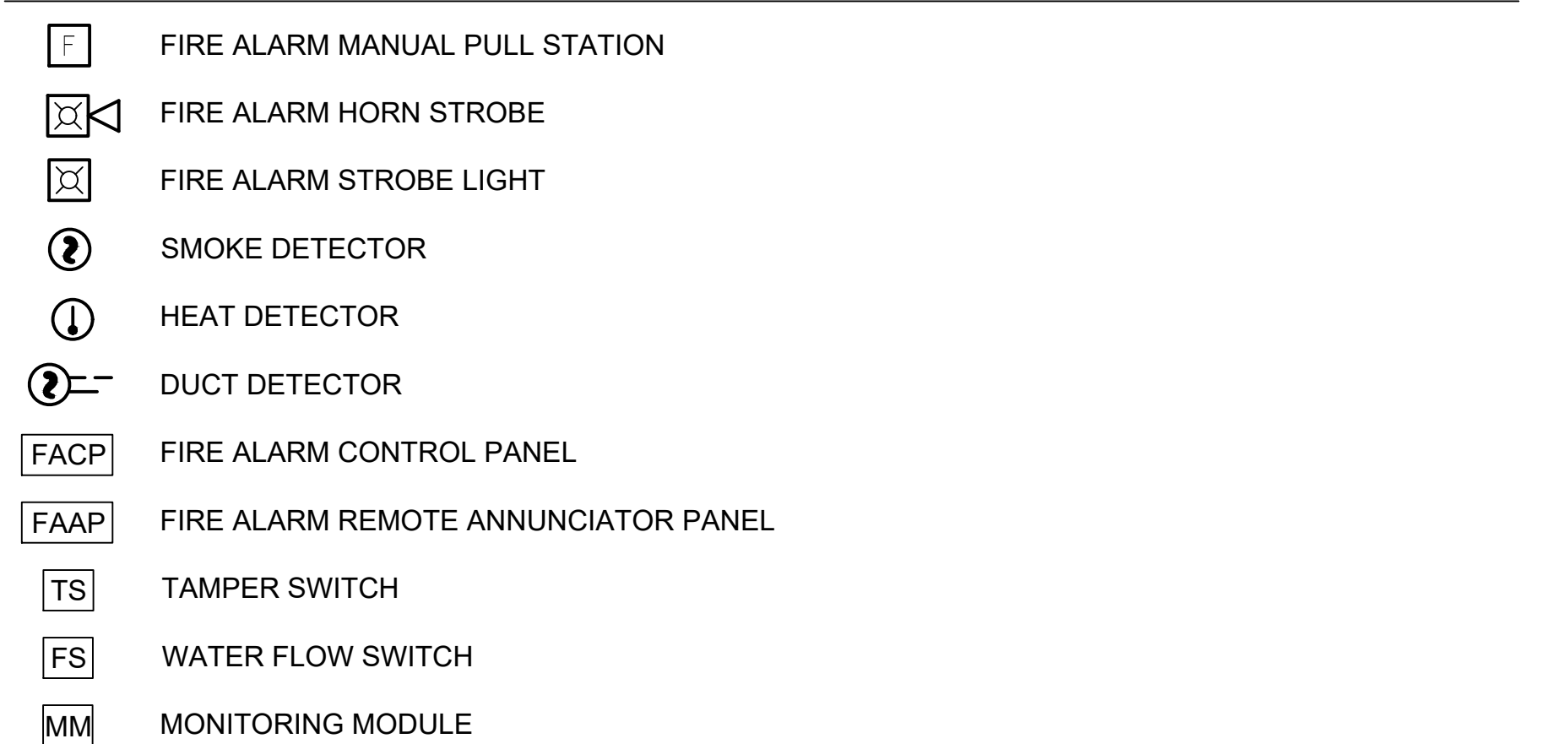
## LIGHTING (FIXTURES)



## LIGHTING CONTROL



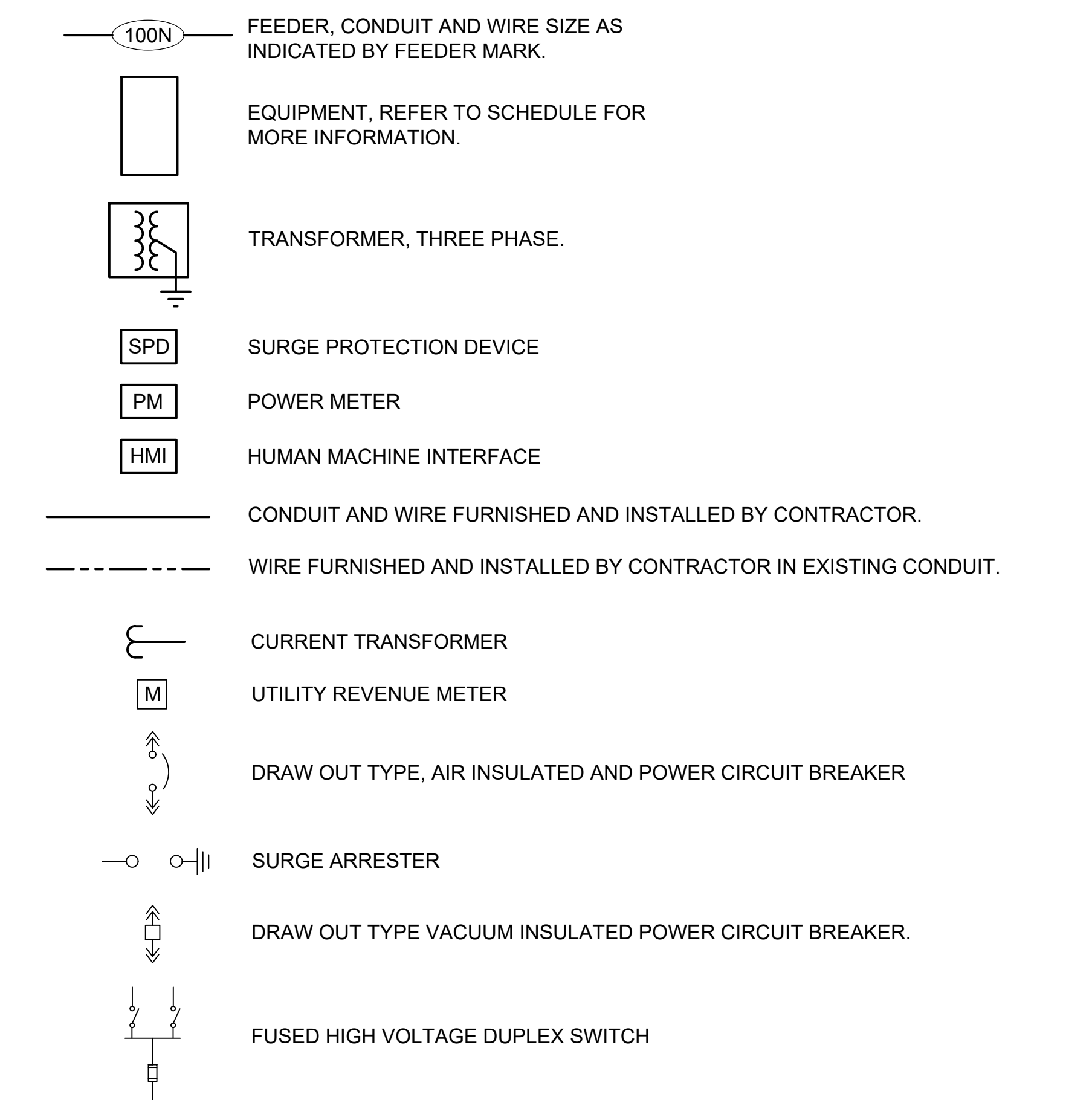
## FIRE ALARM



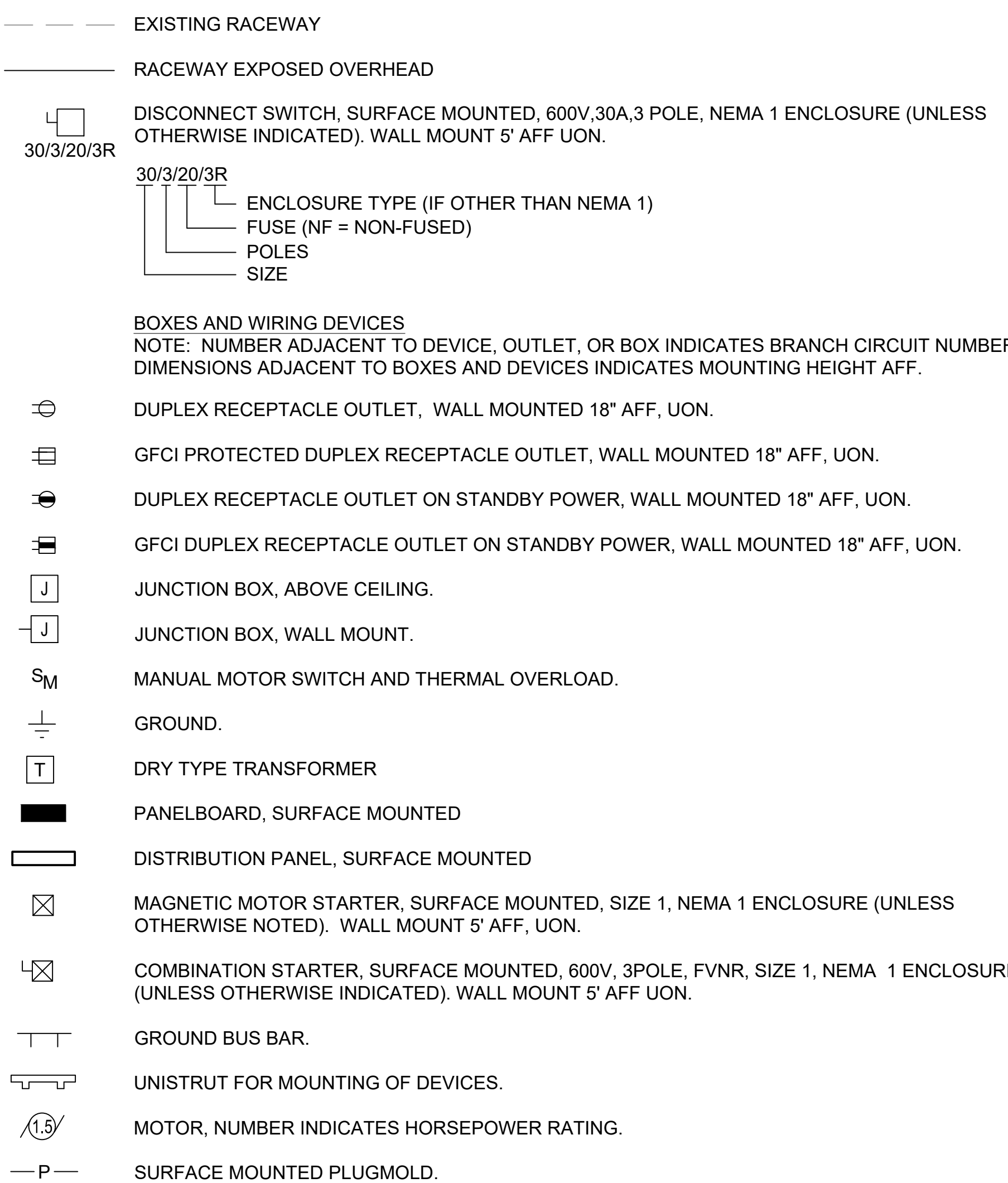
## ABBREVIATIONS

A AMPERES	IG ISOLATED GROUND	IP INTERNET PROTOCOL
AC ALTERNATING CURRENT	IP INTERNET PROTOCOL	K KILO
AFC ABOVE FINISHED COUNTER	KCMIL THOUSAND CIRCULAR MILLS	LRP LIGHTING RELAY PANEL
AFF ABOVE FINISHED FLOOR	LRP LIGHTING RELAY PANEL	MAX MAXIMUM
AFG ABOVE FINISHED GRADE	MAX MAXIMUM	MCB MAIN CIRCUIT BREAKER
AHU AIR HANDLING UNIT	MCB MAIN CIRCUIT BREAKER	MCP MOTOR CIRCUIT PROTECTOR
AIC AMPERES INTERRUPTING CAPACITY	MCP MOTOR CIRCUIT PROTECTOR	MLO MAIN LUGS ONLY
ATS AUTOMATIC TRANSFER SWITCH	MLO MAIN LUGS ONLY	MIN MINIMUM
BIL BASIC IMPULSE LEVEL	MIN MINIMUM	N NEUTRAL
BOT BOTTOM OF TRAY	N NEUTRAL	NEC NATIONAL ELECTRIC CODE (NFPA 70)
BMS BUILDING MANAGEMENT SYSTEM	NEC NATIONAL ELECTRIC CODE (NFPA 70)	NIC NOT IN CONTRACT
C CONDUIT	NIC NOT IN CONTRACT	NTS NOT TO SCALE
CFCI CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	NTS NOT TO SCALE	OC ON CENTER
CM DEVICE LOCATION SHALL BE COORDINATED WITH ARCHITECT AND ARCHITECTURAL ELEVATIONS	OC ON CENTER	OFCI OWNER FURNISHED, CONTRACTOR INSTALLED
CMU CONCRETE MASONRY UNIT	OFCI OWNER FURNISHED, CONTRACTOR INSTALLED	PC PHOTOCCELL
CPT CONTROL POWER TRANSFORMER	PC PHOTOCCELL	PNL PANEL
CTL CONTROL	PNL PANEL	PNL BD PANEL BOARD
DDC DIRECT DIGITAL CONTROL	PNL BD PANEL BOARD	PVC POLY-VINYL CHLORIDE CONDUIT
EC EMPTY CONDUIT	PVC POLY-VINYL CHLORIDE CONDUIT	PIV POST INDICATOR VALVE
EF EXHAUST FAN	PIV POST INDICATOR VALVE	RGSC GALVANIZED STEEL CONDUIT
EGC EQUIPMENT GROUNDING CONDUCTOR	RGSC GALVANIZED STEEL CONDUIT	REC RECEPTACLE
EM DEVICE OR EQUIPMENT CONNECTED TO EMERGENCY POWER	REC RECEPTACLE	RECP RECEPTACLE
EMT ELECTRICAL METALLIC TUBING	RECP RECEPTACLE	RL RELOCATED
ETR EXISTING TO REMAIN	RL RELOCATED	RMC RIGID METAL CONDUIT
FACP FIRE ALARM CONTROL PANEL	RMC RIGID METAL CONDUIT	RMS ROOT MEAN SQUARE
FVNR FULL VOLTAGE, NON-REVERSING	RMS ROOT MEAN SQUARE	RN INSTALL NEW DEVICE IN EXISTING BACK-BOX
G GROUND	RN INSTALL NEW DEVICE IN EXISTING BACK-BOX	SYM SYMMETRICAL
GFI GROUND FAULT INTERRUPTER	SYM SYMMETRICAL	SWBD SWITCHBOARD
GFCI GROUND FAULT INTERRUPTER	SWBD SWITCHBOARD	TFMR TRANSFORMER
GFP GROUND FAULT PROTECTION	TFMR TRANSFORMER	TFTI TENANT FURNISHED, TENANT INSTALLED
GND GROUND	TFTI TENANT FURNISHED, TENANT INSTALLED	TBD TO BE DETERMINED
GRD GROUND	TBD TO BE DETERMINED	TYP TYPICAL
GRS GALVANIZED RIGID STEEL CONDUIT	TYP TYPICAL	UON UNLESS OTHERWISE NOTED
H DEVICE MOUNTED HORIZONTALLY	UON UNLESS OTHERWISE NOTED	UPS UNINTERRUPTED POWER SUPPLY
HID HIGH INTENSITY DISCHARGE	UPS UNINTERRUPTED POWER SUPPLY	V VOLTS
HP HORSEPOWER	V VOLTS	VFD VARIABLE FREQUENCY DRIVE
HPS HIGH PRESSURE SODIUM	VFD VARIABLE FREQUENCY DRIVE	WP WEATHERPROOF
HVAC HEATING, VENTILATION AND COOLING UNIT	WP WEATHERPROOF	XFMR TRANSFORMER

## ONE-LINE DIAGRAM LEGEND



## POWER SYMBOLS



## PROJECT ELECTRICAL PHASING NARRATIVE

MAJOR PROJECT SCOPE INCLUDES REPLACEMENT OF EXISTING PULLBOXES ASSOCIATED WITH DUCTBANK DB301 AND RE-CIRCUITING TEACHING HOSPITAL LOADS OFF OF THE CCA GENERATOR SYSTEM AND ONTO THE TEACHING HOSPITAL GENERATOR SYSTEM. RECOMMENDED PHASING:

- PHASE 1: PROVIDE TEMPORARY NORMAL POWER SOURCE IN GE08. REMOVE ALL CONDUCTORS CURRENTLY ROUTED THROUGH DUCTBANK DB301, AND DEMOLISH EXISTING PULLBOXES ASSOCIATED WITH DUCTBANK DB301. INCLUDES REMOVAL OF PANELS GL-4, GL-5, GL-6, AND ASSOCIATED PULLBOX IN GASOLINE ALLEY, INSTALLATION OF NEW PANEL CD1-2, AND RE-LOCATION OF EXISTING LIGHTING INVERTERS.
- PHASE 2: PROVIDE NEW PULLBOXES ASSOCIATED WITH DUCTBANK DB301. RE-CIRCUIT FIRE PUMP TO THE TEACHING HOSPITAL GENERATOR PLANT AND PROVIDE TEMPORARY GENERATOR SERVICE TO EXISTING GE08 TRANSFER SWITCHES. REMOVE CCA GENERATOR SERVICE TO GE08.
- PHASE 3: INSTALL PERMANENT SERVICES FROM THE TEACHING HOSPITAL GENERATOR PLANT. REMOVE TEMPORARY GENERATOR SERVICE, AND REMOVE REMAINING TRANSFER SWITCHES IN GE08. RE-CIRCUIT CT 1E-17, HYBRID PANEL MP, PROVIDE NEW CRITICAL DISTRIBUTION TO OR SUITE AND RE-CIRCUIT HALF OF THE OR ISOLATION POWER PANELS.

## PROJECT GENERAL NOTES

- PERFORM WORK AT SUCH TIME AND IN SUCH MANNER TO MINIMIZE INCONVENIENCE TO THE OWNER AND AS APPROVED BY THE ENGINEER. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
- THE OWNER INTENDS TO CONTINUE OPERATIONS THROUGHOUT THE DURATION OF THE PROJECT. UTILITIES SHALL NOT BE INTERRUPTED WITHOUT THE OWNER'S WRITTEN APPROVAL AS TO THE TIME AND DURATION OF THE OUTAGE.
- CONSTRUCTION PHASING IS CRITICAL TO HOSPITAL SERVICES AND THE PROMPT RESTORATION OF ALL SERVICES AFTER SCHEDULED OUTAGES IS REQUIRED.
- ALL UTILITY OUTAGES SHALL BE COORDINATED WITH OWNER NO LESS THAN 10 BUSINESS DAYS IN ADVANCE OF STARTING WORK. OUTAGES SHALL OCCUR DURING OFF HOURS AND NOT DURING ADVERSE WEATHER. OFF HOURS SHALL BE AFTER 10PM AND BEFORE 5AM. OUTAGES SHOULD BE PRIORITIZED DURING WEEKDAYS WHEN POSSIBLE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING THE EXTENT OF OUTAGES OF HOSPITAL SERVICES PRIOR TO SCHEDULING OUTAGES WITH THE HOSPITAL FACILITIES.
- CONTRACTOR IS REQUIRED TO USE THE OWNERS HOT WORK AND UTILITY OUTAGE PERMIT REQUIREMENTS PER OWNER'S HEALTHCARE CONSTRUCTION SAFETY REQUIREMENTS DOCUMENT.
- ALL CIRCUIT CONDUCTORS AND RACEWAYS SHALL BE LABELED IN ACCORDANCE WITH SPECIFICATION 260553.
- LEGEND IS GENERAL IN NATURE AND MAY INDICATE MORE INFORMATION THAN IS APPLICABLE TO PROJECT. SEE PLANS FOR SPECIFIC SYMBOLS AND ABBREVIATIONS.
- CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS AND EQUIPMENT LOCATIONS PRIOR TO BEGINNING ANY WORK. ALL EXISTING CONDUIT, WIRE, EQUIPMENT, DEVICES, ETC. MAY NOT BE SHOWN.
- ALL CONDUIT ROUTING AND CIRCUITING SHOWN IS DIAGRAMMATIC ONLY. EXACT ROUTING MAY VARY AND MAY REQUIRE ADDITIONAL J-BOXES AND/OR SPECIAL FITTINGS. COORDINATE INSTALLATION OF NEW WORK WITH EXISTING CONDITIONS.
- MAINTAIN EXISTING INSTALLATIONS EXCEPT WHERE INDICATED. FURNISH AND INSTALL ALL MATERIALS TO MODIFY EXISTING INSTALLATIONS AS REQUIRED TO CONNECT NEW WORK.
- WHERE EXISTING RACEWAYS AND EQUIPMENT ARE INDICATED ON THE DRAWINGS, EXACT SIZE AND LOCATION SHALL BE FIELD VERIFIED PRIOR TO BIDDING.
- DISCONNECT, REMOVE, RELOCATE AND RECONNECT ALL EXISTING ELECTRICAL COMPONENTS WHERE THE INSTALLATION OF NEW MECHANICAL, PLUMBING AND ELECTRICAL WORK CONFLICTS WITH EXISTING LUMINAIRES, ELECTRICAL DEVICES, RACEWAYS, ETC. MODIFY THE EXISTING INSTALLATION AS REQUIRED TO RESOLVE ALL CONFLICTS AS APPROVED BY THE ENGINEER AND AT NO EXTRA COST TO THE OWNER.
- FURNISH AND INSTALL CONDUIT, WIRE, CABLING, JUNCTION BOXES, ETC. AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY FOR EXISTING WIRING DEVICES AND EQUIPMENT LOCATED OUTSIDE OF THE PROJECT AREA THAT IS SERVED FROM OR THROUGH THE RENOVATION AREA.
- COORDINATE THE INSTALLATION OF NEW WORK WITH ALL NEW AND EXISTING FIELD CONDITIONS. NEW CONDUIT AND CABLE SHALL BE ROUTED AND INSTALLED IN LOCATIONS WHERE BLOCKING SERVICE TO NEW AND EXISTING EQUIPMENT IS AVOIDED.
- CONTRACTOR SHALL COORDINATE EXACT PLACEMENT OF ALL DEVICES AND EQUIPMENT SHOWN ON ELECTRICAL CONSTRUCTION DOCUMENTS WITH ARCHITECTURAL, STRUCTURAL, FIRE PROTECTION AND MECHANICAL DRAWINGS PRIOR TO FINAL PLACEMENT.
- WHERE RACEWAYS PENETRATE RATED FIRE AND SMOKE ASSEMBLIES, SUCH AS WALLS AND FLOORS, THE APPROPRIATE MATERIALS SHALL BE FURNISHED AND INSTALLED TO MAINTAIN THE FIRE AND SMOKE RATINGS. ALL FIRESTOPPING SHALL USE UL LISTED ASSEMBLIES AND BE INSTALLED BY A CERTIFIED FIRESTOPPING CONTRACTOR. SEE SPECIFICATIONS AND DETAILS FOR ADDITIONAL INFORMATION.
- A MAXIMUM OF SIX CURRENT-CARRYING CONDUCTORS SHALL BE INSTALLED IN EACH RACEWAY.
- AS PART OF THE GENERAL REQUIREMENTS, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY KNOWN OR SUSPICIOUS ELEMENTS THAT MAY CONTAIN ASBESTOS MATERIALS. THE CONTRACTOR SHALL NOT PERFORM ANY DEMOLITION, DISTURBANCE, REMOVAL, OR PROVIDE CONNECTIONS TO THESE ELEMENTS UNTIL ALL ABATEMENT PROCEDURES HAVE BEEN PERFORMED, CORRECTED, AND VERIFIED.



