

ELECTRICAL SYMBOL LIST

* This is a standard list and not all symbols and abbreviations may be used. See letter code list at duplex receptacle for options, unless otherwise noted.

LIGHTING

⊗ GROUND MOUNTED LANDSCAPE LUMINAIRE

⊖ LUMINAIRE RECESSED IN WALL

⊕ AREA LUMINAIRE ARM MOUNTED WITH POLE AND CONCRETE BASE

⊙ AREA LUMINAIRE POLE TOP MOUNTED WITH POLE AND CONCRETE BASE

⊕ AREA BOLLARD LUMINAIRE WITH CONCRETE BASE

⊙ FLUSH IN GRADE EXTERIOR WATERTIGHT LUMINAIRE

□ RECESSED FLUORESCENT 2' X 2' LUMINAIRE

○ SURFACE MOUNTED FLUORESCENT 2' X 2' LUMINAIRE

○ WALL MOUNTED LUMINAIRE

□ RECESSED FLUORESCENT 2' X 4' LUMINAIRE

■ RECESSED 2X4 FLUORESCENT LUMINAIRE CONNECTED TO EMERGENCY CIRCUIT

⊗ RECESSED LUMINAIRE

⊖ RECESSED WALL WASH LUMINAIRE

□ RECESSED FLUORESCENT 1' X 4' LUMINAIRE

■ RECESSED 1X4 FLUORESCENT LUMINAIRE CONNECTED TO EMERGENCY CIRCUIT

○ SURFACE OR PENDANT MOUNTED FLUORESCENT 1' X 4' LUMINAIRE

○ SURFACE MOUNTED LUMINAIRE CONNECTED TO EMERGENCY CIRCUIT

○ SURFACE OR PENDANT MOUNTED FLUORESCENT STRIPLIGHT

○ WALL MOUNTED FLUORESCENT LUMINAIRE

⊗ EXIT SIGN WALL MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN

⊖ EXIT SIGN CEILING MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN

⊕ COMBINATION EXIT SIGN WALL MOUNTED AND DUAL HEAD EMERGENCY EGRESS LIGHTING WITH BATTERY PACK, ARROW(S) INDICATES DIRECTION IF SHOWN

⊕ COMBINATION EXIT SIGN CEILING MOUNTED AND DUAL HEAD EMERGENCY EGRESS LIGHTING WITH BATTERY PACK, ARROW(S) INDICATES DIRECTION IF SHOWN

⊕ EMERGENCY WALL MOUNT LUMINAIRE CONNECTED TO EMERGENCY CIRCUIT

SWITCHES AND RECEPTACLES

⊕ SINGLE POLE SWITCH
2 = DOUBLE POLE SWITCH
3 = THREE-WAY SWITCH
4 = FOUR-WAY SWITCH
o thru z (LOWERCASE) = LUMINAIRE CONTROL DESIGNATION
D = DIMMER
E = EMERGENCY
EW = EMERGENCY & WEATHER PROOF SWITCH
K = KEY OPERATED SWITCH
KW = KEY OPERATED & WEATHER PROOF SWITCH
KV = KEY OPERATED & LOW VOLTAGE SWITCH
KMW = KEY OPERATED, LOW VOLTAGE & WEATHER PROOF SWITCH
L = LIGHTED HANDLE
M = MANUAL MOTOR STARTER WITH THERMAL OVERLOAD
P = SWITCH WITH PILOT LIGHT
S = SENTRY SWITCH
T = INTERVAL TIMER
W = WEATHER PROOF SWITCH
V = LOW VOLTAGE SWITCH

⊙ PHOTO ELECTRIC SWITCH
D = CONTINUOUS DIMMING PHOTOCELL
S = SWITCHED PHOTOCELL

⊕ CEILING MOUNTED OCCUPANCY SENSOR
P = PASSIVE INFRARED
D = DUAL TECHNOLOGY
U = ULTRASONIC, 360 DEG RANGE
H = ULTRASONIC, HALLWAY PATTERN

⊕ WALL MOUNTED OCCUPANCY SENSOR
P = PASSIVE INFRARED
D = DUAL TECHNOLOGY

⊕ WALL MOUNTED OCCUPANCY SENSOR/SWITCH
S = PASSIVE INFRARED WITH INTEGRAL "OFF" SWITCH
T = DUAL RELAY PASSIVE INFRARED WITH TWO INTEGRAL "OFF" SWITCHES
D = PASSIVE INFRARED WITH INTEGRAL DIMMER TO OFF.

