



TOWN OF PELHAM  
PLANNING DEPARTMENT  
6 Village Green – Pelham, NH 03076  
603-635-7811

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# Basic Minimum Electrical Reminders and Requirements

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APRIL 8, 2024

Tim Zelonis  
ELECTRICAL INSPECTOR | TOWN OF PELHAM, NH

## MEMORANDUM

**TO:** Electrical Contractors / Homeowners  
**FROM:** Timothy Zelonis, Electrical Inspector  
**RE:** Basic Minimum Electrical Reminders and Requirements for the Town of Pelham, NH  
**DATE:** April 8, 2024

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The Town of Pelham is currently under the 2020 Edition of the National Electric Code.

For ANY electrical permit issued on or after July 1, 2022:

- A. **ALL** inspections must be called into the Planning Department at (603) 635-7811 for log in purposes by the Licensed Master Electrician **AFTER** installation is complete and ready for inspection, **NOT PRIOR**.
  1. Exception: Concrete encased grounding electrode (re-bar) should be called in by the General Contractor **PRIOR** to the pouring of concrete.
  2. Any questions pertaining to electrical installations can be called in at (603) 508-3088 or left at the Planning Department. All questions shall be answered within **TWO** business days.
  3. All inspections shall be performed withing **TWO** business days.
- B. All installations shall be in accordance with the 2020 Edition of the National Electric Code as of July 1, 2022.

Note: Execution of work — 90.4 & 110.12
- C. Only State of NH Master Electricians will be allowed to apply for Electrical Permits.

Note: (State of NH 319 C:1).
- D.
  1. **ALL** personnel on site engaged in making electrical installations shall be a State of NH Licensed Master Electrician or Journeyman Electrician.
  2. (State of NH 319-C2) Any person engaged in learning and/or assisting in making electrical installations shall be a State of NH “Registered Apprentice” Electrician and under the **DIRECT** supervision of a Master or Journeyman Electrician.
  3. Under **NO** circumstances shall any electrical installation be installed **PRIOR** to obtaining an electrical permit, unless of an emergency nature. After the emergency situation is addressed, then a permit must be obtained and a request for inspection is to be logged in.
  4. Homeowner permits are permitted; however, **ALL** work must be installed by the homeowner who shall have the knowledge of the current 2020 Edition of the National Electric Code.
  5. As of August 12, 2020, Homeowner Electrical Permits for swimming pools, hot tubs/spas are **NO LONGER** allowed. As of May 30, 2023, service entrance replacements

and/or upgrades, whole house generators, solar photovoltaic systems, duplexes, and accessory dwelling units are **NO LONGER** allowed. Permits will only be issued to Licensed NH Master Electricians.

- E. Additional permitting and inspections may be required as per the Town of Pelham Fire Department, including but not limited to oil and gas/propane burners, fire alarms, smoke detectors, etc. (Check with the Fire Inspector if you have any questions at 603-635-2703).

## **SERVICE ENTRANCES**

- A. All new construction, new service installations, service upgrades, access to meter sockets for generators or solar installations **MUST** obtain a work request number from Liberty Utilities (800-375-7413) **PRIOR** to applying or receiving an electrical permit. All of the above service-related work is **REQUIRED** to have a disconnect/reconnect appointment with Liberty Utilities at (800) 375-7413 or email [NHElectricsrvreg@libertyutilities.com](mailto:NHElectricsrvreg@libertyutilities.com). **DISCONNECT INSPECTIONS WILL REQUIRE A 48 HOUR NOTICE WITH THE PLANNING DEPARTMENT** (with the exception of emergency repairs **ONLY**). Note: No disconnect appointments issued on Fridays
1. Temporary services shall be required to obtain a separate individual work request number and electrical permit and shall be installed in accordance with Liberty Utilities temporary service specifications and diagrams provided (see attached).
  2. All services shall be installed in one of the following:
    - a. PVC conduit (Note: schedule 80 where required)
    - b. Rigid metal conduit – IMC or EMT
    - c. Conduit shall be installed from meter socket to panel board.
  3. SEU Cable is **NOT** allowed to be used for electrical services installations.
    - a. Exception: Temporary Services
  4. PVC Conduit for underground services shall be in schedule 80 where subject to physical damage.
    - a. Expansion joints article — 352.44.
    - b. Securing and supporting article — 352.30 (A) & (B).
    - c. Sealing — 300.7 (A)
  5. Bonding is required on all service equipment.
    - a. 250.92 (A)(1) & (A)(2)
    - b. Intersystem bonding — 250.94 (A)(1)(2)(3)
  6. Service Equipment – Disconnecting means is required on the external of a structure as per
    - a. 230.70 (A) Readily accessible location
    - b. Note:
      - i. SER Cable shall be permitted within the ENTRY of the interior of a building to a service panel.

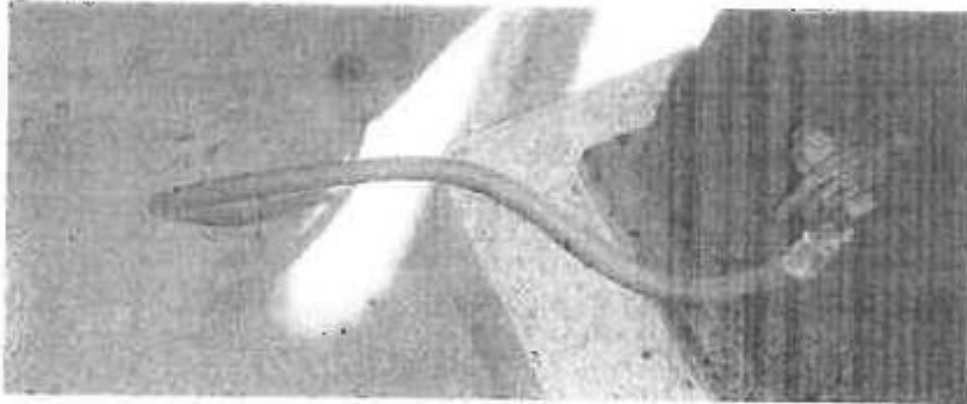
- ii. When SER Cable is used, interior conduit is not required to service panel board.
- 7. Grounding Electrode System Installation — 250.50
  - a. 250.53(2)(3) Supplemental grounding electrodes shall be installed a minimum length of 8', rods may be installed internal or external of a building 6' apart and shall not have less than a #6 copper grounding conductor for a minimum size, which shall be sleeved in either PVC or EMT with approved grounding connectors **ONLY**.
  - b. 250.52(A)(3) An Additional Method: Concrete encased electrode is acceptable, providing that the Electrical Inspector has been notified and has inspected for correct rebar installation **PRIOR** to pouring of concrete, otherwise supplemental grounding electrodes will be required.
- 8. Over Head Service Drops:
  - a. Conduits shall not be less than 1 ¼" in size for 100amp services, 2" for 200amp services, and 2 ½" for mast type service installations as per Liberty Utilities Table 4.2.4.3-1.
  - b. A guy wire shall be installed on **ALL** mast type service installations **REGARDLESS** of height.
- 9. Underground Installations:
  - a. All underground installations shall be inspected **PRIOR** to total back filling. Sand in place with beginning, ending, and midway exposed. Safety warning tape shall be installed a minimum of 12" above conduits.
  - b. Underground service installations require a trench inspection from Liberty Utilities as well.
- 10. To receive permanent service activations:
  - a. Building shall be weather tight to the elements.
  - b. One GFCI protected service outlet shall be installed at the panel board.
  - c. All grounding and bonding in place.
  - d. Inspection requests to be logged in with the Building/Planning Department by the NH Licensed Master Electrician performing the installations.
- 11. Electrical Inspections as follows:
  - a. Rough inspection **PRIOR** to insulation and wallboard being installed shall consist of:
    - i. All boxes (device & fixture) shall be made up with line-load-neutrals and ground with approved connector means.
    - ii. Water system bonding in place where metal piping is used at supply point. 250.104(a) (1-2-3).
    - iii. ALL rooms 1<sup>st</sup>, 2<sup>nd</sup>, & 3<sup>rd</sup> floors, basement, and garage (if applicable).
    - iv. Rough wiring for smoke and/or heat detectors as required per local Fire Department codes. Contact Fire Inspector at (603) 635-2703.

