

ELECTRICAL SYMBOLS AND ABBREVIATIONS

NOTE: NOT ALL SYMBOLS AND ABBREVIATIONS INDICATED HERE ARE USED IN THE DRAWINGS AND MAY NOT APPLY TO THIS PROJECT. ADDITIONAL SYMBOLS MAY BE INDICATED IN THE DRAWINGS.

ELECTRICAL ABBREVIATIONS

1P	ONE POLE
2P	TWO POLE
3P	THREE POLE
4P	FOUR POLE
1P1W	ONE POLE, ONE WIRE
1P2W	ONE POLE, TWO WIRE
2P2W	TWO POLE, TWO WIRE
2P3W	TWO POLE, THREE WIRE
3P2W	THREE POLE, TWO WIRE
3P3W	THREE POLE, THREE WIRE
3P4W	THREE POLE, FOUR WIRE
4P4W	FOUR POLE, FOUR WIRE
AMP	AMPERE
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AS	AMP SWITCH
AT	AMP TRIP
ARCH	ARCHITECT
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
B	PEDESTAL MOUNTED ON BENCH TOP
BF	BELOW FLOOR
BLDG	BUILDING
C	CONDUIT
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING MOUNTED
CT	CURRENT TRANSFORMER
CJ	COPPER
CL	CENTERLINE
DC	DEDICATED DEVICE
DC	DIRECT CURRENT
Δ	DELTA
DISC	DISCONNECT
DWG	DRAWING
E	EMERGENCY
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRIC METALLIC TUBING
EMC	ELECTRIC WATER COOLER
EX	EXISTING
FLA	FULL LOAD AMPS
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFPE	GROUND FAULT PROTECTION EQUIPMENT
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HP	HORSEPOWER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
Hz	HERTZ (cycles) PER SECOND
JB	JUNCTION BOX
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
LP	LIGHTING PANELBOARD
LS	LIMIT SWITCH
LTG	LIGHTING
LV	LOW VOLTAGE
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
#	NUMBER
NTS	NOT TO SCALE
OH	OH
P	POLE
PB	PULL BOX
PC	PLUMBING SYSTEM CONTRACTOR
PH	PHASE
PNL	PANELBOARD
PR	PAIR
PRI	PRIMARY
PVC	POLYVINYL CHLORIDE CONDUIT
R	RELAY
REC	RECESSED
RSC	RIGID STEEL CONDUIT
SEC	SECONDARY
SN	SOLID NEUTRAL
SP	SPARE
SS	STAINLESS STEEL
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
T	TAMPER RESISTANT SAFETY RECEPTACLE
TC	TELEPHONE CABINET
TCI	TELECOMMUNICATIONS CABLING INSTALLER
TEL/DATA	TELEPHONE/DATA
TEL	TELEPHONE
TYP	TYPICAL
UG	UNDERGROUND
UTP	UNSHIELDED TWISTED PAIR
V	VOLT
VOI	UNLESS OTHERWISE INDICATED
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER
ZAM	ZONE ADAPTER MODULE
+72	MOUNTING UNITS TO CENTERLINE ABOVE FINISHED FLOOR OR GRADE