⊕ MULTIPLE CHANNEL SURFACE METAL RECEPTACLE RACEWAY WITH LOW VOLTAGE DIVIDERS, LENGTH AND RECEPTACLES AS INDICATED

⊕ DUPLEX RECEPTACLE
A = ABOVE COUNTER
AG = ABOVE COUNTER & GFCI
C = FLUSH CEILING MOUNTED
E = EMERGENCY
EW = EMERGENCY, WEATHERPROOF CONTINUOUS COVER & GFCI PROTECTED
F = ARC FAULT PROTECTED BY BREAKER IN PANEL
G = GROUND FAULT CIRCUIT INTERRUPTER
K = CHILD RESISTANT COVER
L = ISOLATED GROUND
P = PENDANT MOUNTED WITH CORD GRIPS, VERIFY PENDANT LENGTH
PW = PENDANT MOUNTED IN DAMP/WET LOCATION, PROVIDE CORD GRIPS, CORD CAP AND TRIPLE SEAL RECEPTACLE COVER, VERIFY PENDANT LENGTH.
S = SPLIT WIRED
T = TAMPER RESISTANT SHUTTERED RECEPTACLE
W = WEATHERPROOF CONTINUOUS COVER AND GFCI PROTECTED

⊕ SINGLE RECEPTACLE. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS

⊕ DOUBLE DUPLEX RECEPTACLE. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS

⊕ FLOOR PEDESTAL WITH FLOOR BOX OR POKE-THRU BOX, AND DUPLEX RECEPTACLE

⊕ FLOOR PEDESTAL WITH FLOOR BOX OR POKE-THRU BOX, AND DOUBLE DUPLEX RECEPTACLE

⊕ FLUSH POKE-THRU WITH DUPLEX RECEPTACLE AND RACEWAY FOR SIGNAL CABLES

⊕ SPECIAL PURPOSE RECEPTACLE. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS

⊕ TWISTLOCK RECEPTACLE. COORDINATE RECEPTACLE CONFIGURATION WITH EQUIPMENT BEING SUPPLIED. VERIFY PENDANT LENGTH. SEE LETTER CODE LIST AT DUPLEX RECEPTACLE FOR OPTIONS

