

Electrical Installation Checklist

Rough

1. Splice grounds with approved device (wire nut or properly crimped splice cap).
2. All grounds in any box must be spliced together, even from different circuits.
3. Provide ground pigtail for each switch and receptacle.
4. Ground all metal boxes with an independent, green ground screw or other approved device.
5. Minimum 6' wire length in boxes.
6. Don't install switches, receptacles, or fixtures in boxes. This allows inspection of splices. Devices are installed after drywall.
7. Spacing and number of receptacles:
 - A. 2-foot wall requires receptacle, can't be more than 6 feet from receptacle.
 - B. 1-foot counter top requires receptacle, can't be more than 2 feet from receptacle.
 - C. Kitchen island requires at least one receptacle.
 - D. Kitchen counter peninsula requires at least one receptacle.
 - E. Each bathroom sink must have a receptacle within 3 feet of the sink.
 - F. Outside receptacles required at the front and at the rear of the house.
8. Boxes must be of sufficient size:
 - A. 2 cu. in. per #14 wire, 2.25 cu. in. per #12 wire.
 - B. Each conductor = 1, all grounds = 1, clamp = 1, device = 2.
 - C. **Example:** Three 2 conductor #14 romex in a single gang plastic switch box: $3 \times 2 = 6$ (conductors)+1(ground)+2(switch) = 9; $9 \text{ wires} \times 2 \text{ cu. in. /wire} = \mathbf{18}$ cu in. required for box size:
9. Mount boxes so that opening faces the living space.
10. All junction boxes require access after the job. Don't conceal boxes under drywall or in inaccessible attic.
11. Fan boxes required for all paddle-type ceiling fans.
12. Staple romex within 12 inches of box entry and at least every 4-6 feet along the run.
13. Wire less than 1-1/2 inches of joist edge must be protected with metal plate.
14. 20 amp receptacle circuits required for dining room, dinette, kitchen counter, laundry; these circuits cannot serve general purpose receptacles or light fixtures.
15. Two options allowed for bathrooms:
 - A. 20 amp circuit required for bathroom receptacles; this same circuit can serve multiple bathrooms.
 - B. Each bathroom is served with a dedicated 20 amp circuit for receptacles, lamps, and fan.
16. Firestop wires passing through return air plenum and to other floors.
17. If boxes must be located in return air plenums, then they must be metal and fed with metal conduit.
18. Wires can't be run in return air plenum parallel with joists.
19. Dryers and ranges must be wired with 4 conductor cables.
20. Jacuzzi type tubs require a GFCI protected receptacle. This GFCI must be readily accessible; it can't be 'hidden' behind a panel under the tub. Use a Blank-Face GFCI on a free wall in the bath or adjoining closet feeding a regular receptacle under the tub or use a GFCI circuit breaker in the panel. Receptacles for the whirlpool motor and/or heater must have access.

Final

1. All equipment and fixtures are installed and working (move-in condition).
2. All lighting fixtures have bulbs and operate.
3. Boxes must be flush with walls with **M** side gaps.
4. Direct-wired appliances such as furnaces must be grounded.
5. All receptacles must be grounded and have proper Hot, Neutral, & Ground connections (use three lamp receptacle tester).
6. GFCI's are required for receptacles that are located outdoors, in a garage, unfinished basement, kitchen Counters, bathrooms, and Jacuzzi tubs.
7. GFCI's not required for sump pumps, central vacuum units, garage/basement refrigerators or freezers!! Single receptacles are used instead of duplex receptacles.
8. Verify GFCI's are wired properly (power connection to Line, downstream connection to Load); an improperly wired GFCI receptacle still has power if the reset button pops.
9. Bedroom outlets (receptacles, light fixtures, smoke detectors) must be protected by an Arc Fault circuit protection.
10. Outside receptacle covers must be of the type that provide weatherproofing with a cord connected.

(Over)

Service

1. Consult Edison if you desire to relocate the meter. Edison must approve new location.
2. Install 2 ground rods, minimum 6 feet apart (use #6 copper).
3. Ground water pipe to within 5 feet of where pipe enters dwelling; bypass water meter with ground wire; (use #6 copper for 100 A and #4 for 200 A service).
4. Ground conductors can't be spliced.
5. Bond all metal service raceways (conduits and nipples).
6. Don't mix aluminum and copper wire under the same lug. To splice aluminum with copper use a split bolt.
7. Locate main panel immediately where service conductors enter dwelling; otherwise install main service disconnect adjacent to meter and wire to circuit breaker panel with 4 conductors and connect as sub-panel (install a ground bar kit to isolate neutral conductors from ground conductors).
8. Sub-panels must be fed with 4 conductors (and connect as noted above) except for conditions listed in NEC for remote buildings.
9. Water pipe and ground rod conductors must connect to the "main" disconnect. The "main" disconnect is the first panel connected to the meter.
10. Install provided bonding screw in main panel (do not install in sub-panel).
11. Protect service conductors if subject to damage from vehicles (if service is adjacent to driveway).
12. Weatherhead must be higher than Edison connection point.
13. Service taps must be minimum 10 feet above the ground.
14. Overhead conductors must be minimum 12 feet above a residential driveway.
15. Label all panels and circuit breakers within panels.
16. If IAC disconnect is not grouped with main disconnect, label both disconnects to note the location of the other on the label (i.e. "Air Conditioner Main, House Main Panel is Located in Basement", "House Main Panel, Air Conditioner Main is Located Outside at Meter").
17. Free space minimum 30" wide, 36" deep in front of panels.
18. Service panels cannot be located in bathrooms or closets.

Swimming Pools

1. UL listed pump required with wording "UL Listed as Swimming Pool Pump"
 - A. Three-foot maximum cord length
 - B. #12 AWG cord
 - C. Integral twist lock cap
2. Only twist lock receptacle for pump allowed within 10 feet of pool - no other receptacle.
3. Twist lock cover must be the type that remains rain tight when cord is connected.
4. GFCI 20 amp circuit required for pump with no other loads.
5. Raceway cannot contain both GFCI and non-GFCI circuits.
6. If pump is fed from sub-panel (vs. main house panel) then the sub-panel must be fed with four insulated conductors (2 hot, 1 neutral, and 1 ground); note - ground wire cannot be bare.
7. General purpose GFCI receptacle must be provided between 10 and 20 feet from pool edge.
8. Bond with #8 solid copper wire:
 - A. All metal within 5 feet of pool edge bonded, including pool frame, re-rod, ladders, handrails, fence, window, and all pool circulation equipment (pump, heater, filter, ...).
9. PVC conduits must have a minimum of 18" of cover.
10. Rigid metal conduits must have a minimum of 6" of cover.
11. No overhead wires allowed within 10 feet of the edge of the pool.
12. Approved wet niche junction box required for wet-niche light fixture, see NEC for definition.
13. For Hot Tub, provide an accessible, labeled disconnect more than 5 feet, but within sight of hot tub and protect with GFCI breaker.

This list covers **common violations** found during Electrical Inspections and **does not** constitute all requirements of the current electrical code. Our goal is to have no violations! Please call with any questions:

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