LEGEND

(NOTE: ALL SYMBOLS SHOWN ARE NOT NECESSARILY USED ON DRAWINGS)

WIRING DEVICES

- E OR C — DUPLEX RECEPTACLE, 18" AFF UON. ('E' INDICATES EMERGENCY AND 'C' INDICATES CRITICAL) NEMA 5-20R, UON. IN ADDITION TO THE CIRCUIT #, LABEL RECEPTACLES "EMERGENCY" OR "CRITICAL".
- GFI WP — DUPLEX RECEPTACLE WITH INTERNAL GROUND FAULT PROTECTION, INSTALL 18" AFF UON. ('WP' INDICATES WEATHERPROOF).
- IG — ISOLATED GROUND DUPLEX RECEPTACLE, INSTALL 18" AFF UON.
- SS — TRANSIENT VOLTAGE SURGE SUPPRESSION DUPLEX RECEPTACLE, INSTALL 18" AFF UON.
- QUADRUPLEX RECEPTACLE AS DESCRIBED ABOVE, 18" AFF UON.
- CLK — SIMPLEX RECEPTACLE, INSTALL 96" AFF UON. 'CLK' INDICATES CLOCK HANGER RECEPTACLE, INSTALL 84" AFF UON.
- SPECIAL PURPOSE RECEPTACLE, SIZE AND NEMA CONFIGURATION AS INDICATED, INSTALL 48" AFF UON.
- RECEPTACLE AS DESCRIBED ABOVE, INSTALLED IN A FLUSH FLOOR BOX.
- OR AC — DUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTER TOP, UON.
- OR AC — QUADRUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTER TOP, UON.
- CLG — DUPLEX RECEPTACLE INSTALL FLUSH IN THE CEILING.
- COMBINATION RECEPTACLE AND TELE/DATA OUTLET INSTALLED IN FLUSH FLOOR BOX.

CONDUIT AND WIRE

- CONDUIT RUN CONCEALED IN CEILING, WALL, FLOOR, OR ABOVE SUSPENDED CEILING.
- CONDUIT RUN IN OR BELOW SLAB OR GROUND.
- SWITCH LEG.
- LA-1,3,5 — HOMERUN TO PANEL AND CIRCUIT DESIGNATION. BRANCH CIRCUIT SHALL BE MINIMUM 3#12 AWG INCLUDING NEUTRAL AND GROUND, 3/4"C. U.O.N. ON DRAWINGS OR SPECIFICATIONS.
- E — EMPTY CONDUIT WITH PULLING LINE, SIZE AS INDICATED.
- CAPPED CONDUIT.
- CONDUIT TURNED UP.
- CONDUIT TURNED DOWN.

GROUNDING

- 3/4" DIAMETER BY 10'-0" LONG COPPER CLAD GROUND ROD.
- G — GROUND CONDUCTOR. SIZE AS INDICATED.
- GROUND CONNECTION.
- G — GROUND BUS AS NOTED ON DRAWINGS AND SPECIFICATIONS

DISTRIBUTION & CONTROLS

- EMERGENCY POWER ELECTRICAL PANELBOARD (SEE PANEL BOARD NOTATIONS)
- CRITICAL POWER ELECTRICAL PANELBOARD (SEE PANEL BOARD NOTATIONS)
- NORMAL POWER ELECTRICAL PANELBOARD (SEE PANEL BOARD NOTATIONS)
- B — ENCLOSED CIRCUIT BREAKER, RATING AND NO OF POLES AS INDICATED
- VSD OR VFD — VARIABLE SPEED DRIVE OR VARIABLE FREQUENCY DRIVE
- DDC — DIRECT DIGITAL CONTROL
- OR — NON-FUSED DISCONNECT SWITCH, 30A/3P NEMA 1 UON. 30A = SWITCH RATING, 3P = NO OF POLES, NEMA 1 = ENCLOSURE STYLE.
- OR — FUSED DISCONNECT SWITCH, 30A/3P NEMA 1 UON. FUSE SIZE AS NOTED. 30A = SWITCH RATING, 3P = NO OF POLES, NEMA 1 = ENCLOSURE STYLE.
- OR — MAGNETIC MOTOR STARTER. SIZE 1, NEMA 1 UON.
- OR — COMBINATION DISCONNECT AND MAGNETIC STARTER. SIZE 1, NEMA 1 UON.
- CONTROLLER PROVIDED WITH EQUIPMENT (HVAC, ELEVATOR, ETC.) INSTALLED BY DIVISION 16.
- S_M — MANUAL MOTOR STARTER WITH THERMAL OVERLOAD(S) UON, SIZED PER ACTUAL NAMEPLATE RATING.
- C OR — CONTACTOR, RATING AND NO OF POLES AS INDICATED.
- PE — PHOTO-ELECTRIC SWITCH. INSTALL WITH SENSOR ELEMENT FACING NORTH, FLUSH MOUNTED WHERE POSSIBLE, UON.
- TS — TIME SWITCH.
- J — JUNCTION BOX.
- M — MOTOR.
- MD — MOTORIZED DAMPER.
- OR T — TRANSFORMER. RATING AS INDICATED.
- CURRENT TRANSFORMER, RATING AND NO AS INDICATED.
- DRAW-OUT POWER CIRCUIT BREAKER, RATING AND NO. OF POLES, AS INDICATED.
- THERMAL AND/OR MAGNETIC CIRCUIT BREAKER, RATING AND NO OF POLES AS INDICATED.
- MOTOR STARTER, FULL VOLTAGE.
- SOLID STATE MOTOR STARTER (SOFT START)
- FUSE, RATING AS INDICATED.
- SURGE ARRESTER, RATING AS INDICATED.
- MFM — DIGITAL SOLID STATE MULTI-FUNCTION METER.
- M — UTILITY COMPANY REVENUE METER UON.
- PUSHBUTTON, TYPE AS SPECIFIED ON DRAWING.
- SELECTOR SWITCH.
- E — EQUIPMENT CONNECTION. COORDINATE WITH MANUFACTURERS' REPRESENTATIVE.
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR SYSTEM.
- PB — PULL BOX, SIZE PER NEC, UON.

EQUIPMENT IDENTIFICATION SCHEDULE

THE FOLLOWING LABELS SHALL BE INSTALLED ON NEW ELECTRICAL EQUIPMENT AND EXISTING EQUIPMENT AFFECTED BY THE NEW CONSTRUCTION. IDENTIFICATION LABELS SHALL BE LAMINATED BLACK PHENOLIC RESIN WITH A WHITE CORE AND ENGRAVED LETTERING, A MINIMUM OF 1/4" HIGH.

SAFETY SWITCHES/MOTOR STARTERS/VSD:

DEVICE SERVED: DEVICE NAME
AMPS/VOLTAGE/Ø/NO. OF WIRES/AF OR NF
FED FROM: DEVICE NAME

EXAMPLE:

DEVICE SERVED : AHU-1
30A/600V/3Ø/3W/25AF
FED FROM: MCC-B1

WIRE COLORS

VOLTAGE	120/208VAC				277/480VAC			
PHASE	A	B	C	N	A	B	C	N
COLOR	BLACK	RED	BLUE	WHITE	BROWN	YELLOW	ORANGE	LT GREY
CIRCUIT NUMBER	1,2	3,4	5,6	N/A	1,2	3,4	5,6	N/A
	7,8	9,10	11,12	N/A	7,8	9,10	11,12	N/A
	13,14	15,16	17,18	N/A	13,14	15,16	17,18	N/A
	19,20	21,22	23,24	N/A	19,20	21,22	23,24	N/A
	25,26	27,28	29,30	N/A	25,26	27,28	29,30	N/A
	31,32	33,34	35,36	N/A	31,32	33,34	35,36	N/A
	37,38	39,40	41,42	N/A	37,38	39,40	41,42	N/A

CIRCUIT WIRING NOTATION

- GROUND CONDUCTOR
- NEUTRAL CONDUCTOR
- PHASE CONDUCTOR(S)
- INDICATES HOMERUN TO POWER PANELBOARD

PANELBOARD NOTATION

L 1 BB-#

- PANELBOARD CIRCUIT BREAKER LOCATION(S)
- 480/277V A C E G I K M O Q S U W Y AA AAA ETC.
- 120/208V B D F H J L N P R T V X Z BB BBB ETC.
- FLOOR ON WHICH PANELBOARD IS LOCATED
- L=NORMAL POWER E=EMERGENCY POWER C=CRITICAL POWER

