City of Scott City

Residential Electrical Final
Inspection Checklist

This inspection checklist reflects the code requirements of the 2015 International Residential Code (IRC) and the 2008 National Electric Code (NEC)

Please verify the following before calling for an Electrical Final Inspection.

Terminology/Definitions

Bonded – Connected to established electrical continuity and conductivity.
Branch Circuit – The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s).
Feeder – All circuit conductors between the service equipment, or the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent device.
Grounded – Connected to ground or to a conductive body that extends the ground connection.
Grounded Conductor – A system or circuit conductor that is intentionally grounded (commonly referred to as the "neutral" conductor).
Grounding Conductor – The conductive path(s) that provide a ground-fault current path and connect normally noncurrent-carrying metal parts of equipment together and, to the system grounded conductor, the grounding electrode conductor or both (commonly referred to as the "ground" conductor).
Grounding Electrode – A conducting object through which a direct connection to earth is established (typically a "ground rod").
Grounding Electrode Conductor – A conductor used to connect the system ground conductor or equipment to a grounding electrode or to a point on the grounding electrode system.
Service – The conductors and equipment for delivering energy from the serving utility to the wiring system of the premises served.
Service Conductors – The conductors from the service point to the service disconnecting means.
Service Equipment – The necessary equipment, usually consisting of a circuit breaker(s) or switch(es) and fuse(s), and their accessories, connected to the load end of the service conductors to a building or other structure, or an otherwise designated area, and intended to constitute the main control and cutoff of the supply.
Service Drop – The overhead service conductors between the utility supply system and the service point.
Service Lateral – The underground service conductors between the utility supply system and the service point.
Service Point – The point of connection between the facilities of the serving utility and the premises wiring.
Ungrounded Conductor – Commonly referred to as the "hot" conductor.

Permits and Plans

- ☐ Job address is posted in a visible location. (IRC R319.1)
- ☐ Permit and approved plans are on site and accessible to the inspector (IRC R106.3.1 and R105.7)

Service & Service Entry

- ☐ One- and two-family dwellings are supplied by only one service. (IRC E3601.2 & NEC 230.2)
- ☐ Service load is calculated per IRC Table E3602.2 or NEC 220.82(B) & (C).
- ☐ Service conductors supplying another building or structure do not pass through the interior of another building or structure. (IRC E3601.3 & NEC 230.3)
- ☐ Where service raceway enters from underground it is properly sealed. (IRC E3601.5 & NEC 230.8)
- ☐ Service disconnect is provided to disconnect all conductors in a building or other structure from the service entrance conductors. Service disconnect is permanently marked as a service disconnect and is located in an accessible location outside the building or inside nearest the point of entrance of the service conductors. (IRC E3601.6, NEC 230.70)
- ☐ Service disconnecting means consists of not more than six switches or six circuit breakers mounted in a single enclosure (i.e. must be able to disconnect power to the structure in six hand movements or less). (IRC E3601.7, NEC 230.71(A))
- ☐ Service and feeder conductors are sized per IRC Table 3705.1 or NEC Table 310.15(B)(6).
- ☐ Grounding electrode conductor is sized per IRC Table 3603.4 or NEC Table 250.66.
- ☐ Overhead service installations have the following vertical clearances (IRC E3604, NEC 230.24):
    - Where the slope of the roof is less than 4/12, clearance of not less than 8'.
    - Where the slope of the roof is 4/12 or greater, clearance of not less than 36".
    - Where the service mast is located in the overhanging portion of the roof, clearance of not less than 18".
    - From grade to the lowest point of the drip loop above sidewalks, clearance of not less than 10'.
    - From grade to the lowest point of the drip loop above driveways, clearance of not less than 12'.
    - Above public streets, alleys, roads or parking areas subject to truck traffic, clearance of

Grounding & Bonding

- ☐ The grounding electrode conductor is connected to the grounded service conductor at any accessible point from the load end of the overhead service conductor, service drop, underground service conductors, or service lateral to and including the terminal or bus to which the grounded service conductor is connected to the service disconnecting means. A grounding connection is NOT made to any grounded circuit conductor on the load side of the service disconnecting means (see exceptions). (IRC E3607.2 & NEC 250.24(A)(1) and (A)(5))