- v. Rough wiring required only: (a.) Data (b.) Audio (c.) \*Fire Alarm Systems –  
\*Final required and performed by Fire Inspector.
  - b. Final Inspections will include the following:
    - i. All devices (switches & receptacles) with covers/plates installed.
    - ii. Light fixtures properly wire nuted and attached.
    - iii. Smoke detectors installed, tested, and in working order.
    - iv. Oil burner units shall have a fire-o-matic switch in the correct location.
    - v. Gas/Propane, Oil Service and Emergency Switches shall have a red and properly marked cover/plate in the correct location. (Check with the Fire Inspector if you have any questions at 603-635-2703).
    - vi. Pump service switch with lock-out safety device installed on all water supply pumps and sewage effluent pumps.
    - vii. Properly labeled panel board directory.
12. Code Reminders:
- a. GFCI protection for personnel — 210. A thru F
  - b. AFCI - Arc-Fault Circuit Interrupter protection — 210.12 A thru D
  - c. Receptacle outlets — 210.50 - 210.65
  - d. Lighting outlets required — 210.7(A)(B)(C)
  - e. Receptacle replacement — 406.4(D) 1-7
  - f. Cables: Protection against physical damage — 300.4
  - g. Nonmetallic-sheathed cable — 334
  - h. Underground installations — 300.5
  - i. Receptacles, cord connectors and attachment plugs — 406
  - j. Panel board — 408
  - k. Luminaries (lighting fixtures). Lamp holders & lamps — 410
  - l. Built-in dish washers — 422.16 (B)(2)
  - m. Disconnections of permanently connected appliances.
    - i. Example: Electric hot water heater  
422.31 (B) disconnecting means  
110.25 Lockable disconnecting means
  - n. Generators — 445.18(A)(B)
  - o. Solar Photovoltaic (PV) Systems — 690
  - p. Electric vehicle power transfer systems — 625

### **Swimming Pools 680: Part I & Part II**

- A. Receptacle locations — 680.22(A)(1)
  - 1. General purpose receptacle GFCI protected not less than 6' and not more than 20' from the inside wall of waters edge.
  - 2. Circulation pump/filter motor receptacle on a GFCI protected dedicated circuit shall be located a minimum of 6' from inside the wall of waters edge for inground and above ground pools— 680.22(A) (2-6)

3. Note: cord-and-plug connections — 680.21(A)(1-2-3)
  - a. Cord shall NOT exceed 3' in length #12 AWG.
  - b. Cord cap plug shall be of twist lock type.
4. Note: Lighting, receptacles and equipment — 680.22(A)(1-6) (B)(1-8)(C)(D)(E), also 680.23 (A thru F)
- B. Equipotential Bonding — 680.26
  1. Bonding conductor shall consist of #8 solid copper or larger.
  2. Bonding conduction shall be installed a minimum of four evenly spaced locations with approved listed grounding terminals.
  3. Note: Including circulation motors, filtering equipment, pool heater, diving board base, light shells, handrail base, etc. — 680.26 (B) (1-7)
  4. Inground pool perimeter surfaces to be bonded shall extend 3' beyond the inside wall of waters edge including paved and unpaved surfaces not less than 4" and not more than 6" below the surface of subgrade material also attached to rebar or welded wire mesh in concrete.
  5. Above ground pool perimeter surfaces to be bonded shall extend 18" to 24" beyond the inside wall of waters edge including paved and unpaved surfaces not less than 4" and not more than 6" below the surface of subgrade material.
  6. Underground wiring — 680.11 (A thru C)
    - a. Transitions can be made upon interior of building.



 Bonding, Electrical Grounding, Grounding Electrodes

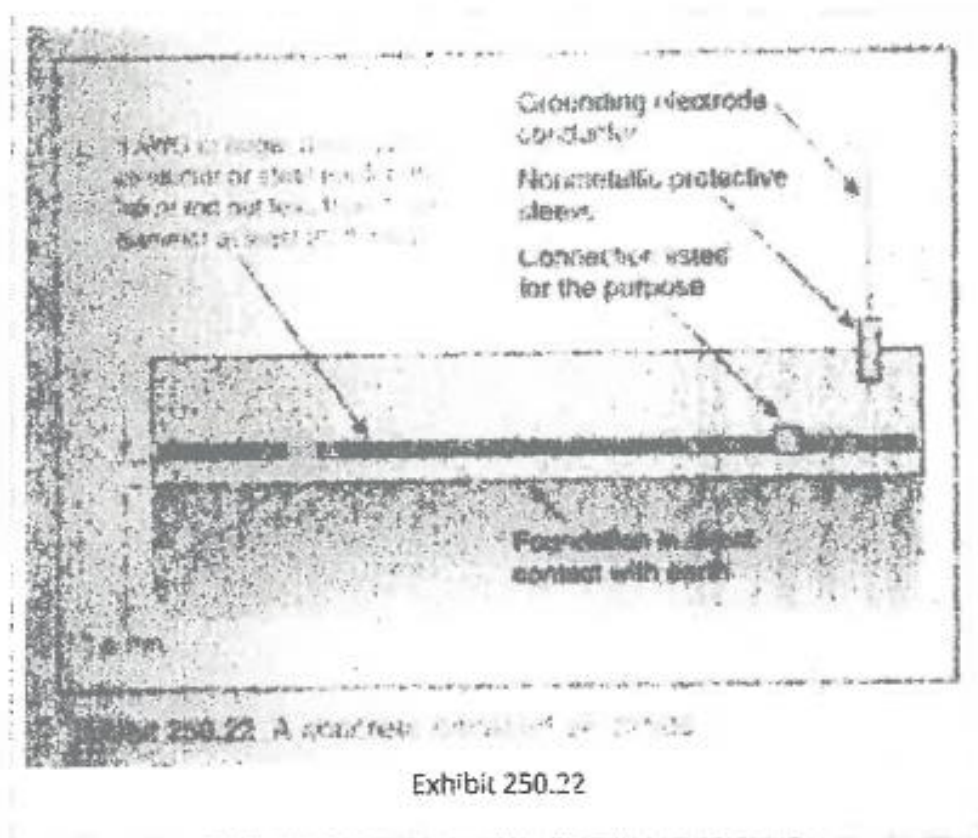
**What are the NEC Requirements for Grounding and Bonding Rebar?**

The National Electrical Code (NEC) requires that all normally non-current-carrying metallic objects in a given structure be bonded together to form a single common system that is at the same potential. This includes the steel rebar in the concrete foundations. We see in Article 250.50 the mandate that all electrodes listed in the code (steel rebar in concrete can sometimes qualify as an electrode) be bonded together, whether they are used as an electrode or not.



in the case of steel rebar in concrete, we see in 250.52(A)(3) (Information Note) that epoxy coated rebar and/or a vapor barrier can negate our ability to use the rebar as an electrode, however our mandate to bond the systems to form a common system still remains under 250.50. In other words, you must bond the steel rebar in concrete foundations whether you use it as an electrode or not (just like a water pipe, gas pipe, alarm system, fire sprinklers, CATV, Telco, etc.).