9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date 11/20/2020	detailed J. CHASE
designed R. DEBAUN	checked R. DEBAUN



UNIVERSITY HOSPITAL  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

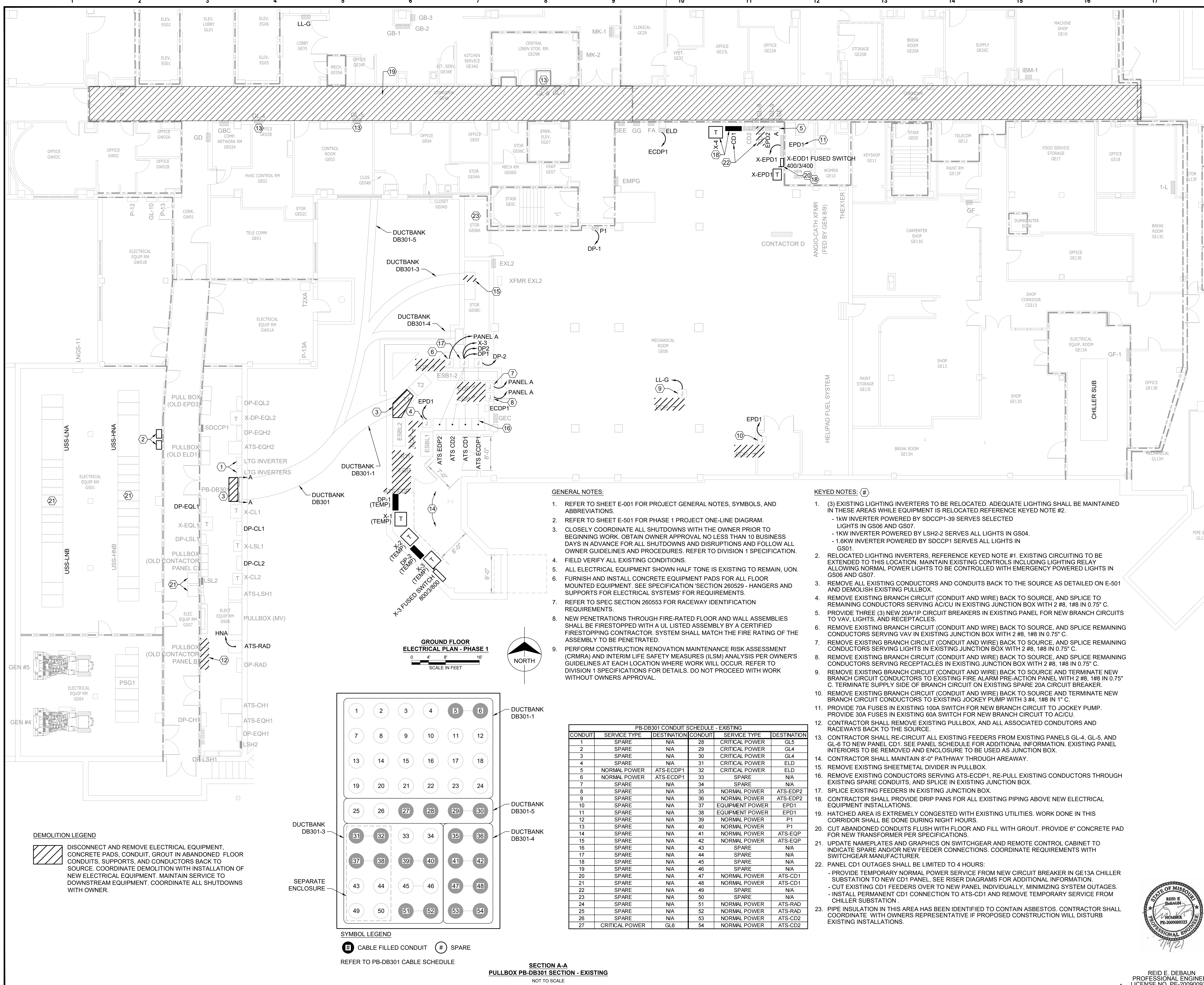
CCA & TH EMERGENCY  
POWER MODIFICATIONS  
ELECTRICAL LEGEND



project 128966	contract CP210961
drawing E-001	rev. 0
sheet E-001	of 0
file 128966 E-001.DWG	sheets

REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323



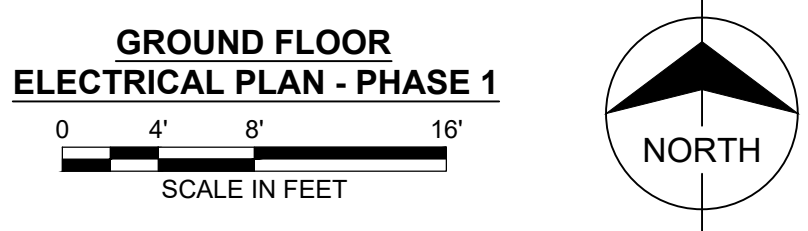


**GENERAL NOTES:**

- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
- REFER TO SHEET E-501 FOR PHASE 1 PROJECT ONE-LINE DIAGRAM.
- CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATION.
- FIELD VERIFY ALL EXISTING CONDITIONS.
- ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNO.
- FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS FOR REQUIREMENTS.
- REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
- NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
- PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

**KEYED NOTES: (#)**

- (3) EXISTING LIGHTING INVERTERS TO BE RELOCATED. ADEQUATE LIGHTING SHALL BE MAINTAINED IN THESE AREAS WHILE EQUIPMENT IS RELOCATED. REFERENCE KEYED NOTE #2.
  - 1KW INVERTER POWERED BY SDCCP1-39 SERVES SELECTED LIGHTS IN GS06 AND GS07.
  - 1KW INVERTER POWERED BY LSH2-2 SERVES ALL LIGHTS IN GS04.
  - 1.6KW INVERTER POWERED BY SDCCP1 SERVES ALL LIGHTS IN GS01.
- RELOCATED LIGHTING INVERTERS, REFERENCE KEYED NOTE #1. EXISTING CIRCUITING TO BE EXTENDED TO THIS LOCATION. MAINTAIN EXISTING CONTROLS INCLUDING LIGHTING RELAY ALLOWING NORMAL POWER LIGHTS TO BE CONTROLLED WITH EMERGENCY POWERED LIGHTS IN GS06 AND GS07.
- REMOVE ALL EXISTING CONDUCTORS AND CONDUITS BACK TO THE SOURCE AS DETAILED ON E-501 AND DEMOLISH EXISTING PULLBOX.
- REMOVE EXISTING BRANCH CIRCUIT (CONDUIT AND WIRE) BACK TO SOURCE, AND SPLICE TO REMAINING CONDUCTORS SERVING AC/UCU IN EXISTING JUNCTION BOX WITH 2 #8, 1#8 IN 0.75" C.
- PROVIDE THREE (3) NEW 20A/1P CIRCUIT BREAKERS IN EXISTING PANEL FOR NEW BRANCH CIRCUITS TO VAV, LIGHTS, AND RECEPTACLES.
- REMOVE EXISTING BRANCH CIRCUIT (CONDUIT AND WIRE) BACK TO SOURCE, AND SPLICE REMAINING CONDUCTORS SERVING VAV IN EXISTING JUNCTION BOX WITH 2 #8, 1#8 IN 0.75" C.
- REMOVE EXISTING BRANCH CIRCUIT (CONDUIT AND WIRE) BACK TO SOURCE, AND SPLICE REMAINING CONDUCTORS SERVING LIGHTS IN EXISTING JUNCTION BOX WITH 2 #8, 1#8 IN 0.75" C.
- REMOVE EXISTING BRANCH CIRCUIT (CONDUIT AND WIRE) BACK TO SOURCE, AND SPLICE REMAINING CONDUCTORS SERVING RECEPTACLES IN EXISTING JUNCTION BOX WITH 2 #8, 1#8 IN 0.75" C.
- REMOVE EXISTING BRANCH CIRCUIT (CONDUIT AND WIRE) BACK TO SOURCE AND TERMINATE NEW BRANCH CIRCUIT CONDUCTORS TO EXISTING FIRE ALARM PRE-ACTION PANEL WITH 2 #8, 1#8 IN 0.75" C. TERMINATE SUPPLY SIDE OF BRANCH CIRCUIT ON EXISTING SPARE 20A CIRCUIT BREAKER.
- REMOVE EXISTING BRANCH CIRCUIT (CONDUIT AND WIRE) BACK TO SOURCE AND TERMINATE NEW BRANCH CIRCUIT CONDUCTORS TO EXISTING JOCKEY PUMP WITH 3 #4, 1#8 IN 1" C.
- PROVIDE 70A FUSES IN EXISTING 100A SWITCH FOR NEW BRANCH CIRCUIT TO JOCKEY PUMP. PROVIDE 30A FUSES IN EXISTING 60A SWITCH FOR NEW BRANCH CIRCUIT TO AC/UCU.
- CONTRACTOR SHALL REMOVE EXISTING PULLBOX, AND ALL ASSOCIATED CONDUCTORS AND RACEWAYS BACK TO THE SOURCE.
- CONTRACTOR SHALL RE-CIRCUIT ALL EXISTING FEEDERS FROM EXISTING PANELS GL-4, GL-5, AND GL-6 TO NEW PANEL CD1. SEE PANEL SCHEDULE FOR ADDITIONAL INFORMATION. EXISTING PANEL INTERIORS TO BE REMOVED AND ENCLOSURE TO BE USED AS JUNCTION BOX.
- CONTRACTOR SHALL MAINTAIN 8'-0" PATHWAY THROUGH AREAWAY.
- REMOVE EXISTING SHEETMETAL DIVIDER IN PULLBOX.
- REMOVE EXISTING CONDUCTORS SERVING ATS-ECDP1, RE-PULL EXISTING CONDUCTORS THROUGH EXISTING SPARE CONDUITS, AND SPLICE IN EXISTING JUNCTION BOX.
- SPLICE EXISTING FEEDERS IN EXISTING JUNCTION BOX.
- CONTRACTOR SHALL PROVIDE DRIP PANS FOR ALL EXISTING PIPING ABOVE NEW ELECTRICAL EQUIPMENT INSTALLATIONS.
- HATCHED AREA IS EXTREMELY CONGESTED WITH EXISTING UTILITIES. WORK DONE IN THIS CORRIDOR SHALL BE DONE DURING NIGHT HOURS.
- CUT ABANDONED CONDUITS FLUSH WITH FLOOR AND FILL WITH GROUT. PROVIDE 6" CONCRETE PAD FOR NEW TRANSFORMER PER SPECIFICATIONS.
- UPDATE NAMEPLATES AND GRAPHICS ON SWITCHGEAR AND REMOTE CONTROL CABINET TO INDICATE SPARE AND/OR NEW FEEDER CONNECTIONS. COORDINATE REQUIREMENTS WITH SWITCHGEAR MANUFACTURER.
- PANEL CD1 OUTAGES SHALL BE LIMITED TO 4 HOURS:
  - PROVIDE TEMPORARY NORMAL POWER SERVICE FROM NEW CIRCUIT BREAKER IN GE13A CHILLER SUBSTATION TO NEW CD1 PANEL. SEE RISER DIAGRAMS FOR ADDITIONAL INFORMATION.
  - CUT EXISTING CD1 FEEDERS OVER TO NEW PANEL INDIVIDUALLY, MINIMIZING SYSTEM OUTAGES.
  - INSTALL PERMANENT CD1 CONNECTION TO ATS-CD1 AND REMOVE TEMPORARY SERVICE FROM CHILLER SUBSTATION.
- PIPE INSULATION IN THIS AREA HAS BEEN IDENTIFIED TO CONTAIN ASBESTOS. CONTRACTOR SHALL COORDINATE WITH OWNERS REPRESENTATIVE IF PROPOSED CONSTRUCTION WILL DISTURB EXISTING INSTALLATIONS.



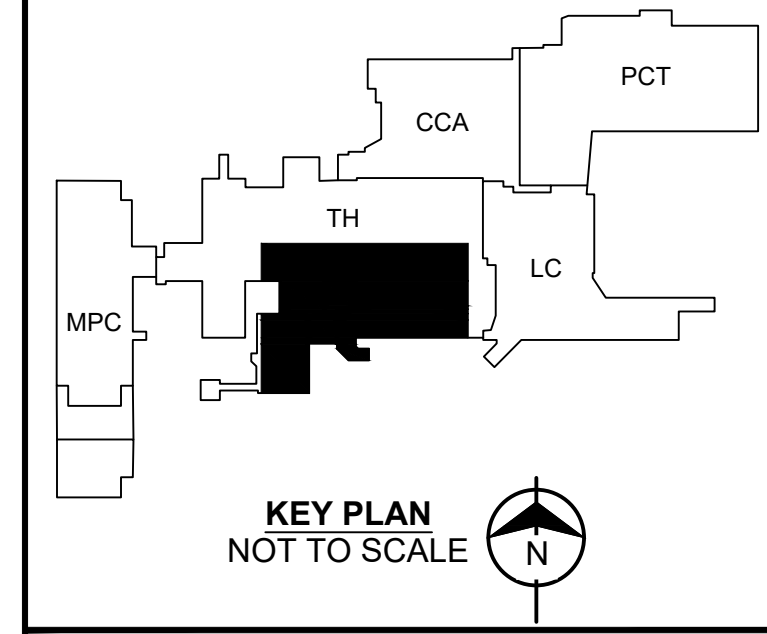
CONDUIT	SERVICE TYPE	DESTINATION	CONDUIT	SERVICE TYPE	DESTINATION
1	SPARE	N/A	28	CRITICAL POWER	GL5
2	SPARE	N/A	29	CRITICAL POWER	GL4
3	SPARE	N/A	30	CRITICAL POWER	GL4
4	SPARE	N/A	31	CRITICAL POWER	ELD
5	NORMAL POWER	ATS-ECDP1	32	CRITICAL POWER	ELD
6	NORMAL POWER	ATS-ECDP1	33	SPARE	N/A
7	SPARE	N/A	34	SPARE	N/A
8	SPARE	N/A	35	NORMAL POWER	ATS-EDP2
9	SPARE	N/A	36	NORMAL POWER	ATS-EDP2
10	SPARE	N/A	37	EQUIPMENT POWER	EPD1
11	SPARE	N/A	38	EQUIPMENT POWER	EPD1
12	SPARE	N/A	39	NORMAL POWER	P1
13	SPARE	N/A	40	NORMAL POWER	P1
14	SPARE	N/A	41	NORMAL POWER	ATS-EOP
15	SPARE	N/A	42	NORMAL POWER	ATS-EOP
16	SPARE	N/A	43	SPARE	N/A
17	SPARE	N/A	44	SPARE	N/A
18	SPARE	N/A	45	SPARE	N/A
19	SPARE	N/A	46	SPARE	N/A
20	SPARE	N/A	47	NORMAL POWER	ATS-CD1
21	SPARE	N/A	48	NORMAL POWER	ATS-CD1
22	SPARE	N/A	49	SPARE	N/A
23	SPARE	N/A	50	SPARE	N/A
24	SPARE	N/A	51	NORMAL POWER	ATS-RAD
25	SPARE	N/A	52	NORMAL POWER	ATS-RAD
26	SPARE	N/A	53	NORMAL POWER	ATS-CD2
27	CRITICAL POWER	GL6	54	NORMAL POWER	ATS-CD2

**SYMBOL LEGEND**  
 [Cable Filled Conduit Symbol] CABLE FILLED CONDUIT [Spare Symbol] SPARE  
 REFER TO PB-DB301 CABLE SCHEDULE

**SECTION A-A  
 PULLBOX PB-DB301 SECTION - EXISTING  
 NOT TO SCALE**

**DEMOLITION LEGEND**  
 [Hatched Box Symbol] DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT, CONCRETE PADS, CONDUIT, GROUT IN ABANDONED FLOOR CONDUITS, SUPPORTS, AND CONDUCTORS BACK TO SOURCE. COORDINATE DEMOLITION WITH INSTALLATION OF NEW ELECTRICAL EQUIPMENT. MAINTAIN SERVICE TO DOWNSTREAM EQUIPMENT. COORDINATE ALL SHUTDOWNS WITH OWNER.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



**BURNS & MCDONNELL**  
 9400 WARD PARKWAY  
 KANSAS CITY, MO 64114  
 816-333-9400  
 LICENSEE NO. 000165

date	detailed
11/20/2020	J. CHASE
designed	checked
R. DEBAUN	R. DEBAUN



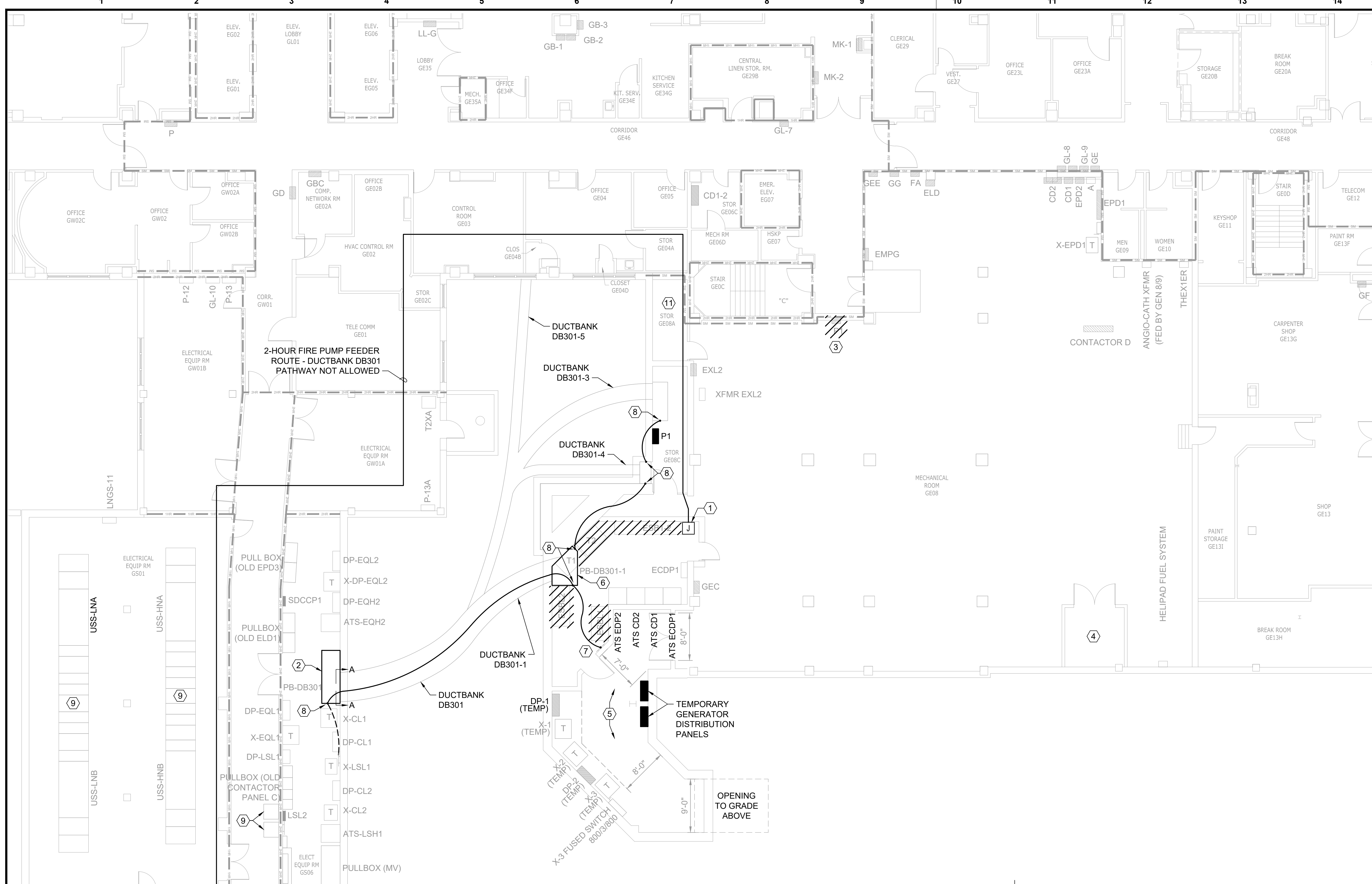
**CCA & TH EMERGENCY POWER MODIFICATIONS  
 GROUND FLOOR  
 ELECTRICAL PLAN - PHASE 1**

project	contract	
128966	CP210961	
drawing	rev.	
E-101	0	
sheet	of	sheets
file 128966 E-101.DWG		



REID E. DEBAUN  
 PROFESSIONAL ENGINEER  
 LICENSE NO. PE-200909323



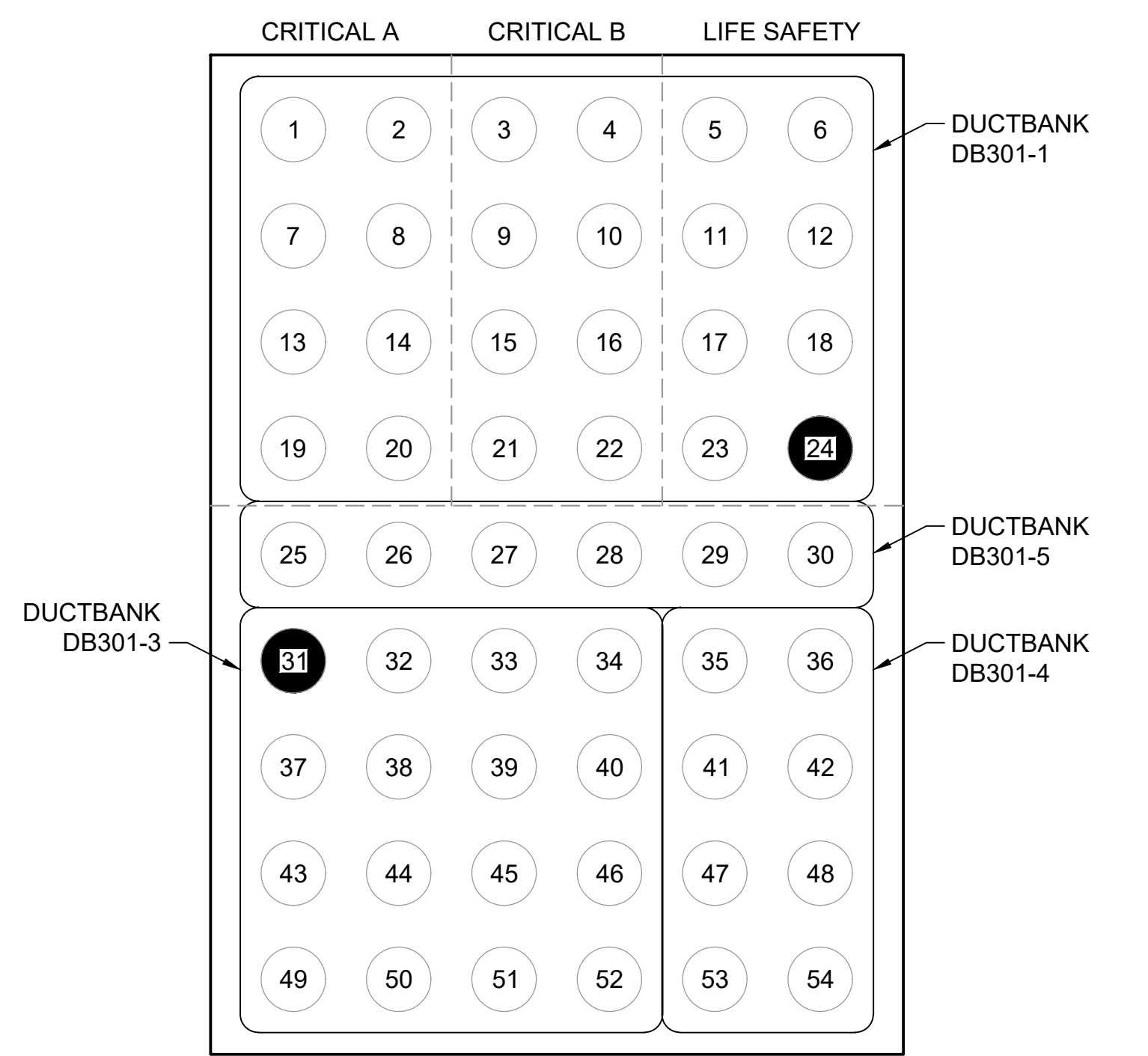
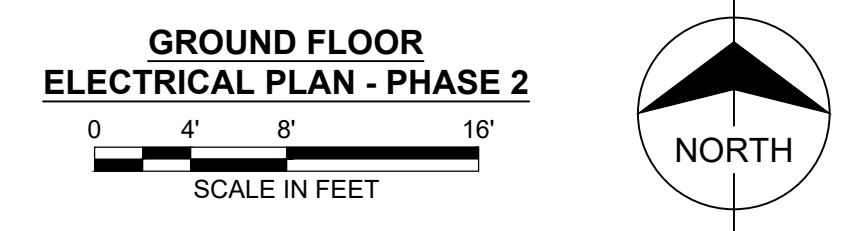


- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - REFER TO SHEET E-502 FOR PHASE 2 PROJECT ONE-LINE DIAGRAM.
  - CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATION.
  - FIELD VERIFY ALL EXISTING CONDITIONS.
  - ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNLESS NOTED OTHERWISE.
  - FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION 'SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS' FOR REQUIREMENTS.
  - REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
  - NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
  - PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNER'S APPROVAL.