ABBREVIATIONS

A	A	AMPERE
	AC	ABOVE COUNTER
	AF	AMP FRAME/AMP FUSE
	AFF	ABOVE FINISHED FLOOR
	AFG	ABOVE FINISHED GRADE
	AHU	AIR HANDLING UNIT
	AIC	AMPERE INTERRUPTING CAPACITY
	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
	AWG	AMERICAN WIRE GAUGE
B	BFG	BELOW FINISHED GRADE
C	C	CONDUIT
	CB	CIRCUIT BREAKER
	CCTV	CLOSED CIRCUIT TELEVISION
	CF	COMPACT FLUORESCENT
	CKT	CIRCUIT
	CLG	CEILING
	CLK	CLOCK
	CPS	CITY PUBLIC SERVICE (SA PROJECTS)
	CTS	CURRENT TRANSFORMERS
	CU	CONDENSING UNIT OR COPPER
D	DISC SW	DISCONNECT SWITCH
E	EA	EACH
	EC	EMPTY CONDUIT
	EDF	ELECTRIC DRINKING FOUNTAIN
	EWC	ELECTRIC WATER COOLER
	EF	EXHAUST FAN
	ELEC	ELECTRICAL
	EMT	ELECTRICAL METALLIC TUBING
	EQUIP	EQUIPMENT
	EWH	ELECTRIC WATER HEATER
	EXT	EXISTING
F	FACP	FIRE ALARM CONTROL PANEL
	FCU	FAN COIL UNIT
	FLA	FULL LOAD AMPS
G	GEC	GROUNDING ELECTRODE CONDUCTOR
	GEN	GENERATOR OR GENERAL
	GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	GND	GROUND
H	HID	HIGH INTENSITY DISCHARGE
	HPS	HIGH PRESSURE SODIUM
	HVAC	HEATING VENTILATION AND AIR CONDITIONING
I	IAW	IN ACCORDANCE WITH
	IDS	INTRUSION DETECTION SYSTEM
	IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
	IMC	INTERMEDIATE METAL CONDUIT
	INC	INCANDESCENT
	IPS	INTERRUPTIBLE POWER SUPPLY
K	KAIC	THOUSAND AMP INTERRUPTING CAPACITY
	MCM/KCMIL	RMS SYMMETRICAL THOUSAND CIRCULAR MILS
	KVA	THOUSAND VOLT AMPERE
	KW	KILOWATT
L	LRA	LOCKED ROTOR AMPS
	LSI	LONG TIME/SHORT TIME/INSTANTANEOUS TRIP SETTINGS INCLUDED WITH CIRCUIT BREAKER
	LSIG	L.T./S.T./I.T./GROUND FAULT TRIP SETTINGS INCLUDED WITH CIRCUIT BREAKER.
M	MCA	MINIMUM CIRCUIT AMPERES
	MCB	MAIN CIRCUIT BREAKER
	MCC	MOTOR CONTROL CENTER
	MDP	MAIN DISTRIBUTION PANEL
	MFR	MANUFACTURER
	MH	METAL HALIDE
	MLO	MAIN LUGS ONLY
	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MSB	MAIN SWITCHBOARD
	MTD	MOUNTED
	MTG HT	MOUNTING HEIGHT
	MV	MERCURY VAPOR
N	NC	NORMALLY CLOSED
	NEC	NATIONAL ELECTRICAL CODE
	NECA	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
	NF	NON FUSED
	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
	NIC	NOT IN CONTRACT
	NL	NIGHT LIGHT
	NO	NUMBER OR NORMALLY OPEN
	NTS	NOT TO SCALE
O	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
	OFOI	OWNER FURNISHED, OWNER INSTALLED
P	PH	PHASE
	PNL	PANELBOARD
	POC	POINT OF CONTACT
R	RCPT/REC	RECEPTACLE
	REP	REPRESENTATIVE
	REQ'D	REQUIRED
	RLA	RUNNING LOAD AMPERES
	RTU	ROOF TOP UNIT
S	SC	SPLIT BRANCH CIRCUIT INDICATES REFERENCED BRANCH CIRCUIT HAS MORE THAN ONE HOMERUN DESIGNATION SHOWN
T	TEL	TELEPHONE
	TV	TELEVISION
	TYP	TYPICAL
U	UH	UNIT HEATER
	UON	UNLESS OTHERWISE NOTED
	UPS	UNINTERRUPTIBLE POWER SUPPLY
V	V	VOLT
	VA	VOLT AMPERE
	VFD/VSD	VARIABLE FREQUENCY/SPEED DRIVE
W	W	WIRE
	W/	WITH
	W/O	WITHOUT
	WP	WEATHERPROOF
X	XFMR	TRANSFORMER
	XMTR	TRANSMITTER
	XFER SW	TRANSFER SWITCH
Z	%Z	PERCENT IMPEDANCE

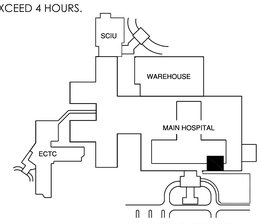
ELECTRICAL DEMOLITION NOTES

1. PRIOR TO BIDDING, THE DIVISION 26 INSTALLER SHALL VISIT THE SITE TO FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS, AND TO VERIFY LOCATION SIZE AND QUANTITY OF ITEMS TO BE REMOVED. SUBMITTAL OF HIS BID SHALL SIGNIFY HIS WILLINGNESS TO COMPLY WITH THE DESIGN AND HIS ACCEPTANCE OF ON-SITE CONDITIONS AS THEY EXIST.
2. SALVAGE ITEMS AND MATERIALS SHALL REMAIN THE PROPERTY OF THE OWNER AND AS A PART OF THIS CONTRACT, THE CONTRACTOR SHALL DELIVER THESE TO A DESTINATION AS DIRECTED BY THE OWNER. DELIVER TO OWNER IN UN-DAMAGED CONDITION WHERE POSSIBLE.
3. EACH ITEM OF EQUIPMENT, RECEPTACLES, LIGHT FIXTURES, SIGNAL EQUIPMENT, MOTORS, ETC., SHOWN TO BE DEMOLISHED SHALL HAVE ITS ASSOCIATED CIRCUITRY REMOVED BACK TO THE PROTECTIVE DEVICE IN THE PANEL, ETC., EXCEPT AS OTHERWISE MENTIONED BY NOTES 4 AND 5 BELOW.
   - 3.A. ASSOCIATED BRANCH CIRCUIT SHALL BE DEFINED TO INCLUDE ALL CONDUIT, CONDUCTORS, BOXES, WIRING DEVICES, COVERPLATES, LAMPS, FIXTURES, WIREWAYS, SWITCHES, STARTERS, ETC., WHICH ARE ASSOCIATED WITH THE ITEM SHOWN TO BE REMOVED.
   - 3.B. THE PROTECTIVE DEVICE SHALL REMAIN AS AN INTEGRAL PART OF THE EXISTING PANEL, SWITCHBOARD, ETC., AND SHALL BE LABELED AS A SPARE OR BE USED FOR NEW CIRCUITRY AS SHOWN.
   - 3.C. WHERE CONDUIT, ASSOCIATED WITH AN ITEM SHOWN TO BE REMOVED, IS IN AN INACCESSIBLE AREA, SUCH AS ENCASED IN CONCRETE, THIS INACCESSIBLE CONDUIT ONLY SHALL BE ABANDONED IN PLACE. ALL CONDUCTORS SHALL BE REMOVED, THEN CONDUIT SHALL BE SEALED, CAPPED OR OTHERWISE TERMINATED IN A SAFE MANNER ACCEPTABLE TO THE OWNER, OR AS OTHERWISE STATED IN ITEM 3D BELOW.
   - 3.D. WHERE SUCH INACCESSIBLE CONDUIT ENDS OR MUST BE TERMINATED IN FINISHED SPACE, THE CONDUIT OR J-BOX SHALL BE REMOVED TO BELOW THE FINISHED SURFACE OF WALL, CEILING OR FLOOR, THEN THE VOID SHALL BE FILLED WITH NON-SHRINKING GROUT, THEN RESURFACED AND REFINISHED TO MATCH SURROUNDING SURFACES.
4. WHERE ONLY A PORTION OF CIRCUIT'S LOAD IS SCHEDULED TO BE REMOVED, ONLY THAT PORTION ASSOCIATED WITH THE DEMOLISHED DEVICE SHALL BE REMOVED TO A POINT WHERE THE REMAINING LOAD IS ACTIVE AND IN A GOOD OPERATING CONDITION, UNLESS INDICATED OTHERWISE.
5. WHERE THE EXTENSION OF AN EXISTING CIRCUIT IS REQUIRED, CONDUIT AND WIRE SHALL BE RUN (CONCEALED WHERE POSSIBLE) FROM THE ITEM'S EXISTING LOCATION TO IT'S NEW LOCATION. CONDUIT SHALL BE ROUTED SO AS NOT TO INTERFERE WITH THE USE OF, OR MAR THE AESTHETICS OF THE AREA. WHERE NECESSARY, THE CONTRACTOR SHALL RELOCATE AND RECONNECT CIRCUITRY ASSOCIATED WITH THE RELOCATION OF THE ITEM.
6. WHERE AN ITEM OF EQUIPMENT IS SCHEDULED TO BE REMOVED AND RELOCATED, IT'S ASSOCIATED CIRCUITRY SHALL ALSO BE REMOVED AS PER NOTE 3 ABOVE ALONG WITH IT'S ASSOCIATED SWITCHGEAR AND DEVICES, ETC., TO BE RELOCATED TO THE NEW LOCATION. PROVIDE CONNECTION OF SUCH RELOCATED ITEMS TO NEW OR EXTENDED CIRCUITRY AS SHOWN ON THE DRAWINGS.
7. COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION. PROVIDE A SCHEDULE FOR THE DISCONNECTION AND RECONNECTION OF EACH PIECE OF EQUIPMENT TO THE VA AND THE ENGINEER OF RECORD FOR REVIEW A MINIMUM OF 14 DAYS PRIOR.

GENERAL ELECTRICAL NOTES

(APPLIES TO ALL DRAWINGS.)