***Please see the NEC 2017 Handbook Exhibits: 250.22, 250.23, 250.29, and 250.30.***



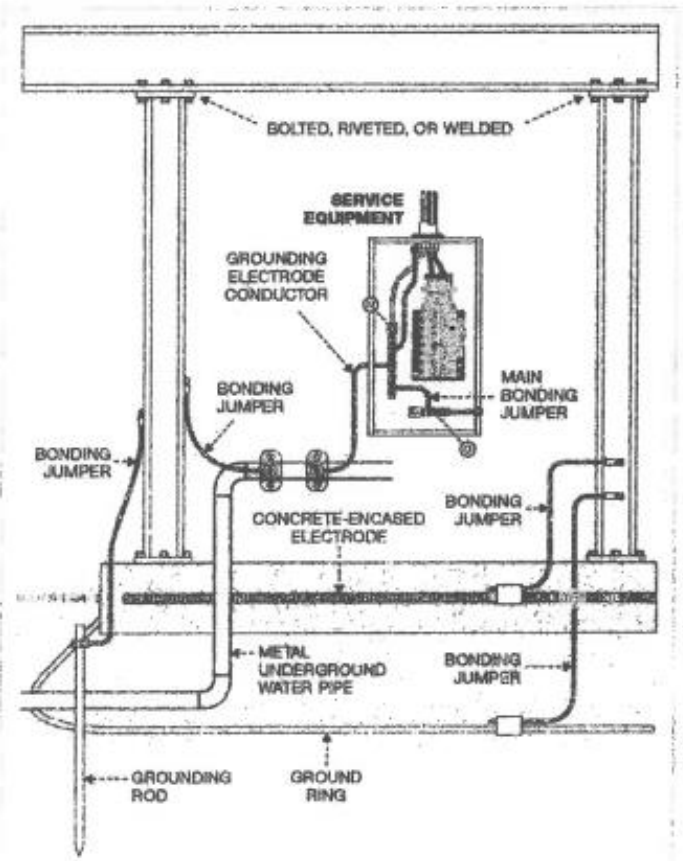
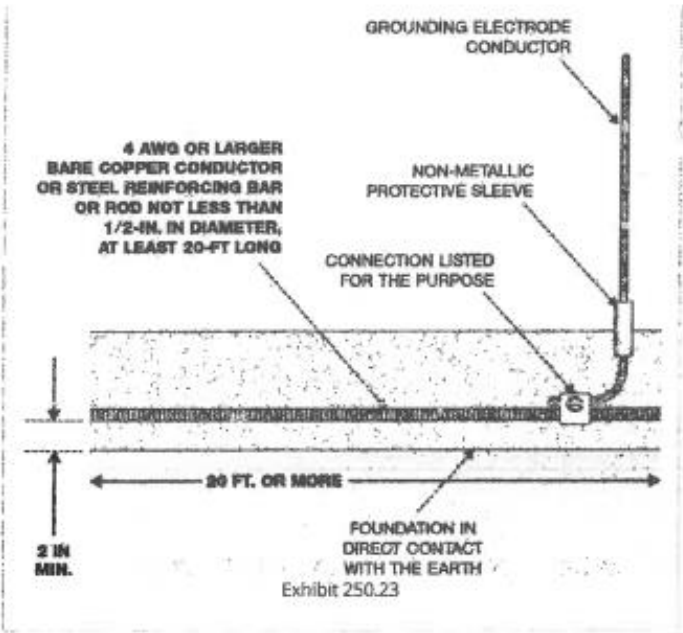
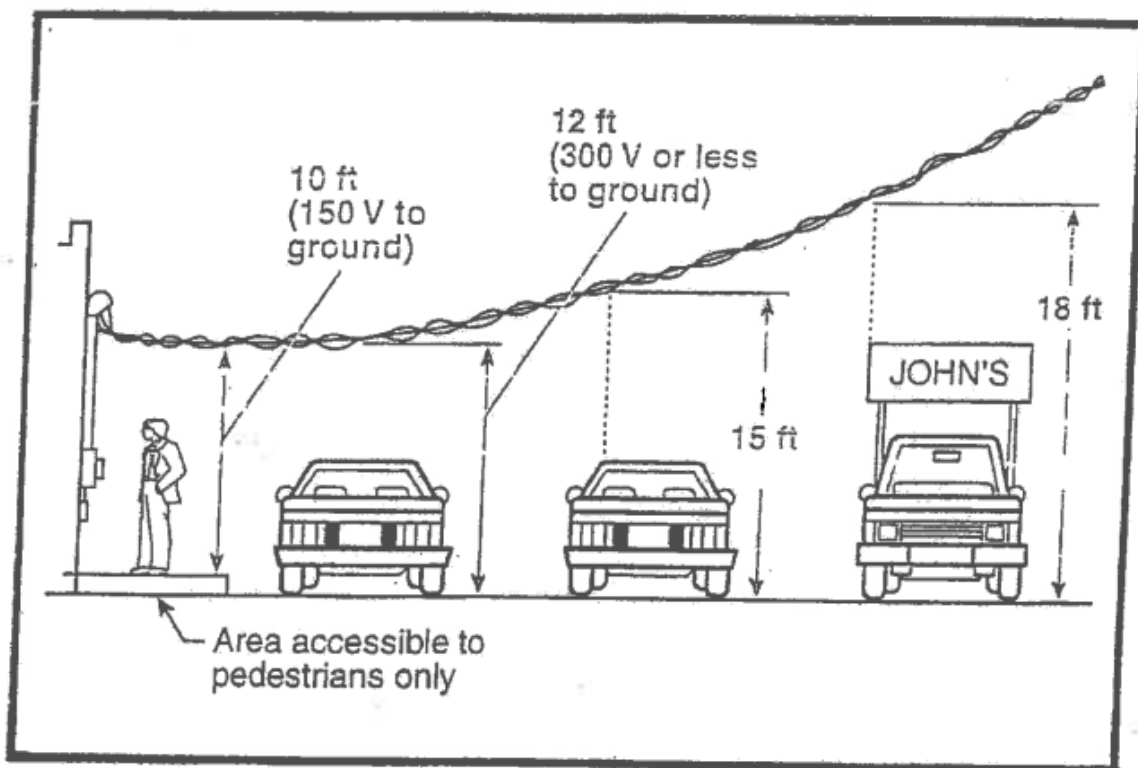
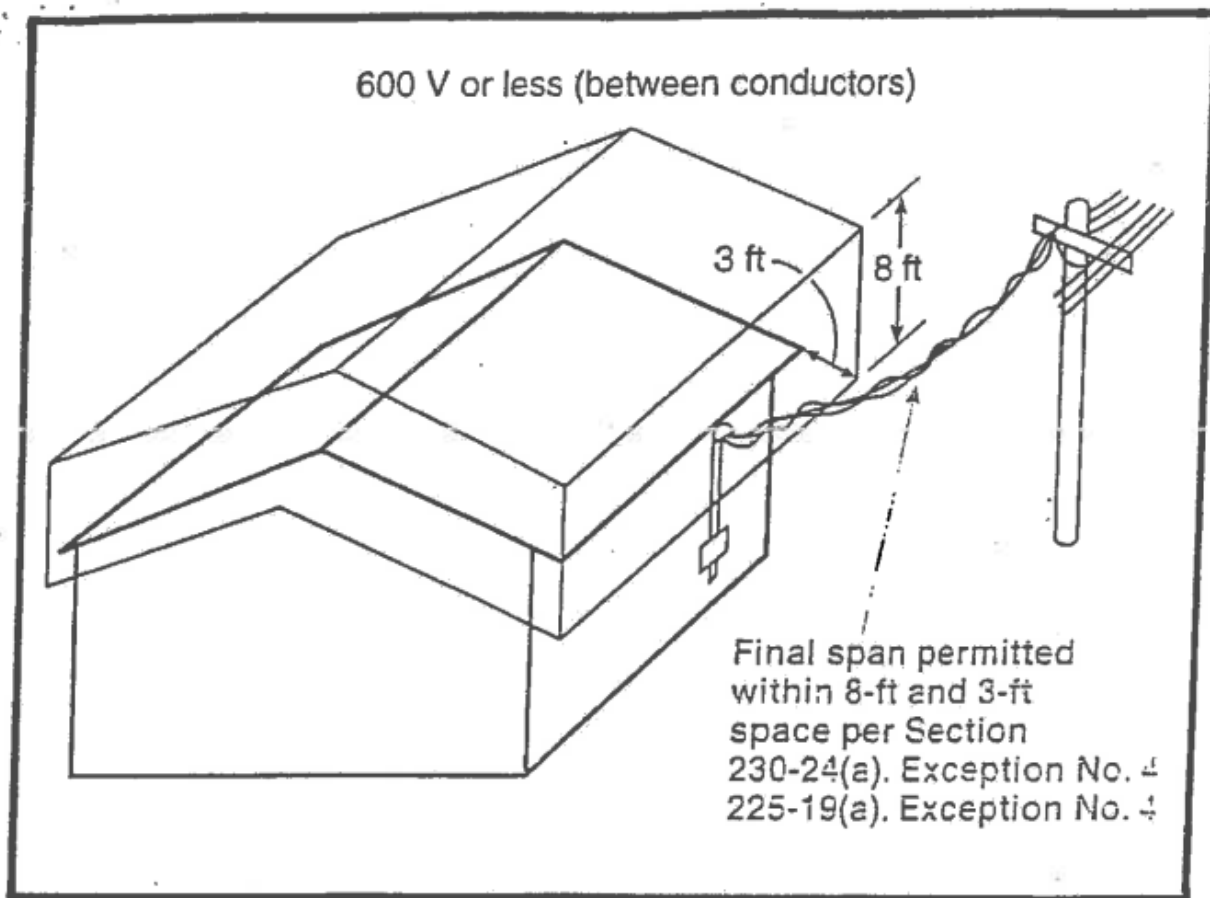


