ELECTRICAL SYMBOLS LEGEND

GENERAL

SYMBOL	DESCRIPTION
——	EXISTING
—*—*—	REMOVE
———	NEW WORK
– – – –	HIDDEN OR BURIED
(3)	KEYED NOTE
<3>	ELECTRICAL EQUIPMENT DESIGNATION (SEE SCHEDULE)
<5>	FEEDER SIZE DESIGNATION (SEE LEGEND)
[5]	NAMEPLATE DESIGNATION (SEE SCHEDULE)

ABBREVIATIONS

ABBREV.	DEFINITION
A	AMPS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
EGC	EQUIPMENT GROUNDING CONDUCTOR
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
FLA	FULL LOAD AMPS
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSEPOWER
IMC	INTERMEDIATE METAL CONDUIT
KVA	KILOVOLT AMPS
KW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEC	NATIONAL ELECTRIC CODE
P	POLE
ϕ OR PH	PHASE
PVC	POLYVINYL CHLORIDE
RMC	RIGID METAL CONDUIT
SSBJ	SUPPLY SIDE BONDING JUMPER
SWBD	SWITCHBOARD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTAGE
VAV	VARIABLE AIR VOLUME
W	WIRE
W/	WITH
WP	WEATHERPROOF

LIGHTNING PROTECTION

SYMBOL	DESCRIPTION
⊙	STRIKE TERMINATION DEVICE
⊗	GROUND ROD

RACEWAY & CONDUCTORS

SYMBOL	DESCRIPTION
→	HOME RUN (ARROWHEADS INDICATE # OF CIRCUITS)
↑↑S	CIRCUIT NEUTRAL SWITCHED LINE EGC
⊣	CONDUIT CAP
B B	BUSWAY
W W	WIREWAY

DEVICES

SYMBOL	DESCRIPTION
⊖X	DUPLEX RECEPTACLE USE "X" TO DESIGNATE DEVICE. TYPICAL OF MOST RECEPTACLES GFCI = GFCI RATED GFCI-P = GFCI PROTECTED WP = WEATHERPROOF (IN-USE COVER WG = WEATHERPROOF & GFCI +84 = NON-STANDARD MOUNTING HEIGHT. NUMBER INDICATES INCHES AFF
⊖X	SINGLE RECEPTACLE
⊕X	DOUBLE DUPLEX RECEPTACLES
⊖X	DUPLEX RECEPTACLE, SPLIT WIRED
⊖X	SPECIAL PURPOSE RECEPTACLE. USE SUBSCRIPT TO IDENTIFY TYPE ON PLANS
⊛X	FLOOR MOUNTED RECEPTACLE
▬▪▬▪▬	MULTIOUTLET ASSEMBLY
(J)	JUNCTION BOX
⊢(J)	JUNCTION BOX, WALL MOUNTED
⊢(P)	PHOTOCELL
(S)	SPEAKER, CEILING MOUNTED
⊢(S)	SPEAKER, WALL MOUNTED
⊢(T)	THERMOSTAT
40/60	FUSIBLE SAFETY SWITCH (NUMBERS INDICATE FUSE/SWITCH SIZES)
60	NON-FUSIBLE SAFETY SWITCH (NUMBER INDICATES SWITCH SIZE)
2/30	ELECTRICAL STARTER COMBINATION WITH DISCONNECT 2 = NEMA STARTER SIZE 30 = CIRCUIT BREAKER OR DISCONNECT SWITCH SIZE
2	ELECTRICAL STARTER OR MOTOR CONTROLLER 2 = NEMA STARTER SIZE
[T]	TRANSFORMER
PP-A	SWITCHBOARD, POWER PANELBOARD
LP-1	LIGHTING PANELBOARD
12,700A	MAXIMUM AVAILABLE FAULT CURRENT

