ELECTRICAL SYMBOLS

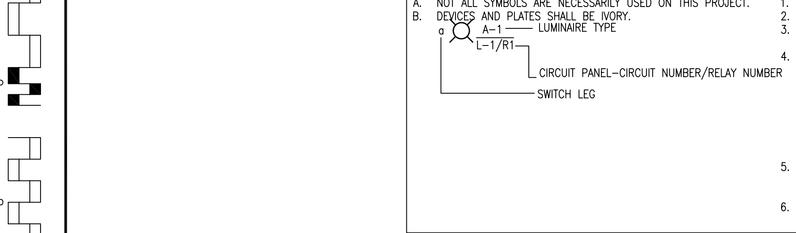
SYMBOL	DESCRIPTION	MOUNTING HEIGHT
FIRE ALARM SYSTEM		
CO	CARBON MONOXIDE ALARM	
	CCTV CAMERA	
S D	DUCT SMOKE DETECTOR. NOTE 6	
FAA	FIRE ALARM ANNUNCIATOR	
FACP	FIRE ALARM CONTROL PANEL	
M, F DH	FIRE ALARM DOOR HOLDER (M = MAGNETIC)	
	FIRE ALARM HORN	VERIFY
	FIRE ALARM MINI HORN	80" UNO
	FIRE ALARM HORN STROBE	80" UNO
F	FIRE ALARM MANUAL PULL STATION	48" UNO
S	FIRE ALARM SMOKE DETECTOR	
S R	FIRE ALARM SMOKE DETECTOR. PROVIDE RELAY	80" UNO
	FIRE ALARM STROBE	
FS	FLOW SWITCH	
H	HEAT DETECTOR	
KP	KEY PAD	
H	MAGNETIC DOOR HOLD	
PS	POWER SUPPLY	
P	PUSH BUTTON	
S	SPEAKER	
TS	TAMPER SWITCH	
LIGHTING		
	CEILING FAN	
	COMBINATION EMERGENCY/EXIT LIGHTING UNIT	
	EMERGENCY LIGHTING UNIT	
	EXIT SIGN	
	LUMINAIRE, CEILING MOUNTED	
	LUMINAIRE, DOWN LIGHT	
	LUMINAIRE	
	LUMINAIRE	
	LUMINAIRE	
	LUMINAIRE	
	LUMINAIRE	
	LUMINAIRE, NIGHT LIGHT OR WITH BATTERY PACK	
	LUMINAIRE, PENDANT	
MS	MOTION SENSOR COMPLETE SYSTEM	
OS	OCCUPANCY SENSOR COMPLETE SYSTEM	
PC	PHOTO CELL	
	REMOTE HEAD	
	TRACK LIGHTING	
	WALL WASH	

SYMBOL	DESCRIPTION	MOUNTING HEIGHT
MISCELLANEOUS		
CR	CARD READER	
J	CEILING MOUNTED JUNCTION BOX	
DC	DOOR CONTACT	
D	DURESS BUTTON	
MC	ELECTRICAL LOCK	
P	PROJECTOR	
	PUSH BUTTON	
RX	REQUEST TO EXIT	
J/P	WALL MOUNTED JUNCTION BOX	
POWER		
	BUILDING WIRES IN CONDUIT, ALL PER CODE	
C	COMBO CONTACTOR AND FUSED DISCONNECT SWITCH	
T	COMBO TIME CLOCK AND FUSED DISCONNECT SWITCH	
CP	CONTROL PANEL	
	DISCONNECT SWITCH. FUSED UNO.	
	FUSED COMBO SWITCH/MAGNETIC STARTER	
	FUSED DISCONNECT	
HD	HAND DRYER	
	HOMERUN PER CODE	
	METER	
	METER	
	MOTOR	
	PANELBOARD	
	PUSH BUTTON CONTROL STATION	48" UNO
	DUPLEX RECEPTACLE. 120V 20A NOTE 4	18" UNO
	DUPLEX RECEPTACLE. 120V 20A NOTE 4	18" UNO
	QUADPLEX RECEPTACLE	18" UNO
	SIMPLEX RECEPTACLE	
	SPECIAL OUTLET	
	WALL SWITCH/SNAP SWITCH. NOTE 5	48" UNO
FRAC	NOTE 1	
M	NOTE 2	
DL	NOTE 3	
P	PILOT LIGHT	
SP	SPEED CONTROL SWITCH	
T	0-15 MINUTE TIMER SWITCH	
	SURFACE WIRE WAY (WIREMOLD)	
TELECOM		
(X) W	TELEPHONE OUTLET (X) = # OF CAT 6 CABLES	18" UNO
(X) W	TELEPHONE/DATA COMBINATION OUTLET (X) = # OF CAT 6 CABLES	18" UNO
(X) W	WALL MOUNTED TELEPHONE OUTLET (X) = # OF CAT 6 CABLES	48" UNO
TV	CATV OUTLET	18" UNO
(X)	DATA OUTLET - (X) = # OF CAT 6 CABLES	18" UNO
(2) HT	FLOOR OUTLET	

