

ELECTRICAL SYMBOLS

| LIGHTING SYMBOLS |   |          | SPECIAL SYSTEMS SYMBOLS |   |          |
|------------------|---|----------|-------------------------|---|----------|
| SYMBOL           | DESCRIPTION   | MH (UON) | SYMBOL                  | DESCRIPTION   | MH (UON) |
|                  | SINGLE POLE TOGGLE SWITCH   | 48" TOD  |                         | FIRE ALARM HORN TYPE SPEAKER  | NOTE 5   |
|                  | SWITCH: SUB-LETTER INDICATES FIXTURES CONTROLLED (a)                        | 48" TOD  |                         | FIRE ALARM FLASHING STROBE LIGHT - WALL MOUNTED                                 | NOTE 5   |
|                  | DOUBLE POLE TOGGLE SWITCH   | 48" TOD  |                         | FIRE ALARM HORN AND FLASHING STROBE LIGHT                                       | NOTE 5   |
|                  | THREE WAY TOGGLE SWITCH (SPOT)  | 48" TOD  |                         | COMBINATION FIRE ALARM HORN AND FLASHING STROBE LIGHT                           | NOTE 5   |
|                  | FOUR WAY TOGGLE SWITCH (DPDT)   | 48" TOD  |                         | S - CEILING SPEAKER, F - FIRE ALARM SPEAKER                                     |          |
|                  | KEY OPERATED SWITCH   | 48" TOD  |                         | FIRE ALARM SPEAKER W/ STROBE  |          |
|                  | THREE WAY DIMMER SWITCH: SUB-LETTER INDICATES FIXTURES CONTROLLED (a)       | 48" TOD  |                         | HORN TYPE SPEAKER   |          |
|                  | MANUAL STARTER W/ OVERLOADS   | 48" TOD  |                         | MAGNETIC DOOR HOLDER  |          |
|                  | SWITCH W/ PILOT LIGHT   | 48" TOD  |                         | DIGITAL ALARM COMMUNICATOR TRANSMITTER  |          |
|                  | DIMMER SWITCH   | 48" TOD  |                         | FIRE ALARM ANNUNCIATOR PANEL  |          |
|                  | 4 BUTTON DIMMER SWITCH  | 48" TOD  |                         | FIRE ALARM CONTROL PANEL  |          |
|                  | LOW VOLTAGE CONTROL SWITCH  | 48" TOD  |                         | RESCUE ASSISTANCE MASTER CONTROL PANEL  | 48" TOD  |
|                  | MANUAL TIME SWITCH  | 48" TOD  |                         | RESCUE ASSISTANCE REMOTE STATION  | 48" TOD  |
|                  | MOMENTARY CONTACT SWITCH  | 48" TOD  |                         | FIRE ALARM TRANSPONDER  | 48" TOD  |
|                  | SWITCH WITH WEATHERPROOF ENCLOSURE  | 48" TOD  |                         | DOOR SOLENOID, ELECTRIC STRIKE - LOCKING DEVICE CONNECTION POINT                | 48" TOD  |
|                  | OCCUPANCY SENSOR (CEILING & WALL MOUNTED)                                   |          |                         | FIRE ALARM PULL STATION   | 48" TOD  |
|                  | VACANCY SENSOR  |          |                         | HEAT DETECTOR: E - ELEVATOR CONTROLS  |          |
|                  | TIME CLOCK  |          |                         | SMOKE DETECTOR (PHOTOELECTRIC): AB - AUDIBLE BASE, E - ELEVATOR CONTROLS        |          |
|                  | RELAY   |          |                         | SMOKE DETECTOR (IONIZATION)   |          |
|                  | LIGHTING CONTACTOR  |          |                         | FIRE ALARM DUCT DETECTOR WITH RELAY   |          |
|                  | PHOTOCELL OR PUSHPLATE SWITCH   |          |                         | CARBON MONOXIDE DETECTOR  |          |