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2012 INTERNATIONAL CODES, THE VA STANDARDS (WWW.CFM.VA.GOV/TIL/INDEX.ASP) AND THE REQUIREMENTS STATED IN THE APPLICABLE SECTIONS OF THE NATIONAL FIRE CODES (NFPA STANDARDS) CURRENT AT THE TIME OF ISSUANCE OF THE CONSTRUCTION DOCUMENTS. AMENDMENTS TO THESE CODES AS SET FORTH BY THE AUTHORITY HAVING JURISDICTION SHALL SUPERSEDE THE INTERNATIONAL CODES AND NFPA STANDARDS AS ISSUED.
2. THE WORK SHALL BE SUPERVISED BY A MASTER ELECTRICIAN TO ASSURE THAT ALL WORK IS INSTALLED IN ACCORDANCE WITH VA REQUIREMENTS, APPLICABLE CODES AND THE CONSTRUCTION DOCUMENTS.
3. INTERRELATION BETWEEN THE DRAWINGS AND THE SPECIFICATIONS: IN GENERAL, THE DRAWINGS INDICATE LOCATIONS, QUANTITIES AND CAPACITIES AND THE SPECIFICATIONS INDICATE QUALITY, OPTIONS, WARRANTIES AND COMPLIANCE STANDARDS. IN THE EVENT THERE IS A CONFLICT BETWEEN THE SPECIFICATIONS AND THE DRAWINGS, THE GREATER QUALITY OR QUANTITY SHALL BE REQUIRED. IN ALL CASES, THE ENGINEER OF RECORD SHALL BE THE INTERPRETER OF THE DOCUMENTS.
4. INTERRELATION BETWEEN THE DRAWINGS: IN THE EVENT OF A CONFLICT BETWEEN A DETAIL AND A FLOOR PLAN, THE LARGER SIZE, QUANTITY, LENGTH OR OPTIONS SHALL BE REQUIRED. IN THE EVENT OF A CONFLICT BETWEEN WHAT IS SHOWN ON THE FLOOR PLAN AND A KEYED NOTE, THE KEYED NOTE SHALL GOVERN. IN ALL CASES, THE ENGINEER OF RECORD SHALL BE THE INTERPRETER OF THE DOCUMENTS.
5. PRIOR TO BIDDING, THE DIVISION 26 INSTALLER SHALL VISIT THE JOB SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND TO VERIFY LOCATIONS AND SIZES OF EXISTING EQUIPMENT, CONDUCTORS, ETC. SUBMITTAL OF A BID SHALL SIGNIFY WILLINGNESS TO COMPLY WITH THE CONSTRUCTION DOCUMENTS AND ACCEPTANCE OF ON-SITE CONDITIONS AS THEY EXIST.
6. THE EXISTENCE AND LOCATION OF UTILITIES, MECHANICAL SYSTEMS, ELECTRICAL SYSTEMS AND OTHER CONSTRUCTION INDICATED AS EXISTING ARE NOT GUARANTEED. BEFORE BEGINNING WORK, INVESTIGATE AND VERIFY THE EXISTENCE AND LOCATION OF MECHANICAL AND ELECTRICAL SYSTEMS AND OTHER CONSTRUCTION AFFECTING THE WORK AND ADJUST THE WORK ACCORDINGLY. FURNISH AND INSTALL CONDUCTORS, RACEWAYS, PULL BOXES, ETC. AS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS AS A PART OF THE WORK.
7. COOPERATE FULLY WITH SEPARATE CONTRACTORS SO WORK ON THOSE CONTRACTS MAY BE CARRIED OUT SMOOTHLY, WITHOUT INTERFERING WITH OR DELAYING WORK UNDER THIS CONTRACT. COORDINATE THE WORK OF THIS CONTRACT WITH WORK PERFORMED UNDER SEPARATE CONTRACTS. COORDINATE PURCHASING, FABRICATIONS, DELIVERY AND PERFORMANCE OF THE WORK OF THIS CONTRACT WITH WORK PERFORMED UNDER SEPARATE CONTRACTS TO AVOID DELAYING THE WORK.
8. DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY THE VA OR OTHERS UNLESS PERMITTED BY THE VA HOSPITAL FACILITY MANAGER. COORDINATE UTILITY OUTAGES IN WRITING WITH THE VA HOSPITAL FACILITY MANAGER 21 DAYS IN ADVANCE.
9. THE DRAWINGS ARE DIAGRAMMATIC ONLY AND SHALL NOT BE SCALED. NOT ALL NEC REQUIRED ITEMS SUCH AS RACEWAYS, CONDUCTORS, GROUNDING SYSTEMS, ETC. CAN BE SHOWN. FURNISH AND INSTALL RACEWAYS, CONDUCTORS, ETC. AS REQUIRED FOR A COMPLETE AND FUNCTIONAL, NEC COMPLIANT SYSTEM.
10. THE INSTALLER IS RESPONSIBLE FOR COORDINATING WITH OTHER TRADES. THE INSTALLER SHALL NOT INSTALL OR FABRICATE ANY WORK SHOWN UNTIL ALL SUCH WORK IS FULLY COORDINATED. FURNISH AND INSTALL ADDITIONAL RACEWAYS, CONDUCTORS, ETC. AS REQUIRED TO COORDINATE THE INSTALLATION WITH OTHER TRADES AS PART OF THE WORK.
11. TAKE FIELD MEASUREMENTS AS REQUIRED TO FIT THE WORK PROPERLY. RECHECK MEASUREMENTS BEFORE INSTALLING EACH PRODUCT. WHERE PORTIONS OF THE WORK ARE INDICATED TO FIT TO OTHER CONSTRUCTION, VERIFY DIMENSIONS OF OTHER CONSTRUCTION BY FIELD MEASUREMENTS BEFORE FABRICATION. FURNISH AND INSTALL ADDITIONAL RACEWAYS, CONDUCTORS, ETC. AS REQUIRED TO ACCOMMODATE FIELD CONDITIONS AS PART OF THE WORK.
12. MECHANICAL EQUIPMENT SIZES ARE AS DESIGNED. BREAKERS, CONDUIT, STARTERS, CONDUCTORS, ETC., SHALL BE ADJUSTED TO THE EQUIPMENT SUBMITTED AND APPROVED FOR INSTALLATION ON THIS PROJECT AT NO COST TO THE OWNER.
13. A CIRCUIT SHALL BE DEFINED TO INCLUDE ALL OF THE FOLLOWING: CONDUIT, CONDUCTORS, BOXES, WIRING DEVICES, COVERPLATES, WIREWAYS, ETC.
14. MULTIWIRE BRANCH CIRCUITS AS DEFINED BY THE NATIONAL ELECTRICAL CODE SHALL NOT BE USED. A DEDICATED NEUTRAL CONDUCTOR SHALL BE RUN FOR EACH BRANCH CIRCUIT, UON.
15. THE CONTRACTOR SHALL LABEL EACH JUNCTION/PULL BOX COVER PLATE WITH THE CIRCUIT NUMBER OF THE CIRCUITS IT CONTAINS. LABEL EACH EXITING CONDUIT AT THE POINT WHERE IT EXITS THE JUNCTION BOX WITH THE CIRCUIT NUMBER IT CONTAINS. IF THE RACEWAY SYSTEM IS IN AN EXPOSED AREA LABEL THE INSIDE OF THE JUNCTION/PULL BOX COVER PLATE ONLY.
16. COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION. PROVIDE A SCHEDULE FOR THE DISCONNECTION AND RECONNECTION OF EACH PIECE OF EQUIPMENT TO THE VA AND THE ENGINEER OF RECORD FOR REVIEW A MINIMUM OF 21 DAYS PRIOR. ANY APPROVED OUTAGE SHALL NOT EXCEED 4 HOURS.



Revisions | Date

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CONSTRUCTION DOCUMENTS

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7.02.2014

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Drawing Title: LEGEND, ABBREVIATIONS AND GENERAL NOTES - ELECTRICAL

