

TYPICAL BRANCH CIRCUIT WIRE SIZE TABLE						
BREAKER RATING (AMPS)	WIRE SIZE AND QUANTITY					CONDUIT (INCHES)
	120V-1Ø	208V-1Ø (1)	208V-3Ø	277V-1Ø	480V-3Ø	
20	2-#12, #12G	2-#12, #12G	3-#12, #12G	2-#12, #12G	3-#12, #12G	3/4
30	2-#10, #10G	2-#10, #10G	3-#10, #10G	2-#10, #10G	3-#10, #10G	3/4
40	2-#8, #10G	2-#8, #10G	3-#8, #10G	2-#8, #10G	3-#8, #10G	3/4
50	2-#8, #10G	2-#8, #10G	3-#8, #10G	2-#8, #10G	3-#8, #10G	3/4
60	2-#6, #10G	2-#6, #10G	3-#6, #10G	2-#6, #10G	3-#6, #10G	1
70	2-#4, #8G	2-#4, #8G	3-#4, #8G	2-#4, #8G	3-#4, #8G	1 1/4
80	2-#4, #8G	2-#4, #8G	3-#4, #8G	2-#4, #8G	3-#4, #8G	1 1/4
90	2-#3, #8G	2-#3, #8G	3-#3, #8G	2-#3, #8G	3-#3, #8G	1 1/4
100	2-#3, #8G	2-#3, #8G	3-#3, #8G	2-#3, #8G	3-#3, #8G	1 1/4
125	2-#1, #6G	2-#1, #6G	3-#1, #6G	2-#1, #6G	3-#1, #6G	1 1/2
150	2-1/0, #6G	2-1/0, #6G	3-1/0, #6G	2-1/0, #6G	3-1/0, #6G	2
175	2-2/0, #6G	2-2/0, #6G	3-2/0, #6G	2-2/0, #6G	3-2/0, #6G	2

FOOT NOTE (1): INCLUDE 100% SIZED NEUTRAL IF EQUIPMENT AND OR NEC REQUIRES

GENERAL TABLE NOTES:  
 1. THE ABOVE WIRE AND CONDUIT SIZES ARE FOR REFERENCE ONLY.  
 2. THIS TABLE IS BASED ON 2005 NEC USING COPPER WIRE RATED AT 75 DEG. CELSIUS AND EMT CONDUIT.  
 3. FARTHEST DEVICE ON A CIRCUIT SHALL NOT EXCEED A VOLTAGE DROP OF 3% CONTRACTOR TO INCREASE WIRE AND CONDUIT SIZE TO ACHIEVE 3% DROP OR LESS. CONTRACTOR RESPONSIBLE FOR CALCULATIONS AND MEASUREMENTS.

MOUNTING HEIGHTS	
STANDARD MOUNTING HEIGHTS	
4" BELOW FINISH CEILING	EXIT AND EGRESS LIGHT FIXTURES WHEN STANDARD HEIGHT AND FIXTURE IS IN CONFLICT WITH CEILING HEIGHT.
8'-6"	PENDANT-HUNG INDUSTRIAL AND STRIP LIGHTING FIXTURES. (UNLESS OTHERWISE NOTED)
7'-6"	TOP OF WALL MOUNTED EXIT AND EGRESS LIGHTING FIXTURES (NOT MOUNTED ABOVE DOORS)
CENTERED ABOVE DOOR/WINDOW OPENING	EGRESS LIGHTING, EXIT LIGHTS, WARNING, AND SIGNALING FIXTURES/SIGNS WHEN CEILING HEIGHT IS 9'-0" OR LESS
6'-8"	ILLUMINATED FIRE SIGNALS (SEE NOTE #3)
6'-6"	TOP OF FLUSH AND SURFACE MOUNTED ELECTRICAL PANEL BOARDS AND TELEPHONE CABINETS
6'-0"	TOP OF HIGHEST ELECTRICAL SAFETY DISCONNECT SWITCHES, MAGNETIC STARTERS, AND CONTACTORS
4'-0"	LIGHTING SWITCHES, MANUAL MOTOR STARTERS, AND DISCONNECTS (TOP OF DEVICE)
4'-0"	FIRE ALARM PULL STATIONS THERMOSTATS, INTERCOM PHONES, CARD READERS AND FIRE ALARM REMOTE ANNUNCIATORS (TOP OF DEVICE)
3'-6"	WALL-MOUNTED TELEPHONES AND PAY STATIONS
2'-0"	ELECTRICAL RECEPTACLES WITHIN MECHANICAL SPACES, ELECTRICAL AND ELEVATOR ROOMS
18"	ELECTRICAL RECEPTACLES, TELEPHONE OUTLETS, AND VOICE/DATA
12"	GUEST ROOM RECEPTACLES, TELEPHONE OUTLETS, AND VOICE/DATA
00"	FINISHED FLOOR

