

ELECTRICAL ROUGH

ALL CODE REFERENCES ARE 2008 N.E.C. UNLESS OTHERWISE NOTED

CONDUIT

PER ARTICLE 300 AND TABLE 300.5

WIRE

- * NEUTRALS AND GROUNDS MUST BE SEPARATED IN SUBPANELS (250-24(5))
- * EXPOSED ROMEX (300-4(D) & **334.15**)
- * MINIMUM WIRE SIZE IS **#12 FOR KITCHEN, LAUNDRY AND BATHROOM CIRCUITS, #14 FOR OTHER** BRANCH CIRCUIT WIRING. (210.19(A) (4) & 210.24)
- * MINIMUM RANGE WIRE SIZE IS 8/3 WITH GROUND. (4 WIRE) MINIMUM RANGE CIRCUIT SIZE IS 40 AMPS. (210-19(3))
- * DOUBLE OVEN OR COOKTOP CIRCUIT AND WIRE SIZE SHALL BE PER MANUFACTURERS SPECIFICATIONS. MINIMUM 10/3 – 30 AMP (4 WIRE) (210-19(A)(3))
- * WATER HEATER MINIMUM WIRE SIZE IS 10/2 WITH GROUND FOR 4KW AND GREATER. (422-13)
- * MINIMUM DRYER WIRE SIZE IS 10/3 WITH GROUND. (4 WIRE) (210-23(B) & **250.140**)
- * WIRE AMPACITY TABLES 310-16.
- * AIR HANDLERS MUST BE MARKED WITH HEATER KW. (FBC-MECH 301.6)
 - 5 KW – 10/2 WITH GROUND
 - 7.5 KW – 8/2 WITH GROUND
 - 10 KW – 6/2 WITH GROUND
- * ALL GROUNDING CONNECTIONS MUST BE MADE UP WITH APPROVED SPLICE CAPS OR WIRE NUTS AND HAVE PIGTAIL FOR CONNECTION TO THE DEVICE. (110.14)
- * ALL SWITCHES AND RECEPTACLES MUST BE GROUNDED. (404.9(B) & **406.3(A)**)
- * ALL WHITE WIRE USED AS A HOT CONDUCTOR MUST BE MARKED WITH TAPE OTHER THAN WHITE OR GREEN. (SWITCH LOOPS, TRAVELERS, OR 240 VOLT CIRCUIT ETC.) (200-7c)
- * NEUTRALS MUST BE MARKED WITH WHITE AND GROUNDING CONDUCTORS MUST BE MARKED WITH GREEN IF # 6 OR LARGER. (200-6(A) & **250.119**)

CIRCUITS / OUTLETS

- * #12/2 WITH GROUND WIRE (**20 AMP CIRCUIT**) MUST BE USED FOR THE 2 OR MORE KITCHEN SMALL APPLIANCE CIRCUITS. THESE CIRCUITS SHALL EXTEND FROM THE KITCHEN COUNTERTOP AND ISLAND AREA TO THE DINING, NOOK AND BREAKFAST AREA. (210-52b1&3)
- * A REFRIGERATOR MAY BE ON THE SMALL APPLIANCE CIRCUIT. IF A SEPARATE REFRIGERATOR CIRCUIT IS SUPPLIED IT MAY BE A 15 AMP. CIRCUIT WITH 14/2 W/GROUND WIRE. (210-52b1 EXCEPTION 2)
- * COUNTERTOP AND ISLAND RECEPTACLES MUST BE GFCI PROTECTED. (210-8a6)
- * RANGE HOOD IS NOT PERMITTED TO BE ON SMALL APPLIANCE CIRCUIT. (210-52b2)
- * IGNITER FOR GAS RANGE IS PERMITTED TO BE ON SMALL APPLIANCE CIRCUIT. (210-52b2 EXCEPTION 2)
- * **AT LEAST ONE 20 AMP BRANCH CIRCUIT SHALL BE PROVIDED TO SUPPLY ALL BATHROOM RECEPTICLES. WHERE THE 20 AMP CIRCUIT SUPPLIES A SINGLE BATHROOM, LIGHTING AND OTHER EQUIPMENT WITHIN THE SAME BATHROOM MAY BE ON THE SAME CIRCUIT. (210.11(C), (3))**
- * REQUIRED GARAGE AND EXTERIOR RECEPTACLES MAY BE ON A 15 **OR 20** AMP. CIRCUIT **AND MUST BE GFCI PROTECTED.** (210-52(E) (G) & 210-8(A), (2) (3)) **NOTECERTAIN EXCEPTIONS PERTAINING TO GFCI PROTECTION IN GARAGES, ACCESSORY STRUCTURES AND UNFINISHED BASEMENTS WERE DELETED IN THE 2008 NEC. ALL RECEPTICLES IN THES E LOCATIONS NOW REQUIRE GFCI PROTECTION REGARDLESS OF ACCESSIBLILITY OR WHETHER INTENDED FOR AN APPLIANCE**