Approved: Project Director

Project Title: DESIGN REPLACEMENT FOR MCC AND SWITCHGEAR

Location: Audie L. Murphy Memorial Veterans Hospital, San Antonio, Texas

Date: 2 JULY 2014 | Checked: DB | Drawn: JRS

Project Number: 671-14-106

Building Number: 1

Drawing Number: ES0.1

Dwg. 1 of 5

Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231, OCT 1978

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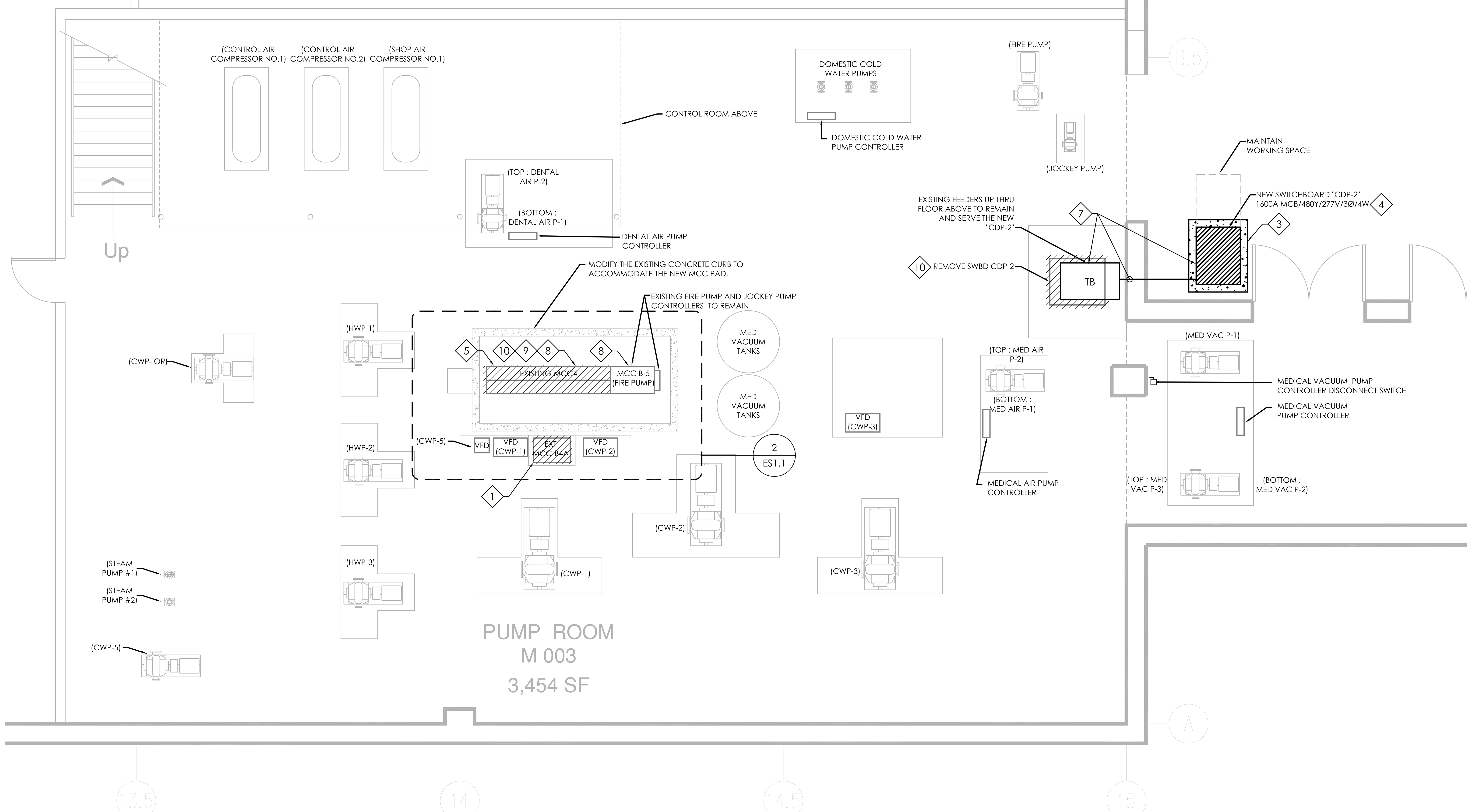


PARTIAL FLOOR PLAN - PUMP ROOM M003
DEMOLITION & NEW WORK - ELECTRICAL

1 ES1.1 SCALE: 1/4 = 1'-0"

TRUE NORTH / PLAN NORTH

GENERAL NOTES:

1. REFERENCE SHEET ES0.1 FOR LEGEND, ABBREVIATIONS AND FURTHER GENERAL NOTES.

KEYED NOTES:

THE PROJECT SHALL BE PHASED AND SEQUENCED TO MINIMIZE THE DOWN TIME OF THE EQUIPMENT SERVING THE HOSPITAL . REFERENCE THE DESIGN SEQUENCE OF OPERATIONS ON THIS SHEET. ANY OUTAGES SHALL BE SCHEDULED WITH THE VA CONTRACTING OFFICER A MINIMUM OF 21 DAYS PRIOR TO THE OUTAGE.