|                  | EMERGENCY SHUNT RELAY, UL 924 LISTED (CEILING MOUNTED)                      |          |                         | FIRE ALARM SYSTEM ADDRESSABLE RELAY - CONTROL                                   |          |
|                  | LIGHTING FIXTURE: RECESSED, SURFACE, OR PENDANT MOUNTED - TYPE AS SPECIFIED |          |                         | FIRE ALARM SYSTEM ADDRESSABLE RELAY - MONITOR                                   |          |
|                  | LIGHTING FIXTURE: 2 BALLAST   |          |                         | FIRE ALARM SYSTEM REMOTE ALARM LIGHT  |          |
|                  | LIGHTING FIXTURE: INDUSTRIAL  |          |                         | FLOW SWITCH CONNECTION  |          |
|                  | LIGHTING FIXTURE: WALL MOUNTED - TYPE AS SPECIFIED                          |          |                         | TAMPERS SWITCH CONNECTION   |          |
|                  | LIGHTING FIXTURE: RECESSED, SURFACE, OR PENDANT MOUNTED                     |          |                         | FIRE ALARM LINEAR BEAM SMOKE DETECTOR: TRANSMITTER (LBT) AND RECEIVER (LBR)     |          |
|                  | LIGHTING FIXTURE: WALL MOUNTED - TYPE AS SPECIFIED                          |          |                         | FIRE FIGHTER'S TELEPHONE JACK   | 48" TOD  |
|                  | WALL WASHER   |          |                         | MONITOR SYSTEM JUNCTION BOX   | 36" CTR  |
|                  | ADJUSTABLE WALL WASHER  |          |                         | AMPLIFIER   |          |
|                  | LIGHTING FIXTURE ON EMERGENCY OR NIGHT LIGHT CIRCUIT (NL)                   |          |                         | KEYPAD  | 48" TOD  |
|                  | EMERGENCY BATTERY PACK: W/ NUMBER OF HEADS INDICATED                        |          |                         | CARD READER   | 48" TOD  |
|                  | EMERGENCY BATTERY PACK: W/ REMOTE HEADS                                     |          |                         | DOOR ALARM CONTACT  |          |
|                  | REMOTE EMERGENCY HEAD   |          |                         | ROUGH-IN JUNCTION BOX FOR CCTV CAMERA   |          |
|                  | EMERGENCY BATTERY PACK: SEMI RECESSED, CEILING MOUNT                        |          |                         | PUSH BUTTON PLATE   |          |
|                  | EXIT SIGN: CEILING OR PENDANT MOUNTED (SHADED PORTION INDICATES FACE)       |          |                         | TELEVISION ANTENNA OUTLET   | 18" CTR  |
|                  | EXIT SIGN: WALL MOUNTED - END, BACK   |          |                         | CABLE TV OUTLET   |          |
|                  | EXIT SIGN: W/ DIRECTIONAL ARROWS  |          |                         | TELEVISION SYSTEM SPLITTER - 2 WAY, 4 WAY                                       |          |
|                  | POLE MOUNTED LIGHTING FIXTURE: SINGLE HEAD, DOUBLE HEAD                     |          |                         | A/V CREDENZA LOCATION   |          |
|                  | POLE MOUNTED LIGHTING FIXTURE: SINGLE, POLE TOP                             |          |                         | A/V INPUT PLATE   |          |
|                  | LIGHTING POLE (SPORTS)  |          |                         | A/V IN-WALL RACK  |          |
