

(Effective 01/02/2017)

Scope

This bulletin applies to inspection requirements for residential occupancies, including dwelling units and single dwellings.

Objective

This bulletin is intended to serve as a minimum guideline to bring awareness to electrical contractors, builders, and owners, of items that must be considered when preparing for an electrical inspection.

Other Reference Documents that Supplement this Bulletin

- Canadian Electrical code Part 1 (CE Code)
- NSPI Utility Service Requirements (USR) – www.nspower.ca
- NSPI Bulletin B-02-016.1 – Utility Power Connection for New Services
- NSPI Bulletin B-06-136 – Insulation Integrity
- NSPI Bulletin B-76-000 – Temporary Electrical Installations
- LAE Bulletin 2014-06 - Consumer's service requirements and restrictions

Definitions

Service Entrance - all that portion of the consumer's installation from the service box or its equivalent up to and including the point at which the supply authority makes connection.

Directive

When preparing for an inspection it is important to ensure the installation has been thoroughly checked by your onsite personnel by completing a walkthrough prior to the inspection date to avoid deficiencies during the inspection process.

This document is broken down into three phases of the inspection process, including the service entrance, rough-in, and final.

Things to review during your walkthrough should include but are not limited to the following:

Service Entrance

- Service entrances shall be installed in accordance with Utility Standards and the CE Code
- Meterbase height shall be between 1.4m and 1.8m to the centreline of the meter socket
- Service raceways shall be securely fastened to the building structure with a minimum 3 x 2 hole straps
- Branch circuits and devices shall be installed for construction power. See NSPI Bulletins B-02-016.1 and B-76-000

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- The service weatherhead and point of attachment (POA) shall be installed at a proper height in accordance with NSPI standards or as directed by NSPI personnel. See USR book. (new installations min 4.5m to POA and maximum of 7.5m)
- The POA shall be securely attached to the building structure or service mast
- The POA location shall provide adequate clearances from decks, windows, or other readily accessible locations. See Section 6 of the CE Code.
- The POA shall be installed on the same building surface as the weatherhead. Also See USR Book. (see note 2)
- The consumer's service weatherhead shall be located a minimum of 150mm above and a maximum of 300mm above the POA. See Section 6 of the CE Code, and USR Book
- Grounding electrode(s) shall be installed and the grounding conductor securely attached to the electrode(s) with an approved grounding clamp.
- Panel trims shall be installed and securely fastened to the panel enclosure
- There shall be adequate working space and head room at the panelboard location. See Section 2 and Section 6 of the CE Code (1m in front, 2m high)
- If the service raceways are installed underground, the trench shall be properly prepared with screened earth or similar materials. Caution tape shall be installed approximately 150mm-300mm below the rough grade finish. (see note 3)
- Before scheduling a service entrance inspection the building shall be weathertight and secure (See note 1)

Rough In

- A maximum of 12 outlets may be installed on a branch circuit. This includes a combination of general purpose receptacles and lighting outlets.
- Kitchen outlets should be verified in conjunction with the kitchen design requirements (see note 4)
- Wires shall be properly supported / stapled throughout. Staples shall be located a minimum 32mm from the face of the supporting member
- Non-Metallic Sheathed Cable shall be run in such a manner that the cables are not in contact with metal ventilation ducts, metal plumbing pipes, or other non-electrical metallic systems
- Communication / CATV cabling shall be run in a manner to maintain a 50mm separation from power wiring as best as possible and shall not purposely be installed through the same holes in studs, joist,

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etc. Crossing of conductors shall be permitted however separation should be maintained at a minimum where possible. See Section 60 of the CE Code.

- Metallic piping systems shall be bonded in accordance with Section 10.
- Receptacles shall be installed within 1m of all bathroom sinks.
- Receptacles shall not be installed closer than 500mm to a shower stall or bath tub. (see note 5)
- At least one branch circuit shall be provided solely for receptacles installed in a utility room.
- Branch circuit and feeder wiring shall be run in such a manner to minimize bundling of cables in excess of 600mm to avoid derating.
- Cables shall be supported within 300mm of all outlet boxes.
- Double check wire size and overcurrent protection for specific equipment loads. IE, cooktops, wall ovens, microwaves, heating systems, etc.
- Verify all outlet boxes are properly supported. IE, 3 gang, 4 gang, range, dryer, etc.
- Where manufacturer's instructions require rough in rings to be installed when a "retro-fit" style pot light pot will be used for new construction, the rough in rings shall be in place at the time of rough in inspection. (see note 6)
- Where pot lights are installed in insulated ceilings, they shall be of a type specifically approved for the purpose. (see note 7)
- Three way switches shall be installed in accordance with Section 30 of the CE Code.
- Smoke and CO alarms shall be installed in accordance with the National Building Code of Canada. (see note 8)
- Smoke and CO alarms shall be wired to a circuit containing lighting. See Section 32 of the CE Code.
- Branch circuit wiring shall be arranged in a manner that will permit the installation of AFCI and GFCI protection as required by the CE Code.