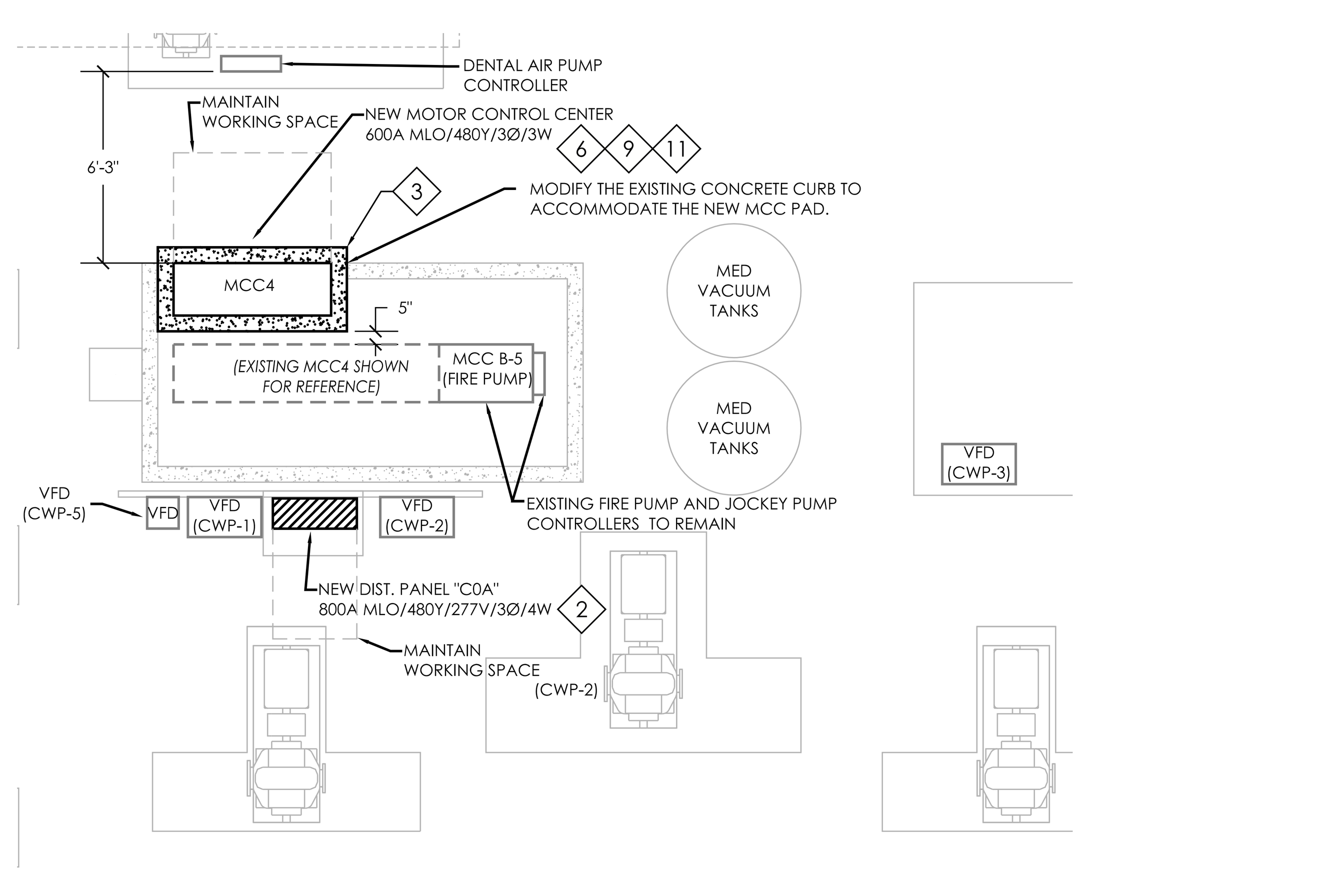
1. REMOVE THE MCC-B4A AND THE FEEDER CIRCUIT BACK TO THE EXISTING PANEL "LDP-2" (LOCATED IN ELEC. RM L007) TO ACCOMMODATE THE INSTALLATION OF THE NEW PANEL "COA" (REFERENCE 2/ES1.1). DISCONNECT THE EQUIPMENT FROM THE EXISTING C-CHANNEL SUPPORT SYSTEM. DISCONNECT AND PULL BACK THE BRANCH CIRCUITS FROM THE MCC-B4A TO THE VFDs SERVING THE CHILLED WATER PUMPS (CWP-1, CWP-2 AND CWP-3). DISCONNECT AND PULL BACK THE EXISTING CONTROL CIRCUITS ROUTED TO MCC4. REMOVE THE VERIS POWER MONITORING DEVICES FOR EACH OF THE CHILLED WATER PUMPS AND THE VERIS POWER MONITOR ON THE MCC-B4A FEEDER. **LABEL THE POWER MONITORS WITH THE NAME OF THE CHILLED WATER PUMP IT SERVES SO THEY CAN BE REINSTALLED ON THE SAME CHILLED WATER PUMPS CIRCUIT TO MAINTAIN THE HISTORICAL DATA.**
2. FURNISH AND INSTALL A NEW 800A MLO/480Y/277V/3Ø/4W DISTRIBUTION PANEL "C0A" ON THE EXISTING PAD WHERE MCC-B4A WAS REMOVED (REFERENCE KEYED NOTE NO. 1 ABOVE). CONNECT THE EXISTING BRANCH CIRCUITS SERVING THE CHILLED WATER PUMPS (CWP-1, CWP-2 AND CWP-3) TO A NEW CIRCUIT BREAKER IN PANEL "C0A" (REFERENCE THE PANEL SCHEDULES FOR ADDITIONAL INFORMATION). REINSTALL THE VERIS POWER MONITORS ON THE EXACT CWP CIRCUIT THAT IT WAS PREVIOUSLY CONNECTED TO. THE VERIS POWER MONITOR REMOVED FROM THE FEEDER CIRCUIT SHALL BE INSTALLED AROUND ALL THREE BRANCH CIRCUITS SERVING ALL THE CHILLED WATER PUMPS TO OBTAIN THE SUM OF THE THREE CIRCUITS. ALL OF THE VERIS POWER MONITORS SHALL BE DAISY CHAINED TOGETHER VIA A TWISTED PAIR AND CONNECTED BACK TO THE EXISTING DATA ACQUISITION SERVER IN THE CONTROL ROOM IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
3. FURNISH AND INSTALL A NEW CONCRETE EQUIPMENT PAD FOR THE NEW ELECTRICAL EQUIPMENT. THE PAD SHALL EXTEND 8 INCHES BEYOND THE FOOTPRINT OF THE EQUIPMENT. THE EQUIPMENT PAD FOR THE MCC SHALL BE AT THE SAME ELEVATION AS THE EXISTING CONCRETE CURB. SAW CUT AND REMOVE THE CURB TO ACCOMMODATE THE INSTALLATION OF THE NEW PAD. REFERENCE SHEET S-101 FOR ADDITIONAL REQUIREMENTS.
4. FURNISH AND INSTALL A NEW 1600A MCB/480Y/277V/3Ø/4W SWITCHBOARD "CDP-2" TO SERVE THE EQUIPMENT IN THE PUMP ROOM. FURNISH AND INSTALL NEW FEEDERS FROM CDP-2 TO THE NEW "MCC4", TO THE NEW PANEL "C0A", TO THE EXISTING FIRE PUMP CONTROLLER "MCC-B5" AND A TEMPORARY FEEDER CIRCUIT TO THE EXISTING "MCC4". THE FEEDER CIRCUIT TO THE "MCC-B5" AND THE TEMPORARY FEEDER CIRCUIT TO THE EXISTING "MCC4" SHALL NOT BE TERMINATED UNTIL THE EXISTING FEEDER CIRCUIT IS DISCONNECTED FROM THE EXISTING "CDP-2" (REFERENCE THE DESIGN SEQUENCE FOR ADDITIONAL REQUIREMENTS). REFERENCE THE RISER DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL REQUIREMENTS.
5. DISCONNECT THE CIRCUITS IN MCC4 - SECTIONS 3A, 5A AND 5B SERVING THE HOUSE WATER PUMPS 1,2,& 3 AND MED AIR COMPRESSOR 1 & 2 TO FACILITATE THE INSTALLATION OF THE NEW MCC4. EXTEND AND CONNECT THE EXISTING BRANCH CIRCUITS TO NEW CIRCUIT BREAKERS IN PANEL "C0A". REMOVE THE ABANDONED CIRCUITS FROM MCC4 TO FACILITATE THE INSTALLATION OF THE NEW MCC4.
6. FURNISH AND INSTALL A NEW 600A MLO/480V/3Ø/3W MOTOR CONTROL CENTER "MCC4" TO SERVE THE MECHANICAL EQUIPMENT IN THE PUMP ROOM. REFERENCE THE MCC SCHEDULE FOR ADDITIONAL REQUIREMENTS.
7. DISCONNECT THE FEEDER CIRCUIT SERVING THE EXISTING CDP-2. REMOVE APPROXIMATELY 10FT OF CONDUIT FROM THE THREADED CONNECTOR DOWN TO THE TOP OF THE SWITCHGEAR TO EXPOSE THE EXISTING CONDUCTORS. FURNISH AND INSTALL A BUSSED TAP BOX AT THE EXISTING CONDUIT CONNECTOR AND TERMINATE THE EXISTING FEEDER TO THE TAP BOX. CONSTRUCT A RIGID STEEL STRUCTURE TO SUPPORT THE ELEVATED TAP BOX (APPROX. 10'-6" AFF TO THE BOTTOM). FURNISH AND INSTALL A NEW FEEDER CIRCUIT FROM THE TAP BOX TO THE NEW "CDP-2". TERMINATE THE FEEDER CIRCUITS SERVING THE NEW "MCC4" AND THE NEW PANEL "C0A" AND ENERGIZE.
8. DISCONNECT AND PULL BACK THE EXISTING FEEDERS SERVING "MCC-B5" AND THE EXISTING "MCC4". TERMINATE THE NEW FEEDERS FROM THE NEW "CDP-2" TO "MCC-B5" AND THE TEMPORARY FEEDER CIRCUIT TO THE EXISTING "MCC4". REMOVE THE EXISTING FEEDERS BACK TO THE EXISTING CDP-2.
9. DISCONNECT EACH MOTOR ONE BY ONE FROM THE EXISTING "MCC4" AND EXTEND AND CONNECT THE EXISTING BRANCH CIRCUIT TO THE NEW "MCC4". EXTEND AND CONNECT THE EXISTING CONTROL CIRCUITS FROM THE EXISTING "MCC4" TO THE NEW "MCC4". COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION. REMOVE THE VERIS POWER MONITORS ON CONTROL AIR COMPRESSOR #1 AND #2 AND REINSTALL THE MONITORS IN THE NEW MCC4. **LABEL THE POWER MONITORS WITH THE NAME OF THE COMPRESSOR IT SERVES SO THEY CAN BE REINSTALLED ON THE SAME COMPRESSOR CIRCUIT TO MAINTAIN THE HISTORICAL DATA.**
10. REMOVE THE EXISTING "CDP-2" AND THE EXISTING "MCC4". CUT THE EXISTING CONDUITS THAT ARE ROUTED BELOW GRADE AT THE LEVEL OF THE EXISTING CONCRETE PAD AND SEAL THE CONDUITS. REMOVE THE TEMPORARY FEEDER CIRCUIT SERVING THE EXISTING "MCC4".
11. CONSTRUCT A 20 GUAGE GALVANIZED STEEL SHIELD ABOVE THE DEDICATED SPACE OF THE NEW MCC4 AND EXISTING MCC-B5 TO PROTECT IT FROM THE PIPING ABOVE AS PERMITTED BY THE NEC 110.26(E). ANGLE THE SHIELD SUCH THAT ANY WATER IS DIVERTED IN FRONT OF THE MCC'S. SECURE THE SHIELD WITH UNISTRUT SUPPORTS TO THE STRUCTURE ABOVE. .

DESIGN SEQUENCE OF CONSTRUCTION:

THE PROJECT SHALL BE PHASED AND SEQUENCED TO MINIMIZE THE DOWN TIME OF THE EQUIPMENT SERVING THE HOSPITAL. SUBMIT A CONSTRUCTION PHASING PLAN TO THE ENGINEER OF RECORD FOR REVIEW 14 DAYS PRIOR TO THE COMMENCEMENT OF WORK. ANY OUTAGES SHALL BE SCHEDULED WITH THE VA CONTRACTING OFFICER A MINIMUM OF 21 DAYS PRIOR TO THE OUTAGE. ANY SCHEDULED OUTAGE SHALL NOT EXCEED 4 HOURS.

1. INSTALL NEW CONCRETE EQUIPMENT PADS FOR THE NEW CDP-2 AND MCC4.
2. INSTALL THE NEW "CDP-2". CONCURRENTLY INSTALL THE NEW FEEDERS FROM "CDP-2" TO THE LOCATION OF THE NEW "MCC4", TO THE LOCATION OF THE NEW PANEL "C0A", TO THE EXISTING FIRE PUMP CONTROLLER "MCC-B5" AND THE TEMPORARY FEEDER CIRCUIT TO THE EXISTING "MCC4". TERMINATE THE NEW FEEDERS TO THE NEW CDP-2 BUT DO NOT CONNECT THE FEEDERS TO THE EXISTING ENERGIZED EQUIPMENT UNTIL THE EXISTING CIRCUIT IS DISCONNECTED FROM THE EXISTING "CDP-2" (SEE STEP 6).
3. PULL BACK THE BRANCH CIRCUITS FROM "MCC-B4A". REMOVE "MCC-B4A" AND THE FEEDER CIRCUIT. REMOVE THE VERIS POWER MONITORING DEVICES FOR EACH OF THE CHILLED WATER PUMPS.
4. INSTALL THE NEW DISTRIBUTION PANEL "C0A". CONNECT THE EXISTING BRANCH CIRCUITS TO THE NEW PANEL "C0A". REINSTALL THE VERIS POWER MONITORS.
5. DISCONNECT THE FEEDER CIRCUIT SERVING THE EXISTING "CDP-2". INSTALL THE NEW BUSSED TAP BOX AND TERMINATE THE EXISTING FEEDER TO THE TAP BOX. INSTALL THE NEW FEEDER CIRCUIT FROM THE TAP BOX TO THE NEW "CDP-2" AND ENERGIZE "CDP-2".
6. DISCONNECT AND PULL BACK THE EXISTING FEEDER CIRCUITS SERVING THE EXISTING "MCC4" AND "MCC-B5". CONNECT THE NEW FEEDER CIRCUITS FROM "CDP-2" TO THE EXISTING "MCC4", TO "MCC-B5" AND TO THE NEW "C0A" AND THE ENERGIZE EQUIPMENT.
7. DISCONNECT THE BRANCH CIRCUITS IN MCC4 - SECTIONS 3A, 5A AND 5B. EXTEND AND CONNECT THE EXISTING BRANCH CIRCUITS TO THE NEW PANEL "C0A".
8. INSTALL THE NEW MOTOR CONTROL CENTER "MCC4", CONNECT THE NEW FEEDER CIRCUIT FROM THE NEW "CDP-2" AND ENERGIZE "MCC4".
9. DISCONNECT EACH MOTOR ONE BY ONE FROM THE EXISTING "MCC4" AND EXTEND AND CONNECT THE EXISTING BRANCH CIRCUIT TO THE NEW "MCC4". EXTEND AND CONNECT THE EXISTING CONTROL CIRCUITS FROM THE EXISTING "MCC4" TO THE NEW "MCC4". REMOVE THE VERIS POWER MONITORS ON CONTROL AIR COMPRESSOR #1 AND #2 AND REINSTALL THE MONITORS IN THE NEW MCC4.
10. REMOVE THE EXISTING "CDP-2", THE EXISTING "MCC4" AND THE REMAINING ABANDONED CIRCUITS IN THE EXISTING "MCC4". REMOVE THE TEMPORARY FEEDER CIRCUIT SERVING THE EXISTING "MCC4" AND THE EXISTING FEEDER CIRCUIT SERVING THE EXISTING "CDP-2".