LIGHTING AND CONTROLS

	○	SURFACE MOUNTED LIGHT FIXTURES
	⊙	RECESS MOUNTED LIGHT FIXTURES
	⊚	WALL MOUNTED LIGHT FIXTURES
	⊙	SUSPENDED, PENDENT, CHAIN STEM, OR CABLE HUNG LIGHT FIXTURES
	■	SHADING INDICATES FIXTURE FULLY WIRED TO EMERGENCY OR NIGHT LIGHTING CIRCUIT
	▨	PARTIAL SHADING INDICATES FIXTURE PARTIALLY WIRED TO EMERGENCY OR NIGHT LIGHTING CIRCUIT. REFER TO GENERAL NOTE #17.
	— —	STRIP OR UNDER CABINET LIGHT FIXTURE
	⊘	SINGLE HEAD SPOT LIGHT OR FLOOD LIGHT FIXTURE
	⊘	DOUBLE HEAD SPOT LIGHT OR FLOOD LIGHT FIXTURE
	⊙	EXIT LIGHT FIXTURE - ARROWS AND FACE AS INDICATED ON DRAWINGS
	— — —	LIGHTING TRACK - LENGTH AS INDICATED ON DRAWING
	— — —	NUMBER OF FIXTURES AS INDICATED ON DRAWING
	⊕	EMERGENCY BATTERY REMOTE LIGHTING HEADS
	⊕	EMERGENCY BATTERY UNIT WITH LIGHTING HEADS
	⊙	SURFACE MOUNTED ACCENT LIGHT
	⊙	RECESS MOUNTED ACCENT LIGHT
	⊙	SINGLE POLE SWITCH - MOUNT 4" AFF UNLESS OTHERWISE NOTED
	⊙	SWITCH DESIGNATION
	⊙	SWITCH TYPE
	⊙	(2) DOUBLE POLE
	⊙	(3) 3 WAY
	⊙	(4) 4 WAY
	⊙	(K) KEY OPERATED
	⊙	(P) WITH PILOT LIGHT INDICATION
	⊙	(D) DUAL LEVEL SWITCH
	⊙	(V) VACANCY SENSOR
	⊙	(D) WALL MOUNTED DIMMER SWITCH
	⊙	LOW VOLTAGE SWITCH OVERRIDE RELAY DESIGNATION
	⊙	LIGHTING CONTROL VACANCY SENSOR-CEILING MOUNTED
	⊙	TIME CLOCK - SEE SCHEDULE ON SHEET#
	⊙	CONTACTOR - SEE SCHEDULE ON SHEET#
	⊙	PHOTO CELL
	⊙	LIGHTING CONTROLLER PANEL
	⊙	LCP/1 DESIGNATION
	⊙	PANELBOARD DESIGNATION

POWER AND COMMUNICATIONS

	—G, H, N	CIRCUIT HOME RUN WITH GROUND, HOT, NEUTRAL
	—HA-1, 3, 5/R1	CIRCUIT TO BE PULLED THROUGH DESIGNATED RELAY IN LIGHTING CONTROL PANEL (IF APPLICABLE)
	—	CIRCUITING INFORMATION FOR GROUPING PURPOSES ONLY. CONTRACTOR SHALL SELECT ACTUAL CIRCUIT BREAKERS AND BALANCE LOADS IN PANELBOARD.
	—	PANELBOARD INFORMATION. SEE SCHEDULING SHEETS FOR MORE INFORMATION.
	⊙	DUPLEX RECEPTACLE - MOUNTED 18" AFF UNLESS OTHERWISE NOTED
	⊙	TAMPER PROOF DUPLEX RECEPTACLE - MOUNTED 18" AFF UNLESS OTHERWISE NOTED
	⊙	GFCI DUPLEX RECEPTACLE - MOUNTED 18" AFF UNLESS OTHERWISE NOTED
	⊙	DUPLEX RECEPTACLE - MOUNTED 6" ABOVE COUNTER BACKSPASH UNLESS OTHERWISE NOTED
	⊙	QUAD RECEPTACLE - MOUNTED 18" AFF UNLESS OTHERWISE NOTED
	⊙	DUPLEX RECEPTACLE - MOUNTED FLUSH IN CEILING
	⊙	FLOOR MOUNTED ELECTRICAL BOX SEE DRAWINGS FOR TYPES OF OUTLETS REQUIRED AT EACH BOX
	⊙	(F) FLUSH TYPE
	⊙	(P) POKER THRU TYPE
	⊙	PUSHBUTTON
	⊙	SPECIAL PURPOSE OUTLET - THIS ELECTRICAL CONNECTION REQUIRES ONSITE COORDINATION WITH OTHER CONTRACTORS AND/OR VENDORS PRIOR TO INSTALLATION. PROVIDE ALL CONNECTIONS, MOTOR STARTERS, AND DISCONNECTS REQUIRED BY CODE AND FINAL SUGGESTED MANUFACTURER REQUIREMENTS. CONTACT ENGINEER WITH ANY REQUIRED CHANGES TO ELECTRICAL DESIGN.
	⊙	MOTOR CONNECTION
	⊙	(2) MOTOR IDENTIFICATION
	■	PANELBOARD - FLUSH MOUNTED
	■	PANELBOARD - SURFACE MOUNTED
	⊙	TRANSFORMER - MOUNT ON 4" PAD UNLESS OTHERWISE NOTED
	⊙	IN-GRADE PULLBOX
	⊙	DISCONNECT SWITCH
	⊙	FUSED DISCONNECT SWITCH
	⊙	COMBINATION MOTOR STARTER
	⊙	MOTOR RATED SWITCH
	⊙	JUNCTION BOX
	⊙	DOUBLE ACTION MUSHROOM HEAD EMERGENCY POWER OFF BUTTON. THIS BUTTON SHALL PROVIDE A SIGNAL TO SHUNT TRIP ALL CIRCUIT BREAKERS WHICH FEED POWER TO THIS ROOM. ALL CIRCUIT BREAKERS FEEDING THIS ROOM SHALL BE SHUNT TRIP TYPE.
	⊙	TELEPHONE/DATA OUTLET - PROVIDE SINGLE GANG BOX AND 1" CONDUIT WITH PULL STRING TO NEAREST ACCESSIBLE CEILING.