ELECTRICAL SYMBOLS GENERAL NOTES:

A. NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT.

B. DEVICES AND PLATES SHALL BE IVORY.



NUMBERED NOTES:

1. FRACTIONAL HORSEPOWER MANUAL CONTROLLER, TOGGLE RED OR GREEN PILOT, WITH OVERLOADS.
2. MOTOR RATED SWITCH. MOTOR STARTING SWITCH, RED OR GREEN PILOT. NO OVERLOADS.
3. MANUAL MOTOR CONTROLLER WITH AUXILLARY CONTACT, PUSH BUTTON OR TOGGLE, TOGGLE RED PILOT LIGHT. WITH OVERLOADS.
4. RECEPTACLES: WHERE INDICATED OR WHERE REQUIRED BY CODE PROVIDE CERTAIN RECEPTACLES AS FOLLOWS:
   AC=ABOVE COUNTER (INCLUDES ABOVE COUNTER, ABOVE BACK-SPLASH, ABOVE DESK, ABOVE TABLE, ABOVE BENCH). COORDINATE.
   GFI=GROUND FAULT CIRCUIT INTERUPPTER.
   GA=GFI+AC.
   WP=PROVIDE WEATHER RESISTANT GFI RECEPTACLE, AND LOCKABLE WEATHERPROOF IN USE COVER.
5. SWITCHES:
   O.R. = OVER-RIDE
   MOM. = MOMENTARY CONTACT SWITCH FOR CONTROL OF CONTACTOR.
6. PROVIDE POWER AS NECESSARY. PROVIDE RELAY AND TIE IN FOR FAN SHUTDOWN.

ELECTRICAL ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED ON THIS PROJECT