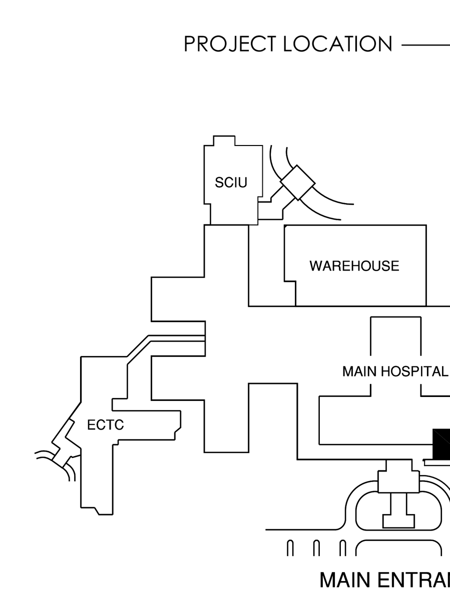
COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION. PROVIDE A SCHEDULE FOR THE DISCONNECTION AND RECONNECTION OF EACH PIECE OF EQUIPMENT TO THE VA AND THE ENGINEER OF RECORD FOR REVIEW A MINIMUM OF 21 DAYS PRIOR TO ANY OUTAGE.



ENLARGED FLOOR PLAN
PUMP ROOM M003 - NEW WORK - ELECTRICAL

2 ES1.1 SCALE: 1/4 = 1'-0"

TRUE NORTH / PLAN NORTH



Revisions:	Date

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Concur M & O	Approved: Service Chief
Concur Bio-Med	Approved: Service Chief
Concur Safety	Approved: Service Chief
Approved: Service Chief	Approved: Service Chief
Approved: Service Chief	Approved: Chief of Staff

CONSTRUCTION DOCUMENTS

STATE OF TEXAS JUSTIN R. SOLIS 110320 LICENSED PROFESSIONAL ENGINEER 7.02.2014

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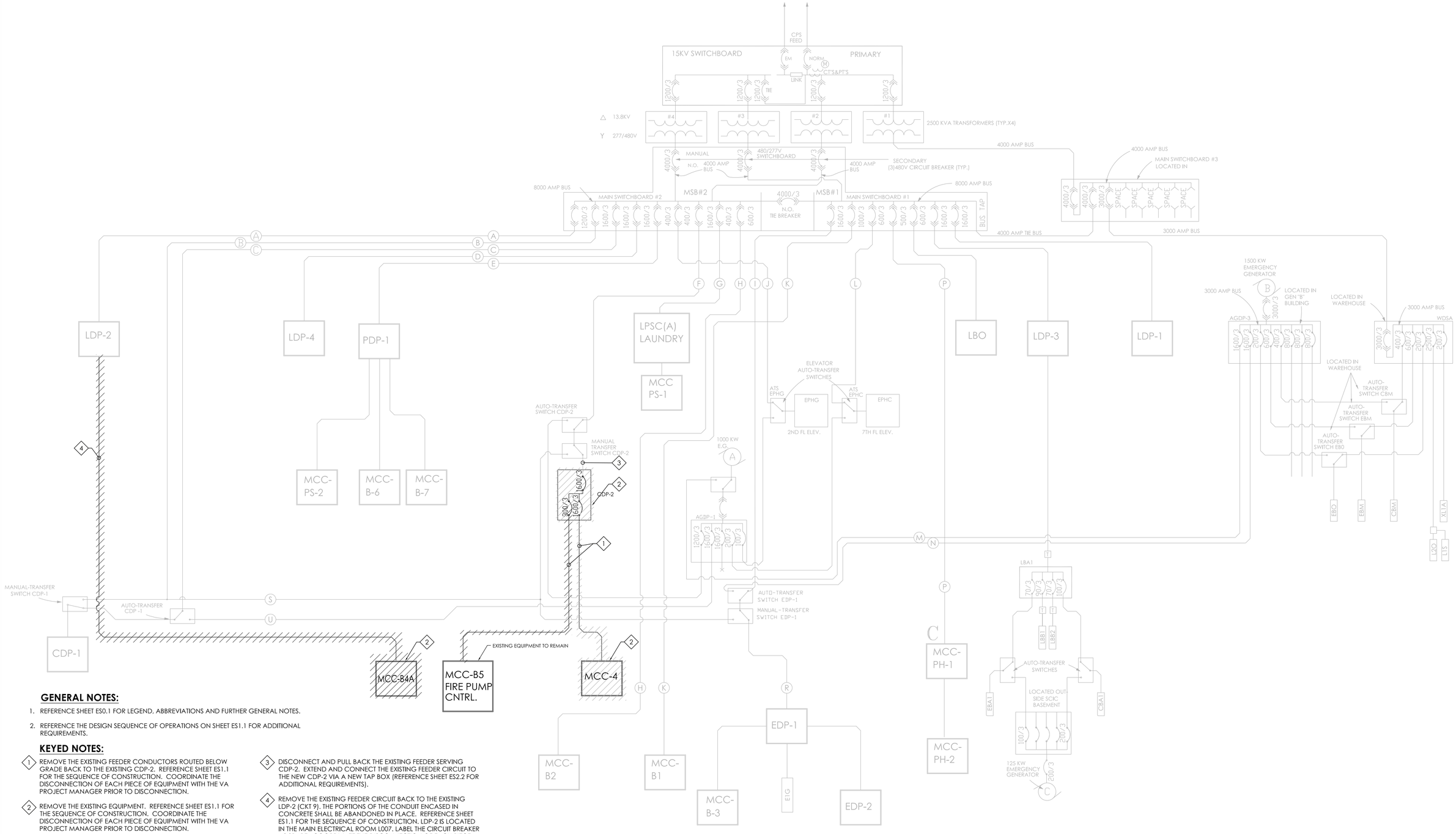
Drawing Title	PARTIAL FLOOR PLAN - PUMP ROOM M003-ELECTRICAL
Approved: Project Director	
Project Title	DESIGN REPLACEMENT FOR MCC AND SWITCHGEAR
Location	Audie L. Murphy Memorial Veterans Hospital San Antonio, Texas
Date	2 JULY 2014
Checked	DB
Drawn	JS
Project Number	671-14-106
Building Number	1
Drawing Number	ES1.1
Dwg.	2 of 5

Construction and Facilities Management
Department of Veterans Affairs



GENERAL NOTES:

1. REFERENCE SHEET ES0.1 FOR LEGEND, ABBREVIATIONS AND FURTHER GENERAL NOTES.
2. REFERENCE THE DESIGN SEQUENCE OF OPERATIONS ON SHEET ES1.1 FOR ADDITIONAL REQUIREMENTS.

KEYED NOTES:

1. REMOVE THE EXISTING FEEDER CONDUCTORS ROUTED BELOW GRADE BACK TO THE EXISTING CDP-2. REFERENCE SHEET ES1.1 FOR THE SEQUENCE OF CONSTRUCTION. COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION.
2. REMOVE THE EXISTING EQUIPMENT. REFERENCE SHEET ES1.1 FOR THE SEQUENCE OF CONSTRUCTION. COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION.
3. DISCONNECT AND PULL BACK THE EXISTING FEEDER SERVING CDP-2. EXTEND AND CONNECT THE EXISTING FEEDER CIRCUIT TO THE NEW CDP-2 VIA A NEW TAP BOX (REFERENCE SHEET ES2.2 FOR ADDITIONAL REQUIREMENTS).
4. REMOVE THE EXISTING FEEDER CIRCUIT BACK TO THE EXISTING LDP-2 (CKT 9). THE PORTIONS OF THE CONDUIT ENCASED IN CONCRETE SHALL BE ABANDONED IN PLACE. REFERENCE SHEET ES1.1 FOR THE SEQUENCE OF CONSTRUCTION. LDP-2 IS LOCATED IN THE MAIN ELECTRICAL ROOM L007. LABEL THE CIRCUIT BREAKER AS SPARE. COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER 21 DAYS PRIOR TO DISCONNECTION.

COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION. PROVIDE A SCHEDULE FOR THE DISCONNECTION AND RECONNECTION OF EACH PIECE OF EQUIPMENT TO THE VA AND THE ENGINEER OF RECORD FOR REVIEW A MINIMUM OF 21 DAYS PRIOR TO ANY OUTAGE.