- * LAUNDRY CIRCUIT MUST BE A 20 AMP. CIRCUIT. (210-11c2)
- * DISHWASHERS AND DISPOSALS MUST BE WIRED ON INDIVIDUAL CIRCUITS ***IF ON 15 AMP CIRCUIT*** (210-23a ***TABLE 210.21 B 2***)
- * AIR HANDLERS LOCATED IN ATTICS MUST HAVE A LIGHT AND RECEPTACLE AT OR NEAR THE UNIT FOR SERVICING THE UNIT (210-63, 210-70a3 & FBC MECH ***306-3.1***)
- * A RECEPTACLE IS REQUIRED WITHIN 25' AND ON THE SAME LEVEL AS THE CONDENSOR (210.63)
- * ATTIC SPACE USED FOR STORAGE MUST HAVE A SWITCHED LIGHT AT THE ATTIC ACCESS. (210-70a3)
- * MULTI-WIRE BRANCH CIRCUITS MUST HAVE NEUTRAL CONNECTIONS INDEPENDENT OF THE DEVICE. THEY MUST BE WIRE NUTTED TOGETHER WITH A PIGTAIL TO THE DEVICE. (210.4 & 300.13(B))
- * ***ALL 120 V, 15 -20 AMP BRANCH CIRCUITS IN BEDROOMS, FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, RECREATION ROOMS, LIBRARIES, DENS, PARLORS, SUNROOMS, HALLWAYS, CLOSETS, AND SIMILAR ROOMS OR AREAS SHALL BE AFCI PROTECTED (210.12 (B))***
- * SMOKE DETECTORS MUST BE WIRED TOGETHER WITH BATTERY BACK-UP AND LOCATED IN AND ADJACENT TO SLEEPING ROOMS. (NFPA 72 A-2-3-52.7)
- * SMOKE DETECTOR CIRCUITS SHALL NOT BE CONNECTED TO A GFCI BREAKER.
- * VOLTAGE DROP MUST BE CONSIDERED FOR WELL CIRCUITS. (210. 19(A) FPN 4)
- * RECEPTACLE SPACING MUST BE 12' BETWEEN OUTLETS AND MAXIMUM OF 6' FROM OPENING. A RECEPTACLE IS REQUIRED ON A 2-FOOT OR LONGER WALL SPACE (210-52(A)) ***NOTE: A RECEPTACLE CONTROLLED BY A WALL SWITCH DOES NOT COUNT AS A REQUIRED OUTLET.***
- * KITCHEN COUNTERTOPS MUST HAVE RECEPTACLES SPACED NOT MORE THAN 4' APART BEGINNING WITHIN 2 FEET OF THE EDGE OF THE COUNTERTOP. A COUNTERTOP 1-FOOT IN WIDTH REQUIRES A RECEPTACLE. RECEPTACLES MUST BE ABOVE BUT NOT MORE THAN 20" ABOVE COUNTERTOP (210-52(C) 1-5)
- * ISLAND AND PENINSULAR CABINETS MUST HAVE A MINIMUM OF 1 RECEPTACLE. THESE RECEPTACLES MUST BE GFCI PROTECTED. (210-52c2&3)
- * BATHROOM COUNTERTOP RECEPTACLES MUST BE WITHIN 3 FEET OF THE OUTSIDE EDGE OF THE LAVATORY. (210-52d)
- * ***WHIRLPOOL AND HYDROMASSAGE TUBS MUST BE ON A SEPARATE CIRCUIT AND PROTECTED BY A READILY ACCESSIBLE GFI INTERRUPTER. (680.71)***
- * THE NUMBER OF CIRCUITS SUPPLYING GENERAL LIGHTING AND CONVENIENCE OUTLETS SHALL BE COMPUTED BY THE LIVING AREA X 3 WATTS PER SQ. FOOT DIVIDED BY 120 VOLTS. EXAMPLE 1800 SQ. FOOT LIVING AREA X 3 = 5400. 5400 DIVIDED BY 120 = 45 AMPS. THUS 3 – 15 AMP. CIRCUITS EVENLY PROPORTIONED MAY SUPPLY ALL LIGHTING AND RECEPTACLES EXCEPT KITCHEN, DINING, NOOK, LAUNDRY, AND BATHROOM RECEPTACLES. (220-12)