- KEYED NOTES: (#)**
- SPLICE NEW FEEDER FOR FIRE PUMP IN NEW JUNCTION BOX. SEE RISER DIAGRAM, SHEET E-502 FOR ADDITIONAL INFORMATION.
  - PROVIDE NEW PULLBOX PB-DB301 AS DETAILED ON E-701. BOND EXISTING BARE COPPER DUCTBANK GROUNDING CONDUCTORS TO PULLBOX.
  - CONTRACTOR SHALL RE-CIRCUIT ALL EXISTING FEEDERS IN EXISTING PANEL TO NEW P1 PANEL. SEE PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
  - EXISTING GENERATOR START SIGNAL FROM FIRE PUMP CONTROLLER TO GENERATOR 6 & 7 SHALL BE RE-CIRCUITED TO GENERATOR 4 & 5 PARALLELING SWITCHGEAR CONTROLS. CIRCUIT SHALL BE A LISTED ELECTRICAL CIRCUIT PROTECTIVE SYSTEM WITH MINIMUM 2-HOUR FIRE RATING AS REQUIRED BY THE NEC. FACTORY CERTIFIED TECHNICIAN SHALL INCORPORATE GENERATOR START SIGNAL AND POWER MONITORING INTO PARALLELING CONTROL SYSTEM.
  - CONTRACTOR SHALL MAINTAIN 8'-0" PATHWAY THROUGH AREAWAY.
  - PROVIDE NEW PULLBOX PB-DB301-1 AS DETAILED ON E-701.
  - BOND TO EXISTING GROUND BAR WITH #4/0 IN 0.75" C.
  - BOND PULLBOXES WITH #4/0 IN 0.75" C.
  - UPDATE NAMEPLATES AND GRAPHICS ON SWITCHGEAR AND REMOTE CONTROL CABINET TO INDICATE SPARE AND/OR NEW FEEDER CONNECTIONS. COORDINATE REQUIREMENTS WITH SWITCHGEAR MANUFACTURER.
  - UPDATE NAMEPLATES AND GRAPHICS ON PARALLELING SWITCHGEAR AND REMOTE CONTROL CABINET TO INDICATE NEW FEEDER CONNECTIONS. COORDINATE REQUIREMENTS WITH PARALLELING CONTROLS MANUFACTURER.
  - PIPE INSULATION IN THIS AREA HAS BEEN IDENTIFIED TO CONTAIN ASBESTOS. CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE IF PROPOSED CONSTRUCTION WILL DISTURB EXISTING INSTALLATIONS.

**DEMOLITION LEGEND**

DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT, CONCRETE PADS, CONDUIT, GROUT IN ABANDONED FLOOR CONDUITS, SUPPORTS, AND CONDUCTORS BACK TO SOURCE. COORDINATE DEMOLITION WITH INSTALLATION OF NEW ELECTRICAL EQUIPMENT. MAINTAIN SERVICE TO DOWNSTREAM EQUIPMENT. COORDINATE ALL SHUTDOWNS WITH OWNER.



**SYMBOL LEGEND**

CABLE FILLED CONDUIT SPARE

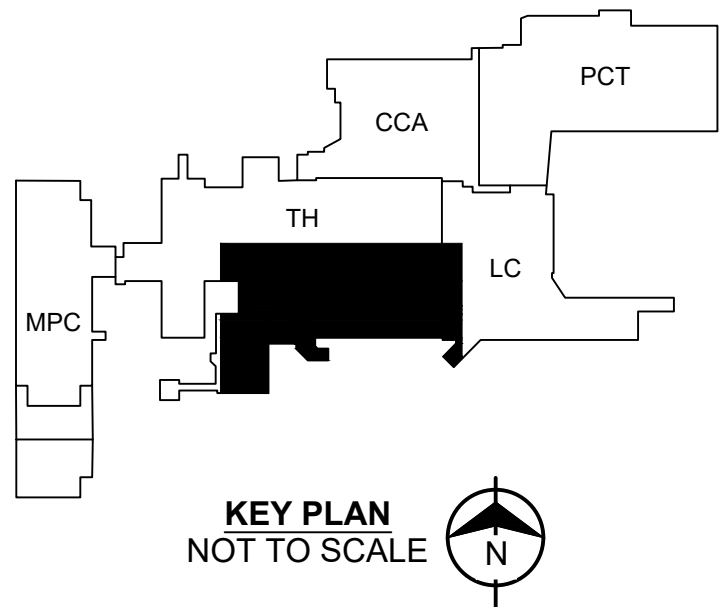
REFER TO PB-DB301 CONDUIT SCHEDULE

**PB-DB301 CONDUIT SCHEDULE - PHASE 2**

CONDUIT	SERVICE TYPE	DESTINATION	CONDUIT	SERVICE TYPE	DESTINATION
1	SPARE	N/A	28	SPARE	N/A
2	SPARE	N/A	29	SPARE	N/A
3	SPARE	N/A	30	SPARE	N/A
4	SPARE	N/A	31	<b>NORMAL POWER</b>	<b>P1</b>
5	SPARE	N/A	32	SPARE	N/A
6	SPARE	N/A	33	SPARE	N/A
7	SPARE	N/A	34	SPARE	N/A
8	SPARE	N/A	35	SPARE	N/A
9	SPARE	N/A	36	SPARE	N/A
10	SPARE	N/A	37	SPARE	N/A
11	SPARE	N/A	38	SPARE	N/A
12	SPARE	N/A	39	SPARE	N/A
13	SPARE	N/A	40	SPARE	N/A
14	SPARE	N/A	41	SPARE	N/A
15	SPARE	N/A	42	SPARE	N/A
16	SPARE	N/A	43	SPARE	N/A
17	SPARE	N/A	44	SPARE	N/A
18	SPARE	N/A	45	SPARE	N/A
19	SPARE	N/A	46	SPARE	N/A
20	SPARE	N/A	47	SPARE	N/A
21	SPARE	N/A	48	SPARE	N/A
22	SPARE	N/A	49	SPARE	N/A
23	SPARE	N/A	50	SPARE	N/A
24	<b>#4/0 GND</b>	<b>PULLBOX</b>	51	SPARE	N/A
25	SPARE	N/A	52	SPARE	N/A
26	SPARE	N/A	53	SPARE	N/A
27	SPARE	N/A	54	SPARE	N/A

**SECTION A-A**  
**PULLBOX PB-DB301 SECTION**  
NOT TO SCALE

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



**BURNS & MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN

**UNIVERSITY HOSPITAL**  
**UNIVERSITY OF MISSOURI HEALTH CARE**  
COLUMBIA, MISSOURI

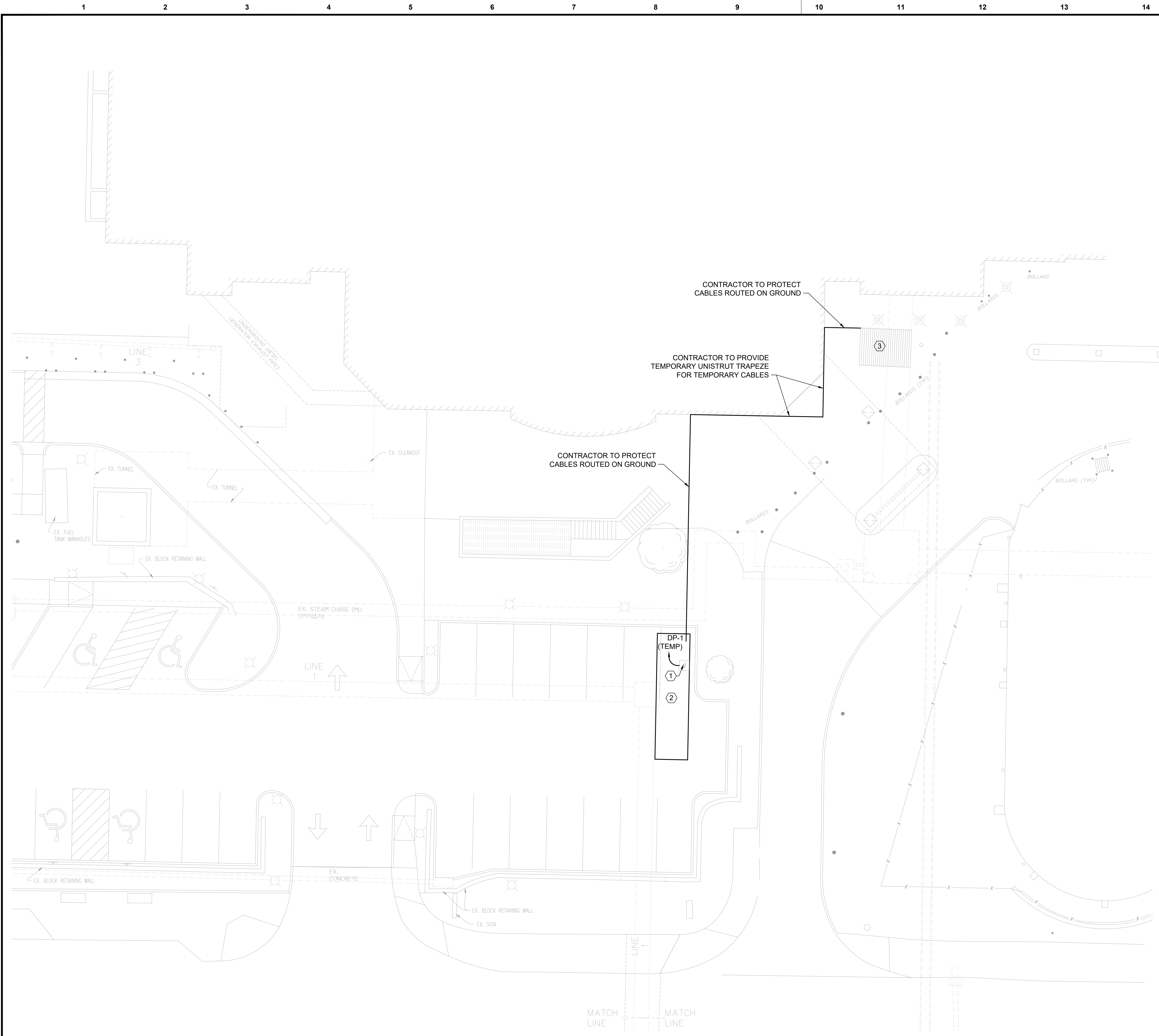


**CCA & TH EMERGENCY POWER MODIFICATIONS**  
GROUND FLOOR  
ELECTRICAL PLAN - PHASE 2

project	128966	contract	CP210961
drawing		rev.	
sheet	<b>E-102</b>	of	<b>0</b>
sheet		of	
file	128966		E-102.DWG

REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323

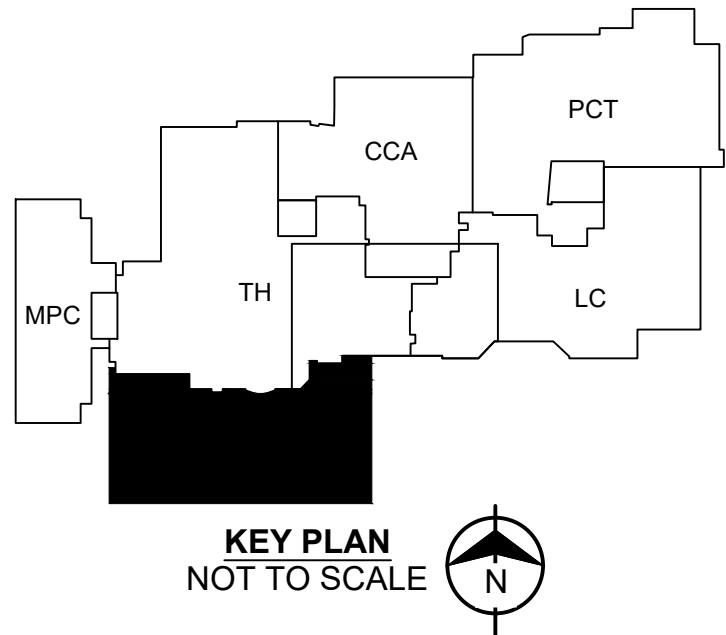




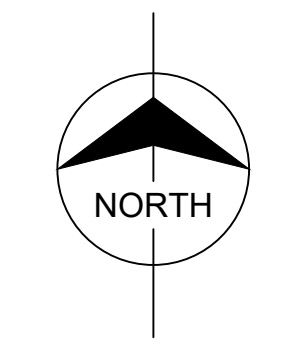
- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - REFER TO SHEET E-502 FOR PHASE 2 PROJECT ONE-LINE DIAGRAM.
  - CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATION.
  - FIELD VERIFY ALL EXISTING CONDITIONS.
  - ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNON.
  - REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
  - NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
  - PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

- KEYED NOTES: (#)**
- COORDINATE FINAL POWER REQUIREMENTS WITH VENDOR. PROVIDE 3#1, 1#BG -1.25" C TO TEMPORARY GENERATOR LOAD CENTER.
  - BOND SEPARATELY DERIVED TEMPORARY GENERATOR SERVICE WITH GROUNDING ELECTRODE CONDUCTOR TO EXISTING GROUND BUS IN ELECTRICAL ROOM GE-08A.
  - CIRCUITS SHALL EXTEND THROUGH AREAWAY TO EQUIPMENT LOCATED IN GE-08.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



**SITE ELECTRICAL PLAN - PHASE 2**  
SCALE IN FEET



**BURNS & MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	05/12/2021	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN

**UNIVERSITY HOSPITAL UNIVERSITY OF MISSOURI HEALTH CARE COLUMBIA, MISSOURI**

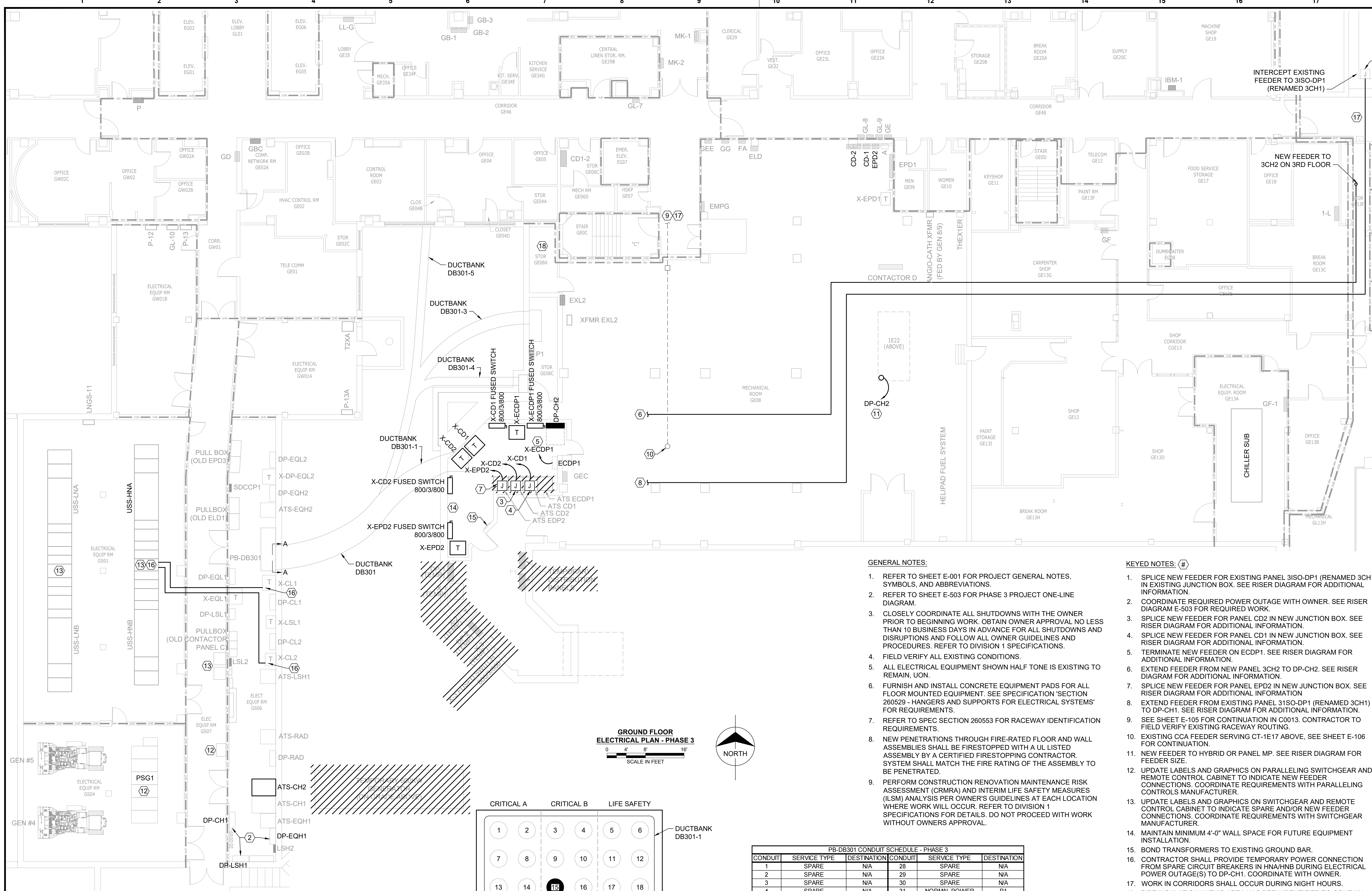
**CCA & TH EMERGENCY POWER MODIFICATIONS**  
SITE  
ELECTRICAL PLAN - PHASE 2

project	128966	contract	CP210961
drawing	E-103	rev.	0

sheet **E-103** of **0** sheets  
file 128966 E-103.DWG

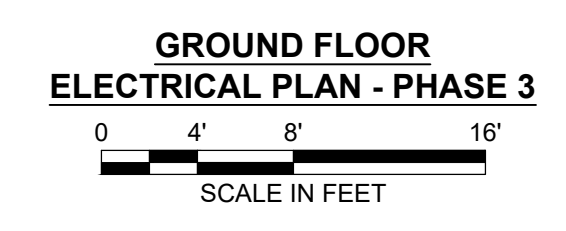
REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323





- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - REFER TO SHEET E-503 FOR PHASE 3 PROJECT ONE-LINE DIAGRAM.
  - CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATIONS.
  - FIELD VERIFY ALL EXISTING CONDITIONS.
  - ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UON.
  - FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS' FOR REQUIREMENTS.
  - REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
  - NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
  - PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (LSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

- KEYED NOTES: (#)**
- SPLICE NEW FEEDER FOR EXISTING PANEL 3ISO-DP1 (RENAMED 3CH1) IN EXISTING JUNCTION BOX. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - COORDINATE REQUIRED POWER OUTAGE WITH OWNER. SEE RISER DIAGRAM E-503 FOR REQUIRED WORK.
  - SPLICE NEW FEEDER FOR PANEL CD2 IN NEW JUNCTION BOX. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - SPLICE NEW FEEDER FOR PANEL CD1 IN NEW JUNCTION BOX. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - TERMINATE NEW FEEDER ON ECDP1. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - EXTEND FEEDER FROM NEW PANEL 3CH2 TO DP-CH2. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - SPLICE NEW FEEDER FOR PANEL EPD2 IN NEW JUNCTION BOX. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - EXTEND FEEDER FROM EXISTING PANEL 3ISO-DP1 (RENAMED 3CH1) TO DP-CH1. SEE RISER DIAGRAM FOR ADDITIONAL INFORMATION.
  - SEE SHEET E-105 FOR CONTINUATION IN C0013. CONTRACTOR TO FIELD VERIFY EXISTING RACEWAY ROUTING.
  - EXISTING CCA FEEDER SERVING CT-1E17 ABOVE. SEE SHEET E-106 FOR CONTINUATION.
  - NEW FEEDER TO HYBRID OR PANEL MP. SEE RISER DIAGRAM FOR FEEDER SIZE.
  - UPDATE LABELS AND GRAPHICS ON PARALLELING SWITCHGEAR AND REMOTE CONTROL CABINET TO INDICATE NEW FEEDER CONNECTIONS. COORDINATE REQUIREMENTS WITH PARALLELING CONTROLS MANUFACTURER.
  - UPDATE LABELS AND GRAPHICS ON SWITCHGEAR AND REMOTE CONTROL CABINET TO INDICATE SPARE AND/OR NEW FEEDER CONNECTIONS. COORDINATE REQUIREMENTS WITH SWITCHGEAR MANUFACTURER.
  - MAINTAIN MINIMUM 4'-0" WALL SPACE FOR FUTURE EQUIPMENT INSTALLATION.
  - BOND TRANSFORMERS TO EXISTING GROUND BAR.
  - CONTRACTOR SHALL PROVIDE TEMPORARY POWER CONNECTION FROM SPARE CIRCUIT BREAKERS IN HNA/HNB DURING ELECTRICAL POWER OUTAGE(S) TO DP-CH1. COORDINATE WITH OWNER.
  - WORK IN CORRIDORS SHALL OCCUR DURING NIGHT HOURS.
  - PIPE INSULATION IN THIS AREA HAS BEEN IDENTIFIED TO CONTAIN ASBESTOS. CONTRACTOR SHALL COORDINATE WITH OWNER'S REPRESENTATIVE IF PROPOSED CONSTRUCTION WILL DISTURB EXISTING INSTALLATIONS.