LIGHTING

SYMBOL	DESCRIPTION
$X	SWITCH, SINGLE POLE USE "X" TO DESIGNATE DEVICE. TYPICAL OF MOST SWITCHES 2 = DOUBLE POLE 3 = THREE WAY 4 = FOUR WAY K = KEY OPERATED OS = OCCUPANCY SENSING a = LOWERCASE SUBSCRIPT DESIGNATES CONTROL OF PARTICULAR LOADS
A 1,b	LUMINAIRE, TROFFER (2'X4') A = FIXTURE TYPE 1 = CIRCUIT NUMBER b = SWITCH CONTROLLING FIXTURE
A 1,b	LUMINAIRE WITH BATTERY
A 1,b	LUMINAIRE, TROFFER (2'x2')
A 1,b	LUMINAIRE, STRIP (1'x4')
A 1,b	LUMINAIRE, WALL MOUNTED
A 1,b	LUMINAIRE, CEILING MOUNTED
○—⊕	LIGHT POLE WITH LUMINAIRE
⌒	UNIT EQUIPMENT FOR EGRESS LIGHTING
⊗	EXIT LUMINAIRE, CEILING MOUNTED - SHADED SIDE INDICATES FACE SIDE. PROVIDE DIRECTIONAL ARROWS AS INDICATED ON PLANS
⊗	EXIT LUMINAIRE, WALL MOUNTED

ONE-LINE DIAGRAM

SYMBOL	DESCRIPTION
300/400	CIRCUIT BREAKER (TRIP / FRAME)
1000/1600	DRAWOUT CIRCUIT BREAKER (TRIP / FRAME)
300/400	BUS PLUG CIRCUIT BREAKER (TRIP / FRAME)
7 MCP	MOTOR CIRCUIT PROTECTOR
300A	DISCONNECT SWITCH (NUMBER INDICATES AMPERAGE RATING)
300A	FUSE (NUMBER INDICATES AMPERAGE RATING)
1000/1600	MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER (TRIP / FRAME)
TR-1 480V Δ 500 KVA Y 120/208V	TRANSFORMER (DELTA-WYE WO/BONDING JUMPER)

ONE-LINE DIAGRAM

SYMBOL	DESCRIPTION
TR-1 480V Δ 500 KVA Y 120/208V	TRANSFORMER (DELTA-WYE W/BONDING JUMPER)
	SHIELDED TRANSFORMER
VFD	VARIABLE FREQUENCY DRIVE
(2)	MOTOR (NUMBER INDICATES HORSEPOWER)
300A 400A LP-1	PANELBOARD WITH MAIN CIRCUIT BREAKER
225A MLO LP-1	PANELBOARD WITH MAIN LUGS ONLY
	HEATER
	GROUND
(G)	GENERATOR
3	POTENTIAL TRANSFORMER (NUMBER INDICATES QUANTITY)
3000/5 3	CURRENT TRANSFORMER (NUMBERS INDICATE RATIO AND QUANTITY)
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
(A)	AMMETER
(V)	VOLTMETER
(KW)	KILOWATT METER
N A L	TRANSFER SWITCH
(K)1	KEY INTERLOCK (NUMBER INDICATES KEY ID)
+||−	BATTERY
	SURGE ARRESTOR
SPD	SURGE PROTECTIVE DEVICE
(CR)1	CONTROL RELAY (NUMBER INDICATES RELAY ID)