Figure 230.7 illustrates the 10-ft, 12-ft, 15-ft, and 18-ft vertical clearance from ground for service-drop conductors up to 600 volts, as specified by Section 230-24(b).

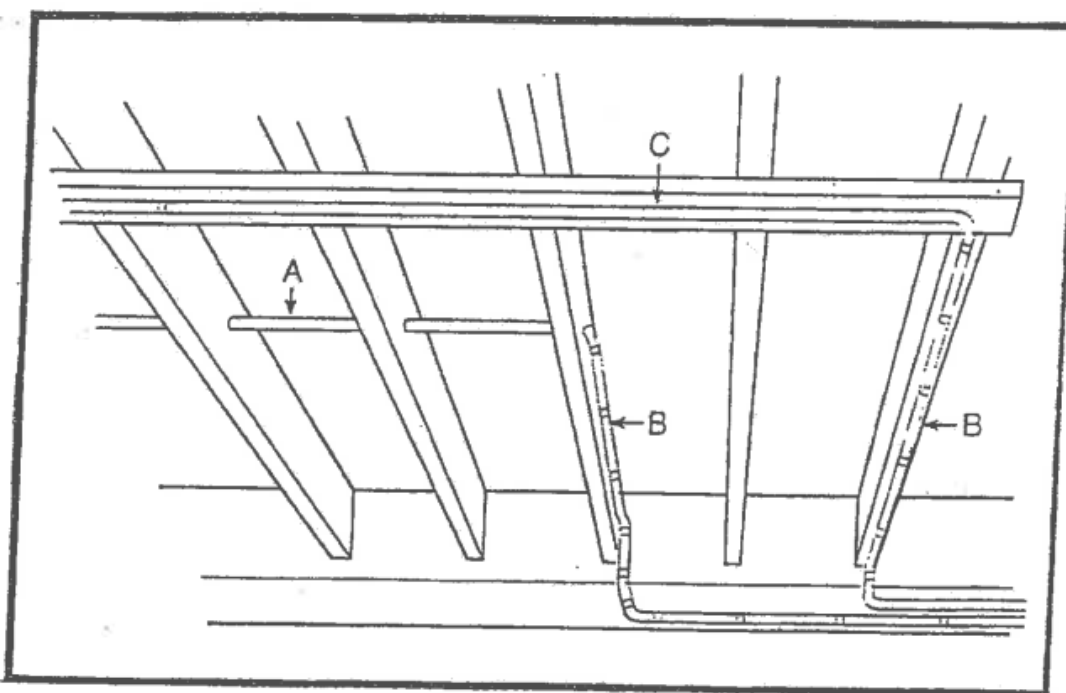


**Figure 230.7** Clearances in accordance with Section 230-24(b).

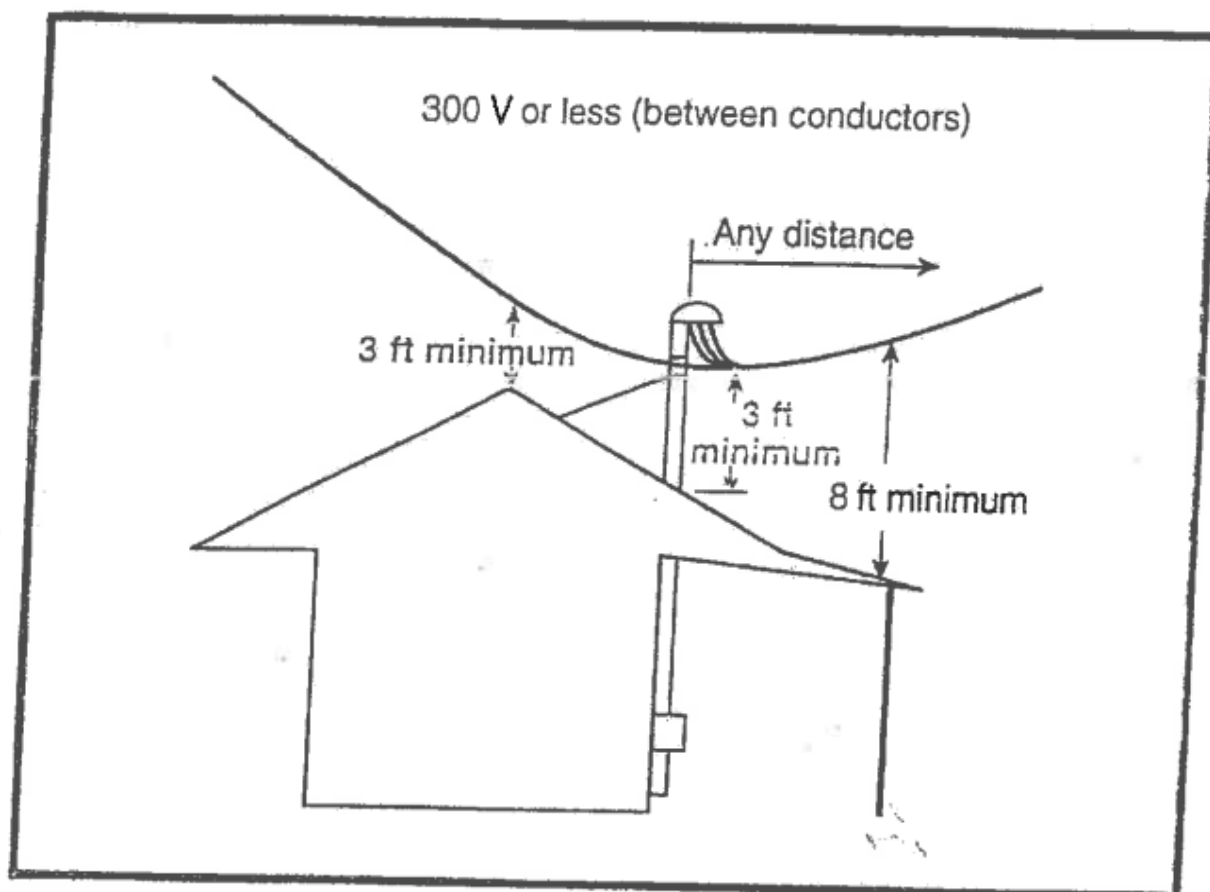


**Figure 230.6D** Final span clearance as permitted by Section 230-24(a), Exception No. 4.

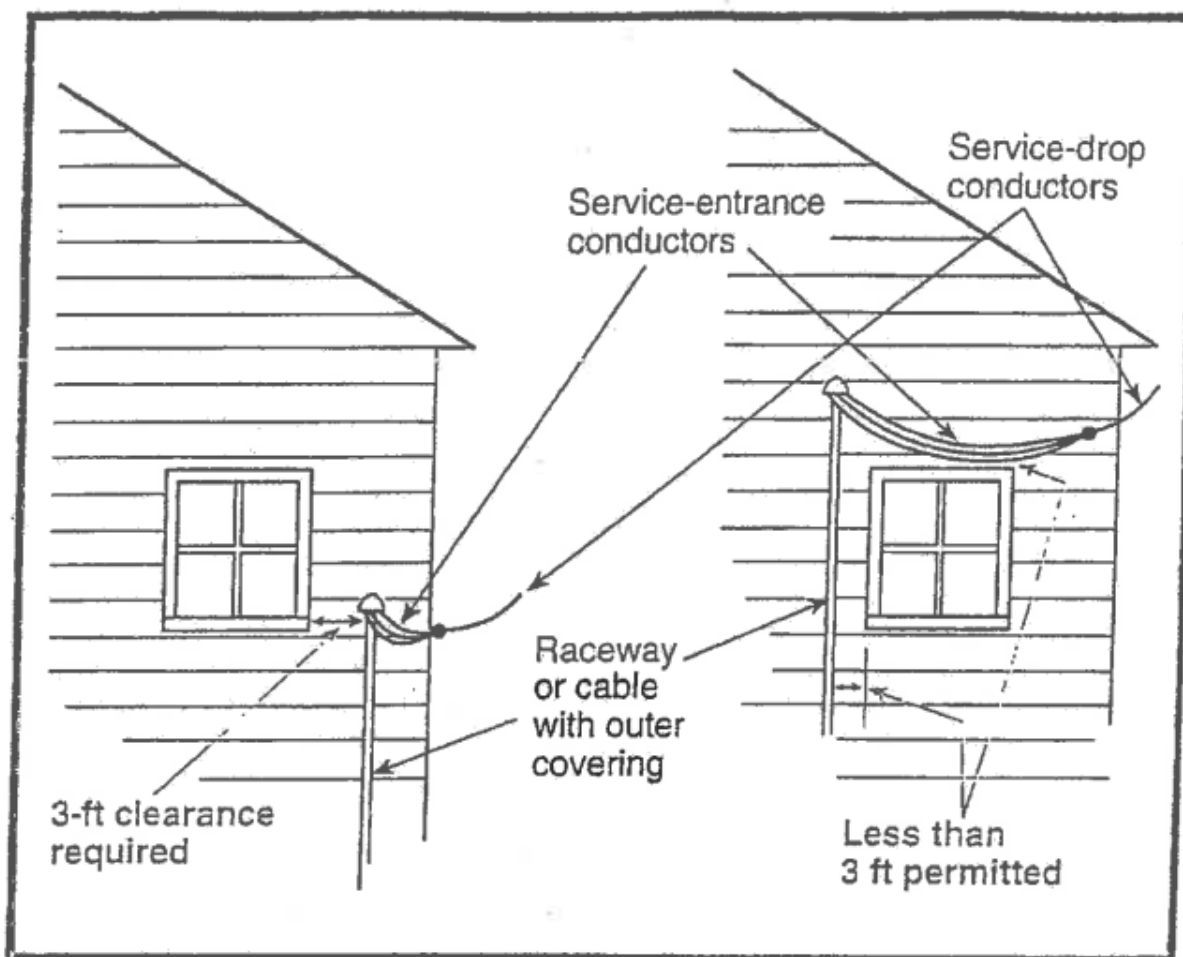
As illustrated in Figure 336.3, nonmetallic-sheathed cables installed in an unfinished basement can be run through joists (A) and attached to the side or face of joists or beams (B) and running boards (C). Section 300-4(d) requires cables that are run parallel to framing members be installed at least 1¼ in. from the nearest edge of studs, joists, or rafters.