ENCLOSURES

- * ALL PANELS MUST BE APPROVED FOR LOCATION AND USE. (110-3(B) & ***110.20***)
- * NO PANELS WITH OVERCURRENT DEVICES PERMITTED IN BATHROOMS, CLOTHES CLOSETS OR OVER STAIRWAYS. (240-24(D), (E) & ***(F)***)
- * WORKING CLEARANCE FOR ELECTRICAL PANELS MUST BE A MINIMUM OF 30" WIDE X 36" DEEP X 72" HIGH IN FRONT OF PANELS. NO OTHER EQUIPMENT MAY BE IN THIS SPACE. (110-26 ***(A)***)
- * A CLEAR PATH MUST BE PROVIDED TO THE ELECTRICAL PANEL. (110-26b&c)
- * CONDUIT MUST BE BUSHED AND SEALED AT TOP END. (312.5(5)C)

BOXES / FITTINGS

- o BOXES MUST BE PROPERLY SUPPORTED. (314-23)
- o JUNCTION BOXES MUST BE ACCESSIBLE. (314-29)
- o NAIL PLATES MUST BE INSTALLED TO PROTECT WIRES AS NECESSARY. (300-4)
- * BOX FILL COUNT FOR #14 WIRE IS 2.0 AND FOR #12 WIRE IS 2.25 PER CONDUCTOR

WITH GROUNDING WIRES COLLECTIVELY COUNTING AS 1. THE DEVICE COUNTS AS 2. **(314.16 (A)&(B))**

- * ALL METAL BOXES MUST BE GROUNDED WITH A GREEN SCREW OR GROUNDING CLIP. (250-126 & **250.148(C)**)
- * ALL CEILING FAN BOXES MUST BE U.L. APPROVED FOR CEILING FANS. (314.27(d))
- * WIRES MUST BE SECURED WITHIN 12" OF BOX AND EVERY 4-1/2' THEREAFTER. (334-30)
- * APPROVED STANDOFF BRACKETS MUST BE USED ON ROMEX WIRES ATTACHED TO FURRING STRIPS. (300-4d)
- * GROUND CLAMPS USED OUTDOORS OR BURIED IN CONCRETE OR GROUND MUST BE DIRECT BURIAL TYPE (WITH BRASS SCREWS). (110-3(B) & **250.70**)
- * **ALL RECESSED CANS MUST BE THERMALLY PROTECTED. ONLY TYPE IC MAY BE IN DIRECT CONTACT WITH INSULATION. (410.115 (C) & 410.116)**

SWITCHES

- * MUST PROVIDE DISCONNECT AT A/C AIR HANDLER (440.11)
- * MUST PROVIDE DISCONNECT WITHIN SIGHT OF A/C CONDENSING UNIT. (440.11 & 440.14)
- * MUST PROVIDE DISCONNECT WITHIN SIGHT OF ALL MOTORS. (430-102b)
- * WIRE MUST BE SIZED ACCORDING TO BREAKER SIZE. (210-3)