CRITICAL A		CRITICAL B		LIFE SAFETY	
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54

PB-DB301 CONDUIT SCHEDULE - PHASE 3					
CONDUIT	SERVICE TYPE	DESTINATION	CONDUIT	SERVICE TYPE	DESTINATION
1	SPARE	N/A	28	SPARE	N/A
2	SPARE	N/A	29	SPARE	N/A
3	SPARE	N/A	30	SPARE	N/A
4	SPARE	N/A	31	NORMAL POWER	P1
5	SPARE	N/A	32	SPARE	N/A
6	SPARE	N/A	33	SPARE	N/A
7	SPARE	N/A	34	SPARE	N/A
8	SPARE	N/A	35	EQUIPMENT POWER	X-EPD2
9	SPARE	N/A	36	SPARE	N/A
10	SPARE	N/A	37	SPARE	N/A
11	SPARE	N/A	38	SPARE	N/A
12	SPARE	N/A	39	SPARE	N/A
13	SPARE	N/A	40	SPARE	N/A
14	SPARE	N/A	41	SPARE	N/A
15	CRITICAL POWER	DP-CH2	42	SPARE	N/A
16	SPARE	N/A	43	SPARE	N/A
17	SPARE	N/A	44	SPARE	N/A
18	SPARE	N/A	45	SPARE	N/A
19	CRITICAL POWER	3CH1	46	SPARE	N/A
20	CRITICAL POWER	3CH1	47	SPARE	N/A
21	CRITICAL POWER	DP-CH2	48	SPARE	N/A
22	CRITICAL POWER	DP-CH2	49	SPARE	N/A
23	LIFE SAFETY POWER	X-CD2	50	SPARE	N/A
24	#4/0 GND	N/A	51	SPARE	N/A
25	SPARE	N/A	52	SPARE	N/A
26	SPARE	N/A	53	SPARE	N/A
27	SPARE	N/A	54	SPARE	N/A

**SYMBOL LEGEND**

# CABLE FILLED CONDUIT    # SPARE

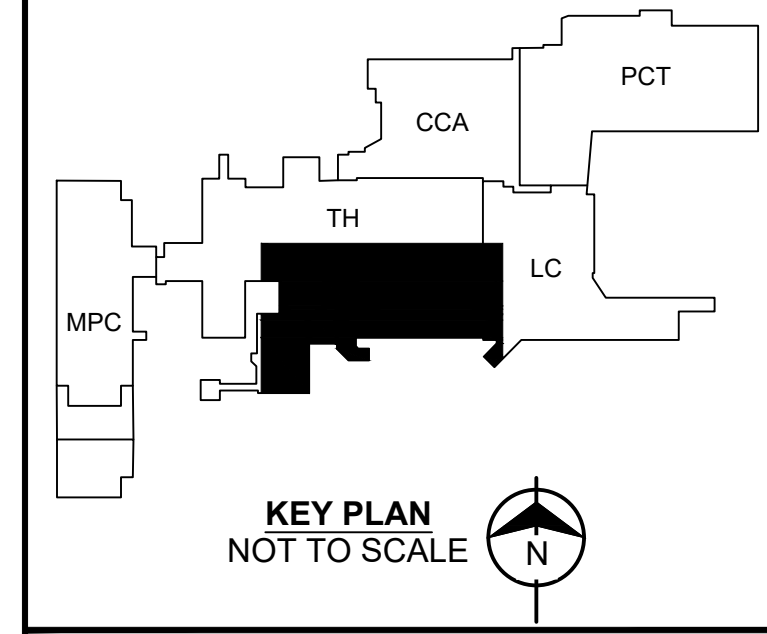
REFER TO PB-DB301 CONDUIT SCHEDULE

**SECTION A-A**  
PULLBOX PB-DB301 SECTION  
NOT TO SCALE

**DEMOLITION LEGEND**

DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT, CONCRETE PADS, CONDUIT, GROUT IN ABANDONED FLOOR CONDUITS, SUPPORTS, AND CONDUCTORS BACK TO SOURCE. COORDINATE DEMOLITION WITH INSTALLATION OF NEW ELECTRICAL EQUIPMENT. MAINTAIN SERVICE TO DOWNSTREAM EQUIPMENT. COORDINATE ALL SHUTDOWNS WITH OWNER.

no. 0 | date 07/09/21 | by JMC | ckd RED | description ISSUED FOR BID



**BURNS & MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date 11/20/2020 | detailed J. CHASE  
designed R. DEBAUN | checked R. DEBAUN

**UNIVERSITY HOSPITAL**  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

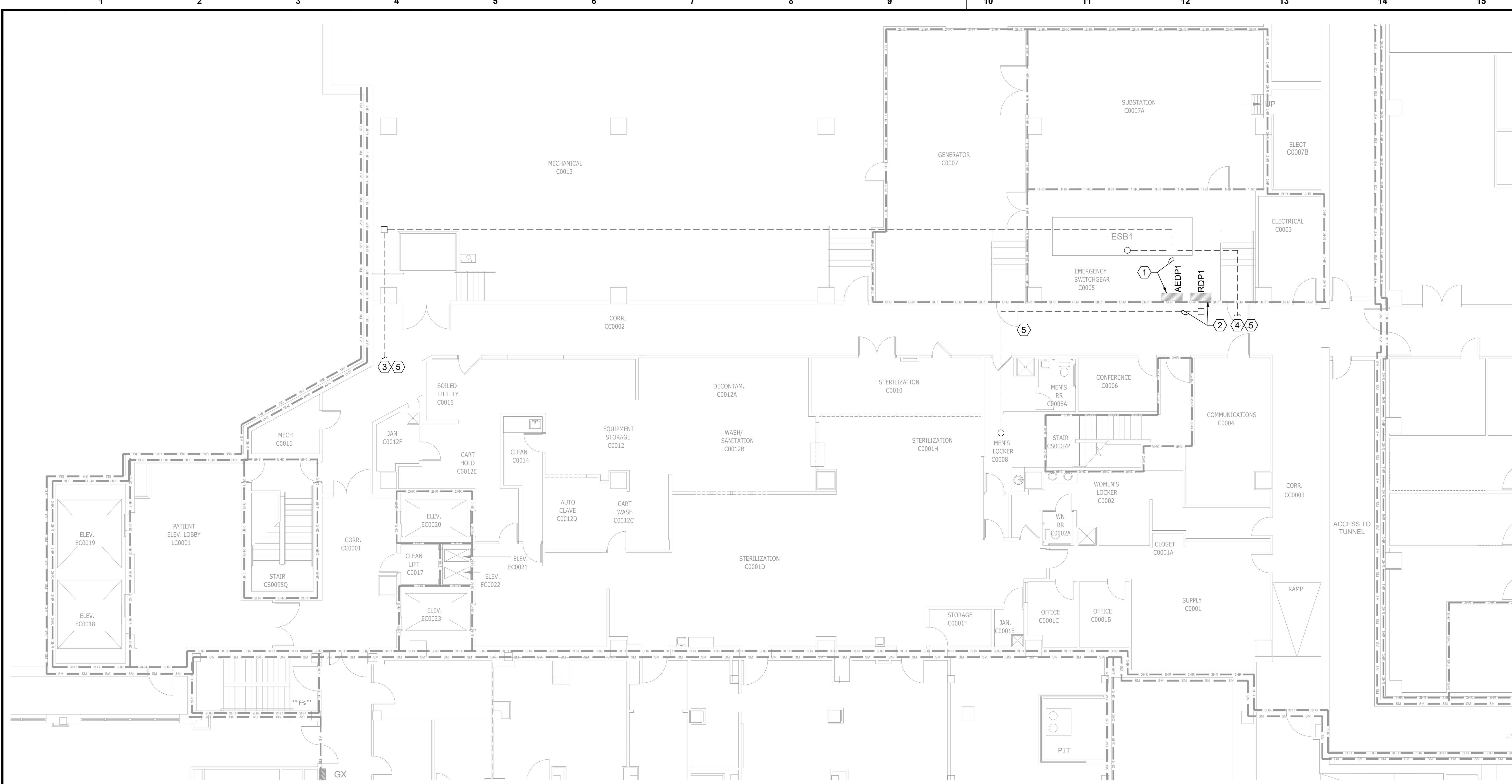
**CCA & TH EMERGENCY**  
POWER MODIFICATIONS  
GROUND FLOOR  
ELECTRICAL PLAN - PHASE 3

project 128966 | contract CP210961  
drawing E-104 | rev. 0  
sheet of sheets  
file 128966 E-104.DWG

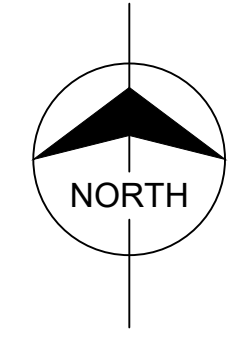
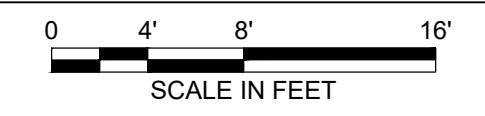


REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323





**CCA GROUND FLOOR  
ELECTRICAL PLAN - PHASE 3**



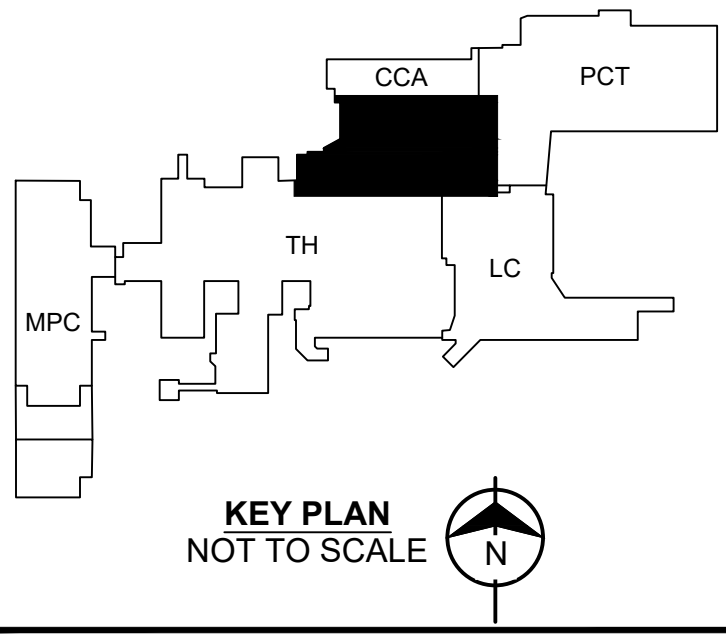
**GENERAL NOTES:**

- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
- CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATIONS.
- FIELD VERIFY ALL EXISTING CONDITIONS.
- ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNO.
- FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION 'SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS' FOR REQUIREMENTS.
- REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
- NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
- PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

**KEYED NOTES: (#)**

- REMOVE EXISTING CONDUCTORS SERVING CT-1E17. LABEL EXISTING CIRCUIT BREAKER AND ABANDONED CONDUIT TO REMAIN AS SPARE.
- REMOVE EXISTING CONDUCTORS SERVING MP HYBRID OR. LABEL EXISTING CIRCUIT BREAKER AND ABANDONED CONDUIT TO REMAIN AS SPARE.
- SEE SHEET E-104 FOR CONTINUATION IN GE08. CONTRACTOR SHALL FIELD VERIFY EXISTING RACEWAY ROUTING.
- REMOVE EXISTING CONDUCTORS SERVING ESB1-2. LABEL EXISTING CIRCUIT BREAKER AND ABANDONED CONDUIT AS SPARE.
- WORK OUTSIDE OF MECHANICAL / ELECTRICAL ROOMS SHALL OCCUR DURING NIGHT HOURS.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



KEY PLAN  
NOT TO SCALE



9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



UNIVERSITY HOSPITAL  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI



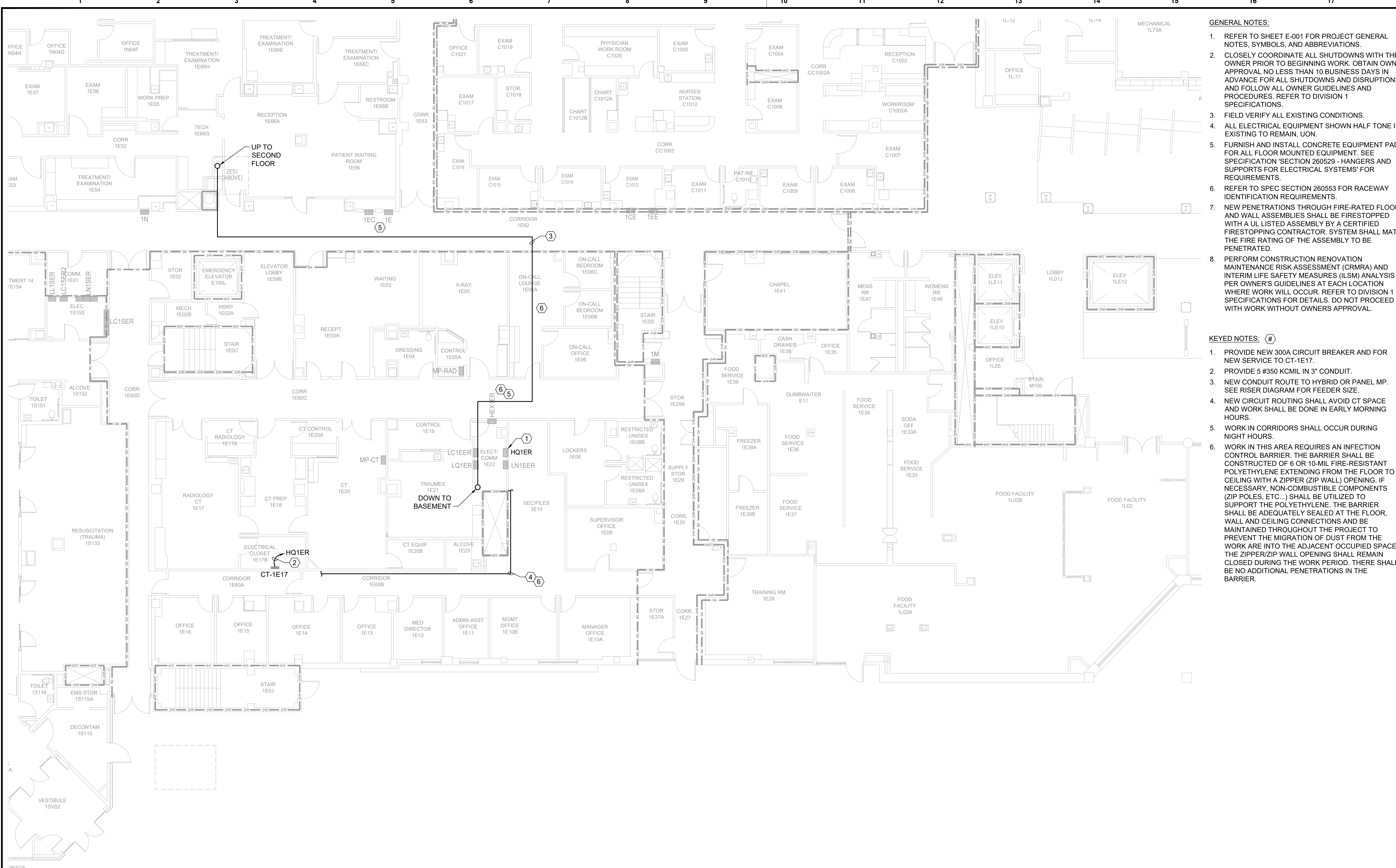
**CCA & TH EMERGENCY  
POWER MODIFICATIONS**  
CCA GROUND FLOOR  
ELECTRICAL PLAN - PHASE 3

project	128966	contract	CP210961
drawing	E-105	rev.	0

sheet	E-105	of	0	sheets
file	128966 E-105.DWG			

REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323

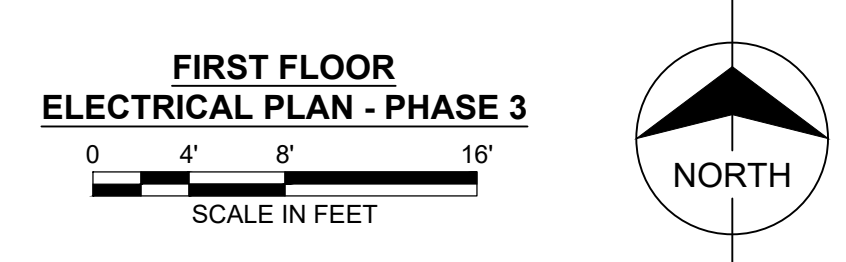
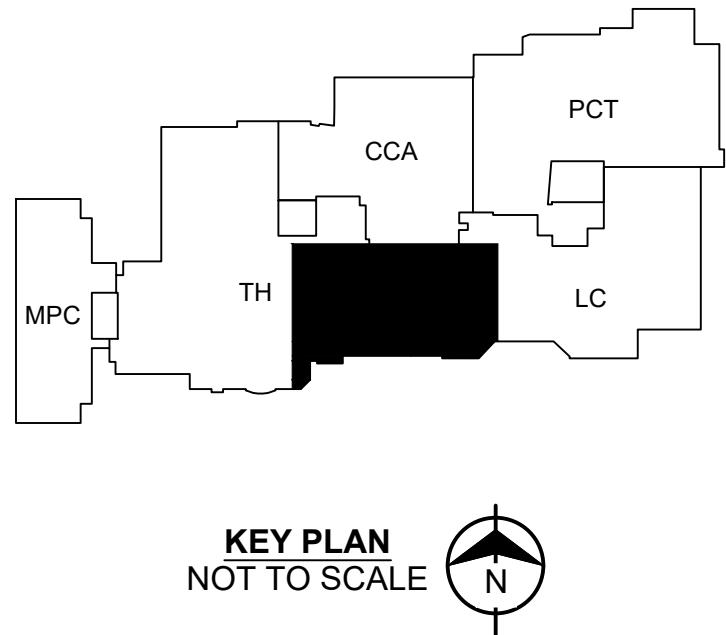




- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATIONS.
  - FIELD VERIFY ALL EXISTING CONDITIONS.
  - ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNO.
  - FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION 'SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS' FOR REQUIREMENTS.
  - REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
  - NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
  - PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

- KEYED NOTES: (#)**
- PROVIDE NEW 300A CIRCUIT BREAKER AND FOR NEW SERVICE TO CT-1E17.
  - PROVIDE 5 #350 KOMIL IN 3" CONDUIT.
  - NEW CONDUIT ROUTE TO HYBRID OR PANEL MP. SEE RISER DIAGRAM FOR FEEDER SIZE.
  - NEW CIRCUIT ROUTING SHALL AVOID CT SPACE AND WORK SHALL BE DONE IN EARLY MORNING HOURS.
  - WORK IN CORRIDORS SHALL OCCUR DURING NIGHT HOURS.
  - WORK IN THIS AREA REQUIRES AN INFECTION CONTROL BARRIER. THE BARRIER SHALL BE CONSTRUCTED OF 6 OR 10-MIL FIRE-RESISTANT POLYETHYLENE EXTENDING FROM THE FLOOR TO CEILING WITH A ZIPPER (ZIP WALL) OPENING. IF NECESSARY, NON-COMBUSTIBLE COMPONENTS (ZIP POLES, ETC...) SHALL BE UTILIZED TO SUPPORT THE POLYETHYLENE. THE BARRIER SHALL BE ADEQUATELY SEALED AT THE FLOOR, WALL AND CEILING CONNECTIONS AND BE MAINTAINED THROUGHOUT THE PROJECT TO PREVENT THE MIGRATION OF DUST FROM THE WORK AREA INTO THE ADJACENT OCCUPIED SPACE. THE ZIPPER/ZIP WALL OPENING SHALL REMAIN CLOSED DURING THE WORK PERIOD. THERE SHALL BE NO ADDITIONAL PENETRATIONS IN THE BARRIER.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



**BURNS & MCDONNELL**  
 9400 WARD PARKWAY  
 KANSAS CITY, MO 64114  
 816-333-9400  
 LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN

**UNIVERSITY HOSPITAL**  
 UNIVERSITY OF MISSOURI HEALTH CARE  
 COLUMBIA, MISSOURI

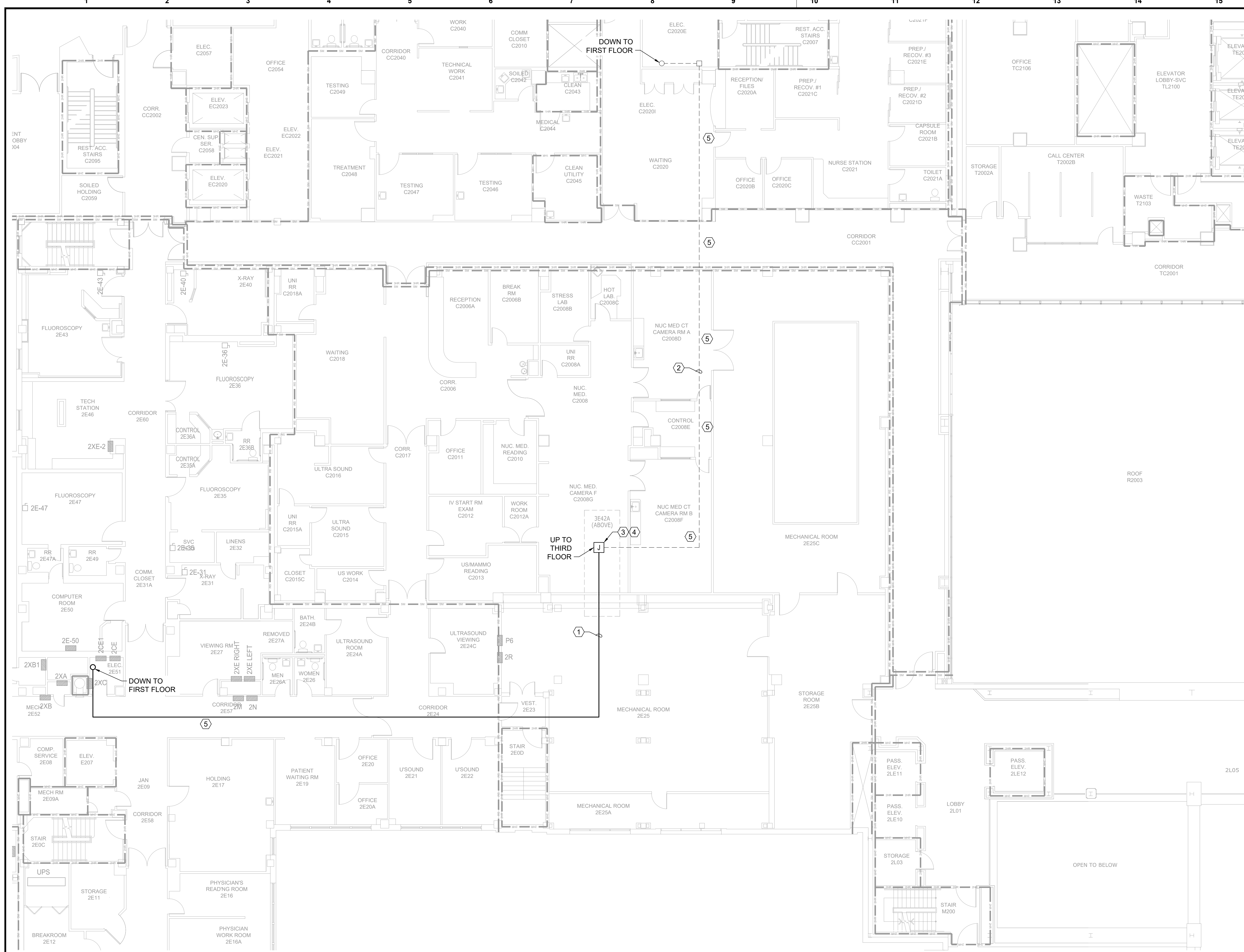
**CCA & TH EMERGENCY POWER MODIFICATIONS**  
 FIRST FLOOR  
 ELECTRICAL PLAN - PHASE 3

project	128966	contract	CP210961
drawing	E-106	rev.	0

sheet of sheets  
 file 128966 E-106.DWG



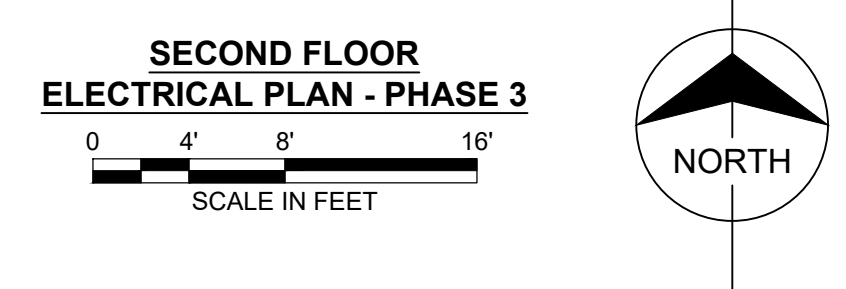
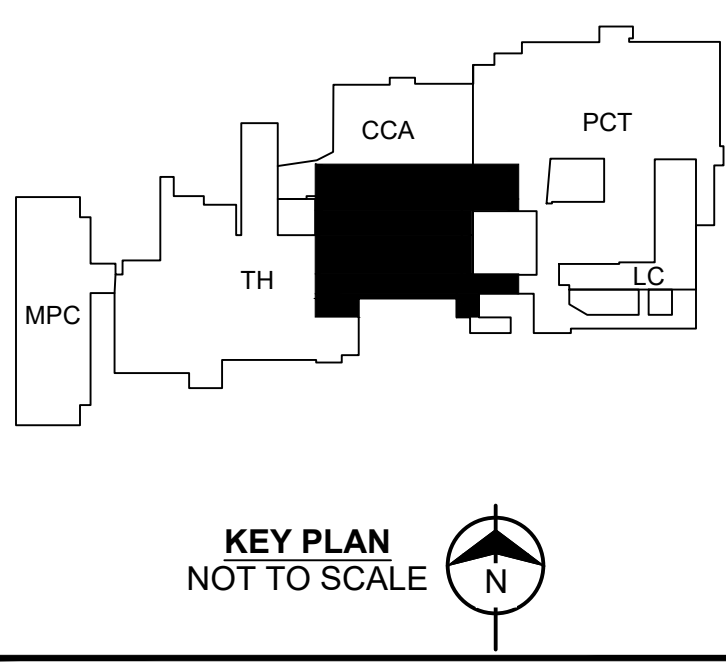




- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATIONS.
  - FIELD VERIFY ALL EXISTING CONDITIONS.
  - ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNO.
  - FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION 'SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS' FOR REQUIREMENTS.
  - REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
  - NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
  - PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

- KEYED NOTES: (#)**
- NEW CONDUIT ROUTE TO HYBRID OR PANEL MP. SEE RISER DIAGRAM FOR FEEDER SIZE.
  - EXISTING FEEDER CONDUCTORS TO BE REMOVED BACK TO SOURCE. EXISTING CONDUIT TO REMAIN SHALL BE LABELED AS SPARE.
  - INTERCEPT EXISTING FEEDER TO HYBRID OR PANEL MP. COORDINATE OUTAGE WITH OWNER.
  - WORK IN THIS AREA REQUIRES THE PROTECTION OF IMAGING MACHINE AND INFECTION CONTROL BARRIER(S). THE BARRIER SHALL BE CONSTRUCTED OF 6 OR 10-MIL FIRE-RESISTANT POLYETHYLENE EXTENDING FROM THE FLOOR TO CEILING WITH A ZIPPER (ZIP WALL) OPENING. IF NECESSARY, NON-COMBUSTIBLE COMPONENTS (ZIP POLES, ETC...) SHALL BE UTILIZED TO SUPPORT THE POLYETHYLENE. THE BARRIER SHALL BE ADEQUATELY SEALED AT THE FLOOR, WALL AND CEILING CONNECTIONS AND BE MAINTAINED THROUGHOUT THE PROJECT TO PREVENT THE MIGRATION OF DUST FROM THE WORK ARE INTO THE ADJACENT OCCUPIED SPACE. THE ZIPPER/ZIP WALL OPENING SHALL REMAIN CLOSED DURING THE WORK PERIOD. THERE SHALL BE NO ADDITIONAL PENETRATIONS IN THE BARRIER.
  - WORK OUTSIDE OF MECHANICAL / ELECTRICAL ROOMS SHALL OCCUR DURING NIGHT HOURS.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323

**BURNS & MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

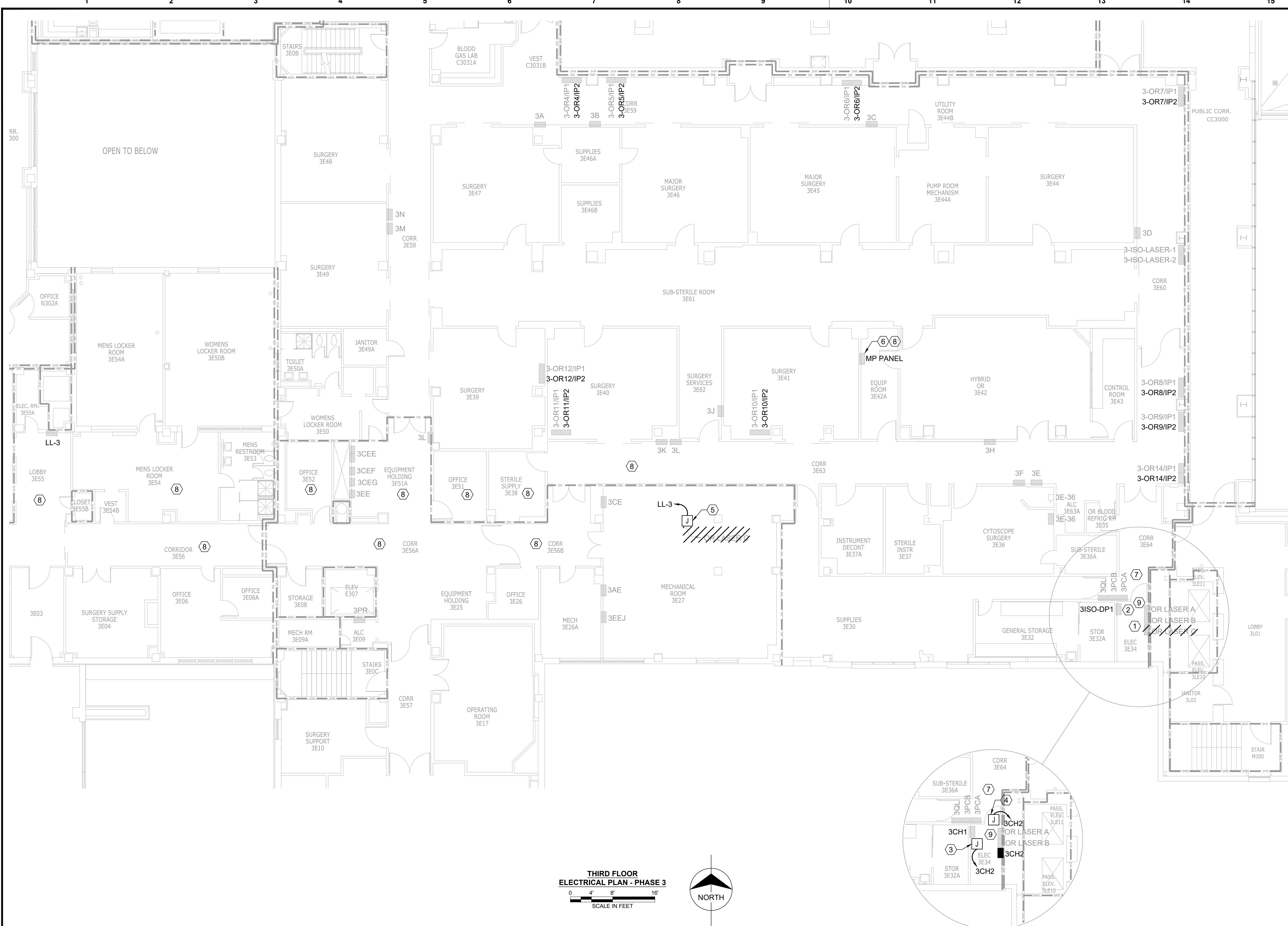
date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN

**UNIVERSITY HOSPITAL**  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

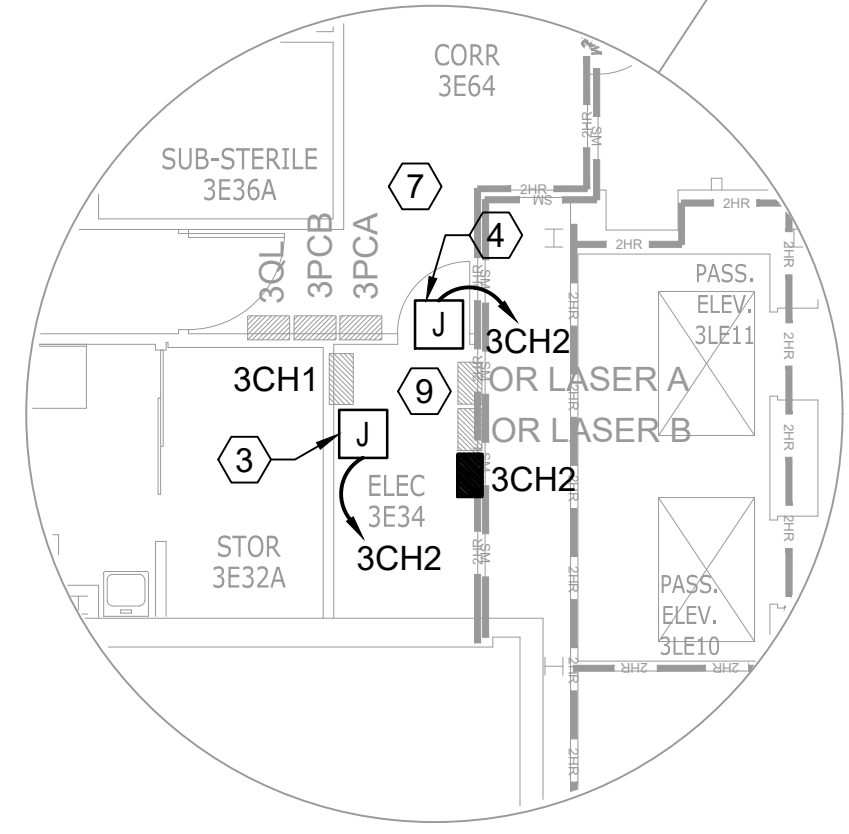
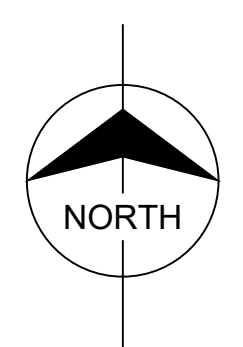
**CCA & TH EMERGENCY**  
POWER MODIFICATIONS  
SECOND FLOOR  
ELECTRICAL PLAN - PHASE 3

project	128966	contract	CP210961
drawing		rev.	
sheet	E-107	of	0
file	128966	of	E-107.DWG





THIRD FLOOR  
ELECTRICAL PLAN - PHASE 3  
SCALE IN FEET

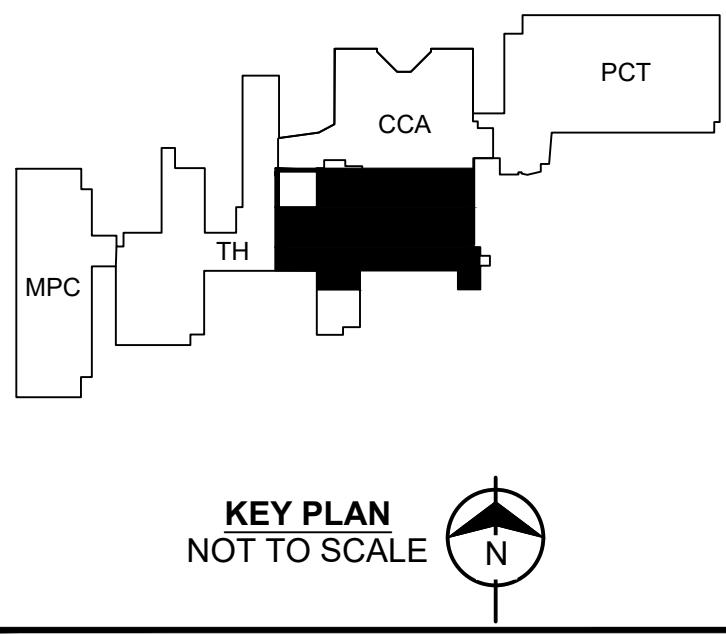


- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - CLOSELY COORDINATE ALL SHUTDOWNS WITH THE OWNER PRIOR TO BEGINNING WORK. OBTAIN OWNER APPROVAL NO LESS THAN 10 BUSINESS DAYS IN ADVANCE FOR ALL SHUTDOWNS AND DISRUPTIONS AND FOLLOW ALL OWNER GUIDELINES AND PROCEDURES. REFER TO DIVISION 1 SPECIFICATIONS.
  - FIELD VERIFY ALL EXISTING CONDITIONS.
  - ALL ELECTRICAL EQUIPMENT SHOWN HALF TONE IS EXISTING TO REMAIN, UNO.
  - FURNISH AND INSTALL CONCRETE EQUIPMENT PADS FOR ALL FLOOR MOUNTED EQUIPMENT. SEE SPECIFICATION 'SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS' FOR REQUIREMENTS.
  - REFER TO SPEC SECTION 260553 FOR RACEWAY IDENTIFICATION REQUIREMENTS.
  - NEW PENETRATIONS THROUGH FIRE-RATED FLOOR AND WALL ASSEMBLIES SHALL BE FIRESTOPPED WITH A UL LISTED ASSEMBLY BY A CERTIFIED FIRESTOPPING CONTRACTOR. SYSTEM SHALL MATCH THE FIRE RATING OF THE ASSEMBLY TO BE PENETRATED.
  - PERFORM CONSTRUCTION RENOVATION MAINTENANCE RISK ASSESSMENT (CRMRA) AND INTERIM LIFE SAFETY MEASURES (ILSM) ANALYSIS PER OWNER'S GUIDELINES AT EACH LOCATION WHERE WORK WILL OCCUR. REFER TO DIVISION 1 SPECIFICATIONS FOR DETAILS. DO NOT PROCEED WITH WORK WITHOUT OWNERS APPROVAL.

- KEYED NOTES: (#)**
- RE-CIRCUIT ALL EXISTING LOADS IN PANEL LASER C TO PANEL LASER B AND REMOVE EXISTING PANEL OR LASER C. SEE PANEL SCHEDULES FOR DETAILS.
  - RENAME EXISTING PANEL 3CH1.
  - SPLICE NEW FEEDERS FOR EXISTING ISOLATION PANELS IN NEW JUNCTION BOX(S). SEE PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
  - SPLICE NEW FEEDERS FOR EXISTING ISOLATION PANELS IN NEW JUNCTION BOX(S). SEE PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
  - TERMINATE (2) NEW BRANCH CIRCUITS ON EXISTING FIRE ALARM PRE-ACTION PANEL WITH 2 #8, 1#8 IN 0.75" C. TERMINATE SUPPLY SIDE OF BRANCH CIRCUITS ON (2) EXISTING SPARE 20A CIRCUIT BREAKERS.
  - RE-CIRCUIT MP PANEL OFF OF CCA POWER SOURCE TO TEACHING HOSPITAL POWER SOURCE DP-CH2. REMOVE EXISTING CONDUCTORS BACK TO THE SOURCE AND LABEL ABANDONED CONDUIT AS SPARE. SEE PANEL SCHEDULE FOR NEW FEEDER SIZE.
  - WORK IN THIS AREA REQUIRES INFECTION CONTROL BARRIER(S). THE BARRIER SHALL BE CONSTRUCTED OF 6 OR 10-MIL FIRE-RESISTANT POLYETHYLENE EXTENDING FROM THE FLOOR TO CEILING WITH A ZIPPER (ZIP WALL) OPENING. IF NECESSARY, NON-COMBUSTIBLE COMPONENTS (ZIP POLES, ETC..) SHALL BE UTILIZED TO SUPPORT THE POLYETHYLENE. THE BARRIER SHALL BE ADEQUATELY SEALED AT THE FLOOR, WALL AND CEILING CONNECTIONS AND BE MAINTAINED THROUGHOUT THE PROJECT TO PREVENT THE MIGRATION OF DUST FROM THE WORK AREA INTO THE ADJACENT OCCUPIED SPACE. THE ZIPPER/ZIP WALL OPENING SHALL REMAIN CLOSED DURING THE WORK PERIOD. THERE SHALL BE NO ADDITIONAL PENETRATIONS IN THE BARRIER.
  - WORK OUTSIDE OF MECHANICAL ROOM SHALL OCCUR DURING NIGHT HOURS.
  - NEGATIVE AIR HEPA FILTERED MACHINE REQUIRED IF WORK IN THIS AREA WILL OCCUR OVER MULTIPLE DAYS.

- DEMOLITION LEGEND**
- DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT, CONDUIT, SUPPORTS, AND CONDUCTORS BACK TO SOURCE. COORDINATE DEMOLITION WITH INSTALLATION OF NEW ELECTRICAL EQUIPMENT. MAINTAIN SERVICE TO DOWNSTREAM EQUIPMENT. COORDINATE SHUTDOWNS WITH OWNER.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



**BURNS  
MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



UNIVERSITY HOSPITAL  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI



CCA & TH EMERGENCY  
POWER MODIFICATIONS  
THIRD FLOOR  
ELECTRICAL PLAN - PHASE 3

project	128966	contract	CP210961
drawing	E-108	rev.	0
sheet	128966	of	128966
file	128966	of	E-108.DWG



FEEDER SIZE SCHEDULE	
FEEDER MARK	COPPER CONDUCTOR AND CONDUIT SIZE
200A	4-#3/0 AND #6 G (EXIST)
350	3-500KCMIL AND #3 G -3°C
400	3-500KCMIL AND #3 G (EXIST)
400A	2 SETS (4-#3/0 AND #3 G) (EXIST)
400B	4-500KCMIL AND #3 G (EXIST)
400N	4-500KCMIL AND #3G -3.5°C
400X	2 SETS (4#3/0 AND #2G -2°C)
450	2 SETS (3#4/0 AND #2G -2.5°C)
600A	2 SETS (3-350KCMIL AND #1 G) (EXIST)
600N	2 SETS (4-350KCMIL AND #1 G -3°C)
800	2 SETS (3-500KCMIL AND #1/0 G -3°C)
800A	2 SETS (3-600KCMIL AND #1/0 G) (EXIST)
800B	2 SETS (4-500KCMIL AND #1/0 G) (EXIST)
800C	2 SETS (4-600KCMIL AND #1/0 G) (EXIST)
800N	2 SETS (4-500KCMIL AND #1/0 G -3.5°C)
800X	2 SETS (4-600KCMIL AND #3/0 G -4°C)
1000X	3 SETS (4-500KCMIL AND #3/0 G -3.5°C)

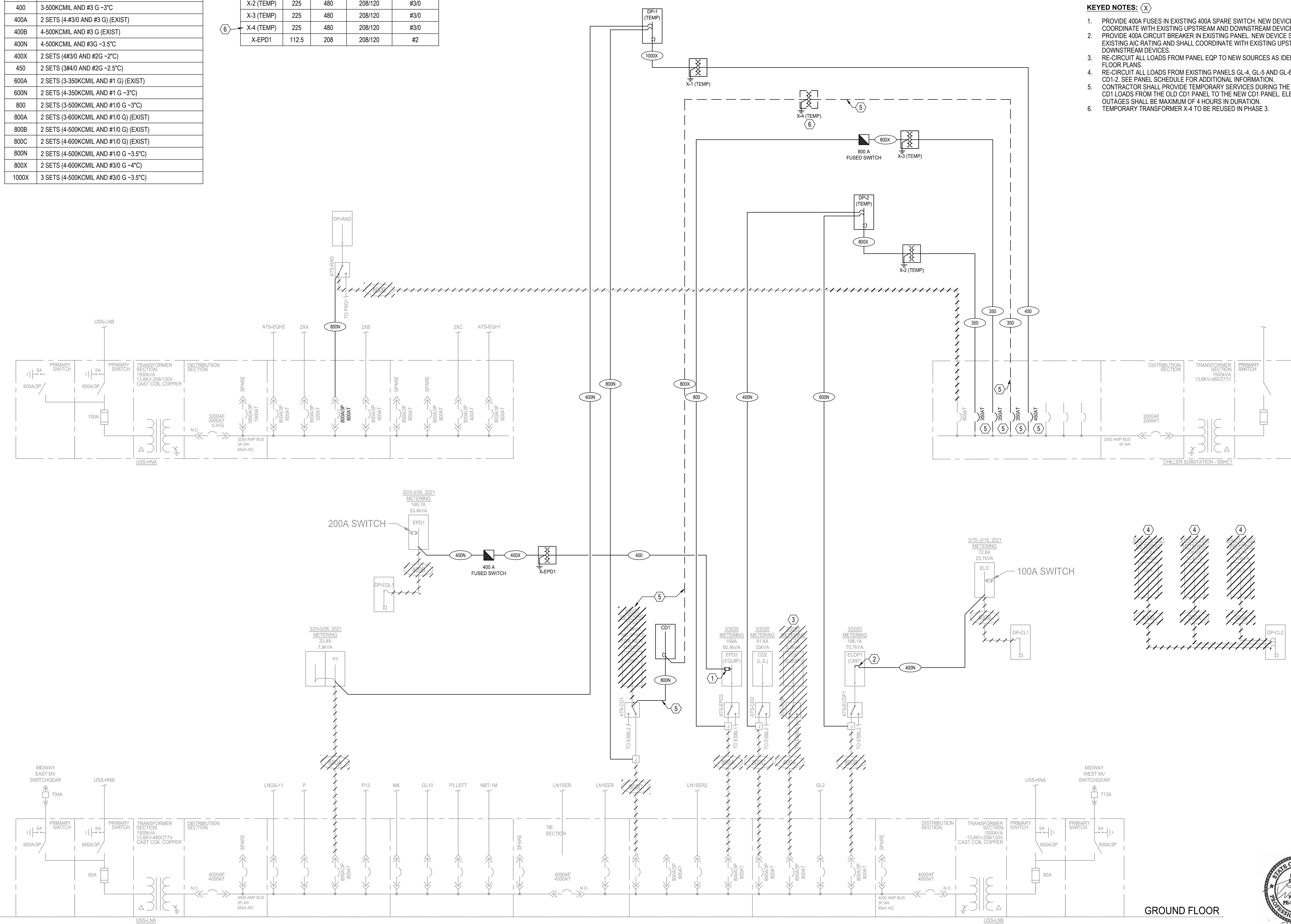
DRY-TYPE TRANSFORMER SCHEDULE				
NO.	KVA	PRIMARY VOLTAGE	SECONDARY VOLTAGE	GROUNDING ELECTRODE CONDUCTOR
X-1 (TEMP)	300	480	208/120	#3/0
X-2 (TEMP)	225	480	208/120	#3/0
X-3 (TEMP)	225	480	208/120	#3/0
X-4 (TEMP)	225	480	208/120	#3/0
X-EPD1	112.5	208	208/120	#2

**GENERAL NOTES:**

- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
- REMOVE ALL CONDUIT AND WIRING BACK TO SOURCE AS INDICATED.

**KEYED NOTES:** (X)

- PROVIDE 400A FUSES IN EXISTING 400A SPARE SWITCH. NEW DEVICE SHALL COORDINATE WITH EXISTING UPSTREAM AND DOWNSTREAM DEVICES.
- PROVIDE 400A CIRCUIT BREAKER IN EXISTING PANEL. NEW DEVICE SHALL MATCH EXISTING AIC RATING AND SHALL COORDINATE WITH EXISTING UPSTREAM AND DOWNSTREAM DEVICES.
- RE-CIRCUIT ALL LOADS FROM PANEL EQP TO NEW SOURCES AS IDENTIFIED ON FLOOR PLANS.
- RE-CIRCUIT ALL LOADS FROM EXISTING PANELS GL-4, GL-5 AND GL-6 TO NEW PANEL CD1-2. SEE PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES DURING THE CUTOVER OF CD1 LOADS FROM THE OLD CD1 PANEL TO THE NEW CD1 PANEL. ELECTRICAL OUTAGES SHALL BE MAXIMUM OF 4 HOURS IN DURATION.
- TEMPORARY TRANSFORMER X-4 TO BE REUSED IN PHASE 3.