THE ONE - LINE DIAGRAM WAS PROVIDED BY VA PERSONNEL AND THE INFORMATION SHOWN MAY NOT BE COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THE ELECTRICAL CONNECTION POINTS OF THE NEW EQUIPMENT TO THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM PRIOR TO THE COMMENCEMENT OF WORK.

1 / ES2.1 EXISTING ONE-LINE DIAGRAM - DEMOLITION - ELECTRICAL

SCALE: NTS

Revisions:	Date

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Concur M & O	Approved: Service Chief
Concur Bio-Med	Approved: Service Chief
Concur Safety	Approved: Service Chief
Approved: Service Chief	Approved: Service Chief
Approved: Service Chief	Approved: Chief of Staff

CONSTRUCTION DOCUMENTS

STATE OF TEXAS JUSTIN R. SOLIS 110520 LICENSED PROFESSIONAL ENGINEER 7/2/2014

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Drawing Title: PARTIAL ONE-LINE DIAGRAM - DEMOLITION - ELECTRICAL

Approved: Project Director

Project Title: DESIGN REPLACEMENT FOR MCC AND SWITCHGEAR

Location: Audie L. Murphy Memorial Veterans Hospital, San Antonio, Texas

Date: 2 JULY 2014 | Checked: DB | Drawn: JS

Project Number: 671-14-106

Building Number: 1

Drawing Number: ES2.1

Dwg. 3 of 5

Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231, OCT 1978

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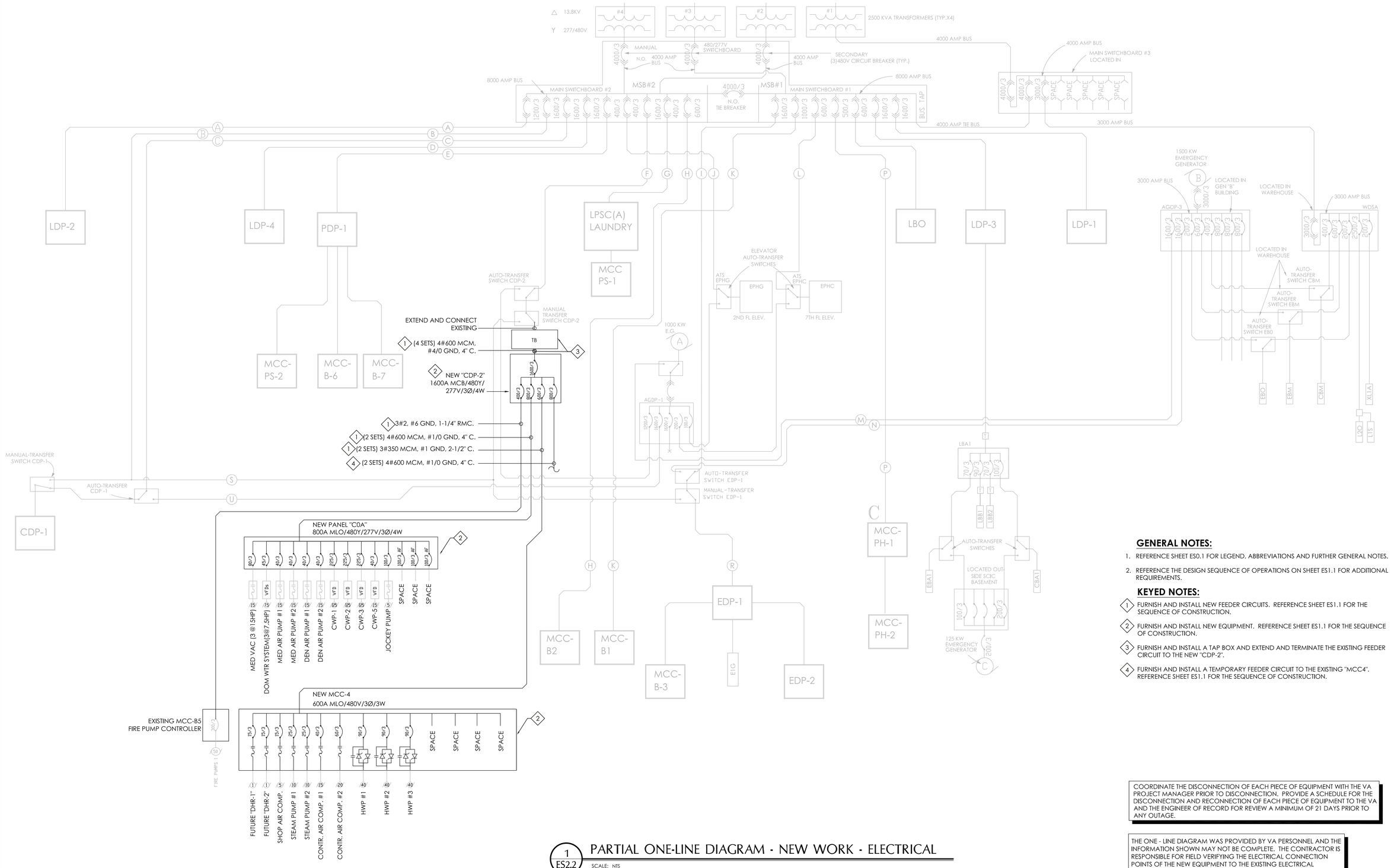

1 ES2.2 PARTIAL ONE-LINE DIAGRAM - NEW WORK - ELECTRICAL

SCALE: NTS

GENERAL NOTES:

1. REFERENCE SHEET ES0.1 FOR LEGEND, ABBREVIATIONS AND FURTHER GENERAL NOTES.
2. REFERENCE THE DESIGN SEQUENCE OF OPERATIONS ON SHEET ES1.1 FOR ADDITIONAL REQUIREMENTS.

KEYED NOTES:

1. FURNISH AND INSTALL NEW FEEDER CIRCUITS. REFERENCE SHEET ES1.1 FOR THE SEQUENCE OF CONSTRUCTION.
2. FURNISH AND INSTALL NEW EQUIPMENT. REFERENCE SHEET ES1.1 FOR THE SEQUENCE OF CONSTRUCTION.
3. FURNISH AND INSTALL A TAP BOX AND EXTEND AND TERMINATE THE EXISTING FEEDER CIRCUIT TO THE NEW "CDP-2".
4. FURNISH AND INSTALL A TEMPORARY FEEDER CIRCUIT TO THE EXISTING "MCC4". REFERENCE SHEET ES1.1 FOR THE SEQUENCE OF CONSTRUCTION.

COORDINATE THE DISCONNECTION OF EACH PIECE OF EQUIPMENT WITH THE VA PROJECT MANAGER PRIOR TO DISCONNECTION. PROVIDE A SCHEDULE FOR THE DISCONNECTION AND RECONNECTION OF EACH PIECE OF EQUIPMENT TO THE VA AND THE ENGINEER OF RECORD FOR REVIEW A MINIMUM OF 21 DAYS PRIOR TO ANY OUTAGE.

THE ONE - LINE DIAGRAM WAS PROVIDED BY VA PERSONNEL AND THE INFORMATION SHOWN MAY NOT BE COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING THE ELECTRICAL CONNECTION POINTS OF THE NEW EQUIPMENT TO THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM PRIOR TO THE COMMENCEMENT OF WORK.

Revisions:	Date

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Concur Safety	Approved: Service Chief
Approved: Service Chief	Approved: Service Chief
Approved: Service Chief	Approved: Chief of Staff

CONSTRUCTION DOCUMENTS

STATE OF TEXAS JUSTIN R. SOLIS 110630 LICENSED PROFESSIONAL ENGINEER 7.02.2014

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Drawing Title: PARTIAL ONE-LINE DIAGRAM - NEW WORK - ELECTRICAL

Approved: Project Director

Project Title: DESIGN REPLACEMENT FOR MCC AND SWITCHGEAR

Location: Audie L. Murphy Memorial Veterans Hospital San Antonio, Texas

Date: 2 JULY 2014 | Checked: DB | Drawn: JS

Project Number: 671-14-106

Building Number: 1

Drawing Number: ES2.2

Dwg. 4 of 5

Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231, OCT 1978

Y:\PROJECTS\WEDG-1405 - VA - AUDIE MURPHY - REPLACE MCC AND SWITCHGEAR\DRAWINGS\MEP\WEDG-1405-E-DG-ES2.1 & ESS2.2.DWG , Justin Solis, 7/2/2014 3:37 PM

NEW SWITCHBOARD "CDP-2"

VOLTAGE: 480Y/277V 3 PHASE 3 WIRE
1600A MAIN CIRCUIT BREAKER (LSIG)
BUSES: 1600A ; NEUTRAL - 100%; EQUIPMENT GROUND.
Isc = 65K AMPS RMS SYM BRACING
ENCLOSURE: NEMA 3R

A	B	C	CKT	BKR	LOAD	VA	CIRCUIT
X			1	600AT	NEW MOTOR CONTROL CENTER "MCC4"	62796	(2 SETS) 3#350 MCM,#1GND, 2-1/2"C
	X					62796	
		X				62796	
X			2	800AT	NEW DISTRIBUTION PANEL "C0A"	172654	(2 SETS) 4#600 MCM,#1/0GND, 4"C
	X					172654	
		X				172654	
X			3	400AT	FIRE PUMP CONTROLLER (50HP) "MCC-B5"	16897	3#2, #6GND, 1-1/4" RMC
	X					16897	
		X				16897	
X			4	800AT	TEMPORARY FEED TO EXISTING MCC4	0	(2 SETS) 4#600 MCM,#1/0GND, 4" C
	X					0	
		X				0	
X			5	225AF	BUS SPACE		
	X						
		X					