|                  |   |          |                         | A/V MONITOR TV  |          |
|                  |   |          |                         | A/V SCREEN CONTROL  |          |
|                  |   |          |                         | A/V SCHEDULE PANEL  |          |
|                  |   |          |                         | A/V SIGNAGE TV  |          |
|                  |   |          |                         | A/V TOUCH PANEL   |          |
|                  |   |          |                         | DATA/TELEPHONE OUTLET: CEILING MOUNTED  |          |
|                  |   |          |                         | TELEPHONE OUTLET  | 18" CTR  |
|                  |   |          |                         | DATA OUTLET   | 18" CTR  |
|                  |   |          |                         | TELEPHONE OUTLET, WALL MOUNTED  | 54" CTR  |
|                  |   |          |                         | TELEPHONE OUTLET, EMERGENCY   | 54" TOD  |
|                  |   |          |                         | DATA/TELEPHONE OUTLET: UNSHADED AREA - DATA, SHADED AREA - VOICE                | 18" CTR  |
|                  |   |          |                         | TELEPHONE OUTLET, FLOOR MOUNTED   |          |
|                  |   |          |                         | DATA OUTLET, FLOOR MOUNTED  |          |
|                  |   |          |                         | DATA/TELEPHONE OUTLET: FLOOR MOUNTED: UNSHADED AREA - DATA, SHADED AREA - VOICE | 18" CTR  |
|                  |   |          |                         | COMBINATION POWER & TELEPHONE OUTLET, FLOOR MOUNTED                             |          |
|                  |   |          |                         | COMBINATION POWER & DATA OUTLET, FLOOR MOUNTED                                  |          |
|                  |   |          |                         | COMBINATION POWER & DATA/TELEPHONE OUTLET, FLOOR MOUNTED                        |          |
|                  |   |          |                         | WIRELESS ACCESS POINT   |          |

| POWER SYMBOLS |  |          |
|---------------|--|----------|
| SYMBOL        | DESCRIPTION  | MH (UON) |
|               | COMBINATION SWITCH AND SIMPLEX RECEPTACLE  | 48" TOD  |
|               | COMBINATION SWITCH AND DUPLEX RECEPTACLE   | 48" TOD  |
|               | SIMPLEX RECEPTACLE   | 18" CTR  |
|               | DUPLEX RECEPTACLE: E (IF SHOWN) INDICATES CONNECTED TO EMERGENCY CIRCUIT                                     | 18" CTR  |
|               | DUPLEX RECEPTACLE: FLOOR MOUNTED   |          |
|               | DUPLEX RECEPTACLE: SPLIT WIRED, BOTTOM HALF SWITCHED   | 18" CTR  |
|               | DUPLEX RECEPTACLE: CEILING MOUNTED   |          |
|               | DUPLEX RECEPTACLE: PEDESTAL TYPE   |          |
|               | DUPLEX RECEPTACLE: MOUNTED ABOVE BACKSLASH OR COUNTER  |          |
|               | DUPLEX RECEPTACLE: GROUND FAULT INTERRUPTER TYPE   | 18" CTR  |
|               | DUPLEX RECEPTACLE: GFI MOUNTED ABOVE BACKSLASH OR COUNTER  |          |
|               | DUPLEX RECEPTACLE: MOUNTED HIGH  | 84" CTR  |
|               | DUPLEX RECEPTACLE: ISOLATED GROUND   | 18" CTR  |
|               | DUPLEX RECEPTACLE: MULTI OUTLET ASSEMBLY: DARK SQUARES INDICATE PREWIRED RECEPTACLE LOCATIONS                | 54" CTR  |