**1 PARTIAL RISER DIAGRAM - PHASE 1**  
NO SCALE



REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID

**BURNS & MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



CCA & TH EMERGENCY  
POWER MODIFICATIONS  
ELECTRICAL RISER DIAGRAM - PHASE 1

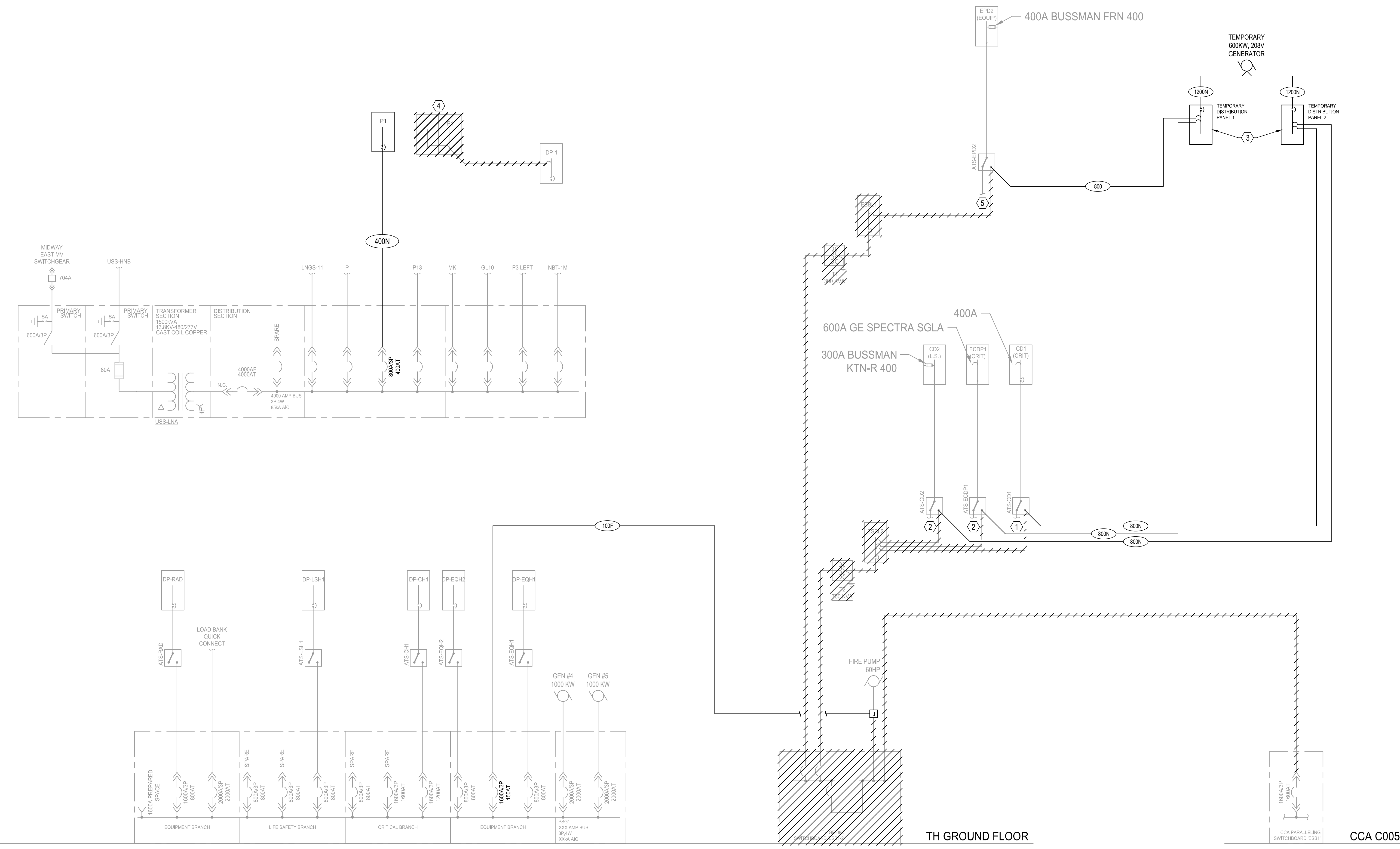
project	128966	contract	CP210961
drawing	E-501	rev.	0
sheet	of	of	of
file	128966	E-501.DWG	



FEEDER SIZE SCHEDULE	
FEEDER MARK	COPPER CONDUCTOR AND CONDUIT SIZE
100F	DRAKA LIFELINE 2-HOUR FIRE RESISTIVE CABLE 3#1 AND 1#8G -2°C
400N	4-500KCMIL AND #3G -3.5°C
800	2 SETS (3-500KCMIL AND #1/0G -3°C)
800N	2 SETS (4-500KCMIL AND #1/0G -3.5°C)
1200N	3 SETS (4-600KCMIL AND #3/0G -4°C)

- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - REMOVE ALL CONDUIT AND WIRING BACK TO SOURCE AS INDICATED.

- KEYED NOTES:** (X)
- NORMAL POWER CONTINUATION TO DP-1 (TEMP). SEE DRAWING E-501 FOR CONTINUATION.
  - NORMAL POWER CONTINUATION TO DP-2 (TEMP). SEE DRAWING E-501 FOR CONTINUATION.
  - OVERCURRENT PROTECTION DEVICES PROVIDED IN TEMPORARY DISTRIBUTION PANELS SHALL COORDINATE WITH EXISTING DOWNSTREAM DEVICES.
  - RE-CIRCUIT ALL LOADS FROM EXISTING PANEL P1 TO NEW PANEL P1. SEE PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
  - NORMAL POWER CONTINUATION TO TRANSFORMER X-3 (TEMP). SEE DRAWING E-501 FOR CONTINUATION.



**1 PARTIAL RISER DIAGRAM - PHASE 2**  
NO SCALE



no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID

**BURNS & MCDONNELL**  
9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN

**UNIVERSITY HOSPITAL**  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

CCA & TH EMERGENCY POWER MODIFICATIONS  
ELECTRICAL RISER DIAGRAM - PHASE 2

project	128966	contract	CP210961
drawing	E-502	rev.	0
sheet	of	sheets	
file	128966 E-502.DWG		

REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323



125A SIEMENS  
 3CH2  
 3CH1 (3ISO-DP1)  
 RENAME 3ISO-DP1 TO 3CH1  
 125A SQUARE D EDB34125

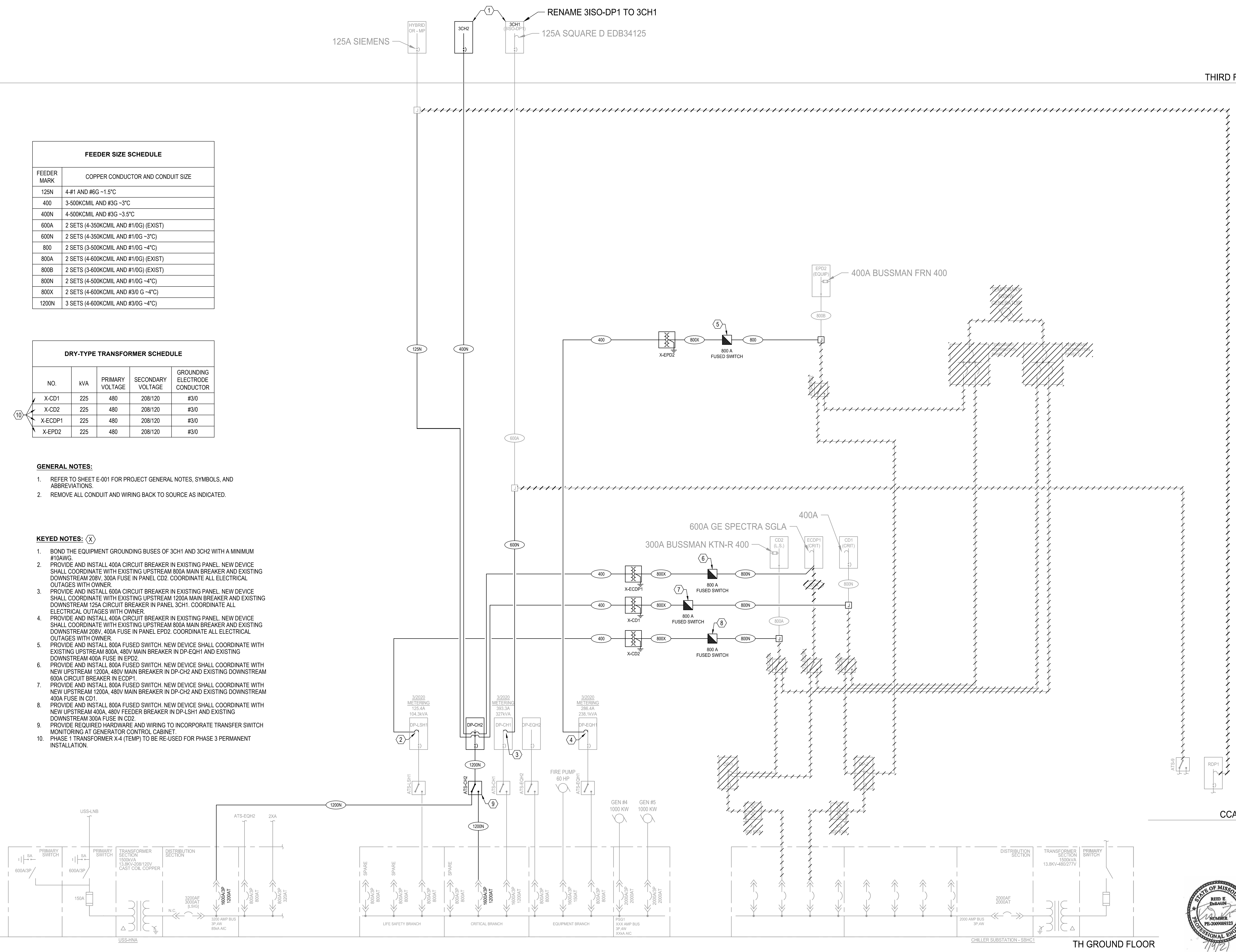
THIRD FLOOR

FEEDER SIZE SCHEDULE	
FEEDER MARK	COPPER CONDUCTOR AND CONDUIT SIZE
125N	4-#1 AND #6G -1.5°C
400	3-500KCMIL AND #3G -3°C
400N	4-500KCMIL AND #3G -3.5°C
600A	2 SETS (4-350KCMIL AND #1/0G) (EXIST)
600N	2 SETS (4-350KCMIL AND #1/0G -3°C)
800	2 SETS (3-500KCMIL AND #1/0G -4°C)
800A	2 SETS (4-600KCMIL AND #1/0G) (EXIST)
800B	2 SETS (3-600KCMIL AND #1/0G) (EXIST)
800N	2 SETS (4-500KCMIL AND #1/0G -4°C)
800X	2 SETS (4-600KCMIL AND #3/0 G -4°C)
1200N	3 SETS (4-600KCMIL AND #3/0G -4°C)

DRY-TYPE TRANSFORMER SCHEDULE				
NO.	KVA	PRIMARY VOLTAGE	SECONDARY VOLTAGE	GROUNDING ELECTRODE CONDUCTOR
X-CD1	225	480	208/120	#3/0
X-CD2	225	480	208/120	#3/0
X-ECDP1	225	480	208/120	#3/0
X-EPD2	225	480	208/120	#3/0

- GENERAL NOTES:**
- REFER TO SHEET E-001 FOR PROJECT GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
  - REMOVE ALL CONDUIT AND WIRING BACK TO SOURCE AS INDICATED.

- KEYED NOTES: (X)**
- BOND THE EQUIPMENT GROUNDING BUSES OF 3CH1 AND 3CH2 WITH A MINIMUM #10AWG.
  - PROVIDE AND INSTALL 400A CIRCUIT BREAKER IN EXISTING PANEL. NEW DEVICE SHALL COORDINATE WITH EXISTING UPSTREAM 800A MAIN BREAKER AND EXISTING DOWNSTREAM 208V, 300A FUSE IN PANEL CD2. COORDINATE ALL ELECTRICAL OUTAGES WITH OWNER.
  - PROVIDE AND INSTALL 600A CIRCUIT BREAKER IN EXISTING PANEL. NEW DEVICE SHALL COORDINATE WITH EXISTING UPSTREAM 1200A MAIN BREAKER AND EXISTING DOWNSTREAM 125A CIRCUIT BREAKER IN PANEL 3CH1. COORDINATE ALL ELECTRICAL OUTAGES WITH OWNER.
  - PROVIDE AND INSTALL 400A CIRCUIT BREAKER IN EXISTING PANEL. NEW DEVICE SHALL COORDINATE WITH EXISTING UPSTREAM 800A MAIN BREAKER AND EXISTING DOWNSTREAM 208V, 400A FUSE IN PANEL EPD2. COORDINATE ALL ELECTRICAL OUTAGES WITH OWNER.
  - PROVIDE AND INSTALL 800A FUSED SWITCH. NEW DEVICE SHALL COORDINATE WITH EXISTING UPSTREAM 800A, 480V MAIN BREAKER IN DP-EQ1 AND EXISTING DOWNSTREAM 400A FUSE IN EPD2.
  - PROVIDE AND INSTALL 800A FUSED SWITCH. NEW DEVICE SHALL COORDINATE WITH NEW UPSTREAM 1200A, 480V MAIN BREAKER IN DP-CH2 AND EXISTING DOWNSTREAM 600A CIRCUIT BREAKER IN ECDP1.
  - PROVIDE AND INSTALL 800A FUSED SWITCH. NEW DEVICE SHALL COORDINATE WITH NEW UPSTREAM 1200A, 480V MAIN BREAKER IN DP-CH2 AND EXISTING DOWNSTREAM 400A FUSE IN CD1.
  - PROVIDE AND INSTALL 800A FUSED SWITCH. NEW DEVICE SHALL COORDINATE WITH NEW UPSTREAM 400A, 480V FEEDER BREAKER IN DP-LSH1 AND EXISTING DOWNSTREAM 300A FUSE IN CD2.
  - PROVIDE REQUIRED HARDWARE AND WIRING TO INCORPORATE TRANSFER SWITCH MONITORING AT GENERATOR CONTROL CABINET.
  - PHASE 1 TRANSFORMER X-4 (TEMP) TO BE RE-USED FOR PHASE 3 PERMANENT INSTALLATION.



**1 PARTIAL RISER DIAGRAM - PHASE 3**  
 NO SCALE

**BURNS & MCDONNELL**  
 9400 WARD PARKWAY  
 KANSAS CITY, MO 64114  
 816-333-9400  
 LICENSE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN

**UNIVERSITY HOSPITAL**  
 UNIVERSITY OF MISSOURI HEALTH CARE  
 COLUMBIA, MISSOURI

**CCA & TH EMERGENCY POWER MODIFICATIONS**  
 ELECTRICAL RISER DIAGRAM - PHASE 3

project	128966	contract	CP210961
drawing	E-503	rev.	0
sheet	of	sheets	
file	128966	E-503.DWG	



REID E. DEBAUN  
 PROFESSIONAL ENGINEER  
 LICENSE NO. PE-200909323



DISTRIBUTION PANEL DP-1 (TEMP) SCHEDULE									
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION			REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT	
1	400A	400A	3	PANEL P1	7.9				SEE RISER DIAGRAM
2	800A	800A	3	ATS-CD1	121.9				SEE RISER DIAGRAM
3	100A	100A	2	TEMPORARY GENERATOR	16.6				SEE FLOOR PLANS
4			3						
5			3						
6			3						
7			3						
8			3						
9			3						
10			3						
11			3						
12			3						
13			3						
14			3						

CONNECTED kVA: 146  
DEMAND kVA: 237

CONNECTED AMPS: 406  
DEMAND AMPS: 657

NOTES:  
1. PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 22,000 AMPERES.  
2. CHARACTERISTICS:  
VOLTS: 208 HERTZ: 60  
PHASE: 3 MCB: 1000A  
WIRE: 4

DISTRIBUTION PANEL DP-2 (TEMP) SCHEDULE									
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION			REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT	
1	400A	400A	3	ATS-CD2	33.0				SEE RISER DIAGRAM
2	600A	600A	3	ATS-ECDEP1	94.4				SEE RISER DIAGRAM
3			3						
4			3						
5			3						
6			3						
7			3						
8			3						
9			3						
10			3						
11			3						
12			3						
13			3						
14			3						

CONNECTED kVA: 127  
DEMAND kVA: 205

CONNECTED AMPS: 354  
DEMAND AMPS: 570

NOTES:  
1. PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 22,000 AMPERES.  
2. CHARACTERISTICS:  
VOLTS: 208 HERTZ: 60  
PHASE: 3 MCB: 800A  
WIRE: 4

DISTRIBUTION PANEL CD1 SCHEDULE									
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION			REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT	
1	200A	250A	3	PANELS GD, 1C & 1D	11.8	4#250	1#6	2"	EXISTING FEEDER IN GL-4
2	200A	250A	3	PANELS 4D & 5D	11.8	4#3/0	1#6	2"	EXISTING FEEDER IN GL-4
3	200A	250A	3	PANELS 6D, 7D & 8B	11.8	4#4/0	1#6	2"	EXISTING FEEDER IN GL-4
4	200A	250A	3	PANELS 2L, 2J, 2L1 & 3D	11.8	4#500	1#6	2"	EXISTING FEEDER IN GL-4
5	200A	250A	3	PANELS 4K & 5K	8.9	4#4/0	1#6	2"	EXISTING FEEDER IN GL-5
6	200A	250A	3	PANELS GB1, GB2 & GB3	8.9	4#4/0	1#6	2"	EXISTING FEEDER IN GL-5
7	200A	250A	3	PANEL GBA	8.9	4#3/0	1#6	2"	EXISTING FEEDER IN GL-5
8	200A	250A	3	PANEL MK1	8.9	4#4/0	1#6	2"	EXISTING FEEDER IN GL-5
9	200A	250A	3	PANEL 4G & 5G	11.3	4#4/0	1#6	2"	EXISTING FEEDER IN GL-6
10	350A	400A	3	PANELS 2CE, 4CE, 5CE, 6CE & 7CE	5.6	4#500	1#3	3.5"	EXISTING FEEDER IN CD-1
11	400A	400A	3	TRANSFORMER THEXIER	5.6	3#500	1#3	3"	EXISTING FEEDER IN CD-1
12	150A	250A	3	PANEL L1E1EER	5.6	4#1/0	1#6	2"	EXISTING FEEDER IN CD-1
13	200A	250A	3	PANEL 2CC	5.6	4#3/0	1#6	2.5"	EXISTING FEEDER IN CD-1
14	150A	250A	3	PANEL 3CEF	5.6	4#1/0	1#6	2"	EXISTING FEEDER IN CD-1
15		400A	3	SPARE					
16		400A	3	SPARE					
17		400A	3	SPARE					
18		400A	3	SPARE					
19		250A	3	SPARE					
20		250A	3	SPARE					
21		250A	3	SPARE					
22		250A	3	SPARE					
23		400A	3	SPARE					
24		400A	3	SPARE					

CONNECTED kVA: 122  
DEMAND kVA: 213

CONNECTED AMPS: 338  
DEMAND AMPS: 592

NOTES:  
1. PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 22,000 AMPERES.  
2. CHARACTERISTICS:  
VOLTS: 208 HERTZ: 60  
PHASE: 3 MCB: 800A  
WIRE: 4  
3. CONDUCTOR SIZES INDICATED ARE BASED ON FIELD OBSERVATIONS AND AN INTENT TO MATCH EXISTING, WHILE MAINTAINING CODE MINIMUMS. CONTRACTOR SHALL FIELD VERIFY AND SUBMIT EXISTING CONDUCTOR SIZES TO ENGINEER FOR FINAL APPROVAL.  
4. PROVIDE WITH FULL HEIGHT BUSSING AND MINIMUM HEIGHT OF 86" TALL.

DISTRIBUTION PANEL PI SCHEDULE									
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION			REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT	
1	30A	100A	3	CONDENSATE PUMP	1.3	4#10	1#10	0.75"	
2	20A	100A	3	HOT WATER #2	1.3	4#12	1#12	0.75"	
3	20A	100A	2	EQUIPTECH	1.3	3#12	1#12	0.75"	
4	20A	100A	3	HOT WATER #1	1.3	4#12	1#12	0.75"	
5	50A	100A	3	WORKBENCH 50A PLUG	1.3	4#6	1#10	1"	
6	70A	100A	3	PACO CONDENSATE PUMP	1.3	4#4	1#8	1.25"	
7		400A	3	SPARE					
8		400A	3	SPARE					
9		250A	3	SPARE					
10		250A	3	SPARE					
11		250A	3	SPARE					
12		250A	3	SPARE					
13		100A	3	SPARE					
14		100A	3	SPARE					

CONNECTED kVA: 8  
DEMAND kVA: 14

CONNECTED AMPS: 22  
DEMAND AMPS: 38

NOTES:  
1. PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 22,000 AMPERES.  
2. CHARACTERISTICS:  
VOLTS: 208 HERTZ: 60  
PHASE: 3 MCB: 400A  
WIRE: 4  
3. CONDUCTOR SIZES INDICATED ARE BASED ON FIELD OBSERVATIONS AND AN INTENT TO MATCH EXISTING, WHILE MAINTAINING CODE MINIMUMS. CONTRACTOR SHALL FIELD VERIFY AND SUBMIT EXISTING CONDUCTOR SIZES TO ENGINEER FOR FINAL APPROVAL.

TEMPORARY GENERATOR DISTRIBUTION PANEL 1 SCHEDULE									
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION			REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT	
1	800A	800A	3	ATS-EFD2	114.3				SEE RISER DIAGRAM
2	800A	800A	3	ATS-ECDP1	94.4				SEE RISER DIAGRAM
3			3						
4			3						
5			3						
6			3						
7			3						
8			3						
9			3						
10			3						
11			3						
12			3						
13			3						
14			3						

CONNECTED kVA: 209  
DEMAND kVA: 332

CONNECTED AMPS: 579  
DEMAND AMPS: 922

NOTES:  
1. PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 22,000 AMPERES.  
2. CHARACTERISTICS:  
VOLTS: 208 HERTZ: 60  
PHASE: 3 MCB: 1200A  
WIRE: 4

TEMPORARY GENERATOR DISTRIBUTION PANEL 2 SCHEDULE									
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION			REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT	
1	800A	800A	3	ATS-CD1	121.9				SEE RISER DIAGRAM
2	800A	800A	3	ATS-CD2	33.0				SEE RISER DIAGRAM
3			3						
4			3						
5			3						
6			3						
7			3						
8			3						
9			3						
10			3						
11			3						
12			3						
13			3						
14			3						

CONNECTED kVA: 155  
DEMAND kVA: 256

CONNECTED AMPS: 430  
DEMAND AMPS: 710

NOTES:  
1. PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 22,000 AMPERES.  
2. CHARACTERISTICS:  
VOLTS: 208 HERTZ: 60  
PHASE: 3 MCB: 1200A  
WIRE: 4

no. | date | by | ckd | description  
0 | 07/09/21 | JMC | RED | ISSUED FOR BID



9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
LICENSEE NO. 000165

date 11/20/2020 detailed J. CHASE  
designed R. DEBAUN checked R. DEBAUN



UNIVERSITY HOSPITAL  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

CCA & TH EMERGENCY  
POWER MODIFICATIONS  
ELECTRICAL SCHEDULES



project 128966 contract CP210961  
drawing E-601 rev. 0  
sheet of sheets  
file 128966 E-601.DWG

REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323



DISTRIBUTION PANEL DP-CH2 SCHEDULE										
CIRCUIT NUMBER	BREAKERS			EQUIPMENT SERVED	LOAD kVA	DESCRIPTION				REMARKS
	TRIP	FRAME	POLES			WIRE	GROUND	CONDUIT		
1	400A	400A	3	X-FCDP1	94.4					SEE RISER DIAGRAM
2	400A	400A	3	X-CD1	121.9					SEE RISER DIAGRAM
3	400A	400A	3	PANEL 3CH2	55.0					SEE RISER DIAGRAM
4	125A	400A	3	HYBRID OR PANEL MP	83.0					SEE RISER DIAGRAM
5		800A	3	SPARE						
6		800A	3	SPARE						
7		800A	3	SPARE						
8		800A	3	SPARE						
9		400A	3	SPARE						
10		400A	3	SPARE						
11		400A	3	SPARE						
12		400A	3	SPARE						
13		400A	3	SPARE						
14		400A	3	SPARE						

CONNECTED kVA: 354  
DEMAND kVA: 492

CONNECTED AMPS: 426  
DEMAND AMPS: 592

- NOTES:
- PROVIDE MINIMUM AMPERES INTERRUPTING CAPACITY (AIC) AND BUS BRACING: 65,000 AMPERES.
  - CHARACTERISTICS:  
VOLTS: 480 HERTZ: 60  
PHASE: 3 MCB: 1200A  
WIRE: 4
  - PROVIDE WITH FULL HEIGHT BUSSING AND MINIMUM HEIGHT OF 86" TALL.