RACEWAYS

⊖ CABLE TRAY

⊖ SURFACE METAL RECEPTACLE RACEWAY

⊖ VERTICAL SURFACE METAL RECEPTACLE RACEWAY

CONNECTIONS / EQUIPMENT

⊕ MOTOR CONNECTION

⊕ NON-FUSED DISCONNECT SWITCH

⊕ HEAVY DUTY FUSED DISCONNECT SWITCH

⊕ COMBINATION MOTOR STARTER/FUSED DISCONNECT SWITCH

⊕ MOTOR STARTER

⊕ UTILITY METER BASE

⊕ COMBINATION ADJUSTABLE FREQUENCY DRIVE WITH SAFETY DISCONNECT SWITCH

⊕ MOTOR CONTROL CENTER

⊕ BATTERY INVERTER

⊕ JUNCTION BOX
P = PENDANT EQUIPMENT CONNECTION

⊕ TRANSFORMER

⊕ CONTACTOR

⊕ RELAY

⊕ SOLENOID VALVE CONNECTION

⊕ PUSHBUTTON

⊕ FIRE SMOKE DAMPER WITH END SWITCH

MISCELLANEOUS

⊕ CONDUIT ELLED UP

⊕ CONDUIT ELLED DOWN

⊕ CONDUIT/WIRING STUBBED OUT WITH END CAP OR INSULATED PLASTIC BUSHING

⊕ CONDUIT/WIRING CONTINUATION

⊕ GROUND ROD

⊕ WATER PIPE GROUND CONNECTION

⊕ GROUNDING POINT

⊕ STANDBY/EMERGENCY GENERATOR

⊕ DRY TYPE TRANSFORMER

⊕ LANDING LUG

⊕ CURRENT TRANSFORMER

⊕ FUSED DISCONNECT SWITCH OR SWITCH/FUSE IN SWITCHBOARD

⊕ FUSE

⊕ SWITCH

⊕ CIRCUIT BREAKER

⊕ CIRCUIT BREAKER WITH SHUNT TRIP

⊕ CIRCUIT BREAKER WITH GROUND FAULT INTERRUPTING

⊕ CIRCUIT BREAKER WITH KIRK-KEY LOCK SYSTEM

⊕ SURFACE MOUNT EQUIPMENT ENCLOSURE AS NOTED

⊕ FLUSH MOUNT EQUIPMENT ENCLOSURE AS NOTED

⊕ BRANCH PANEL

⊕ FLUSH WALL MOUNTED BRANCH PANEL

⊕ MAIN DISTRIBUTION PANEL / SUB DISTRIBUTION PANEL

⊕ FLEXIBLE CONDUIT

⊕ UNDERGROUND PRIMARY SERVICE

⊕ UNDERGROUND SECONDARY SERVICE

⊕ UNDERGROUND TELEPHONE SERVICE

⊕ UNDERGROUND CABLE TELEVISION SERVICE

⊕ OVERHEAD PRIMARY SERVICE

⊕ OVERHEAD TELEPHONE SERVICE

⊕ BRANCH CIRCUIT WIRING, ARROW INDICATES HOME RUN TO PANEL WITH CIRCUITS AS NOTED. WIRE SIZE IS #12 AWG MINIMUM UNLESS NOTED OTHERWISE. SHORT TICK MARKS INDICATE PHASE CONDUCTORS, LONG TICK MARKS INDICATE NEUTRAL CONDUCTORS. A SINGLE CURVED TICK MARK INDICATES INSULATED GREEN CONDUCTOR, SECOND CURVED TICK MARK INDICATES "ISOLATED GROUND" (GREEN INSULATION WITH YELLOW STRIPE) CONDUCTOR.

MISCELLANEOUS (CONTINUED)