|               | DUPLEX RECEPTACLE: MULTI OUTLET ASSEMBLY: SIZE AS INDICATED  | 18" CTR  |
|               | DUPLEX RECEPTACLE: MULTI OUTLET ASSEMBLY: WITH RECEPTABLES LOCATED WHERE INDICATED                           | 18" CTR  |
|               | DUPLEX RECEPTACLE: MULTI OUTLET ASSEMBLY: WITH COMMUNICATION DEVICES AND RECEPTABLES LOCATED WHERE INDICATED | 36" CTR  |
|               | DUPLEX RECEPTACLE: MULTI OUTLET ASSEMBLY: WITH COMMUNICATION DEVICES LOCATED WHERE INDICATED                 | 36" CTR  |
|               | DUPLEX RECEPTACLE: PAY PHONE   | 54" CTR  |
|               | SPECIAL RECEPTACLE: NEMA 6-20R (20A, 2P, 3W, 208V)   | 18" CTR  |
|               | SPECIAL RECEPTACLE: NEMA 6-30R (30A, 2P, 3W, 208V)   | 18" CTR  |
|               | SPECIAL RECEPTACLE: NEMA 14-20R (20A, 3P, 4W, 208/120V)  | 18" CTR  |
|               | SPECIAL RECEPTACLE: NEMA 15-30R (30A, 3P, 4W, 208V)  | 18" CTR  |
|               | SPECIAL RECEPTACLE: FLOOR MOUNTED, NEMA 6-20R  |          |
|               | SPECIAL RECEPTACLE: PEDESTAL TYPE, NEMA 6-20R  |          |
|               | TELEVISION RECEPTACLE  | 72" CTR  |
|               | TELEVISION RECEPTACLE  | 18" BFC  |
|               | CLOCK HANGER OUTLET  | 84" CTR  |
|               | PROGRAM CLOCK OUTLET: SINGLE FACE, DOUBLE FACE   | 54" CTR  |
|               | EMERGENCY POWER OFF SWITCH   | 48" TOD  |
|               | JUNCTION BOX   |          |
|               | JUNCTION BOX - WALL MOUNTED  | 18" TOD  |
|               | EQUIPMENT CONNECTION AS NOTED  |          |
|               | EQUIPMENT CONNECTION AS NOTED - WALL MOUNTED   | 48" TOD  |
|               | HEATER CONNECTION - NUMBER INDICATES KILOWATTS (KW)  |          |
|               | HEATER CONNECTION - CEILING MOUNTED  |          |
|               | CLOSE CIRCUIT BREAKER  |          |
|               | NON-FUSED DISCONNECT SWITCH: 30A (UON)   |          |
|               | FUSED DISCONNECT SWITCH: FUSE SIZE AS INDICATED (40A)  |          |
|               | MAGNETIC MOTOR STARTER   |          |
|               | COMBINATION MAGNETIC MOTOR STARTER: ABBREVIATION INDICATES TYPE - FVNR, FVR, RVAT, 2S1W, 2S2W, SST           |          |
|               | VARIABLE FREQUENCY CONTROLLER W/ FUSED DISCONNECT SWITCH   |          |
|               | VARIABLE FREQUENCY DRIVE W/ DISCONNECT SWITCH  |          |
|               | MOTOR: NUMERALS (IF SHOWN) INDICATE HP   |          |
|               | GENERATOR: NUMERALS (IF SHOWN) INDICATE KW   |          |
|               | MANUAL MOTOR STARTER W/ THERMAL OVERLOADS  |          |
|               | MOTOR SWITCH   |          |
|               | MECHANICAL EQUIPMENT CONNECTION - WITH MOTOR   |          |
|               | MECHANICAL EQUIPMENT CONNECTION - NO MOTOR   |          |
|               | CONTROL PANEL: TYPE AS INDICATED   |          |
|               | MOMENTARY CONTACT START-STOP PUSHBUTTON STATION  | 48" TOD  |
|               | MAINTAINED CONTACT START-STOP PUSHBUTTON STATION   | 48" TOD  |
|               | MAINTAINED CONTACT EMERGENCY STOP PUSHBUTTON STATION   | 48" TOD  |
|               | BRANCH PANELBOARD  | 90" TOD  |
|               | DISTRIBUTION PANELBOARD  |          |
|               | TRANSFORMER, CONCRETE PAD MOUNTED  |          |

ELECTRICAL ABBREVIATIONS

NOTE: THIS IS A STANDARD ABBREVIATION LIST. SOME ABBREVIATIONS MAY NOT APPEAR ON THE ACCOMPANYING DRAWINGS.