**Figure 336.3** Nonmetallic-sheathed cables installed in an unfinished basement.



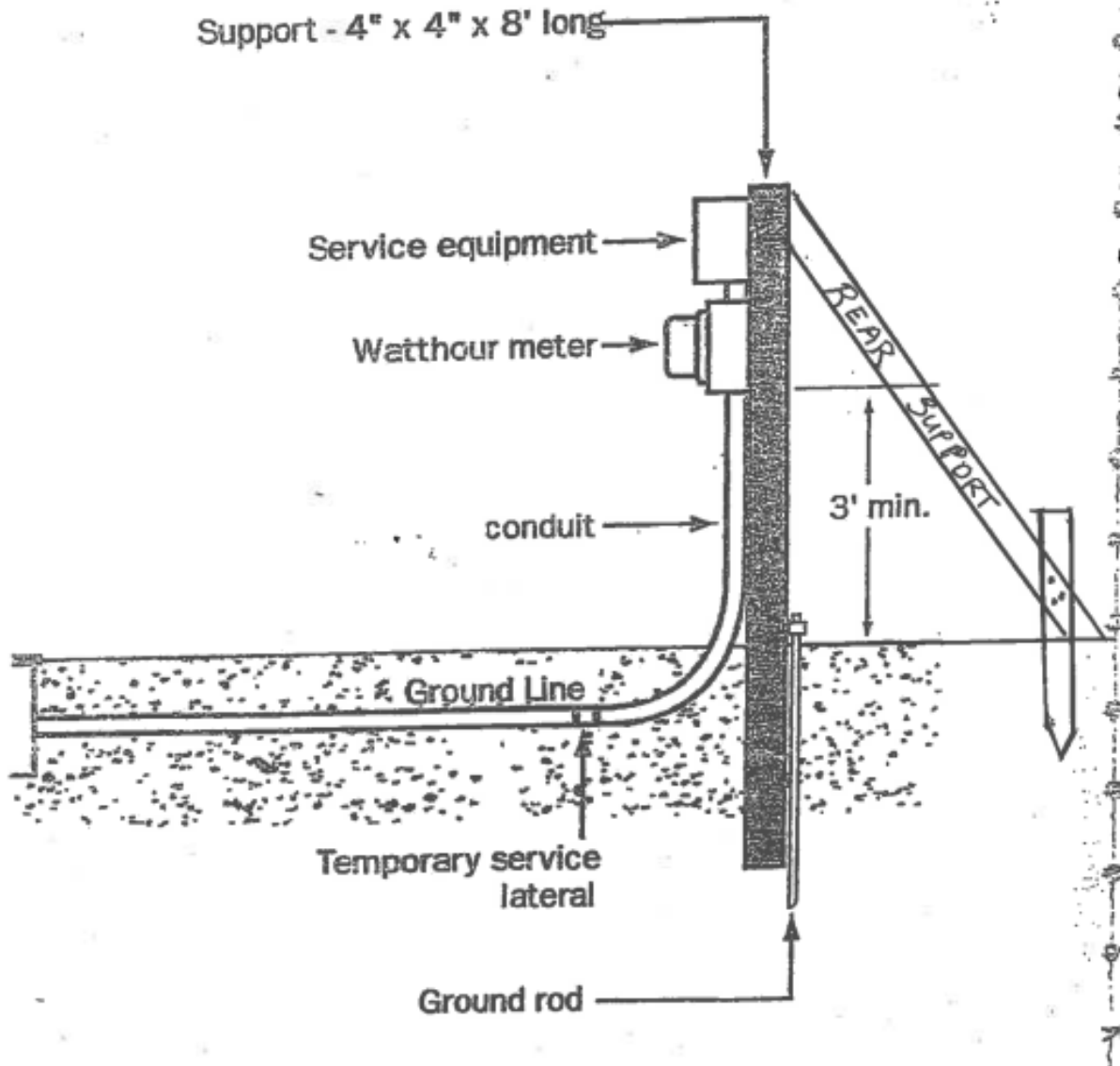
**Figure 230.6B** Reduction in clearance as permitted by Section 230-24(a), Exception No. 2.



**Figure 230.5** Required dimensions for service conductors located alongside a window and service conductors above the top level of a window designed to be opened.