EXISTING PANELBOARD "3CH1" SCHEDULE																
VOLTAGE: 480Y/277V PHASE: 3 WIRE: 4+G																
AMP: 600A MAIN: 600A																
SECTION: 1 OF 1 MOUNTING: SURFACE LOCATION: ROOM 3E-34																
EQUIPMENT	kVA	CB	WIRE	GRND	COND	CKT	A	B	C	CKT	COND	GRND	WIRE	CB	kVA	EQUIPMENT
3-OR6/IP1	45/1					1	0.0			2				45/1	3-OR15/IP1	
3-OR6/IP2	45/1					3	0.0			4				45/1	3-OR15/IP2	
3-OR7/IP1	45/1					5		0.0		6				45/1	3-OR16/IP1	
3-OR7/IP2	45/1					7	0.0			8				45/1	3-OR16/IP2	
3-OR8/IP1	45/1					9		0.0		10				45/1	3-OR17/IP1	
3-OR8/IP3	45/1					11			0.0	12				45/1	3-OR17/IP2	
3-OR8/IP1	45/1					13	0.0			14				45/1	3-OR11/IP1	
3-OR8/IP2	45/1					15		0.0		16				45/1	3-OR8/IP1	
FUT PNL 3E-36 OR14	45/1					17			0.0	18				45/1	3-OR12/IP2	
FUT PNL 3E-36 OR14	45/1					19	0.0			20				45/1	3-OR4/IP2	
3-OR12/IP1	45/1					21		0.0		22				45/1	3-OR5/IP2	
3-OR2 (OFF)	45/1					23				24				45/1	3-OR4/IP1	
LASER PANEL 2	125/2					25	0.0			26				45/1	3-OR10/IP1	
						27		0.0		28				45/1	3-OR10/IP2	
LASER PANEL 1	125/2					29			0.0	30					SPACE ONLY	
						31	0.0			32					SPACE ONLY	
3-OR11/IP2	45/1					33		0.0		34					SPACE ONLY	
3-OR3 (OFF)	45/1					35			0.0	36					SPACE ONLY	
XX-3-LP-3E-11-A	125/3					37	0.0			38					SPACE ONLY	
						39			0.0	40					SPACE ONLY	
						41				42					SPACE ONLY	
PHASE TOTALS							0.0	0.0	0.0							

NOTES:  
1. UPDATE PANEL SCHEDULE TO REFLECT SPARE CIRCUIT BREAKERS.

EXISTING PANELBOARD "LASER B" SCHEDULE																
VOLTAGE: 208Y/120V PHASE: 3 WIRE: 4+G																
AMP: 100A MAIN: MLO																
SECTION: 1 OF 1 MOUNTING: SURFACE LOCATION: ROOM 3E-31																
EQUIPMENT	kVA	CB	WIRE	GRND	COND	CKT	A	B	C	CKT	COND	GRND	WIRE	CB	kVA	EQUIPMENT
OR #15 30A LASER (3E-15)	30/2	2#10	#10	0.75"	1	0.0				2	0.75"	#10	2#10	30/2		HYBRID OR BEAT TRACE
						3			0.0	4						
OR #15 60A LASER (3E-15)	60/2	2#4	#10	0.75"	5	0.0			0.0	6	0.75"	#10	2#4	60/2		OR #15 60A LASER (3E-15)
						7			0.0	8						
DAIKIN	30/2	2#10	#10	0.75"	9	0.0			0.0	10	0.75"	#10	2#10	30/2		OR #15 30A LASER (3E-15)
						11			0.0	12						
SPARE						13	0.0			14	0.75"	#12	2#12	20/2		PHARMACY AHU (3E-30)
						15			0.0	16						
SPARE	50/2					17			0.0	18	0.75"	#12	2#12	20/2		CONDENSATE PUMP
						19	0.0			20						
SPARE	50/2					21			0.0	22	0.75"	#12	2#12	20/1		????
						23			0.0	24	0.75"	#12	2#12	20/1		DAIKIN SERVICE OUTLET
OR #16 60A LASER (3E-16)	60/2					25	0.0			26	0.75"	#12	2#12	20/1		RFC AHU (3E-30)
						27			0.0	28						SPACE ONLY
OR #16 60A LASER (3E-16)	60/2					29	0.0			30						SPARE
						31	0.0			32						
OR #16 30A LASER (3E-16)	30/2					33			0.0	34						SPARE
						35			0.0	36						
OR #16 30A LASER (3E-16)	30/2					37	0.0			38						SPARE
						39			0.0	40						
SPACE ONLY						41			0.0	42						
PHASE TOTALS							0.0	0.0	0.0							

NOTES:  
1) MINIMUM CONDUCTOR SIZE INDICATED. CONTRACTOR SHALL FIELD VERIFY AND MATCH EXISTING CONDUCTOR SIZES.  
2) BOLD TEXT INDICATES NEW WORK.

PANELBOARD "3CH2" SCHEDULE																
VOLTAGE: 480Y/277V PHASE: 3 WIRE: 4+G																
AMP: 400A MAIN: 400A AIC RATING: 14,000																
SECTION: 1 OF 1 MOUNTING: SURFACE LOCATION: ROOM 3E-31																
EQUIPMENT	kVA	CB	WIRE	GRND	COND	CKT	A	B	C	CKT	COND	GRND	WIRE	CB	kVA	EQUIPMENT
3-OR6/IP2	10.0	45/1	2#6	#10	0.75"	1	20.0			2	0.75"	#10	2#6	45/1	10.0	3-OR11/IP2
3-OR7/IP2	10.0	45/1	2#6	#10	0.75"	3	20.0			4	0.75"	#10	2#6	45/1	10.0	3-OR12/IP2
3-OR8/IP1	10.0	45/1	2#6	#10	0.75"	5				6	0.75"	#10	2#6	45/1	10.0	3-OR4/IP2
3-OR8/IP2	10.0	45/1	2#6	#10	0.75"	7	20.0			8	0.75"	#10	2#6	45/1	10.0	3-OR5/IP2
3-OR14/IP2	10.0	45/1	2#6	#10	0.75"	9	20.0			10	0.75"	#10	2#6	45/1	10.0	3-OR10/IP2
3-OR15/IP2	10.0	45/1	2#6	#10	0.75"	11				12				45/1		SPARE
3-OR16/IP2	10.0	45/1	2#6	#10	0.75"	13	10.0			14				45/1		SPARE
3-OR17/IP2	10.0	45/1	2#6	#10	0.75"	15				16				45/1		SPARE
SPARE		45/1				17			0.0	18				45/1		SPARE
SPACE ONLY						19	0.0			20						SPACE ONLY
SPACE ONLY						21			0.0	22						SPACE ONLY
SPACE ONLY						23			0.0	24						SPACE ONLY
SPACE ONLY						25	0.0			26						SPACE ONLY
SPACE ONLY						27			0.0	28						SPACE ONLY
SPACE ONLY						29			0.0	30						SPACE ONLY
SPACE ONLY						31	0.0			32						SPACE ONLY
SPACE ONLY						33			0.0	34						SPACE ONLY
SPACE ONLY						35			0.0	36						SPACE ONLY
SPACE ONLY						37	0.0			38						SPACE ONLY
SPACE ONLY						39			0.0	40						SPACE ONLY
SPACE ONLY						41			0.0	42						SPACE ONLY
PHASE TOTALS							150	50.0	50.0	300						
CONNECTED AMPS:							156									130
DEMAND AMPS:							84									70

NOTES:  
1) MINIMUM CONDUCTOR SIZE INDICATED. CONTRACTOR SHALL FIELD VERIFY AND MATCH EXISTING CONDUCTOR SIZES.

KEYED NOTES: (#)  
1. RE-CIRCUIT TO NEW PANEL 3CH2.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



UNIVERSITY HOSPITAL  
UNIVERSITY OF MISSOURI HEALTH CARE  
COLUMBIA, MISSOURI

CCA & TH EMERGENCY  
POWER MODIFICATIONS  
ELECTRICAL SCHEDULES

project	128966	contract	CP210961
drawing	E-602	rev.	0
sheet		of	
file	128966 E-602.DWG	sheets	

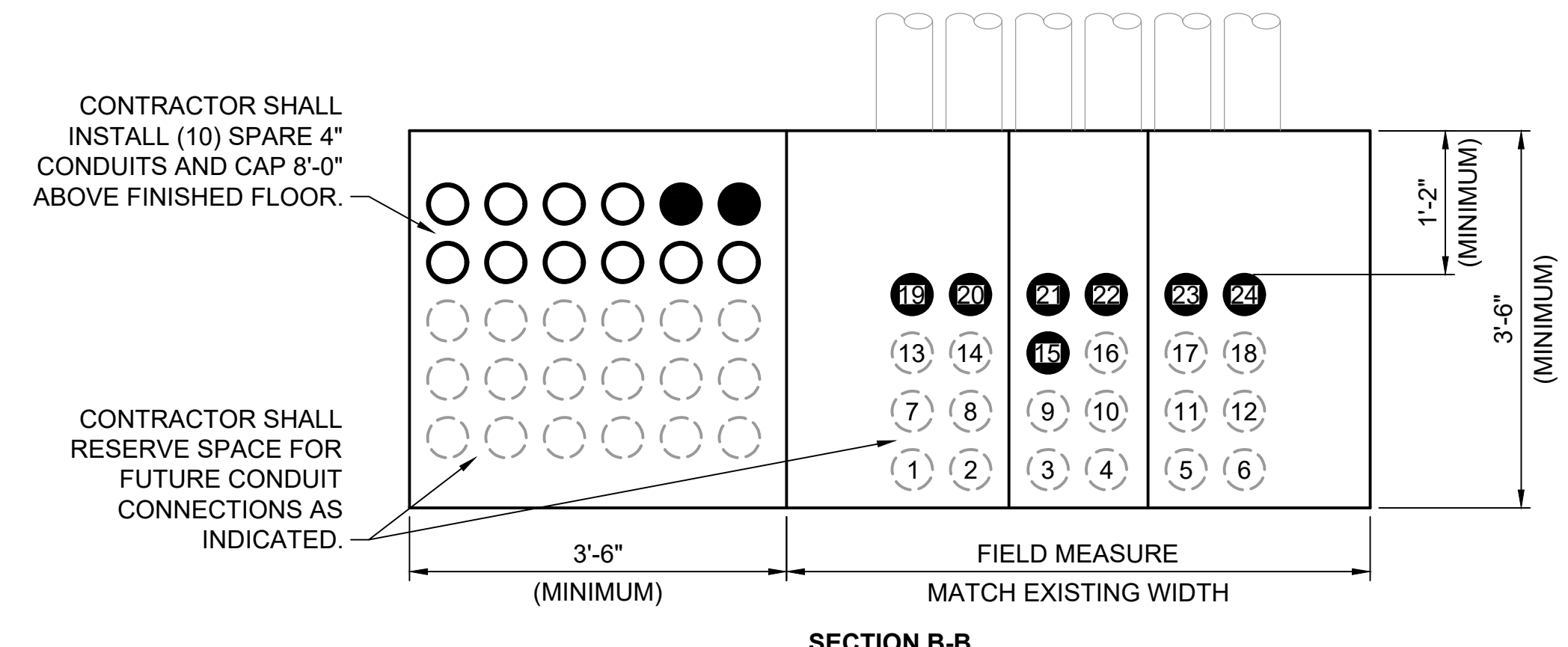


REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323

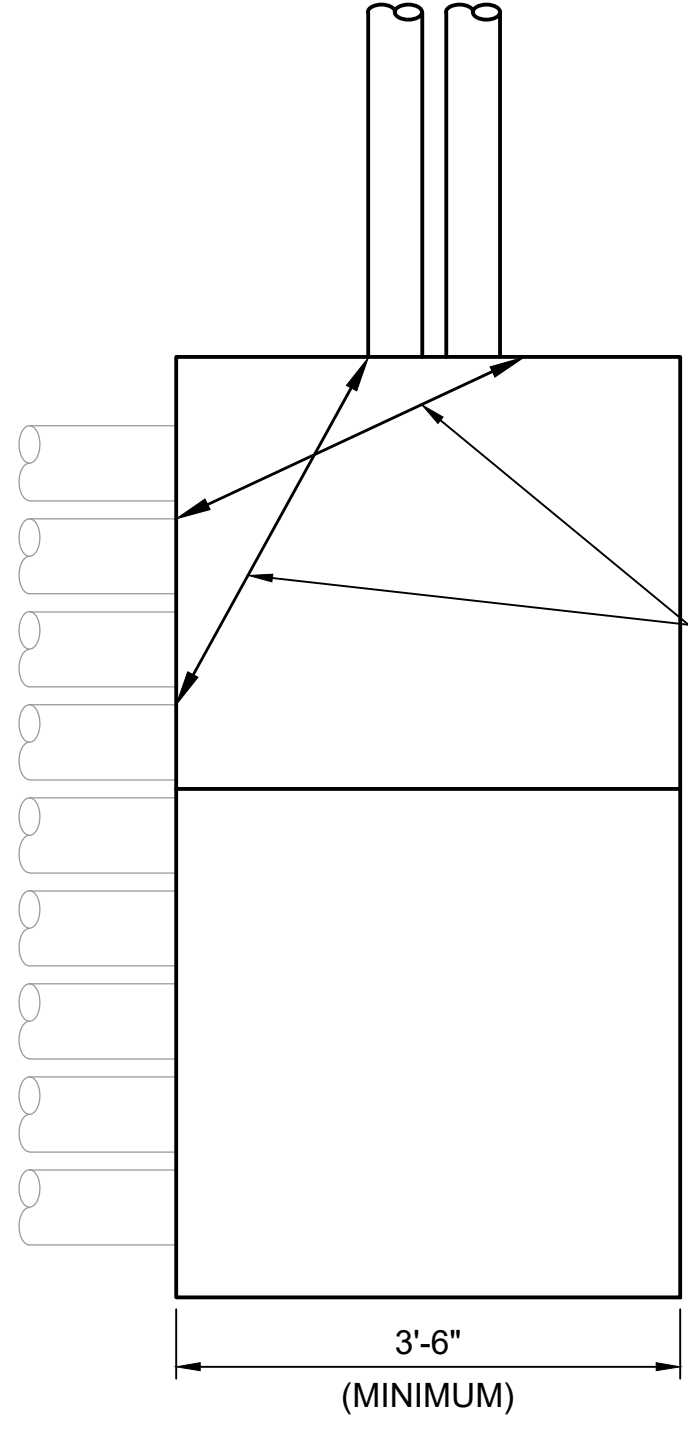


GENERAL NOTES:  
1. PULL BOX SHALL MEET REQUIREMENTS OF NEC ARTICLE 314.

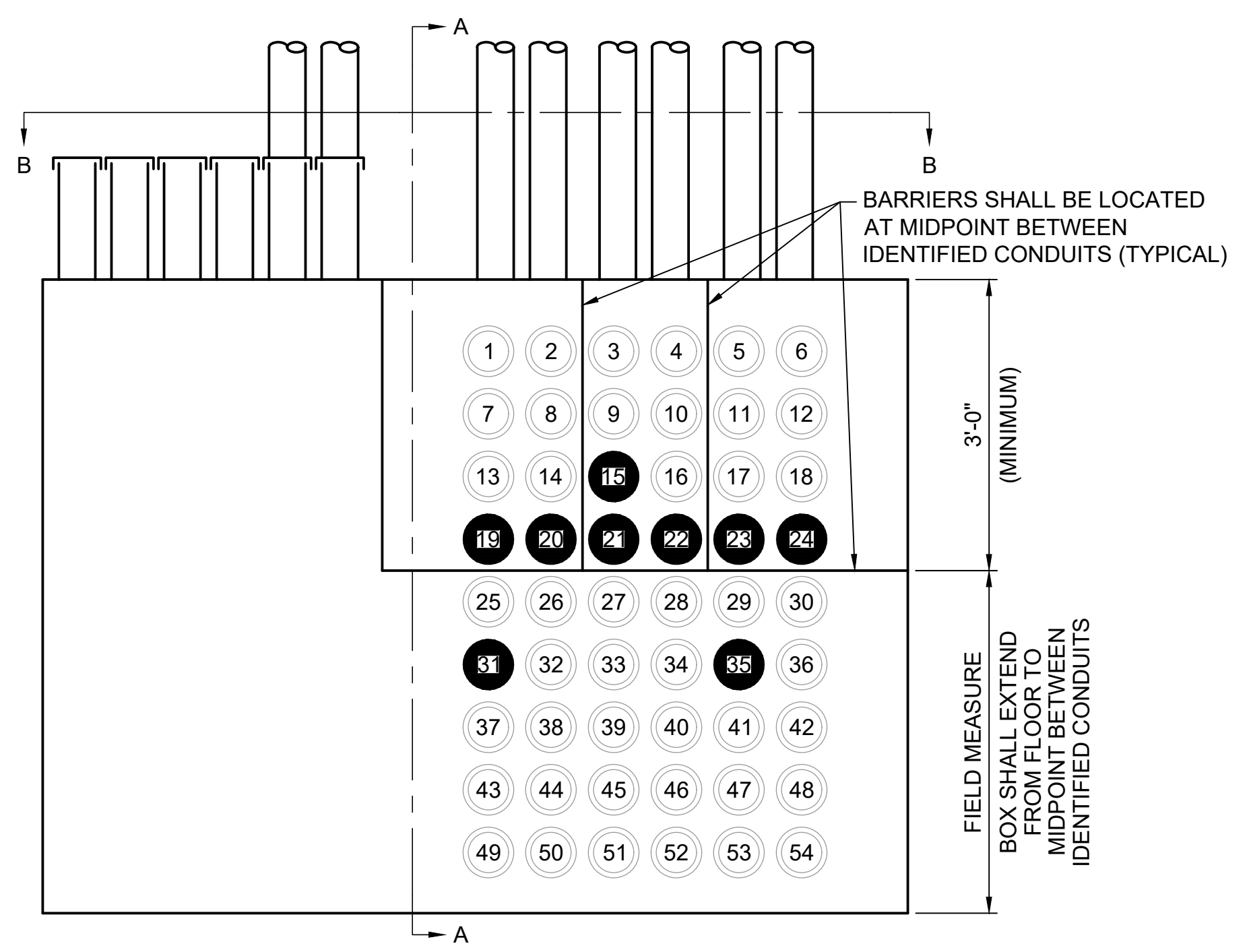
no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



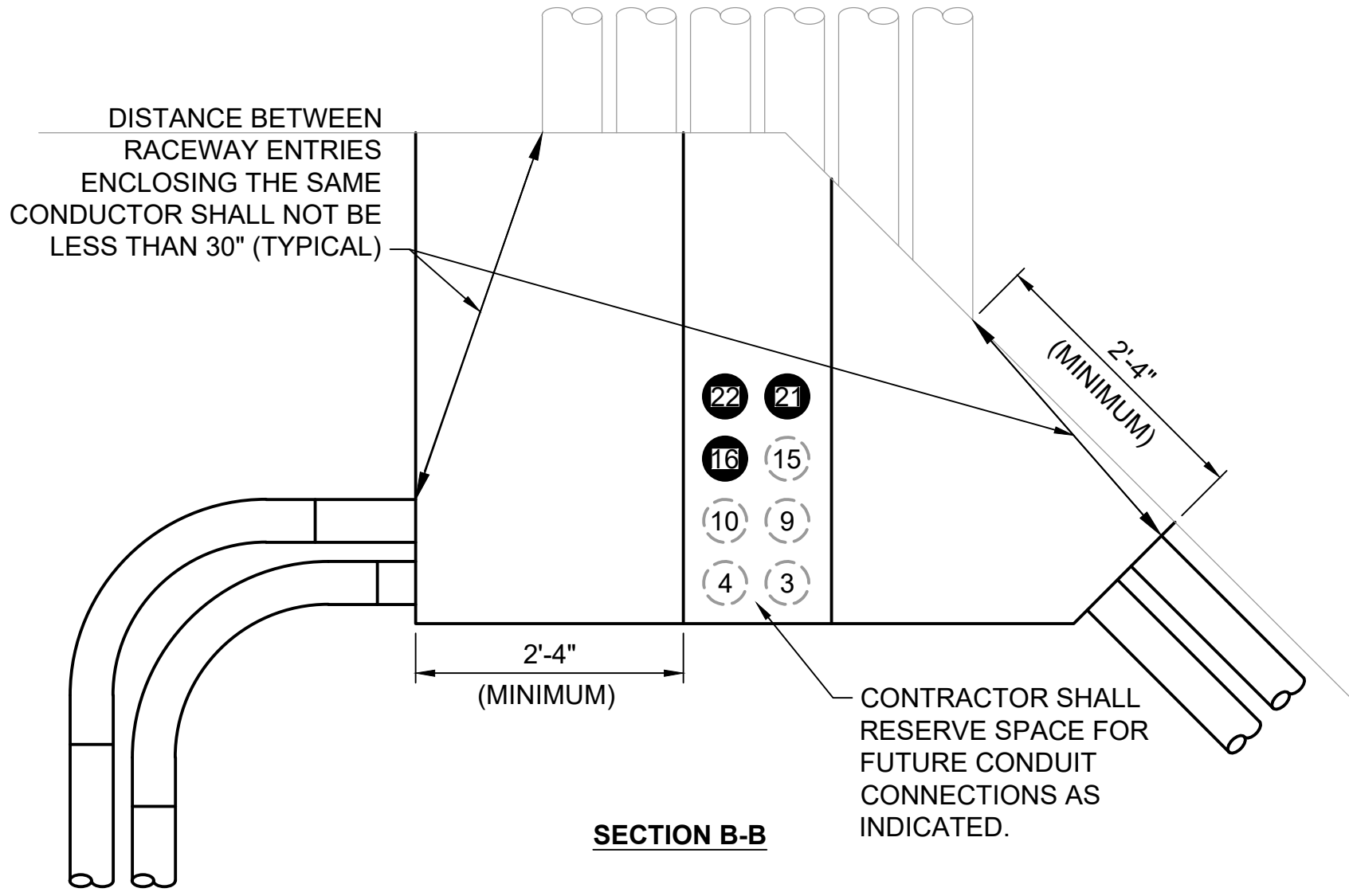
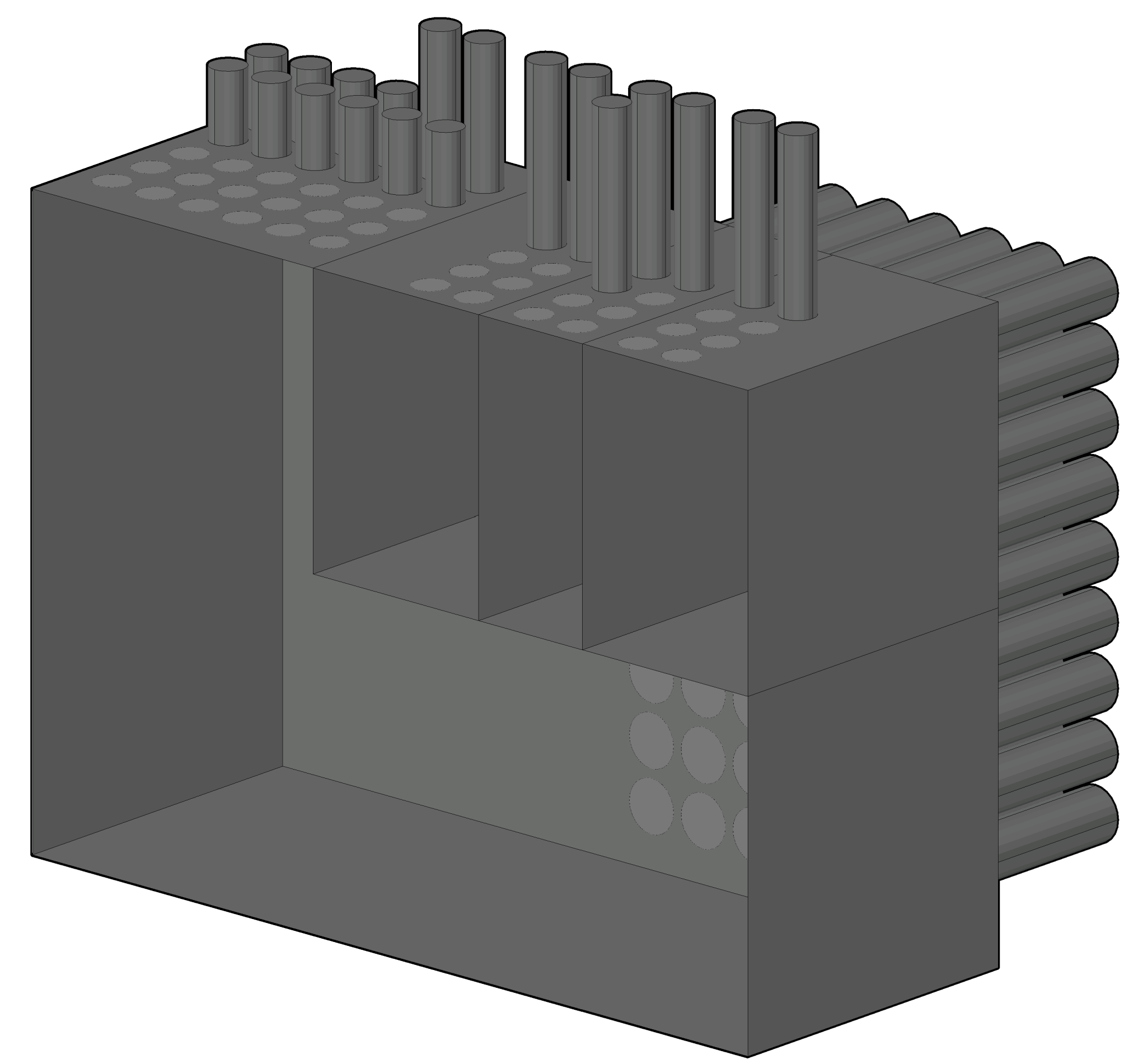
SECTION B-B