SINGLE LINE DIAGRAM SYMBOLS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
-----	CONDUCTORS AND CONDUIT	-----	CONTROL WIRING
[VS]	VOLTMETER SWITCH	[AS]	AMP METER SWITCH
[NO]	NORMALLY OPEN CONTACTOR	[NC]	NORMALLY CLOSED CONTACTOR
[M]	MOTOR	[TVSS]	TRANSIENT VOLTAGE SURGE SUPPRESSOR DEVICE
[ST]	SHUNT TRIP RELAY	[GND]	GROUNDING POINT
[IL]	INDICATING LIGHT	[GFR]	GROUND FAULT RELAY
[A]	AMP METER	[V]	VOLTMETER
[M]	KILOWATT HOUR/DEMAND METER WITH CT CABINET	[PB]	PUSH BUTTON
[SW]	SWITCH	[OR]	OVERLOAD RELAY
[CB]	CIRCUIT BREAKER	[F]	FUSE
[CT]	CURRENT TRANSFORMER	[PT]	POTENTIAL TRANSFORMER
[MS]	MOTOR STARTER (BY CONTRACTOR)	[MSD]	MOTOR STARTER WITH DISCONNECT
[S]	STARTER BY OTHERS	[VSD]	VARIABLE SPEED DRIVE
[NEMA]	NEMA AMPS POLES ENCLOSED FUSED DISCONNECT	[NEMA]	NEMA AMPS POLES ENCLOSED DISCONNECT
[G]	GENERATOR	[ST]	SERVICE TRANSFORMER
[N]	NEUTRAL	[E]	ELECTRICAL PANEL
[L]	LOAD	[X]	PANEL X

ELEC. LIGHTING SYMBOLS	
SYMBOL	DESCRIPTION
[AI]	*A* TYPICAL LUMINAIRE TAG (-EM = EMERGENCY BATTERY PACK)
[RF]	RECESSED 2x4 FLUORESCENT TROFFER
[ERF]	EMERGENCY RECESSED 2x4 TROFFER
[RF2]	RECESSED 2x2 FLUORESCENT TROFFER
[ERF2]	EMERGENCY RECESSED 2x2 TROFFER
[SL]	STRIP FLUORESCENT LIGHT
[ESL]	EMERGENCY STRIP FLUORESCENT LIGHT
[RD]	RECESSED DOWN LIGHT
[ERD]	EMERGENCY RECESSED DOWN LIGHT
[WML]	WALL MOUNTED LINEAR FLUORESCENT LIGHT
[ESWML]	EMERGENCY WALL MOUNTED LINEAR FLUORESCENT LIGHT
[SDM]	SURFACE MOUNTED DOME LIGHT
[ESDM]	EMERGENCY SURFACE MOUNTED DOME LIGHT
[PL]	ROUND PENDENT LIGHT
[LPL]	LINEAR PENDENT LIGHT
[CL]	COVE LIGHTS AND LIGHTS BY LENGTH
[SC]	WALL SCONCE
[SR]	SURFACE/RECESSED HID LIGHT
[FL]	FLOOD LIGHT
[BL]	BOLLARD LIGHT
[C]	CEILING MOUNTED EXIT SIGN, ARROWS AS INDICATED, SHADED SECTORS INDICATE FACE(S)
[W]	WALL MOUNTED EXIT SIGN, ARROWS AS INDICATED, SHADED SECTORS INDICATE FACE(S)
[ELU]	EMERGENCY LIGHTING UNIT
[ELUB]	EMERGENCY LIGHTING UNIT WITH EXTENDED BATTERY
[RELU]	REMOTE EMERGENCY LIGHTING UNIT
[RELUB]	REMOTE EMERGENCY LIGHTING UNIT, WET LOCATIONS
[ELUBO]	EMERGENCY LIGHTING UNIT, BATTERY ONLY