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION	ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
A	AMPERES	F	FUSE OR FRONT	MECH	MECHANICAL	SCH	SCHEDULE
AC	ABOVE COUNTER	FA	FIRE ALARM	MEZ	MEZZANINE	SE	SERVICE ENTRANCE EQUIPMENT
AFF	ABOVE FINISHED FLOOR	FAAP	FIRE ALARM ANNUNCIATOR PANEL	MFR	MANUFACTURER	SEC	SECTION OR SECURITY
AFG	ABOVE FINISHED GRADE	FAAN	FIRE ALARM ANNUNCIATOR PANEL	MFS	MAXIMUM FUSE SIZE	SF	SQUARE FEET, SINGLE FACE
AHJ	AUTHORITY HAVING JURISDICTION	FACP	FIRE ALARM CONTROL PANEL	MH	METAL HALIDE, MOUNTING HEIGHT, MANHOLE	SHT	SHEET
ALT	ALTERNATE	FIXT	FIXTURE	MIN	MINIMUM	SIM	SIMILAR TO
AMP	AMPLIFIER	FLA	FULL LOAD AMPERES	MLO	MAIN LUGS ONLY	SPEC	SPECIFICATION
ANNUN	ANNUNCIATOR	FL_FLR	FLOOR, FLUORESCENT	MOP	MAX OCP	SPR	SPARE
AO	ALWAYS ON	FO	FIBER OPTICS	MSB	MAIN SWITCHBOARD	SQ	SQUARE
ATS	AUTOMATIC TRANSFER SWITCH	FS	FLOW SWITCH	MTD	MOUNTED	SSS	SQUARE STRAIGHT STEEL
ATC	AUTOMATIC TEMP CONTROL	FSD	COMBINATION FIRE AND SMOKE DAMPER	MTG	MOUNTING	SST	STAINLESS STEEL
AUX	AUXILIARY	FURN	FURNISHED	MTL	MATERIAL	STD	STANDARD
BAL	BALLAST	FUS	FUSE, FUSED, FUSIBLE	MTR	MOTOR OR METER	STP	SHIELDED TWISTED PAIR
BAT	BATTERY	GND/G	GROUND	N	NEUTRAL	SURF	SURFACE MOUNT
BFG	BELOW FINISHED GRADE	GA	GFI ABOVE COUNTER, GUAGE	NA	NOT APPLICABLE	SW	SWITCH
BRKR	BREAKER	GC	GENERAL CONTRACTOR	NC	NORMALLY CLOSED	SWBD	SWITCHBOARD
B.O.	BOTTOM OF	GEN	GENERATOR	N/E	NEW TO EXISTING CONNECTION	SYS	SYSTEM
BOT	BOTTOM	GFI	GROUND FAULT INTERRUPTER	NEC	NATIONAL ELECTRICAL CODE	TCC	TEMPERATURE CONTROL CONTRACTOR
BR	BRANCH	GFP	GROUND FAULT PROTECTION	NF	NON FUSIBLE	TCP	TEMPERATURE CONTROL PANEL
BZ	BRONZE	HAL	HALOGEN	NIC	NOT IN CONTRACT	TD	TIME DELAY
C	CONDUIT, CEILING, CONDUCTOR	HD	HEAVY DUTY	NL	NIGHT LIGHT	TEL	TELEPHONE
CAB	CABINET	HID	HIGH INTENSITY DISCHARGE	N.O.	NORMALLY OPEN	TEMP	TEMPORARY, TEMPERATURE
CB	CIRCUIT BREAKER	HP	HORSEPOWER	NORM	NORMAL(LY)	THK	THICK
CBIC	CIRCUIT BREAKER INTERRUPTING CURRENT	HPS	HIGH PRESSURE SODIUM	NTS	NOT TO SCALE	TP	TAMPERPROOF
CCT	CIRCUIT	HOA	HAND-OFF AUTO	OC	ON CENTERS	TRM	TRIM
CF/CFL	COMPACT FL	HS	HAND STATION	OCP	OVERCURRENT PROTECTION	TRT	TRIPLE TUBE
CKT	CIRCUIT	HT	HEIGHT	OD	OUTSIDE DIMENSION, OUTSIDE DIAMETER	TS	TAMPER SWITCH
COMM	COMMUNICATIONS	ID	INSIDE DIMENSION	OH	OVERHEAD	TSTAT	THEMOSTAT
COND	CONDUCTOR	IDF	INTERMEDIATE DISTRIBUTION FRAME	OL	OUTLET, OVERLOAD	TTL	TOTAL
CONN	CONNECTION	IN	INCHES	OP	OPERATOR	TV	TELEVISION
CONTR	CONTROLLER, CONTRACTOR	INB/OUT	INBOARD/OUTBOARD	P	POLE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
CP	COMMON PLATE	INC	INCANDESCENT	PC	PHOTO CONTROL	TYP	TYPICAL
CR	CARD READER	INFO	INFORMATION	ø, PH	PHASE	UNO	UNLESS NOTED OTHERWISE
CT	CURRENT TRANSFORMER	INST	INSTALLATION	PIV	POST INDICATING VALVE	UG	UNDER GROUND
CTR	CENTER	INSUL	INSULATED/INSULATOR	PNL	PANEL, PANEL BOARD	UNV	UNIVERSAL
CU	COPPER	INV	INVERTER	PR	PAIR	UTIL	UTILITY
dB	DECIBAL	JB	JUNCTION BOX	PRI	PRIMARY	UTP	UNSHIELDED TWISTED PAIR
DED/D	DEDICATED CIRCUIT	KA	THOUSAND AMPS	PROJ	PROJECTOR	V	VOLT
DEV	DEVICE	L	LAMP	PS	PULSE START/POWER SUPPLY	VA	VOLT-AMPS
DIA	DIAMETER, DIAGRAM	LCP	LIGHTING CONTROL PANEL	QTY	QUANTITY	VERT	VERTICAL
DISC	DISCONNECT	LI	LAY IN	REC	RECESSED	VFD	VARIABLE FREQUENCY DRIVE
DISTR	DISTRIBUTION	LOC	LOCATION, LOCATE	RCVR	RECEIVER	W	WIRE GUARD
DN	DOWN	LRA	LOCKED ROTOR AMPS	RECPT	RECEPTACLE	WP	WEATHERPROOF, NEMA 3R IF ENCLOSURE
DNLT	DOWNLIGHT	LTG	LIGHTING	REF	REFERENCE, REFER TO	W/	WITH
DTL	DETAIL	LTS	LIGHTS	RELO	RELOCATE	W/O	WITHOUT
DWG	DRAWING	LV	LOW VOLTAGE	REQ	REQUIRE	XFMR	TRANSFORMER
EB	ELECTRONIC BALLAST	MAG	MAGNETIC	REV	REVISION	XFR	TRANSFER
EC	ELECTRICAL CONTRACTOR	MAX	MAXIMUM	REX	REQUEST TO EXIT	1P20	SINGLE POLE 20A
EL	ELECTRICAL, ELECTRIC	MC	MECHANICAL CONTRACTOR	RLA	RUNNING LOAD AMPS	3P30/30J	3 POLE 30A WITH 3 30AJ FUSES
ELEV	ELEVATOR OR ELEVATION	MCA	MINIMUM CIRCUIT AMPS	RM	ROOM, REMOVE	3P30	3 POLE 30A CB
EM	EMERGENCY	MCB	MAIN CIRCUIT BREAKER	RM/RI	REMOVE & RE-INSTALL	3P30/NF	3 POLE 30A, NON FUSIBLE
EQ	EQUAL, EQUIPMENT	MCC	MOTOR CONTROL CENTER	RP	REPLACE	48"	+ 48" AFF/AFG
EX	EXISTING	MDF	MAIN DISTRIBUTION FRAME	RQD	REQUIRED		
EXPL	EXPLOSION PROOF	MDP	MAIN DISTRIBUTION PANEL	SC	SHORT CIRCUIT		