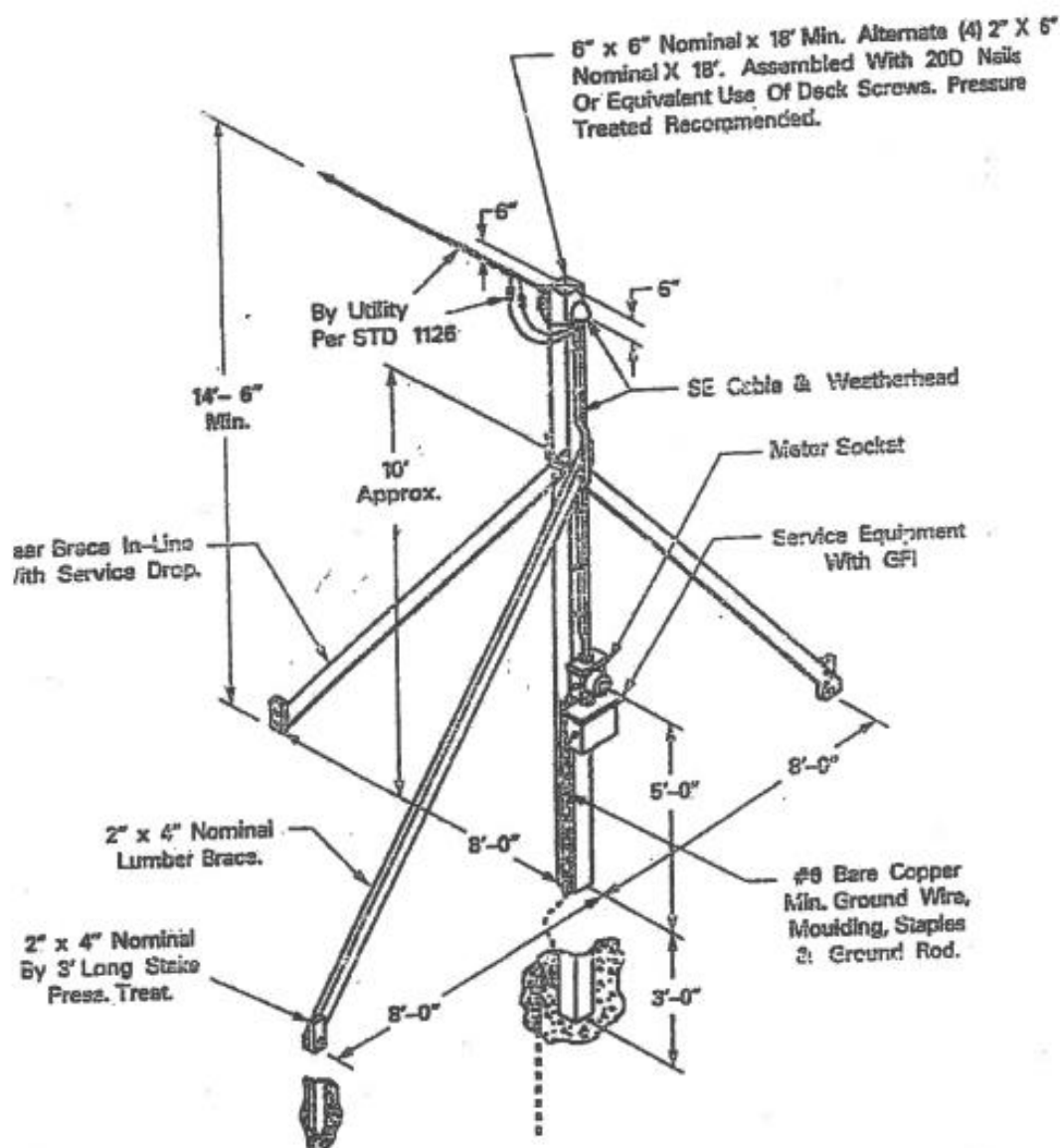


## Typical Temporary Service Underground Distribution

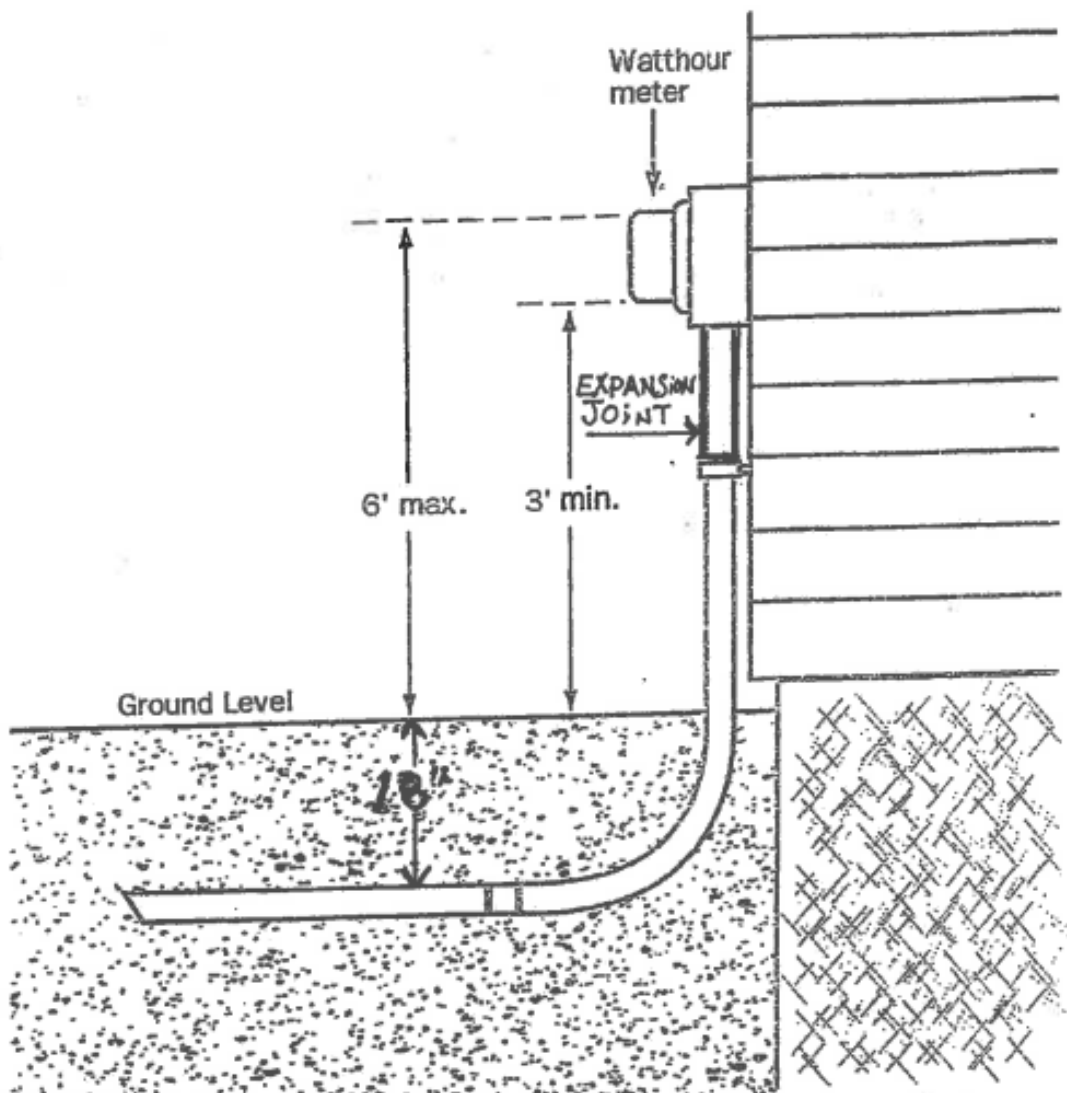