ELEC. ABBREVIATIONS	
ABBREV.	DEFINITION
AC	ABOVE COUNTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFG	ABOVE FINISH GRADE
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
AL	ALUMINUM CONDUCTORS
ATS	AUTOMATIC TRANSFER SWITCH
CATV	CABLE TV
CCTV	CLOSE CIRCUIT TV
DB	DATA BACKBOARD
IE	EXISTING ELECTRICAL EQUIPMENT OR WORK
EMERG	EMERGENCY
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
GRD	GROUND FAULT CIRCUIT INTERRUPTER
IDF	INTERMEDIATE DISTRIBUTION FRAME
IS	ISOLATED GROUND
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
NI	NEW ELECTRICAL EQUIPMENT OR WORK
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NL	NIGHT LIGHT
OS	OCCUPANCY SENSOR
PACK	BATTERY PACK
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(R&R)	REMOVE AND RELOCATE
RGS	RIGID GALVANIZED STEEL
TS	TELEPHONE BACKBOARD
TEDP	TELEPHONE EQUIPMENT DISTRIBUTION PANEL
WP	WEATHER PROOF

ELEC. POWER SYMBOLS	
SYMBOL	DESCRIPTION
---	POWERED WIRING
[E]	EXISTING COMPONENT
Ø	SINGLE RECEPTACLE OUTLET
⊕	DUPLEX RECEPTACLE OUTLET
⊕	DUPLEX OUTLET W/ INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER
⊕IG	ISOLATED GROUND DUPLEX RECEPTACLE OUTLET
⊕	1/2 SWITCHED DUPLEX RECEPTACLE OUTLET
⊕	QUAD RECEPTACLE OUTLET
[R]	RECESSED FLOOR SINGLE RECEPTACLE OUTLET
[R]	RECESSED FLOOR DUPLEX RECEPTACLE OUTLET
[R]	RECESSED FLOOR QUAD RECEPTACLE OUTLET
⊕	CEILING MOUNTED DUPLEX RECEPTACLE OUTLET
⊕	HORIZONTALLY MOUNTED RECEPTACLE OUTLET
⊕	HIGH VOLTAGE RECEPTACLE OUTLET
⊕	PEDESTAL SINGLE RECEPTACLE OUTLET
⊕	PEDESTAL DUPLEX RECEPTACLE OUTLET
⊕	PEDESTAL QUAD RECEPTACLE OUTLET
⊕	POWER CONNECTION TO THE FURNITURE
[WP]	WEATHER PROOF GFCI RECEPTACLE OUTLET
⊕	220 VOLT RECEPTACLE OUTLET
⊕	SPECIAL PURPOSE OUTLET, PER EQUIPMENT SERVED.
⊕	WALL MOUNTED JUNCTION BOX
[J]	CEILING MOUNTED JUNCTION BOX
[D]	DISCONNECT SWITCH, SIZED PER CIRCUIT
[D]	DISCONNECT FUSED SWITCH, SIZED PER CIRCUIT
[D]	COMBINATION MAGNETIC MOTOR STARTER
[VSD]	VARIABLE SPEED DRIVE
[TB]	CABLE TAP BOX
[CF]	CEILING FAN
[EM]	ELECTRIC MOTOR
[EP]	SURFACE MOUNTED ELECTRICAL PANEL
[RP]	RECESSED ELECTRICAL PANEL
[EM]	ELECTRIC METER
[R]	RELAY
[C]	LIGHTING CONTACTOR
[TC]	TIME CLOCK
[T]	THERMOSTAT - COORDINATE WITH MECHANICAL
[PB]	PUSH BUTTON
[B]	BELL
[CD]	CONDUIT DOWN
[CU]	CONDUIT UP
[HR]	HOME RUN
[HRD]	HOME RUN DIRECTLY CONNECTED TO EQUIPMENT
[MDM]	SMOKE DAMPER MOTOR PROVIDED BY MECHANICAL TRADES WIRING BY ELECTRICAL TRADES. REFER TO FIRE ALARM FOR MONITORING WIRING
[MDC]	MULTI-DEVICE CIRCUIT, MULTIPLE DEVICES ARE ASSOCIATED WITH NOTED CIRCUIT. INDIVIDUAL DEVICES ARE SHOWN ON TYPICAL ENLARGED PLANS.