DRAWING INDEX

E1.0	DRAWING INDEX, ABBREVIATIONS, SYMBOLS AND NOTES
E2.0	OVERALL ELECTRICAL PLAN
E2.1	ENLARGED ELECTRICAL PLANS
E2.2	BUILDING ONE ELECTRICAL PLAN
E3.0	POWER RISER DIAGRAM
E4.0	DETAILS AND SCHEDULES
E4.1	DETAILS AND SCHEDULES

GENERAL NOTES

1.1 SCOPE:

A. ENGINEER'S SEAL COVERS POWER AND RECEPTACLE LAYOUTS ONLY. ALL OTHER SYSTEMS SHALL BE DESIGNED AND BUILT BY CONTRACTOR. THIS NOTE APPLIES TO ALL DRAWINGS IN THIS SET.

B. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR COMPLETE AND OPERATIONAL SYSTEMS DESCRIBED IN THIS SPECIFICATION OR SHOWN ON THE PLANS UNLESS INDICATED OR NOTED OTHERWISE. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS THAT ALL SYSTEMS BE COMPLETE AND READY FOR OPERATION.

1.2 SITE:

A. EXAMINE PREMISES AND UNDERSTAND THE CONDITIONS WHICH MAY AFFECT THIS DIVISION'S WORK BEFORE SUBMITTING BIDS. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.

1.3 CODE OF COMPLIANCE:

A. ALL ELECTRICAL WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE OR LOCAL CODES, LAWS, ORDINANCES AND/OR REGULATIONS. IF CONTRACTORS ARE AWARE OF CONFLICTS BETWEEN PLANS OR SPECIFICATIONS AND SUCH CODES OR REGULATIONS, THEY SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO COMMENCING APPLICABLE WORK. IF CONTRACTORS KNOWINGLY PERFORMS WORK IN VIOLATION OF SUCH CODES OR REGULATION, WHETHER SUCH VIOLATION IS SHOWN OR SPECIFIED OR NOT, THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE CORRECTION OF THE VIOLATION AT NO ADDITIONAL CHARGE.

B. CODE COMPLIANCE IS MANDATORY. NOTHING IN THESE DRAWINGS AND SPECIFICATIONS PERMITS WORK NOT CONFORMING TO THESE CODES. WHERE WORK IS SHOWN TO EXCEED MINIMUM CODE REQUIREMENTS, COMPLY WITH DRAWING AND SPECIFICATIONS.

1.4 DRAWING AND SPECIFICATIONS:

A. ELECTRICAL PLANS SHOW GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT, RECEPTACLES, LIGHT FIXTURES, ETC. FOLLOW AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT. BECAUSE OF THE SMALL SCALE OF PLANS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED. INVESTIGATE STRUCTURAL AND FINISH CONDITIONS AFFECTING THIS WORK AND ARRANGE WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, VALVES AND ACCESSORIES REQUIRED TO MEET THE CONDITIONS.