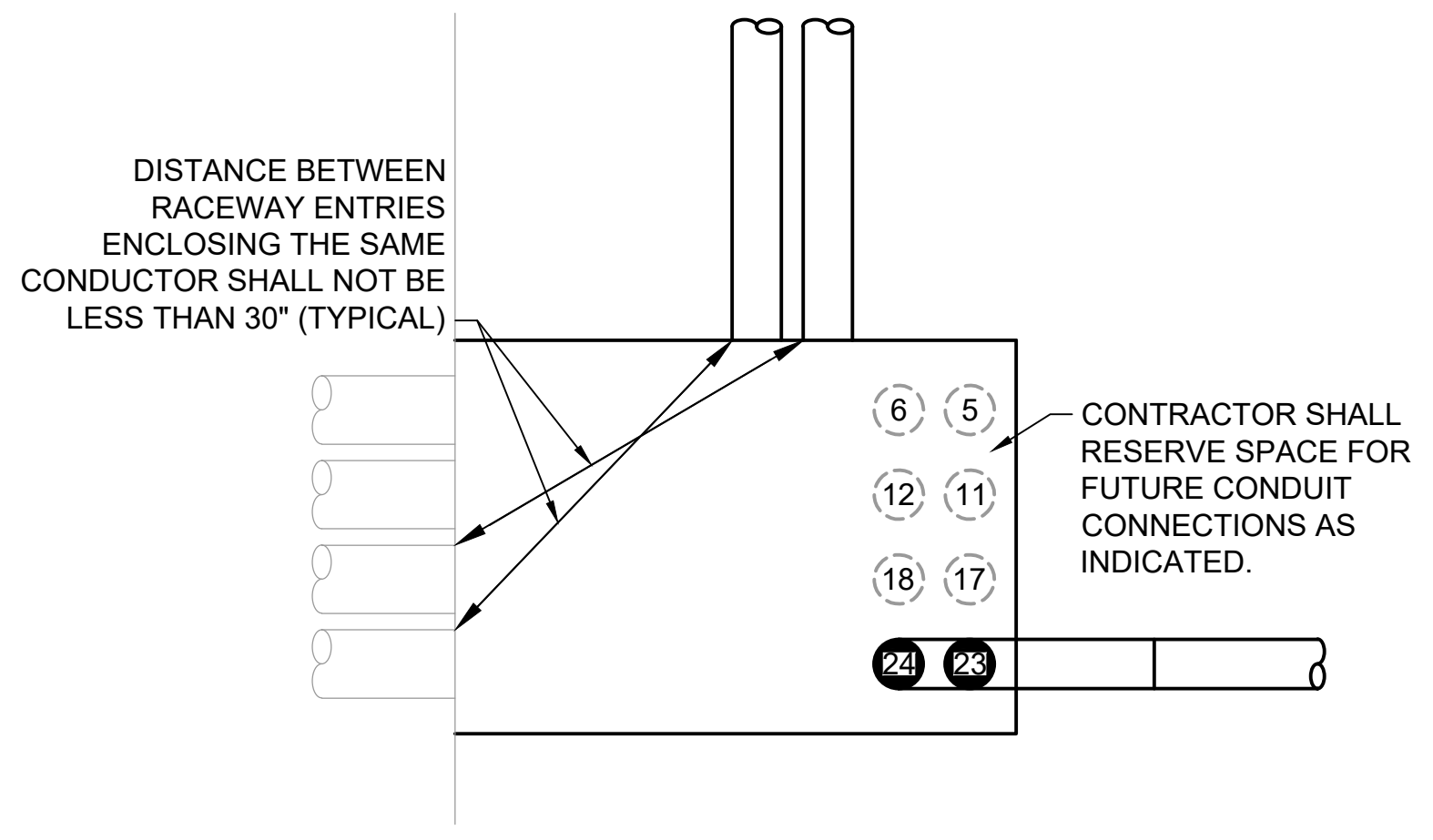
SECTION A-A



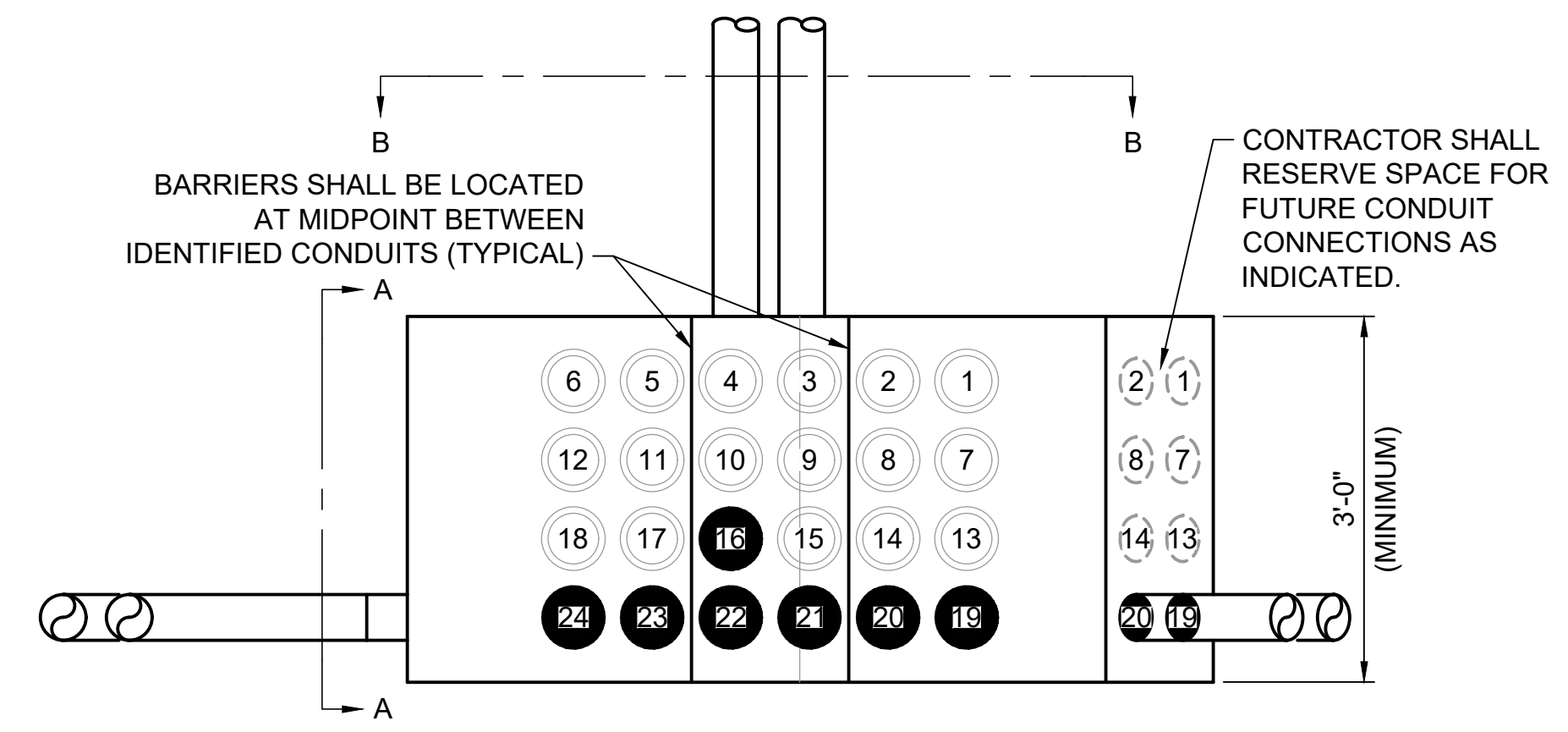
PULL BOX PB-DB301 DETAIL  
NOT TO SCALE



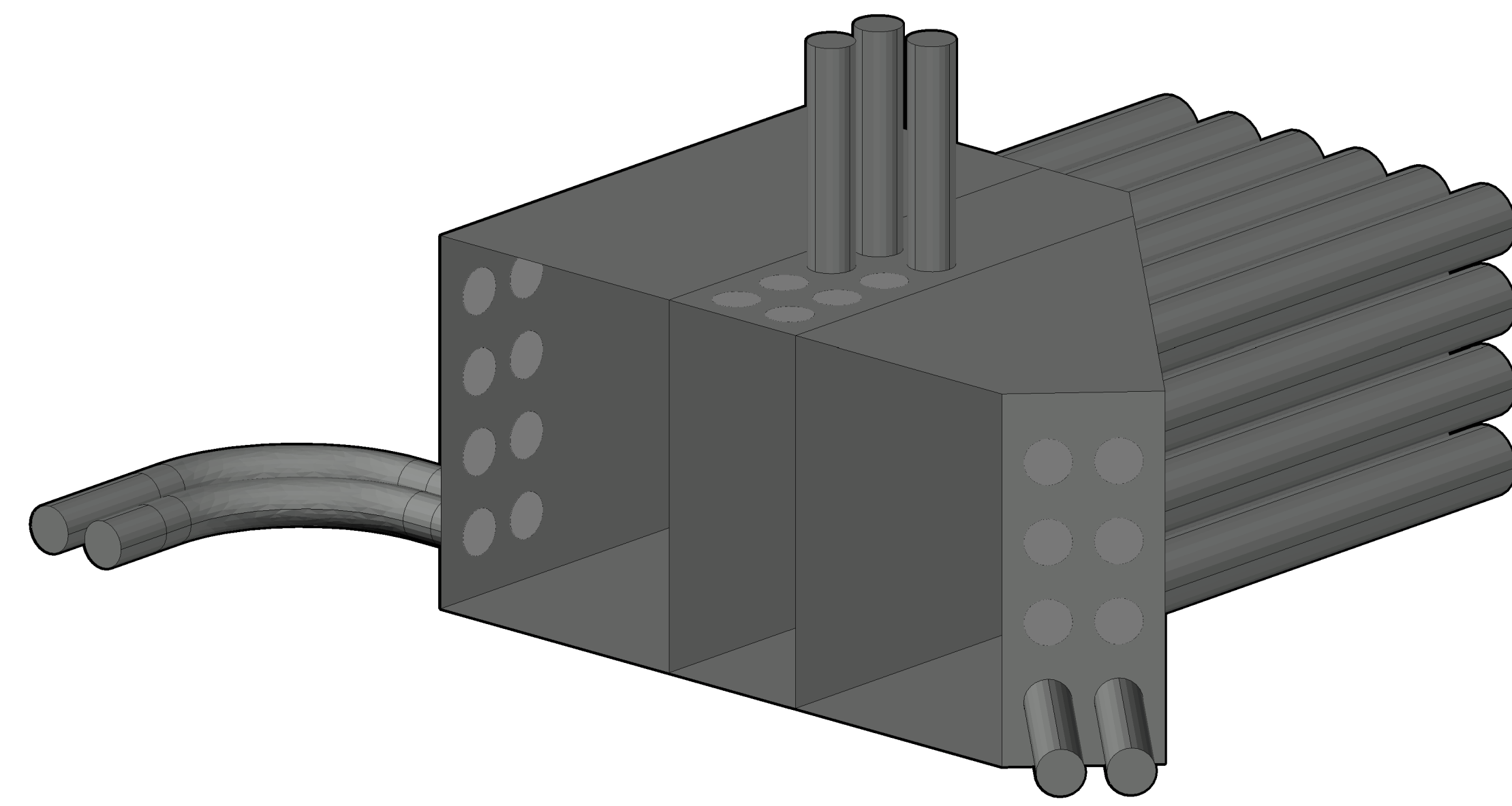
SECTION B-B



SECTION A-A



PULL BOX PB-DB301-1 DETAIL  
NOT TO SCALE



date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



CCA & TH EMERGENCY  
POWER MODIFICATIONS  
ELECTRICAL DETAILS

project	128966	contract	CP210961
drawing	E-701	rev.	0
sheet	of	sheet	
file	128966	E-701.DWG	

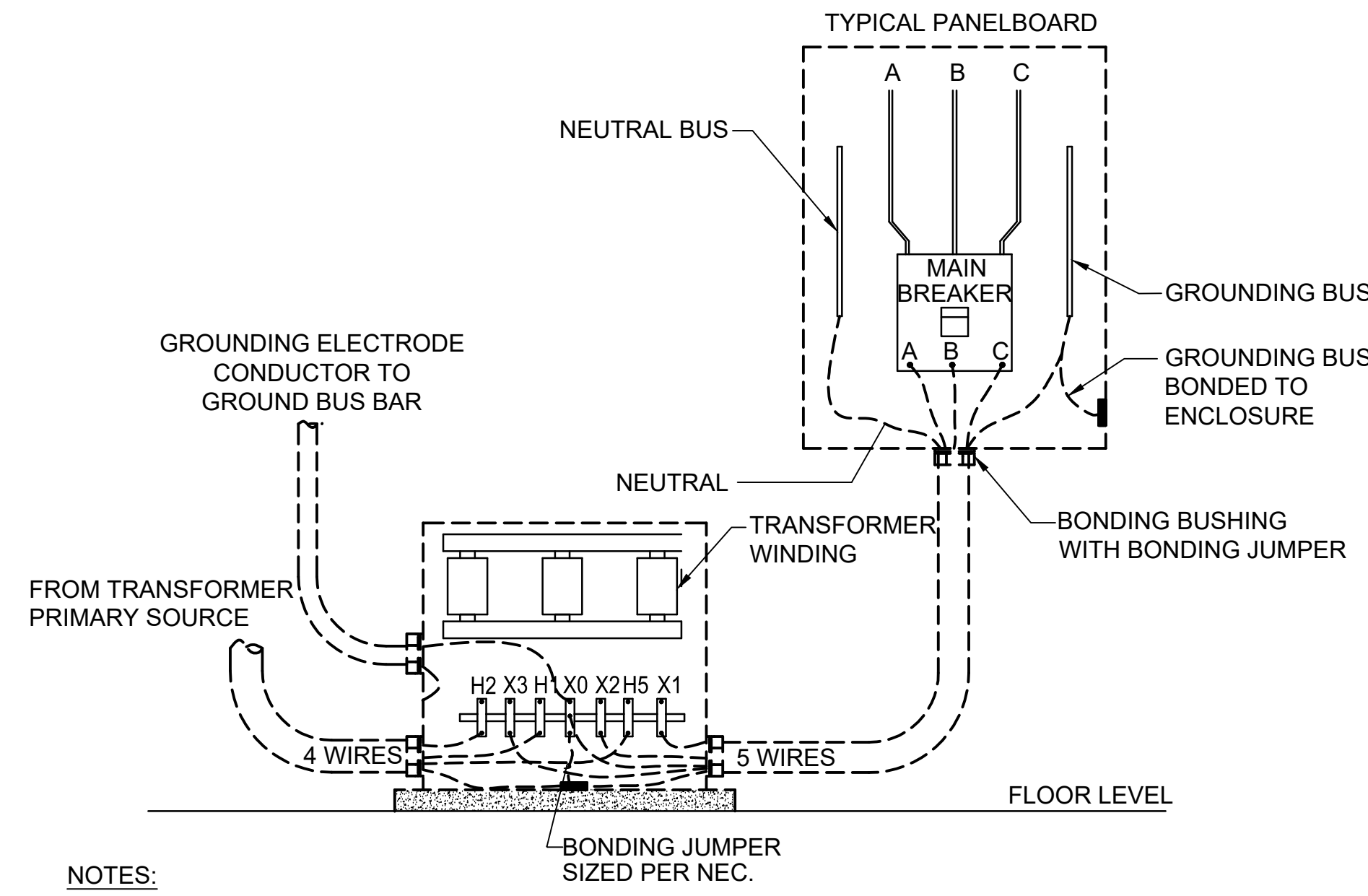


REID E. DEBAUN  
PROFESSIONAL ENGINEER  
LICENSE NO. PE-200909323



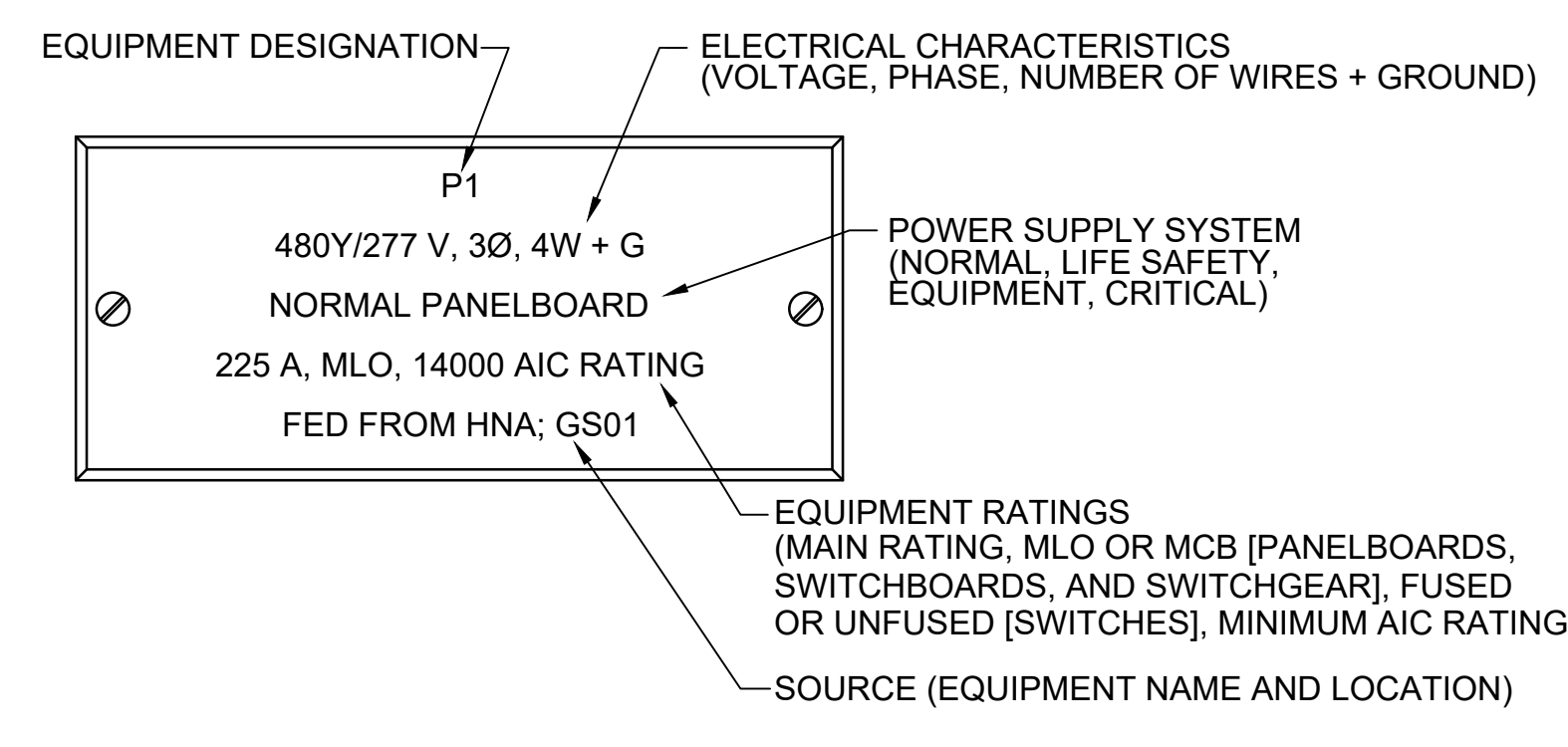
GENERAL NOTES:  
 1. PULL BOX SHALL MEET REQUIREMENTS OF NEC ARTICLE 314.

no.	date	by	ckd	description
0	07/09/21	JMC	RED	ISSUED FOR BID



- NOTES:
1. TRANSFORMER BONDING STRAP, IF NOT PROVIDED BY THE TRANSFORMER MANUFACTURER THIS STRAP SHALL BE THE SAME SIZE AS THE MAIN BONDING JUMPER.
  2. USE A BONDING BUSHING AND JUMPER AT THE CONDUIT TERMINATION. JUMPER SHALL BE THE SAME SIZE AS THE GROUNDING ELECTRODE CONDUCTOR CONTAINED IN THE CONDUIT.
  3. USE A BONDING CLAMP AT THE TERMINATION OF THE GROUNDING ELECTRODE CONDUCTOR TO THE ELECTRODE.

DRY-TYPE TRANSFORMER GROUNDING DETAIL  
 NOT TO SCALE



EQUIPMENT NAMEPLATE DETAIL  
 NOT TO SCALE

**System No. C-AJ-1154**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 3 Hr	F Rating — 3 Hr
T Rating — 1/4 Hr	FT Rating — 1/4 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 3 Hr
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 1/4 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max diam of opening is 14 in. (356 mm).  
 See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.  
 2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 3-1/4 in. (83 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:  
 A. Steel Pipe — Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.  
 B. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.  
 C. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper tubing.  
 D. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.  
 3. Firestop System — The firestop system shall consist of the following:  
 A. Packing Material — Mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material. As an option to the above, backer rod and/or foamed plastic backer material may be used.  
 B. Fill, Void or Cavity Material\* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between pipe and concrete, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall.  
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant  
 \*Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems  
 Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 06, 2015

**System No. W-L-1054**

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating (Without Movement) at Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Items 1 and 3)
L Rating (Without Movement) at 400°F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
M Rating (Movement) — See Table 1	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 5.1 L/sqm <sup>2</sup>
	L Rating at 204°C — Less Than 5.1 L/sqm <sup>2</sup>

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:  
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. For M Rating, steel studs to be min 3-5/8 in. (92 mm) wide. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.  
 B. Gypsum Board\* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly. The M Rating is applicable only to 1 hr rated walls.  
 \*Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems  
 Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 21, 2020

FIRESTOP DETAILS  
 NOT TO SCALE

**System No. W-L-1054**

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:  
 A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.  
 B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.  
 C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) diam steel conduit.  
 D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.  
 E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.  
 3. Fill, Void or Cavity Material\* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.  
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

Movement Direction	Penetrant Item	Nominal Penetrant Diameter	Annular Space	Movement	Sealant Depth	F-Rating	L Rating with Movement
Y	2A, 2C*	2 in.	Max 2-1/4 in.	5%	5/8 in.	1 hr	N/A
Z	2A, 2C*	2 in.	2-1/4 in.	0.25 in.	5/8 in.	1 hr	N/A

\*Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems  
 Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 21, 2020

**BURNS & MCDONNELL**  
 9400 WARD PARKWAY  
 KANSAS CITY, MO 64114  
 816-333-9400  
 LICENSE NO. 000165

date	11/20/2020	detailed	J. CHASE
designed	R. DEBAUN	checked	R. DEBAUN



**CCA & TH EMERGENCY POWER MODIFICATIONS ELECTRICAL DETAILS**

project	128966	contract	CP210961
drawing	E-702	rev.	0
sheet	of	sheets	
file	128966	E-702.DWG	



REID E. DEBAUN  
 PROFESSIONAL ENGINEER  
 LICENSE NO. PE-200909323