Final Inspections

- All receptacles, light switches, and similar devices shall be installed.
- All device plates shall be installed

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- The primary heating system shall be installed c/w associated controls.
 - Where central heating systems are installed, the heating system characteristics shall be clearly identified on the system nameplates for reference during the inspection.
 - The panelboard legend shall be accurately completed and the branch circuits verified.
 - Unused “knock-outs” in boxes, panelboards, or other electrical equipment shall be provided with fillers suitable for the purpose.
 - Ensure minimum clearances have been maintained about electrical equipment. See Section 2 of the CE Code.
 - Test all AFCIs and GFCIs prior to inspection if possible. Verify proper function and ensure they control the devices and equipment that they are intended to.
 - Verify all overcurrent devices are properly sized for the loads and equipment they are connected to.
 - All branch circuits shall be meggered in accordance with NSPI Bulletin B-06-132 and the megger readings posted adjacent or on the consumer’s panelboard.
 - All outside lights at entryways shall be installed.
 - All outside receptacles, and associated cover plates shall be installed.
 - All smoke and CO2 alarms shall be installed. Verify their proper function when possible. (see note 9)
 - Where the installation is a multi-unit dwelling, each meter position shall be properly, and permanently identified for each unit
 - Metallic piping systems shall be bonded in accordance with Section 10.
 - A lockable disconnect shall be installed for a submersible well pump in an accessible location and labelled accordingly.
 - Cabinets shall be installed in the kitchen so outlet spacings may be verified during the final inspection process. (see note 10)
 - Incomplete circuitry shall be made safe (see note 11)

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Notes

1) For a service inspection the building shall be weather tight and secure. This would include installation of windows, doors, and locksets or other means to secure building. The roof shall be complete and shingled or the final weather tight material applied. The meter socket shall be supported on an approved J-Block or the exterior wall finish material shall be installed above the meter height location. Installation of strapping behind the meter socket will not be accepted.

2) In accordance with NSPI standards the weatherhead and POA shall be installed on the same building surface as each other. If for instance the POA is on the front face of the building then the weatherhead must also be placed on the face of the building. Consumer or Supply Service conductors are not permitted to wrap around the corner to a connection point. See also NSPI USR book.

3) Where teck cable or ACWU cables are installed underground the trench shall be prepared with sand or screened earth only. Crusher dust or materials containing flat sharp particles is not acceptable.

4) The location of receptacles in conjunction with the kitchen cabinet design and kitchen layout is an important part of the electrical installation. It is the responsibility of the electrical contractor to ensure the location, spacing, and quantity of outlets is adequate for the kitchen design.

5) Receptacles installed in bathrooms shall, where practicable, be located at least 1 m but in no case less than 500 mm from the bathtub or shower stall, this distance being measured horizontally between the receptacle and the bathtub or shower stall, without piercing a wall, partition, or similar obstacle.

6) Some retrofit style pot lights require the installation of a “rough-in ring”, or as commonly known in the industry, a “smash plate” to be installed prior to installing the retrofit. The manufacturer’s instructions would typically identify these requirements and provide a product part number for these accessories.

7) Where a retro fit style pot light is used, it shall be the responsibility of the contractor to ensure the manufacturer’s instructions are followed. The inspection department will assume all retro fit pot lights require a rough in ring unless it is identified to the inspector or the inspection department prior to the rough in inspection.

8) Where pot lights are installed in an insulated ceiling they shall be a Type IC rated pot light. Where a pot light is to be installed in a ceiling that will be insulated using a spray foam application, the installation shall meet the requirements of Department of Labour and Advanced Education Electrical Bulletin 2014-06.

9) The location and quantity of smoke alarms or CO2 alarms in a residential occupancy falls under the requirements of the National Building Code of Canada. When these devices are installed the wiring will be inspected to meet the requirements of CE Code Section 32.

The inspection department does not mandate the requirements of the NBCC. It shall be the responsibility of the electrical contractor to ensure installation of these devices meets all applicable building codes and regulations.

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10) Where the kitchen cabinets are not installed during a final inspection, the electrical contractor shall comply with the following requirements,

A) A representative of the electrical contracting company shall be onsite to review the kitchen cabinet layout with the inspector, and,

B) A kitchen cabinet layout drawing shall be provided to the electrical inspector for record purposes at the time of the final inspection.