1.5 RECORD DRAWINGS:

A. MAINTAIN ONE SET OF CLEAN WORKING DRAWINGS AT THE JOB SITE AND RECORD "AS-BUILT" INFORMATION FOR ANY CHANGE OR MODIFICATIONS TO THE CONSTRUCTION DOCUMENTS. UNLESS NOTED OTHERWISE.

1.6 GUARANTEE:

A. GUARANTEE THE INSTALLATION FREE FROM DEFECTS OF WORKMANSHIP AND MATERIALS OF A PERIOD OF ONE(1) YEAR AFTER DATE OF CERTIFICATE OF FINAL PAYMENT, AND PROMPTLY REMEDY ANY DEFECTS DEVELOPING DURING THE PERIOD WITHOUT CHARGE. UNLESS NOTED OTHERWISE.

1.7 COORDINATION:

A. COORDINATE WORK WITH OTHER TRADES TO AVOID CONFLICT AND TO PROVIDE CORRECT ROUGH-IN AND CONNECTION FOR EQUIPMENT FURNISHED UNDER OTHER TRADES THAT REQUIRE ELECTRICAL CONNECTIONS. INFORM CONTRACTORS OF OTHER TRADES OF THE REQUIRED CLEARANCES AROUND ELECTRICAL EQUIPMENT TO MAINTAIN SERVICEABILITY AND CODE COMPLIANCE.

B. VERIFY EQUIPMENT DIMENSIONS AND REQUIREMENTS WITH PROVISIONS SPECIFIED UNDER THIS SECTION. CHECK ACTUAL JOB CONDITIONS BEFORE FABRICATION WORK. REPORT NECESSARY CHANGES IN TIME TO PREVENT NEEDLESS WORK. CHANGES OR ADDITIONS SUBJECT TO ADDITIONAL COMPENSATION WHICH ARE MADE WITHOUT WRITTEN AUTHORIZATION AND AN AGREED PRICE, SHALL BE AT CONTRACTOR'S RISK AND EXPENSE.

C. COORDINATE WITH OWNER DURING WALK-THROUGH.

1.8 BASIC MATERIALS AND METHODS:

A. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REQUIRED DIGGING, CUTTING AND PATCHING INCIDENT TO WORK OF THIS DIVISION AND MAKE REQUIRED REPAIRS AFTERWARDS TO SATISFACTION OF ENGINEER. CUT CAREFULLY TO MINIMIZE REPAIRS TO EXISTING WORK. DO NOT CUT BEAMS, COLUMNS, TRUSSES OR ANY STRUCTURAL MEMBER.

B. PATCH AND REPAIR WALLS, FLOORS, CEILINGS AND ROOFS WITH MATERIALS OF SAME QUALITY AND APPEARANCE AS ADJACENT SURFACES UNLESS OTHERWISE SHOWN. SURFACE FINISHES SHALL EXACTLY MATCH EXISTING FINISHES OF SAME MATERIALS.

C. ADJUST LOCATIONS OF RECEPTACLES, EQUIPMENT, FIXTURES, ETC. TO ACCOMMODATE WORK FROM INTERFERENCE ANTICIPATED AND ENCOUNTERED. DETERMINE EXACT ROUTE AND LOCATION OF EACH CONDUIT PRIOR TO FABRICATION.

D. IN THE EVENT THAT OTHER THAN SPECIFIED EQUIPMENT IS USED AND WILL NOT FIT JOB SITE CONDITIONS, THE ELECTRICAL CONTRACTOR ASSUMES RESPONSIBILITY FOR REPLACEMENT WITH ITEMS NAMED IN SPECIFICATION.

100% CONSTRUCTION DOCUMENTS - FOR CONSTRUCTION

Revisions	Date

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Drawing Title: DRAWING INDEX, ABBREVIATIONS, SYMBOLS AND NOTES

Approved: JOEL A. KATH LICENSE #25677

Project Title: Transfer Switches

Location: St. Cloud VA Health Care System

Date: April 6, 2012 **Checked:** JAK **Drawn:** CAB/DLJ

Project Number: 656-12-193

Building Number: -

Drawing Number: E1.0 Dwg. 2 of 8

VAMC SAINT CLOUD MN

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