TOTAL CONNECTED VA 757041 VA
TOTAL CONNECTED KVA 757.0 KVA
TOTAL CONNECTED AMPS 911 A

SHORT CIRCUIT ANALYSIS

SERVICE ENTRANCE

VOLTAGE:	480 V
PHASE:	3
SIZE OF TRANSFORMER:	2500 kVA
TRANSFORMER IMPEDANCE:	4.0%

FIRST POINT: MSB #2

TRANSFORMER FLA:	3007.0 Amps
TRANSFORMER MULTIPLIER:	27.8
TRANSFORMER AVAILABLE FAULT CURRENT:	86021.9 Amps
LENGTH OF CONDUIT TO THE FAULT:	60.0 Feet
CONDUCTOR CONSTANT:	277800.0
No. OF CONDUCTORS OF PHASE:	1.0
f FACTOR:	0.067
M FACTOR:	0.937
AVAILABLE SHORT CIRCUIT CURRENT:	80617.1 Amps
NOTE: EXISTING GEAR IS RATED FOR A MINIMU	100K Amps

SECOND POINT: CDP-2

LENGTH OF CONDUIT TO THE FAULT:	150.0 Feet
CONDUCTOR CONSTANT:	22965.0
No. OF CONDUCTORS OF PHASE:	4.0
f FACTOR:	0.475
M FACTOR:	0.678
AVAILABLE SHORT CIRCUIT CURRENT:	54655.0 Amps
NOTE: GEAR SHALL BE RATED FOR A MINIMUM	65K Amps

MOTOR CONTROL CENTER "MCC4"

VOLTAGE: 480Y/277V 3 PHASE 3 WIRE
600A MAIN LUGS ONLY
BUSES: 600A ; NEUTRAL - 100%; EQUIPMENT GROUND.
Isc = 65K AMPS RMS SYM BRACING
ENCLOSURE: NEMA 3R

A	B	C	CKT	BKR	LOAD	HP	FLA (A)	VOLTAGE	VA	STARTER SIZE	CIRCUIT
X			1	15/3	FUTURE DOMESTIC HOT WATER RETURN PUMPS "DHR-1"	1	3	480/3PH	831	FULL VOLTAGE, NON-REVERSING, NEMA 00	N/A
	X								831		
		X							831		
X			2	15/3	FUTURE DOMESTIC HOT WATER RETURN PUMPS "DHR-2"	1	3	480/3PH	831	FULL VOLTAGE, NON-REVERSING, NEMA 00	N/A
	X								831		
		X							831		
X			3	15/3	SHOP AIR COMPRESSOR	5	7.2	480/3PH	1994	FULL VOLTAGE, NON-REVERSING, NEMA 0	3#12, #12GND, 1/2"C
	X								1994		
		X							1994		
X			4	25/3	STEAM PUMP NO. 1	10	14	480/3PH	3878	FULL VOLTAGE, NON-REVERSING, NEMA 1	3#12, #12GND, 1/2"C
	X								3878		
		X							3878		
X			5	25/3	STEAM PUMP NO. 2	10	14	480/3PH	3878	FULL VOLTAGE, NON-REVERSING, NEMA 1	3#12, #12GND, 1/2"C
	X								3878		
		X							3878		
X			6	40/3	CONTROL AIR COMPRESSOR NO. 1	15	18	480/3PH	4986	FULL VOLTAGE, NON-REVERSING, NEMA 2	3#10, #10GND, 1/2"C
	X								4986		
		X							4986		
X			7	60/3	CONTROL AIR COMPRESSOR NO. 2	20	23.5	480/3PH	6510	FULL VOLTAGE, NON-REVERSING, NEMA 2	3#10, #10GND, 1/2"C
	X								6510		
		X							6510		
X			8	90/3	HEATING WATER PUMP NO. 1	40	49	480/3PH	13573	SOLID-STATE REDUCED VOLTAGE STARTER , NEMA 3	3#6, #8GND, 1"C
	X								13573		
		X							13573		
X			9	90/3	HEATING WATER PUMP NO. 2	40	49	480/3PH	13573	SOLID-STATE REDUCED VOLTAGE STARTER , NEMA 3	3#6, #8GND, 1"C
	X								13573		
		X							13573		
X			10	90/3	HEATING WATER PUMP NO. 3	40	46	480/3PH	12742	SOLID-STATE REDUCED VOLTAGE STARTER , NEMA 3	3#6, #8GND, 1"C
	X								12742		
		X							12742		
X			11	-	BUS SPACE	-	0	-	0		
	X								0		
		X							0		
X			12	-	BUS SPACE	-	0	-	0		
	X								0		
		X							0		
X			13	-	BUS SPACE	-	0	-	0		
	X								0		
		X							0		

TOTAL CONNECTED VA 188388
TOTAL CONNECTED KVA 188.3877
TOTAL CONNECTED AMPS 226.7

NEW DISTRIBUTION PANEL C0A

VOLTAGE: 480Y/277 3 PHASE 4 WIRE
800A MAIN LUGS ONLY
BUSES: 800A ; NEUTRAL - 100%; EQUIPMENT GROUND.

LOCATION: PUMP ROOM
MOUNTING: SURFACE EQUIPMENT RACK
Isc = 65K AMPS RMS SYM BRACING
ENCLOSURE: NEMA 3R

VA:L	VA:R	VA:A/C	VA:O	LOAD	BKR	CKT	A	B	C	CKT	BKR	LOAD	VA:L	VA:R	VA:AC	VA:O
			14543	MEDICAL VACUUM PUMP SYSTEM (3 PUMPS @ 15 HP EACH)	80/3	1	X			2	225/3	CHILLED WATER PUMP NO. 1 (125 HP, 145A) 3#3/0, #4 GND, 2"C				40165
			14543			3		X		4						40165
			14543			5			X	6						40165
			9141	DOMESTIC WATER PUMP SYSTEM (3 PUMPS @ 7.5 HP EACH)	45/3	7	X			8	225/3	CHILLED WATER PUMP NO. 2 (125 HP, 141A) 3#3/0, #4 GND, 2"C				39057
			9141			9		X		10						39057
			9141			11			X	12						39057
			5817	MEDICAL AIR PUMP #1 (15 HP) 3#10, #10 GND, 1/2"C	40/3	13	X			14	225/3	CHILLED WATER PUMP NO. 3 (125 HP, 143A) 3#3/0, #4 GND, 2"C				39611
			5817			15		X		16						39611
			5817			17			X	18						39611
			5817	MEDICAL AIR PUMP #2 (15 HP) 3#10, #10 GND, 1/2"C	40/3	19	X			20	40/3	CHILLED WATER PUMP "CWP-5" (15 HP, 17.7 A) 3#10, #10 GND, 1/2"C				4903
			5817			21		X		22						4903
			5817			23			X	24						4903
			5817	DENTAL AIR PUMP #1 (15 HP) 3#10, #10 GND, 1/2"C	40/3	25	X			26	15/3	JOCKEY PUMP (5 HP, 7.1 A) 3#12, #12 GND, 1/2"C				1967
			5817			27		X		28						1967
			5817			29			X	30						1967
			5817	DENTAL AIR PUMP #2 (15 HP) 3#10, #10 GND, 1/2"C	40/3	31	X			32	100AF	BUS SPACE				
			5817			33		X		34						
						35			X	36						
				BUS SPACE	100AF	37	X			38	100AF	BUS SPACE				
						39		X		40						
						41			X	42						

VA:L (LIGHTING)	0 CONNECTED	0 DEMAND
VA:R (RECEPTACLES)	0 CONNECTED	0 DEMAND
VA:A/C (HVAC EQUIPT)	0 CONNECTED	0 DEMAND
VA:O (MISC.)	517962 CONNECTED	517962 DEMAND
VA: TOTAL	517962 CONNECTED	517962 DEMAND
AMPS: TOTAL	623 CONNECTED	623 DEMAND

L	R	A/C	O	TOTAL			
0	0	0	172654	VA CONNECTED TO A PHASE	172654 VA =	623	AMPS CONNECTED TO A PHASE @ 277 VOLTS
0	0	0	172654	VA CONNECTED TO B PHASE	172654 VA =	623	AMPS CONNECTED TO B PHASE @ 277 VOLTS
0	0	0	172654	VA CONNECTED TO C PHASE	172654 VA =	623	AMPS CONNECTED TO C PHASE @ 277 VOLTS
0	0	0	517962	**TOTAL**	517962		
					517.962 KVA		

Revisions:	Date

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Concur Bio-Med	Approved: Service Chief
Concur Safety	Approved: Service Chief
Approved: Service Chief	Approved: Service Chief
Approved: Service Chief	Approved: Chief of Staff

CONSTRUCTION DOCUMENTS

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Drawing Title: SCHEDULES - ELECTRICAL

Approved: Project Director

Project Title: DESIGN REPLACEMENT FOR MCC AND SWITCHGEAR

Location: Audie L. Murphy Memorial Veterans Hospital San Antonio, Texas

Date: 2 JULY 2014 | Checked: DB | Drawn: JS

Project Number: 671-14-106
Building Number: 1
Drawing Number: ES3.1
Dwg. 5 of 5

Construction and Facilities Management
Department of Veterans Affairs