⊕ CONDUIT CONCEALED IN WALL OR CEILING SPACE

⊕ CONDUIT ROUTED BELOW FLOOR / GRADE

⊕ EXISTING CONDUIT CONCEALED IN WALL OR CEILING SPACE

⊕ EXISTING CONDUIT ROUTED BELOW FLOOR / GRADE

⊕ SUBGRADE VAULT POWER

⊕ SUBGRADE VAULT TELEPHONE

⊕ SUBGRADE VAULT CATV

⊕ POWER UTILITY POLE

⊕ TELEPHONE UTILITY POLE

⊕ UTILITY TRANSFORMER PAD/VAULT

⊕ SHEET KEYNOTE

⊕ MECHANICAL EQUIPMENT CONNECTION ITEM. REFER TO SCHEDULE

⊕ DETAIL / SHEET CALLOUT TAG

ABBREVIATIONS

A AMPERES, AMBER

AFF ABOVE FINISHED FLOOR

AFG ABOVE FINISHED GRADE

AIC AVAILABLE INTERRUPTING CAPACITY

ATS AUTOMATIC TRANSFER SWITCH

AV AUDIO VISUAL

BC BARE COPPER

C CONDUIT, CLOSE, CONTROL

CB CIRCUIT BREAKER

CCTV CLOSED CIRCUIT TELEVISION

CATV CABLE TELEVISION

CLG CEILING

CNTL CONTROL

COM COMMUNICATION

CPT CONTROL POWER TRANSFORMER

CR CONTROL RELAY

CT CURRENT TRANSFORMER

CU COPPER

E EMERGENCY

(E) EXISTING

(F) FUTURE

FA FIRE ALARM

FACP FIRE ALARM CONTROL PANEL

GFCI GROUND FAULT CIRCUIT INTERRUPTER

GFI GROUND FAULT INTERRUPTER

G, GND GROUND

GRC GALVANIZED RIGID STEEL CONDUIT

IG ISOLATED GROUND

IMC INTERMEDIATE METAL CONDUIT

KV KILOVOLT

KVA KILOVOLT AMPERES

KW KILOWATT

M MOTOR

MATV MASTER ANTENNA TELEVISION

MCA MINIMUM CIRCUIT AMPS

MLO MAIN LUG ONLY

MOCP MAXIMUM OVERCURRENT PROTECTION

MSB MAIN SWITCHBOARD

MTS MANUAL TRANSFER SWITCH

NC NORMALLY CLOSED

NL NIGHT LIGHT

NO NORMALLY OPEN

PH PHASE

PNL PANEL

PVC POLY-VINYL-CHLORIDE

(R) EXISTING TO BE REMOVED

(RL) NEW LOCATION OF RELOCATED DEVICE/EQUIPMENT

TELE TELEPHONE

TTB TELEPHONE TERMINAL BOARD

TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR

TYP TYPICAL

UL UNDERWRITERS LABORATORIES

UPS UNINTERRUPTABLE POWER SUPPLY

V VOLTS, VOLTAGE

W WIRE, WHITE

WP WEATHERPROOF

GENERAL ELECTRICAL NOTES

- A. ALL WORK IS TO BE CONSTRUCTED IN ACCORDANCE WITH LOCAL AND STATE CODES.
- B. THE DRAWINGS AND SPECIFICATIONS REPRESENT FINISHED SYSTEMS COMPLETE AND READY FOR USE. ANCILLARY DEVICES, WIRING, RACEWAY, CONNECTIONS AND SIMILAR WORK ALTHOUGH NOT EXPLICITLY STATED BUT REQUIRED FOR PROPER SYSTEM OPERATION OR TO COMPLY WITH CODE ARE TO BE INCLUDED AS A REQUIREMENT OF THE CONTRACT WITHOUT ADDITIONAL COMPENSATION.
- C. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND ARRANGEMENT OF ELECTRICAL WORK, LAYOUT, ROUGH-IN, AND EXACT LOCATION OF ALL FIXTURES, DEVICES, AND OUTLETS IS TO BE BASED ON THE ARCHITECTURAL DRAWINGS AND COORDINATED WITH FINAL ARRANGEMENT OF MECHANICAL EQUIPMENT.
- D. REFER TO DRAWINGS OF OTHER TRADES FOR COORDINATION OF ELECTRICAL CONSTRUCTION. THE LOCATION OF MECHANICAL EQUIPMENT IS SHOWN DIAGRAMMATICALLY. EXACT LOCATION TO BE FIELD DETERMINED. SEE SPECS FOR TRADE COORDINATION DRAWING SUBMITTAL REQUIREMENTS. DRAWINGS FOR LENGTHS AND LOCATIONS OF ALL EQUIPMENT TO BE INSTALLED UNDER ELECTRICAL CONTRACT.
- E. DO NOT COMMENCE INSTALLATION OF ELECTRICAL SYSTEMS AND EQUIPMENT WITHOUT RELATED SHOP DRAWING APPROVALS.
- F. PROVIDE UL LISTED FIRE RATED SEALS FOR ALL RACEWAY PENETRATIONS THROUGH FIRE RATED WALLS, SLABS, AND CEILINGS.
- G. COORDINATE ALL CONTROL SYSTEM DEVICES, WIRING, AND CONNECTIONS WITH REQUIREMENTS OF DRIVEN EQUIPMENT.
- H. PROVIDE SUITABLE ANCHORAGE AND SUPPORT OF ALL ELECTRICAL EQUIPMENT INCLUDING RATED WALLS, SLABS, AND CEILINGS. DEVICES AND RACEWAYS IN ACCORDANCE WITH ESTABLISHED CODES AND THE SPECIFICATIONS.
- I. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- J. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND WHAT IS REQUIRED BY EITHER IS TO BE INFERRED TO BE REQUIRED BY BOTH.