GENERAL NOTES

1. PERFORM INSTALLATION IN ACCORDANCE WITH THE CODES OF RECORD AND APPLICABLE DOE ORDERS, NATIONAL ELECTRICAL CODE (NEC), AND THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
2. EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) WHEN REQUIRED BY THE NEC OR IF IT CONTAINS A VOLTAGE THAT IS GREATER THAN 50VAC OR 100VDC.
3. FOR ELECTRICAL EQUIPMENT THAT CONTROLS OR SWITCHES 480 VOLT POWER CIRCUITS, THE CONTACTS THAT CONTROL OR SWITCH THE POWER MUST BE RATED AT 600 VOLTS, DUE TO ALTITUDE CONSIDERATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, CIRCUIT BREAKERS, MOTOR STARTERS, DISCONNECTS, TRANSFER SWITCHES.
4. PROVIDE PROVISIONS TO LOCK EACH CIRCUIT BREAKER. PROVISIONS SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
5. ROUTE RACEWAYS TO SUIT EQUIPMENT AND BUILDING STRUCTURE. LIMIT THE USE OF EMT TO AREAS WHERE IT WILL NOT BE SUBJECT TO PHYSICAL DAMAGE OR CORROSION. USE IMC, PVC, OR RMC FOR WORK EMBEDDED IN CONCRETE. USE IMC OR RMC FOR WORK EXPOSED TO PHYSICAL DAMAGE. USE MINIMUM 3/4 INCH CONDUIT EXCEPT AS FOLLOWS: 1/2" CONDUIT MAY BE USED FOR CONTROL CIRCUITS; 3/8" FLEXIBLE METAL CONDUIT MAY BE USED TO CONNECT LIGHT FIXTURES IN SUSPENDED CEILINGS. USE LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR FLEXIBLE CONNECTIONS TO EQUIPMENT IN MECHANICAL ROOMS OR OUTDOORS.
6. NEW BRANCH CIRCUITS SHALL BE LABELED AT THE ORIGINATING PANELBOARD, ON THE PANELBOARD LEGEND. THEY SHALL BE ALSO LABELED AT THE LOAD END ON THE RECEPTACLE, LIGHT SWITCH, OR THE PIECE OF EQUIPMENT (E.G. MOTOR STARTER, SAFETY SWITCH).
7. ENERGIZATION OF NEW SYSTEMS REQUIRE AUTHORIZATION OF THE CHIEF ELECTRICAL INSPECTOR.
8. RACEWAY PENETRATIONS THROUGH WALLS AND/OR FLOORS SHALL BE SEALED APPROPRIATELY WITH AN APPROVED SEALANT. IF THE PENETRATION IS THROUGH A FIRE-RATED ASSEMBLY, IT MUST HAVE A NRTL LISTED FIRE SEAL WITH A STATEMENT OF SPECIAL INSPECTION.
9. INTERNAL RACEWAY SEALS FOR WATER, TEMPERATURE, AND/OR RADIOLOGICAL SHALL BE IDENTIFIED FOR USE WITH THE CONDUCTOR OR CABLE INSULATION.
10. ELECTRICAL DRAWINGS ARE CONSIDERED DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND SYSTEMS. COORDINATE ROUGH-IN REQUIREMENTS AND INSTALLATION REQUIREMENTS WITH OTHER TRADES.
11. ALL BRANCH CIRCUIT WIRING, RACEWAY, AND FEEDERS SHALL BE INSTALLED CONCEALED BEHIND BUILDING FINISHES UNLESS OTHERWISE NOTED.
12. PROVIDE ALL NECESSARY ANGLES, CHANNELS, SLOTTED CHANNEL, AND SUPPORTS, AS REQUIRED TO ADEQUATELY SUPPORT ELECTRICAL RACEWAYS AND ASSOCIATED EQUIPMENT IN A MANNER THAT DOES NOT OVERLOAD THE BUILDING STRUCTURAL SYSTEM.
13. THE NEC SIZE REQUIREMENTS FOR PULL BOXES, JUNCTION BOXES, AND CONDUIT BODIES ARE AS FOLLOWS:
    13.1. USE 314.16 FOR CONDUCTORS 6 AWG AND SMALLER.
    13.2. USE 314.28 FOR CONDUCTORS 4 AWG AND LARGER.

NOTES FOR DESIGNER:

(DO NOT INCLUDE ON CONSTRUCTION DRAWINGS)

1. EDIT AND/OR MODIFY GENERAL NOTES TO BE PROJECT SPECIFIC.
2. DO NOT USE GENERAL NOTES ON PROJECTS WITH FORMAL SPECIFICATIONS.
3. SYMBOLS ARE SIZED BASED ON THE SIZE THEY SHOULD BE PLOTTED.
4. DRAWING DEVELOPED FOR ML-3/ML-4 PROJECTS. FOR ML-1/ML-2, ADDITIONAL REQUIREMENTS AND QA REVIEWS ARE REQUIRED.

NO	DATE	CLASS REV	DC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
3	03/11/19	UNCLASS	DY	ADDED / UPDATED SYMBOLS PER NATIONAL CAD STANDARD	AM	MR	RB	ES	TO
2	09/25/2006			UPDATED TITLE BLOCK. ADDED/UPDATED SYMBOLS	LT	DP	RD	DP	TO
1	11/19/2002			NEW DRAWING NO., CORRECTED LAYERS, ADDED 3 SYMBOLS, UPDATED NOTES. REPLACES ST7001	SB	DP	DW	DP	TO

00% REVIEW
NOT FOR CONSTRUCTION

ENGINEERING STANDARDS

ELECTRICAL

ELECTRICAL SYMBOL LEGEND AND GENERAL NOTES

TA-XX BLDG XXXX

DRAWN	D.W.POWELL
DESIGN	D.W.POWELL
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SHEET E-1
1 OF 1

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DATE:

PROJECT ID: CHAPTER 7
DRAWING NO: ST-D5000-1
REV: 3