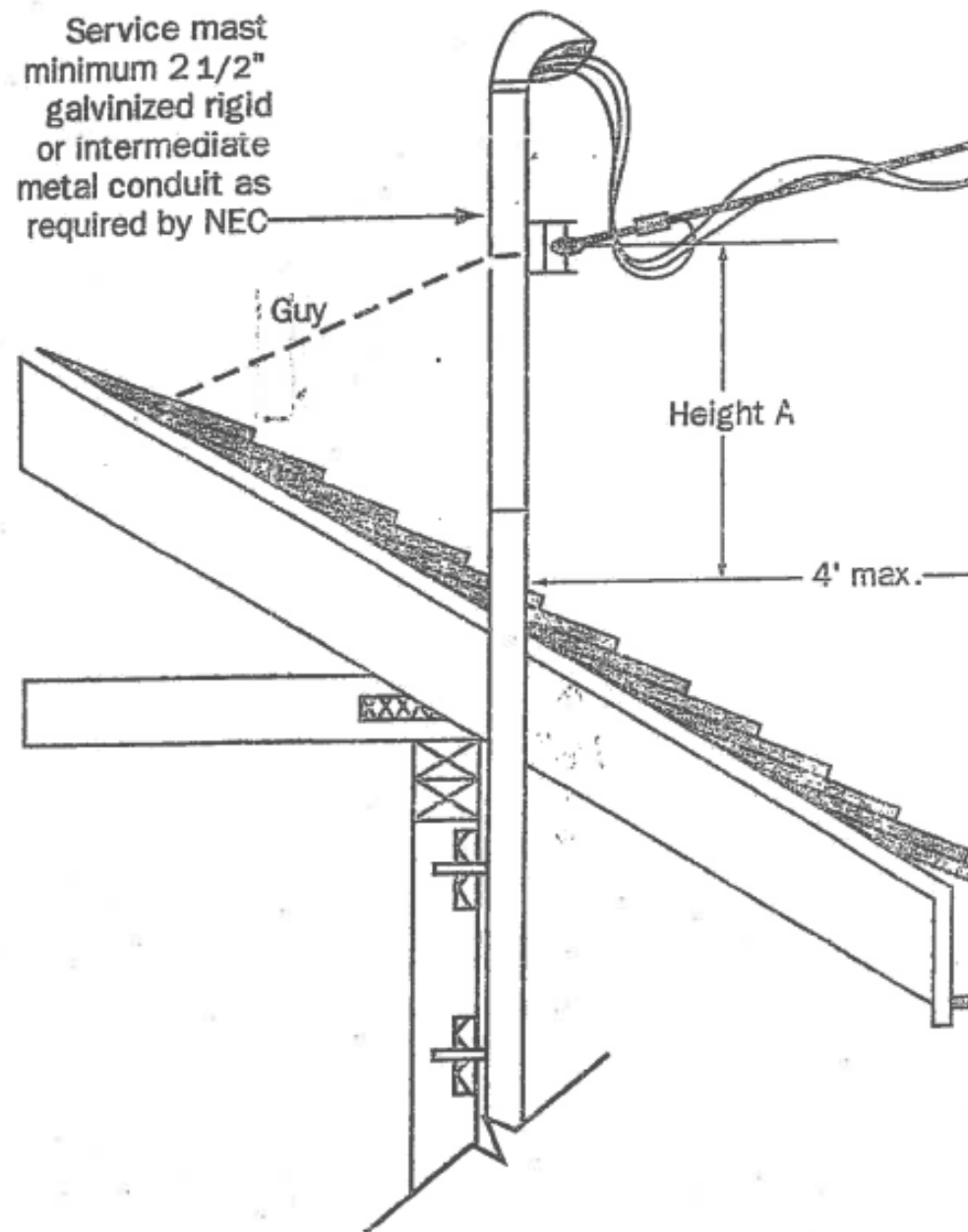
TYPICAL 100 AMPERE OVERHEAD TEMPORARY  
SERVICE STRUCTURE WHERE SERVICE DROP  
DOES NOT CROSS OVER A HIGHWAY