| SYMBOL   | DESCRIPTION                          | MH (UON) |
|----------|--------------------------------------|----------|
| 2S1W     | 2 SPEED SINGLE WINDING               |          |
| 2S2W     | 2 SPEED DOUBLE WINDING               |          |
| A, AMP   | AMPERE                               |          |
| AC       | AIR CONDITIONING                     |          |
| AC       | ALTERNATING CURRENT                  |          |
| AFCI     | ARC FAULT CIRCUIT INTERRUPTER        |          |
| AFD      | ABOVE FINISHED FLOOR                 |          |
| AHU      | AIR HANDLING UNIT                    |          |
| AIC      | AMPS INTERRUPTING CAPACITY           |          |
| ALT      | ALTERNATE                            |          |
| ANN      | ANNUNCIATOR                          |          |
| APPROX   | APPROXIMATELY                        |          |
| ARCH     | ARCHITECT                            |          |
| ATC      | AUTOMATIC TEMPERATURE CONTROL        |          |
| ATS      | AUTOMATIC TRANSFER SWITCH            |          |
| AV       | AUDIOVISUAL                          |          |
| AWG      | AMERICAN WIRE GAUGE                  |          |
| BAS      | BUILDING AUTOMATION SYSTEM           |          |
| BFC      | BELOW FINISHED CEILING               |          |
| BFG      | BELOW FINISHED GRADE                 |          |
| BLOG     | BUILDING                             |          |
| BOD      | BOTTOM OF DEVICE                     |          |
| C, CND   | CONDUIT                              |          |
| CATV     | CABLE TELEVISION                     |          |
| CB       | CIRCUIT BREAKER                      |          |
| CCTV     | CLOSED CIRCUIT TELEVISION            |          |
| CKT, CCT | CIRCUIT                              |          |
| CL       | CURRENT LIMITING                     |          |
| CLQ      | CEILING                              |          |
| CONN     | CONNECT                              |          |
| CPT      | CONTROL POWER TRANSFORMER            |          |
| CT       | CURRENT TRANSFORMER                  |          |
| CTR      | CENTER                               |          |
| CU, CO   | COPPER                               |          |
| CX       | CONNECT TO EXISTING                  |          |
| DC       | DIRECT CURRENT                       |          |
| DISC     | DISCONNECT                           |          |
| DN       | DOWN                                 |          |
| DP       | DISTRIBUTION PANEL                   |          |
| DPDT     | DOUBLE POLE DOUBLE THROW             |          |
| DPST     | DOUBLE POLE SINGLE THROW             |          |
| DT       | DRIP TRAY                            |          |
| EA       | EMERGENCY                            |          |
| EAH      | EMPTY CONDUIT                        |          |
| EC       | EXHAUST FAN                          |          |
| EH       | ELECTRIC HEATER                      |          |
| ELEC     | ELECTRIC                             |          |
| ELEV     | ELEVATION ELEVATOR                   |          |
| ETR      | EXISTING TO REMAIN                   |          |
| EW       | ELECTRIC WATER COOLER                |          |
| EX       | EXISTING                             |          |
| EXP      | EXPOSED                              |          |
| FA       | FIRE ALARM                           |          |
| FAAP     | FIRE ALARM ANNUNCIATOR PANEL         |          |
| FACP     | FIRE ALARM CONTROL PANEL             |          |
| FBO      | FURNISHED BY OTHERS                  |          |
| FC       | FAN COIL                             |          |
| FDR      | FEEDER                               |          |
| FLA      | FULL LOAD AMPERES                    |          |
| FLR      | FLOOR                                |          |
| FR       | FRAME                                |          |
| FU       | FUSED, FUSIBLE                       |          |
| FUSS     | FUSED SAFETY SWITCH                  |          |
| FVNR     | FULL VOLTAGE NON REVERSING           |          |
| FVR      | FULL VOLTAGE REVERSING               |          |
| GEN      | GENERATOR, GENERAL                   |          |
| GFCI     | GROUND FAULT CIRCUIT INTERRUPTER     |          |
| GFI      | GROUND FAULT INTERRUPTER             |          |
| GFP      | GROUND FAULT PROTECTED               |          |
| GFR      | GROUND FAULT RELAY                   |          |
| GRD      | GROUND                               |          |