- K. EQUIPMENT AND DEVICES FURNISHED UNDER OTHER DIVISIONS OF THIS CONTRACT, BY THE OWNER, OR BY OTHER CONTRACTS, ARE TO BE CONNECTED UNDER THIS CONTRACT.
- L. OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS ARE TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND BEFORE PROCEEDING WITH THE WORK.
- M. PROVIDE FLUSH MOUNTED INSTALLATION OF ALL DEVICES AND EQUIPMENT IN ALL AREAS U.O.N.
- N. PROVIDE SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ALL 120 VOLT MULTI-WIRE CIRCUITS.
- O. FOR 120 VOLT, 20 AMP CIRCUITS WHERE THE CIRCUIT DISTANCE FROM THE PANEL BOARD TO THE FARTHEST DEVICE/FIXTURE EXCEEDS 75 FEET PROVIDE #10 SIZE CONDUCTOR.
- P. PROVIDE AS-BUILT DRAWINGS IN AUTOCAD FORMAT PER SPECIFICATIONS.
- Q. ALL ELECTRICAL CONDUIT IS TO BE RUN CONCEALED AND PARALLEL TO BUILDING LINES. ALL ELECTRICAL CONDUIT IS TO BE INSTALLED CONCEALED UNLESS PRIOR TO INSTALLATION OF ANY EXPOSED CONDUIT VERIFY WITH DISTRICT REPRESENTATIVE.
- R. RECEPTACLE OUTLETS SHALL COMPLY WITH CEC SECTION 210.7.
- S. LIGHTS SWITCHES AND CONTROL MECHANISM SHALL COMPLY WITH CEC SECTION 404.
- T. DO NOT INSTALL ELECTRICAL BOXES IN RATED WALLS CLOSER THAN 24" HORIZONTALLY FROM EACH OTHER. OFFSET OUTLET BOXES SHOWN TO BE INSTALLED BACK-TO-BACK IN FIRE RATED WALLS AND PARTITIONS A MINIMUM OF 24" HORIZONTALLY.
- U. BRACE ALL ELECTRICAL EQUIPMENT TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION. COMPLY WITH REQUIREMENTS OF TITLE 24, REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- V. ALL LIGHTING AND RECEPTACLE CIRCUITRY SHOWN ON THESE DRAWINGS SHALL CONTAIN THE REQUIRED CONDUCTORS. FOR EVERY GROUP OF TWO OR THREE CONSECUTIVE PHASE ORDER CIRCUITS, PROVIDE A DEDICATED NEUTRAL. FOR EXAMPLE, A HOMERUN COMPRISED OF CIRCUITS 1, 3, AND 5 CONTAINS FOUR (4) CONDUCTORS: THREE (3) HOTS AND ONE (1) NEUTRAL. A RUN COMPRISED OF FIVE-CONSECUTIVE NUMBERS OUT OF PHASE ORDER, I.E., 3, 4, AND 7 OR 1, 9, AND 11 SHALL CONTAIN FIVE CONDUCTORS: THREE (3) HOTS AND TWO (2) NEUTRALS. IN ALL CASES, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED IN ADDITION TO THE CURRENT-CARRYING CONDUCTORS. PROVIDE ALL CONDUCTORS REQUIRED FOR A COMPLETE OPERATIONAL SYSTEM.
- W. A COMPLETE SYSTEM OF CONDUCTORS SHALL BE INSTALLED IN THE RACEWAY SYSTEM THROUGHOUT THE BUILDING FOR ALL FEEDERS, BRANCH CIRCUITS, ETC.
- X. MOUNT CENTER OF OUTLET BOXES AS REQUIRED BY ADA, OR NOTED ON DRAWINGS, THE FOLLOWING DISTANCE ABOVE THE FLOOR:
a. CONTROL SWITCHES: 48 INCHES.
b. RECEPTACLES: 18 INCHES.
c. TELECOM OUTLETS: 18 INCHES.
d. OTHER OUTLETS: AS INDICATED IN OTHER SECTIONS OF SPECIFICATIONS OR AS DETAILED ON DRAWINGS.
- Y. IN MANY LOCATIONS EXISTING ELECTRICAL INSTALLATION IS SUPPORTED BY THE EXISTING T-BAR CEILING. CONTRACTOR TO VERIFY EXACT LOCATIONS OF THIS FIELD CONDITION. WHERE THIS CONDITION OCCURS, CONTRACTOR TO PROVIDE NEW CONDUIT AND WIRING FOR A FULLY CODE CONFORMING INSTALLATION. SUPPORTS TO BE INSTALLED OFF THE EXISTING STRUCTURE.

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REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM NO. 1	09/18/08
2	ADDENDUM NO. 2	11/06/08

FILE NO. 41-C1

DATE 01-11-07

AC FLS SS

DATE

BUILDINGS 5 & 6 RENOVATIONS

San Mateo County Community College District

BID ADDENDA

APPROVED
BY THE STATE ARCHITECT

AC 111 FLS 68 SS 12
APPL NO. 110074 DATE 01/22/08

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ELECTRICAL SYMBOLS LIST,
GENERAL NOTES, ABBREV,
AND SHEET INDEX

Date 08/29/08
Scale AS NOTED
Project Number 07013

Drawing Number
E0.1