- ☐ If a metal water piping system is installed in the building or structure, the system is bonded to the service equipment enclosure, the grounded conductor at the service entrance, the grounding electrode conductor (where of sufficient size) or to one or more of the grounding electrodes used. Bonding jumper is appropriately sized. (IRC E3609.6 & NEC 250.104(A)(1))
- ☐ A grounded conductor (neutral) is not connected to normally noncurrent-carrying metal parts of equipment, to equipment grounding conductor(s), or reconnected to ground on the load side of the service disconnecting means. (IRC E3908.6 & NEC 250.24(A)(5))

Equipment Location & Clearances

- ☐ The following working clearances are required for energized equipment and panelboards: (IRC E3405.2 & Figure E3405.1 & NEC 110.26)
    - o Not less than 36" horizontally in the direction of access to the equipment (measured from the energized parts).
    - o A minimum of 30" wide in front of the electrical equipment or the width of the equipment, whichever is greater. (Hinged doors must be able to open at least 90-degrees)
    - o Clear workspace extending from the floor or platform up to a height of at least 6.5 feet or the top of the equipment, whichever is greater.
- ☐ Manually controlled work lighting is provided for all service equipment and panelboards located indoors. (IRC E3405.7 & NEC 110.26(D))

Panelboards

- ☐ All panelboards have a rating not less than that of the minimum service or feeder capacity required for the calculated load. (IRC E3706.1 & NEC 408.30)
- ☐ All circuits in panelboards are clearly identified and labeled. Labels that depend on transient conditions are not used (for example, circuit is labeled "NW Bedroom" instead of "John's Bedroom" which loses meaning if John and his family no longer live in the dwelling). (IRC E3706.2 & NEC 408.4(A))
- ☐ Panelboard is protected by an overcurrent device that is not rated greater than the rating of the box. (IRC E3706.3 & NEC 408.36)
- ☐ Only one grounded conductor (hot) is connected to the terminal of an overcurrent device unless the device terminal is identified for connection of more than one conductor. (IRC E3706.4 & NEC 408.41)

General Branch Circuit and Feeder Requirements

- ☐ Branch circuits have appropriate wire size and overcurrent protection. (IRC E3702.14 & NEC 210.24)
    - o 15-Amp circuit rating: minimum 14 AWG conductor size, maximum 15 Amp overcurrent protection device rating, any type 15 maximum lampholder or outlet devices.

- 20-Amp circuit rating: minimum 12 AWG conductor size, maximum 20 Amp overcurrent protection device rating, any type 15 or 20 lampholder or outlet devices.
- 30-Amp circuit rating: minimum 10 AWG conductor size, maximum 30 Amp overcurrent protection device rating, no lampholder devices permitted, type 30 outlet devices.

☐ The following branch circuits and outlets are provided: (IRC E3703)

- Central heating equipment – individual branch circuit (auxiliary equipment such as a pump, valve, humidifier, electrostatic air cleaner, etc. are allowed on same circuit) (NEC 422.12)
- Kitchen & Dining Area – minimum of (2) 20-Amp branch circuits serving wall and floor receptacles in kitchen, pantry, breakfast area, dining room or similar area of dwelling. Kitchen countertop is served by a minimum of (2) 20-Amp branch circuits which may be the same two circuits serving the other kitchen, pantry, etc. circuits. (NEC 210.52(B), 210.52(C)). Note: refer to NEC 210.52(C) for specific outlet location requirements.
- Laundry – minimum of (1) 20-Amp dedicated circuit serving only laundry area. (NEC 210.11(C)(2))
- Bathrooms – each bathroom has a minimum of (1) 20-Amp dedicated circuit serving only that bathroom. (NEC 210.11(C)(3))
- Outdoor locations – minimum of (1) 20-Amp circuit with accessible GFCI protected outlets located at front and back of house. Balconies, decks and porches greater than 20 square feet also have an outlet. (NEC 210.52(E))
- Unfinished basement – minimum of (1) 20-Amp GFCI protected outlet installed. (NEC 210.52(G))
- Attached garage – minimum of (1) 20-Amp GFCI protected outlet installed. (NEC 210.52(G))
- Hallways longer than 10 feet – minimum of (1) receptacle outlet. (NEC 210.52(H))

☐ All ungrounded branch circuit and feeder conductors are protected against overcurrent by an overcurrent device installed at the point where the conductors receive their supply.