| GRS      | GALVANIZED RIGID STEEL               |          |
| HID      | HIGH INTENSITY DISCHARGE             |          |
| HQA      | HAND OFF AUTOMATIC                   |          |
| HP       | HEAT PUMP, HORSEPOWER                |          |
| HPS      | HIGH PRESSURE SODIUM                 |          |
| HTR      | HEATER                               |          |
| HW       | HIGH VOLTAGE                         |          |
| HZ       | HERTZ                                |          |
| IG       | ISOLATED GROUND                      |          |
| JB       | JUNCTION BOX                         |          |
| KCML     | THOUSAND CIRCULAR MILS               |          |
| KV       | KILOVOLTS                            |          |
| KVA      | KILOVOLT AMPERES                     |          |
| KVAR     | KILOVOLT AMPERES REACTIVE            |          |
| KW       | KILOWATTS                            |          |
| KWH      | KILOWATT HOUR                        |          |
| LA       | LIGHTNING ARRESTOR                   |          |
| LC       | LIGHTING CONTACTOR                   |          |
| LP       | LIGHTING PANEL                       |          |
| LRA      | LOCKED ROTOR AMPERES                 |          |
| LTG      | LIGHTING                             |          |
| LTNG     | LIGHTNING                            |          |
| MATV     | MASTER ANTENNA TELEVISION            |          |
| MCB      | MAIN CIRCUIT BREAKER                 |          |
| MCC      | MOTOR CONTROL CENTER                 |          |
| MEL      | METAL HALIDE                         |          |
| MH       | MANHOLE, MOUNTING HEIGHT             |          |
| MLO      | MAIN LUGS ONLY                       |          |
| MSP      | MOTOR STARTER PANEL                  |          |
| MTD      | MOUNTED                              |          |
| MV       | MERCURY VAPOR                        |          |
| NC       | NORMALLY CLOSED                      |          |
| NEC      | NATIONAL ELECTRIC CODE               |          |
| NFSS     | NON FUSED SAFETY SWITCH              |          |
| NO       | NUMBER, NORMALLY OPEN                |          |
| OC       | ON CENTER                            |          |
| OCFI     | OWNER FURNISHED CONTRACTOR INSTALLED |          |
| OFD      | OWNER FURNISHED EQUIPMENT INSTALLED  |          |
| OH       | OVERHEAD                             |          |
| P        | POLE                                 |          |
| PB       | PUSHBUTTON                           |          |
| PFC      | POWER FACTOR CORRECTION              |          |
| FCC      | POWER FACTOR CORRECTION              |          |
| PL       | POT LIGHT                            |          |
| PLM      | PROGRAMMABLE LIGHTING CONTROL PANEL  |          |
| PN       | POWER PANEL                          |          |
| PP       | PUMP                                 |          |
| PR       | PAIR                                 |          |
| PRN      | PRINTER                              |          |
| PT       | POTENTIAL TRANSFORMER                |          |
| PVC      | POLYVINYL CHLORIDE                   |          |
| Ø, PH    | PHASE                                |          |
| QTY      | QUANTITY                             |          |
| RCS      | REMOTE CONTROL SWITCH                |          |
| REC      | RECEPTACLE                           |          |
| RECT     | RECTIFIER                            |          |
| REQD     | REQUIRED                             |          |
| RFI      | RADIO FREQUENCY INTERFERENCE         |          |
| RGS      | RIGID GALVANIZED STEEL               |          |
| RLA      | RUNNING LOAD AMPERES                 |          |
| RM       | ROOM                                 |          |
| RVAT     | REDUCED VOLTAGE AUTO TRANSFORMER     |          |
| EX       | EXISTING                             |          |
| SC       | SURGE CAPACITOR                      |          |
| SEC      | SECONDARY                            |          |
| SN, SN   | SOLID NEUTRAL                        |          |
| SP       | SURGE PROTECTION                     |          |
| SPD      | SURGE PROTECTION DEVICE              |          |
| SPT      | SINGLE POLE DOUBLE THROW             |          |
| SS       | SAFETY SWITCH                        |          |
| SST      | SOLID STATE                          |          |
| ST       | SINGLE THROW                         |          |
| SW       | SWITCH                               |          |