DEMO GENERAL NOTES	
A	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
B	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL INTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
C	ALL ELECTRICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED CONDUIT.
D	ALL DEMOLITION OF THE EXISTING ELECTRICAL SYSTEMS, INCLUDING BUT NOT LIMITED TO CONDUIT, CONDUCTORS, LIGHTS, DEVICES, CONTROLS, SUPPORTS, HANGERS, AND EQUIPMENT SHALL BE UNDER SCOPE OF THE ELECTRICAL SECTION OF THE SPECIFICATIONS.
E	THE OWNER SHALL HAVE FIRST RITE OF REFUSAL ON ALL EQUIPMENT BEING REMOVED.

ELEC. DRAWING SYMBOLS	
SYMBOL	DESCRIPTION
[K]	CONSTRUCTION KEY NOTE
[D]	DEMOLITION KEY NOTE
[EP]	EQUIPMENT DESIGNATION
-----	LINE OF DEVICES OR EQUIPMENT BEYOND OR BELOW THE FLOOR
-----	EXISTING SYSTEM COMPONENT TO BE REMOVED
---	LINE OF NEW OR MODIFIED DEVICES OR EQUIPMENT
[W]	WIRE TAG - (S) #12 HOTS WITH (I) #8 GROUND
[PNA]	PANEL TAG - *A* DESIGNATES PANEL NAME
[S]	DISCONNECT TAG - 30 AMP NEMA 3R, 25 AMP TRIP OVER CURRENT PROTECTION

**ELECTRICAL GENERAL NOTES**

THESE DRAWINGS ARE DIAGRAMMATIC & INDICATE THE GENERAL INTENT OF THE WORK. PROVIDE ELECTRICAL SYSTEMS COMPLETE PER SPECIFICATIONS, NATIONAL ELECTRICAL CODE, & ALL APPLICABLE CODES.

1. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.

2. UNLESS OTHERWISE NOTED, REFER TO PANEL BOARD SCHEDULES FOR EQUIPMENT LOADS, CIRCUIT BREAKER SIZES, & PROPOSED WIRE GAUGES.

3. UNLESS OTHERWISE NOTED, REFER TO SINGLE LINE DIAGRAM FOR SWITCHBOARD, DISTRIBUTION PANELS, EQUIPMENT LOADS, CIRCUIT BREAKER SIZES, WIRE GAUGES, & CONDUIT SIZES.

4. ALL ELECTRICAL DEVICES SHOWN ON THIS PLAN SHALL BE NEW UNLESS OTHERWISE NOTED.

5. ANY 120 VOLT BRANCH CIRCUIT LONGER THAN 120'-0" TO LAST DEVICE SHALL BE SIZED TO THE NEXT LARGER STANDARD AWG SIZE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS OF BRANCH CIRCUIT.

6. SHARING OF NEUTRALS IS PROHIBITED.

7. ALL DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE.

8. MOUNT GROUPED LIGHT SWITCHES UNDER ONE COMMON FACE PLATE. MULTIPLE SINGLE GANG FACE PLATES FOR GROUPED SWITCHES IS NOT ACCEPTABLE.