SERVICES

- * 100AMP. MINIMUM SERVICE ON ALL RESIDENTIAL INCLUDING MOBILE HOMES (230-79(C) & **550-32(C)**)
- * MUST HAVE MINIMUM SERVICE DROP CLEARANCE. (230-24)
- * RISER MORE THAN 5' ABOVE ROOF MUST BE GUYED. (230.24, **230.28** & TECO)
- * GALVANIZED CONDUIT MUST BE USED THRU ROOF. (230-28)
- * MINIMUM OF 2 THRU WALL BOLTS TO SUPPORT RISER. (230-28 & **344.30(A)**)
- * BONDING BUSHING MUST BE USED ON METAL NIPPLES AND CONDUITS IF THE LARGEST CONCENTRIC OR ECCENTRIC KNOCKOUT HAS NOT BEEN USED. (**250.90**, 250-92 & 250-94)
- * CONDUIT TERMINATION MUST PROTECT WIRES. (300-4.(G) & **300.5(H)**)
- * PROTECTION FROM DAMAGE MUST BE PROVIDED WHEN PVC, SEALTIGHT, ENT, OR SEU CABLES ARE USED FOR SERVICE ENTRANCE CONDUCTORS. (& 230-50 (A) (B) & **300.5(D)**)
- * FITTINGS **INSTALLED IN WET LOCATIONS SUCH AS** OUTSIDE PANELS AND METERS MUST BE WEATHERPROOF. (314.15)
- * METER TO FIRST DISCONNECT MUST NOT BE MORE THAN 5' OF CONDUIT INSIDE BUILDING (230-70a)
- * METER AND MAIN DISCONNECTS MUST BE GROUPED IN ONE LOCATION (EXCEPT FOR TOWNHOUSES). (**225.34**, 230-71 & 230-72)
- * SERVICE PANEL MAY NOT BE LOCATED IN BATHROOMS OR OVER STAIRWAYS. (230-70(A)(2) & **240.24(C),(D) &(F)**)
- * OUTBUILDINGS OR GARAGE FEED FROM THE HOUSE SERVICE MUST HAVE A GROUNDING ELECTRODE SYSTEM (SAME AS FOR HOUSE). THIS PANEL MAY HAVE NO MORE THAN 6 MAINS OR BREAKERS SERVING AS MAINS WITHOUT HAVING A SINGLE MAIN DISCONNECT. (250-32a & 225-33a)
- * ELECTRICAL SERVICE FEEDER SIZE (310-15B6)
 - o 200 AMP - 2/0 COPPER OR 4/0 ALUMINUM
 - o 150 AMP - #1 COPPER OR 2/0 ALUMINUM
 - o 100 AMP - #4 COPPER OR #2 ALUMINUMNEUTRAL MAY BE REDUCED BY 2 WIRE SIZES (310-15B6)
SER CABLE MAY BE USED BETWEEN MAIN PANEL AND SUBPANEL IF PROTECTED FROM PHYSICAL DAMAGE AND PROPER FITTINGS ARE USED
- * MINIMUM GROUNDING WIRE SIZE (250-66)
 - o 200 AMP - #4 COPPER

- 150 AMP OR LESS - #6 COPPER
- * GROUNDING ELECTRODE SYSTEM MUST INCLUDE FOOTER STEEL AND BE BONDED TOGETHER WITH GROUND ROD AND METAL WATER PIPE (IF USED). IF FOOTER GROUND IS NOT AVAILABLE, 3 GROUND RODS MUST BE USED (250-56)
- * BONDING TERMINATION FOR COMMUNICATIONS, RADIO AND TV, NPBCS SHALL BE IN PROPER TERMINAL BLOCK AT SERVICE (800.100(B) AND 250.94).
- * ANTI-OXIDE MUST BE USED ON ALL ALLUMINUM CONNECTIONS (MANUFACTURER RECOMMENDATIONS)
- * CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED SUNLIGHT RESISTANT. (310. 8(D))
- * RETURN PLANS TO ORIGINAL LOCATION, SIGN AND DATE PERMIT CARD, LEAVE REJECT IF NECESSARY OR COURTESY NOTE IF YOU NEED TO CONVEY A MESSAGE.

THIS LIST IS ONLY A GUIDE AND IS NOT ALL ENCOMPASSING