GENERAL NOTES

- THE ELECTRICAL CONTRACTOR SHALL COORDINATE ANY NEW ELECTRICAL SERVICE INSTALLATION AND/OR MODIFICATIONS TO THE EXISTING ELECTRICAL SERVICE WITH THE LOCAL ELECTRICAL UTILITY COMPANY PRIOR TO STARTING ANY WORK.
- THE ELECTRICAL CONTRACTOR SHALL REPLACE AND/OR REPAIR TO THE SATISFACTION OF THE ARCHITECT AND ENGINEER, ANY ITEMS THAT ARE DAMAGED OR REMOVED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THESE DRAWINGS ARE DIAGRAMMATIC. DO NOT SCALE OFF OF THE ELECTRICAL DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- REFER TO THE ARCHITECTURAL PLANS, ELEVATIONS, AND DIAGRAMS FOR LOCATIONS OF FLOOR AND WALL ELECTRICAL DEVICES. ELECTRICAL DEVICES SHALL BE MOUNTED LONG AXIS VERTICAL AT THE FOLLOWING HEIGHTS AFF TO CENTER OF DEVICE: SWITCHES - 48"; RECEPTACLES - 18"; VOICEDATA JACKS - 18", UNLESS NOTED OTHERWISE WITHIN THE DRAWINGS.
- ON NEW FLOOR PLANS: ALL ITEMS SHOWN IN LIGHT LINE WEIGHT ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE. ALL ITEMS SHOWN IN HEAVY LINE WEIGHT ARE NEW OR RELOCATED AS NOTED.
- ALL 120V BRANCH CIRCUITS SHALL BE 3-WIRE (PHASE, NEUTRAL, GROUND). PHASE, NEUTRAL, AND GROUND CONDUCTORS SHALL BE NO. 12 AWG UNLESS NOTED OTHERWISE. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE EQUIPMENT GROUNDING CONDUCTORS INSTALLED IN THE RACEWAY. USE OF THE CONDUIT BODY AS A GROUNDING METHOD IS PROHIBITED.
- SWITCHES CONTROLLING LIGHTING LOADS: WHERE SWITCHES CONTROL LIGHTING LOADS SUPPLIED BY A GROUNDED GENERAL PURPOSE BRANCH CIRCUIT, THE GROUNDED CIRCUIT CONDUCTOR (NEUTRAL WIRE) FOR THE CONTROLLED LIGHTING CIRCUIT SHALL BE PROVIDED AT THE SWITCH LOCATION. EXISTING SWITCHES IN REMODELED SPACES SHALL NOT BE EXEMPT FROM THIS REQUIREMENT.
- WHERE DIMMING CONTROL IS SPECIFIED AS A PORTION OF A CIRCUIT THAT ALSO HAS SWITCHED LIGHTING IN ADJACENT SPACES, PROVIDE A SEPARATE, DEDICATED NEUTRAL WIRE FROM THE DIMMING DEVICE BACK TO THE ORIGINATING PANEL.
- ALL MOUNTING OF ELECTRICAL DEVICES (LUMINAIRES, TRANSFORMERS, PANELS, OUTLETS, CONDUIT RUNS, ETC.) SHALL COMPLY WITH STATE AND LOCAL SEISMIC REQUIREMENTS. ALL LUMINAIRES SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SUPPORT HANGERS IN COMPLIANCE WITH IBC AND NEC REQUIREMENTS.
- ADA COMPLIANCE: ELECTRICAL DEVICES PROJECTING FROM THE WALLS WITH THEIR LEADING EDGES BETWEEN 27" AND 80" AFF SHALL PROTRUDE NO MORE THAN 4" INTO WALKWAYS OR CORRIDORS.
- BACK TO BACK MOUNTING OF RECEPTACLES OR COMMUNICATION OUTLETS IS NOT PERMITTED. THE MINIMUM SEPARATION BETWEEN DEVICES SHALL BE 6" O.C. IN COMMON WALLS AND 24" O.C. IN SOUND-RATED WALLS.