It will be noted on the wiring inspection report that verification of the outlet spacing, location, and quantity was not confirmed with the cabinets installed. The cabinet drawing will be attached to the wiring permit for future reference if required. The Inspection Department will not be responsible for outlets that are not aligned with the construction design when the cabinets are installed.

11) Where due to timing of the construction process an electrical final is required prior to, final termination of any branch circuit wiring to an appliance or utilization device, that portion of the installation shall have an outlet box and blank cover or disconnect installed to ensure the wiring is safe from accidental electrical contact. All outlet boxes or disconnects shall be labelled for their intended future use.

The following items will be permitted to have an outlet box and cover plate installed during a final inspection:

- Provision for a cooktop stove with a maximum circuit rating of 30 amps 120 volts, or 50 amps 250 volts
- Provision for a wall oven with a maximum circuit rating of 30 amps 120 volts, or 50 amps 250 volts
- Dishwasher
- Provision for an electric water heater with a maximum circuit rating of 30 amps 250 volts
- Well pump (Submersible well pump installations shall have a disconnect installed)
- Septic Pump (Hard wired septic pump installations shall have a disconnect installed)

It shall be noted on the inspection report what items were blanked off at the time of final inspection for our records and future reference if required.

Where permanent lighting fixtures have not been supplied prior to a final inspection, a keyless lampholder shall be installed in its place, with the exception of exterior fixtures, which shall be provided with suitable weatherproof fixture for the location in which it is installed.

In addition to the items listed above, where equipment is rough wired for future use, such as a hot tub, spa, out building, or similar utilization load, the rough wiring shall be made safe by installation of a fixed junction box and cover or a disconnecting means suitable for the location and circuit characteristics.

Where the primary premise heating system is of an electric nature is not installed a final inspection will not be accepted. This will include but not limited to: heat pumps, central forced air, baseboard, electric boilers, or radiant heating cable / panel sets.

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At the discretion of the inspection department, and with prior approval a final inspection may be granted pending the circumstances of the construction schedule outside these parameters. Contractors shall make every effort to ensure coordination of electrical inspections and the construction schedules do not conflict in manner that will impeded the final inspection

The checklist below is provided as a guide only and is not intended to include all aspects of an electrical inspection.

A list of acronyms included in the check list has been provided for your reference

Acronyms Legend			
POA	Point of Attachment	CCTS	Circuits
GFCI	Ground Fault Circuit Interrupter	WP	Weatherproof
AFCI	Arc Fault Circuit Interrupter	CT	Current Transformer
SW	Switch	OC	Over Current
TR	Tamper Resistant	CO	Carbon Monoxide

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Item #	Rough in	Acceptable Y/N n/a	Item #	Rough in	Acceptable Y/N n/a
1	Proper wiring methods		13	Dedicated CCTS where required	
2	Adequate wiring supports		14	Peninsula / Island outlet	
3	Receptacle spacing / location		15	Approved equipment	
4	Ceiling outlet locations		16	Clearance about equipment	
5	Box supports as required		17	Receptacle configuration	
6	Box fill		18		
7	Location of smoke / CO detec.		19		
8	Location of switches		20		
9	Location of GFCI devices		21		
10	Jacuzzi sw / plug installed		22		
11	Neutrals / joints complete		23		
12	Approved recessed lighting		24		
Item #	Final	Acceptable Y/N n/a	Item #	Final	Acceptable Y/N n/a
25	TR devices where required		37	Kitchen CCTS / OC protection	
26	GFCI devices		38	Peninsula / Island outlet	
27	Cover plates / WP covers		39	Microwave outlet flush	
28	Lighting fixtures / pot lights		40	AFCI devices	
29	Single Pole / 3 way Switching		41	Disconnects where required	
30	Furnace Switch		42	Propane / water line bonded	
31	Tub Access / motor switch		43	Septic system installation	
32	Smoke Detectors / CO devices		44	Heating system requirements	
33	Exterior outlet boxes sealed		45	Approved equipment	
34	Equipment clearances		46	Well pump Installation	
35	Receptacle configuration		47	Unfinished wiring made safe	
36	Megger results available		48		
Item #	Service	Acceptable Y/N n/a	Item #	Service	Acceptable Y/N n/a
49	Wiring Method		61	Grounding methods	
50	Conduit sizing / spacing		62	Grounding conductor sizing	
51	Underground conduits		63	Bonding conductor sizing	
52	Meter base location / height		64	Main service conductor sizing	
53	Weatherhead location / height		65	Proper size OC devices	
54	POA location / height		66	Demand load calc. required	
55	Adequate drip loop		67	Service equipment ratings	
56	Service Supports / blocking		68	Equipment clearances	
57	Panelboard location / height		69	Panel legend / labeling	
58	CT installation		70	Service conduits sealed	
59	Parallel conductors shorted		71		
60	Approved equipment		72		