Ground-Fault Protection

☐ The following locations are required to be protected by Ground-Fault Circuit-Interrupters: (IRC E3902)

- Bathroom receptacles – all locations, no exceptions (NEC 210.8(A)(1))
- Garages and accessory building receptacles (NEC 210.8(A)(2))
- Outdoor receptacles(NEC 210.8(A)(3))
- Kitchen receptacles – locations that serve countertop surfaces (NEC 210.8(A)(4))
- Laundry, utility and wet bar sink receptacles – where located within 6 ft to the outside edge of the sink (NEC 210.8(A)(7))
- Kitchen dishwasher branch circuit or outlets that supply the dishwasher (IRC E3902.10)
- Electrically heated floors – in bathrooms, kitchens and in hydromassage bathtub, spa and hot tub locations. (IRC E3902.13)

Arc-Fault Protection

- ☐ Branch circuits that supply 120-volt, single-phase, 15- and 20-Amp outlets in the following locations are required to be protected by Arc-Fault Circuit-Interrupters: (IRC E3902.16 & NEC 210.12)
    - o Kitchens (where not ground-fault protected)
    - o Family rooms
    - o Dining rooms
    - o Living rooms
    - o Parlors
    - o Libraries
    - o Dens
    - o Bedrooms
    - o Sunrooms
    - o Recreation rooms
    - o Closets
    - o Hallways
    - o Laundry area (where not ground-fault protected)
    - o Similar rooms or areas
- ☐ Methods of providing Arc-fault protect meet the requirements listed in IRC 3902.16 and NEC 210.12.

Lighting

- ☐ Switches or circuit breakers do not disconnect the grounded conductor (neutral) of a circuit except where the switch or circuit breaker simultaneously disconnects all conductors of the circuit. (IRC E4001.8 & NEC 404.2(B))
- ☐ Luminaires are installed or equipped with shades or guards so that combustible material will not be subjected to temperatures in excess of 194F°. (IRC E4003.2 & NEC 410.11)
- ☐ Lighting in a clothes closet meets the requirements of IRC E4003.12 or NEC 410.16.
- ☐ A recessed luminaire that is not identified for contact with insulation has all recessed parts spaced at least ½" from combustible materials. Type IC luminaires are permitted to be in contacted with combustible materials at recessed locations. (IRC E4004.8 & NEC 410.116(A)(1) and (A)(2))

Wiring Methods

- ☐ Metal boxes are grounded. (IRC E3905.2 & NEC 314.4)
- ☐ Junction boxes, pull boxes, and outlet boxes are accessible without having to remove any part of the building or structure. (IRC E3905.10 & NEC 314.29)
- ☐ Unused openings in boxes are plugged. (IRC E3906.4 & NEC 110.12(A))

- ☐ Boxes mounted in non-combustible walls or ceilings (such as concrete) are mounted so that front edge of the box, plaster ring or extension ring is not set back more than ¼" from the finished surface. In walls constructed of combustible materials, the front edge of the box, plaster ring or extension ring is set flush with the finished surface. (IRC E3906.5 & NEC 314.20)
- ☐ Openings in noncombustible surfaces that accommodate boxes with flush-type cover or faceplate do not have open spaces greater than 1/8" around the edge of the box. (IRC E3906.6 & NEC 314.21)
- ☐ Flexible cords such as extension cords are not used as a substitute for NM cabling. Flexible cords are not run through holes in walls, structural ceilings, suspended ceilings, dropped ceilings or floors. Flexible cords are not concealed behind walls, ceilings or located above suspended ceilings or dropped ceilings. (IRC E3909.1 & NEC 400.7 & 400.8)
- ☐ In areas specified under IRC E3901.1, 125-volt, 15- and 20-ampere receptacles are listed to be tamper resistant. (IRC E4002.14 see exceptions & NEC 406.11)
- ☐ Receptacles shall be of the grounding type, be effectively grounded, and have proper polarity. (NEC 406.3)

Equipment Listing & Labeling

- ☐ Electrical materials, components, devices, fixtures and equipment shall be listed for the application, shall bear the label of an approved agency and shall be installed, and used, or both in accordance with the manufacturer's installation instructions. (IRC E3403.3 & NEC 110.3(B))