- GFCI DEVICES SHALL BE PROVIDED AS NOTED AND SHALL COMPLY WITH NEC AND LOCAL REQUIREMENTS. NO FEED-THRU GFCI PROTECTION SHALL BE PERMITTED FOR DOWNSTREAM DEVICES. GFCI DUPLEX RECEPTACLES SHALL BE UL 943 2008 "LOCK-OUT" ACTION OR "NOTIFICATION" COMPLIANT.
- ALL RECEPTACLES IN BREAK ROOMS SHALL BE GFCI PROTECTED. PROVIDE REMOTE BLANK FACE GFCI DEVICE IN AN ACCESSIBLE LOCATION AS REQUIRED FOR INACCESSIBLE RECEPTACLES. VERIFY REMOTE BLANK FACE GFCI DEVICE LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
- ALL ELECTRICAL CABINETS, PANELS, DISCONNECTS, TRANSFORMERS, CONTROLS, RECEPTACLES, J-BOXES, ETC. SHALL BE MARKED, TAGGED AND IDENTIFIED. PROVIDE ADHESIVE FILM LABEL, MACHINE PRINTED, IN BLACK, BY THERMAL TRANSFER OR EQUIVALENT PROCESS, WITH MINIMUM LETTER HEIGHT OF 3/8". THE LABEL SHALL IDENTIFY THE ORIGINATING PANEL AND CIRCUIT NUMBER IN THE FOLLOWING FORMAT: PANEL-CKT. NOTE FEEDER SOURCE WHERE APPLICABLE. REFERENCE SPECIFICATIONS FOR ADDITIONAL LABELING REQUIREMENTS. WHERE THE PROJECT SPECIFICATIONS INDICATE MORE STRINGENT LABELING REQUIREMENTS, THOSE REQUIREMENTS SHALL TAKE PRECEDENCE.
- THE CONTRACTOR SHALL PROVIDE TYPED, UPDATED PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.
- UPON COMPLETION OF THE PROJECT, ALL CHANGES SHALL BE DOCUMENTED, AND REDLINED. AS-BUILT DRAWINGS SHALL BE TURNED OVER TO THE OWNER BY THE CONTRACTOR.
- TRANSFORMERS INDICATED TO BE SUSPENDED FROM THE STRUCTURE SHALL BE SUPPORTED BY A UNISTRUT FRAME THAT IS ATTACHED TO THE STRUCTURE.
- 4" CONCRETE HOUSEKEEPING PADS SHALL BE FURNISHED FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.
- COORDINATE THE LOCATIONS AND CONTROLS OF ALL APPLICABLE FIRE/SMOKE DAMPERS WITH THE MECHANICAL CONTRACTOR, PRIOR TO CONSTRUCTION.
- PROVIDE (1) 3/4" WITH BUSHING AND PULL WIRE FROM EACH TELEPHONE, DATA, COMMUNICATION, AND THERMOSTAT OUTLET TO ABOVE THE ACCESSIBLE CEILING, UNLESS NOTED OTHERWISE.
- COORDINATE THE INSTALLATION OF COMMUNICATIONS CABLING, ROUTING, MOUNTING BOXES, AND TERMINATIONS WITH THE OWNER OR IT MANAGER, PRIOR TO CONSTRUCTION.
- ALL LOW VOLTAGE AND SYSTEMS CABLING LOCATED ABOVE THE ACCESSIBLE CEILING SHALL BE PROPERLY RATED FOR THE APPLICATION. WITHOUT EXCEPTION, ALL CABLING SHALL BE HUNG FROM BRIDLE-TYPE RINGS OR PLACED IN CABLE TRAYS BY THE ELECTRICAL CONTRACTOR. IN EXPOSED CEILING AREAS, ALL CABLING SHALL BE RUN IN CONDUIT TO THE NEAREST ACCESSIBLE CEILING LOCATION.