9. CONFIRM LOCATION OF FURNITURE, OWNER PROVIDED WALL & FLOOR LAMPS, PHONE, TV, & POWER OUTLETS WITH OWNER'S ROOM USE PLANS.

10. ELECTRICAL DEVICE BOXES ARE NOT TO BE INSTALLED IN PARTITION WALLS IN A DIRECT BACK-TO-BACK CONFIGURATION, WITHOUT WRITTEN AUTHORIZATION FROM ARCHITECT/ENGINEER.

11. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY, PRIOR TO INSTALLATION OF ANY INDIVIDUAL CIRCUIT, TO VERIFY WITH ALL OTHER TRADES CONCERNED THAT THE CIRCUIT WITH DEVICES AS DRAWN IS ADEQUATE IN SIZE & MAKE-UP FOR THE MECHANICAL AND/OR KITCHEN EQUIPMENT TO BE INSTALLED. IF ANY CONFLICT IN VOLTAGE, PHASE, OR LOAD IS ENCOUNTERED WHICH WOULD ALTER THE CIRCUIT SIZE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR OWNER IMMEDIATELY. FAILURE TO DO SO SHALL PLACE THE RESPONSIBILITY FOR ANY SUBSEQUENT CIRCUIT CHANGE DIRECTLY UPON THE CONTRACTOR.

12. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES & CEILING CONSTRUCTION.

13. THESE ARE STANDARD SYMBOLS & MAY NOT ALL APPEAR ON PROJECT DRAWING FILES. WHENEVER THE SYMBOL OCCURS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED & INSTALLED.

14. DETAIL CALL OUTS ARE GIVEN AS A REFERENCING AID. DETAILS SHALL BE APPLIED BOTH WHERE CALLED OUT & AS APPLICABLE.

15. DO NOT ROUTE WIRING OR CONDUITS THROUGH STRUCTURAL MEMBERS REQUIRING FIELD OPENINGS LARGER THAN 1" WITHOUT WRITTEN CONSENT FROM ENGINEER. STRUCTURAL MEMBERS TO INCLUDE BUT ARE NOT LIMITED TO BEAMS, COLUMNS, JOIST, & STRUCTURAL WALL ELEMENTS CALLED OUT ON STRUCTURAL PLANS.

PHONE/DATA/TV SYMBOLS	
SYMBOL	DESCRIPTION
[T]	TELEPHONE OUTLET
[TW]	TELEPHONE OUTLET FOR WALL PHONE
[TH]	TELEPHONE OUTLET FOR DEDICATED HOUSE PHONE
[TW]	WALL MOUNTED DEDICATED HOUSE PHONE
[TH]	TELEPHONE OUTLET, MOUNTED HORIZONTALLY
[T]	TELEPHONE OUTLET, FLOOR MOUNT
[D]	DATA OUTLET
[D]	DATA OUTLET, MOUNTED HORIZONTALLY
[D]	DATA OUTLET, FLOOR MOUNTED
[D]	COMBINATION DATA AND PHONE OUTLET
[WAP]	WIRELESS ACCESS POINT 10' OF ROLLED DATA CABLE ABOVE CEILING WITH SURFACE MTD JUNCTION BOX
[TV]	TV OUTLET
[OF]	OPTICAL FIBER OUTLET
[P]	PHOTOCELL
[M]	VOICE MICROPHONE
[S]	WALL MOUNTED SPEAKER
[S]	CEILING MOUNTED SPEAKER
[CAM]	SECURITY CAMERA LOCATION

SCHEDULE NOTES:  
 1. EACH COMMUNICATION JACK TO HAVE AN INDEPENDENT HOME RUN CABLE. DO NOT GANGE MULTIPLE JACKS ON ONE CABLE.  
 2. (#) INDICATES A MULTI-TERMINATION OUTLET. NUMBER OF TERMINATIONS AS INDICATED.  
 3. CAMERA LOCATION TO INCLUDE SINGLE GANG JUNCTION BOX, 3/4" CONDUIT, AND PULL CORD TO HOME RUN AS INDICATED.

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 ABBREVIATIONS AND SYMBOLS

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