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID TO VERIFY EXISTING CONDITIONS. BY SUBMITTING A BID THE CONTRACTOR ACKNOWLEDGES THAT HE HAS VISITED THE SITE AND THE BID IS ADEQUATE TO PERFORM ALL OF THE WORK NECESSARY TO MAKE THE SYSTEMS COMPLETE AND OPERATIONAL. IF THE CONDITIONS AT THE SITE ARE NOT SUCH THAT THE WORK CAN BE INSTALLED AS SHOWN, CONTRACTOR'S BID SHALL INCLUDE COST TO COVER NECESSARY ADJUSTMENTS AND ADDITIONS, BASED UPON SITE CONDITIONS, TO MAKE THE SYSTEMS COMPLETE AND OPERATIONAL. CONTRACTOR SHALL CONTACT ARCHITECT/ENGINEER WITH ANY FIELD DISCREPANCIES.
- ON DEMOLITION PLANS: ALL ITEMS SHOWN IN LIGHT LINE WEIGHT ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE. ALL ITEMS SHOWN IN HEAVY LINE WEIGHT SHALL BE REMOVED, UNLESS NOTED OTHERWISE.
- IN REMODEL AREAS WHERE OCCUPANCY SENSING DEVICES ARE SPECIFIED AND ARE REPLACING EXISTING MANUAL SNAP SWITCH CONTROL OF THE LIGHTING, PROVIDE A NEUTRAL CONDUCTOR FROM THE LIGHTING CIRCUIT BEING CONTROLLED TO THE OCCUPANCY SENSING DEVICE (OR SWITCH/POWER PACK, WHERE LOW VOLTAGE SENSORS ARE SPECIFIED). FOR BIDDING PURPOSES, ASSUME THAT THE EXISTING SNAP SWITCHES ARE WIRED WITHOUT A NEUTRAL CONDUCTOR, AND A NEW NEUTRAL CONDUCTOR WILL BE REQUIRED.
- THE NEW WIRING REQUIRED IN REMODELED AREAS SHALL BE FISHED THROUGH EXISTING WALLS OR CONCEALED IN NEW WALLS OR ABOVE CEILINGS. SURFACE MOUNTED CONDUIT SHALL NOT BE USED IN ANY FINISHED AREAS. CONTRACTOR SHALL NOT ROUTE ANY CONDUIT WITHIN STRUCTURAL OR TOPPING SLABS OF FLOORS UNLESS NOTED TO DO SO.
- ITEMS THAT ARE SHOWN TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL ASSOCIATED CONDUIT, WIRE, AND HANGERS BACK TO THE POINT OF ORIGIN OR THE NEAREST EXISTING ITEM THAT IS REMAINING, UNLESS NOTED OTHERWISE. WHERE EXISTING DEVICES, SWITCHES, MOTOR CONNECTIONS, ETC. ARE TO BE REMOVED FROM WALLS WHICH ARE REMAINING, WALLS SHALL BE PATCHED TO MATCH ORIGINAL FINISH AFTER CONDUCTORS HAVE BEEN REMOVED. BLANK COVER PLATES OVER EXISTING BOXES ARE NOT ACCEPTABLE. IF EXISTING CONDUITS ARE ROUTED IN CONCRETE FLOOR SLABS, WALLS OR CEILINGS, THEY SHALL BE CUT BACK TO WITHIN CONCRETE AND FILLED WITH GROUT TO ACHIEVE A SMOOTH AND EVEN FINISH FLUSH WITH CONCRETE SURFACE AFTER CONDUCTORS HAVE BEEN REMOVED.
- MAINTAIN CIRCUIT CONTINUITY FOR EXISTING ITEMS THAT ARE REMAINING OR BEING RELOCATED.

DATE: 03/29/2018  
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REVISIONS	
ISSUE FOR CONSTRUCTION	3/29/18
1 <sup>st</sup> ISSUE	DATE
2 <sup>nd</sup> ISSUE	DATE
3 <sup>rd</sup> ISSUE	DATE
4 <sup>th</sup> ISSUE	DATE
5 <sup>th</sup> ISSUE	DATE
6 <sup>th</sup> ISSUE	DATE

ELECTRICAL SYMBOLS & ABBREVIATIONS

SHEET NUMBER

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