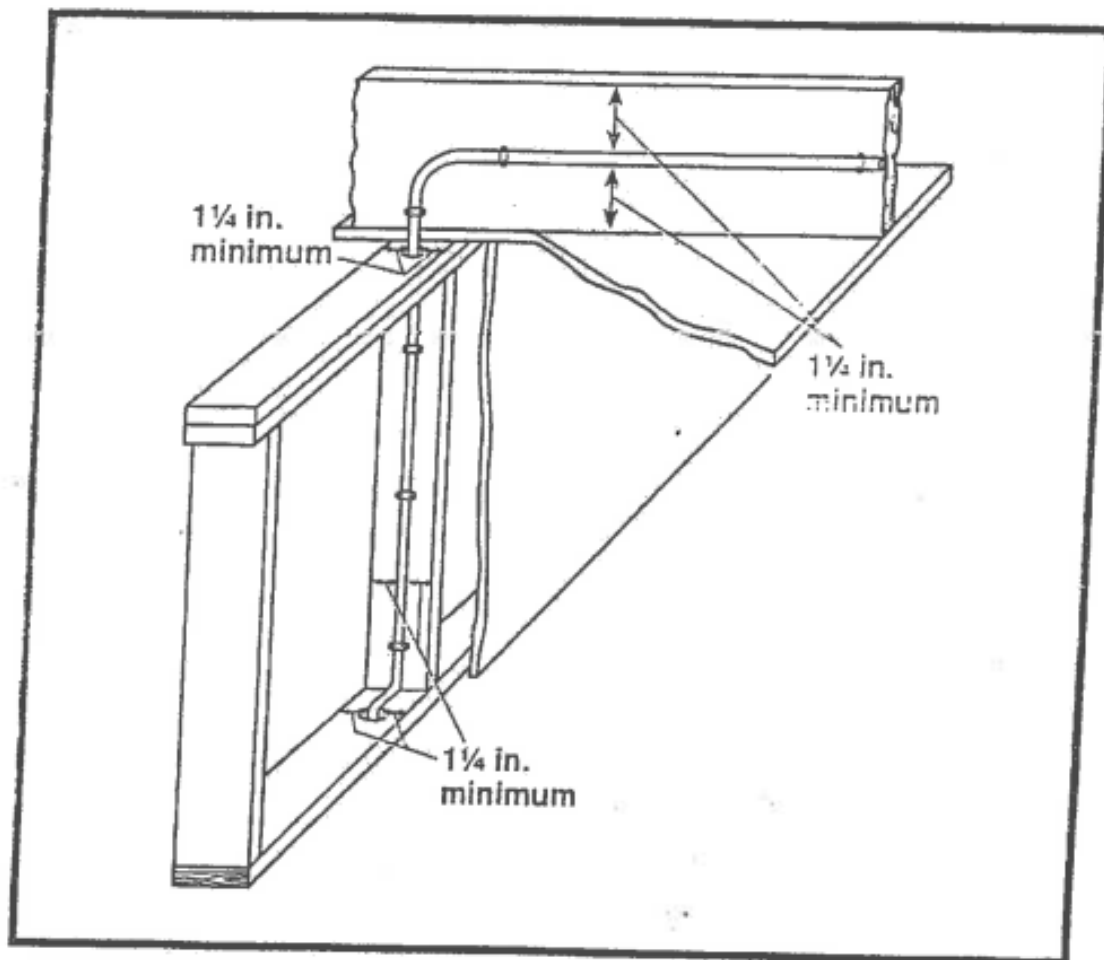


Typical Underground Installation

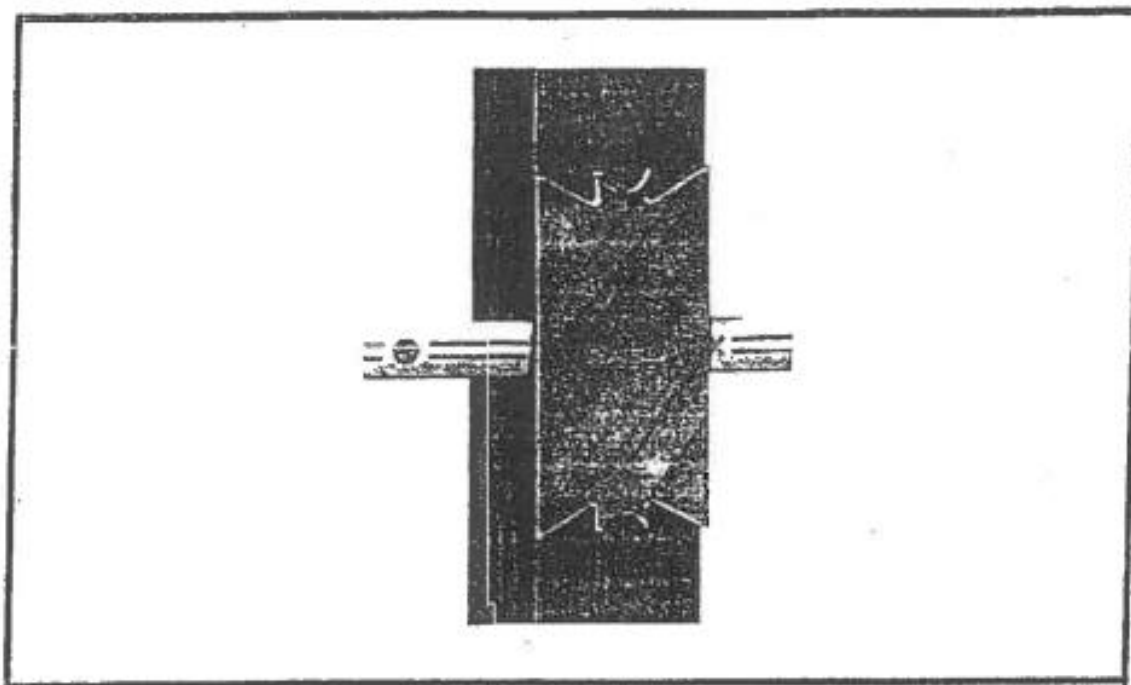


### Typical Service Mast Construction Service Drops to Low Buildings





**Figure 300.3** Cables and raceways installed parallel to framing members in accordance with Section 300-4(d).



**Figure 300.2** A steel plate used to protect a nonmetallic-sheathed cable within 1¼ in. of the edge of a wood stud. (RACO)



How to prevent cold air from entering a device box on exterior wall.

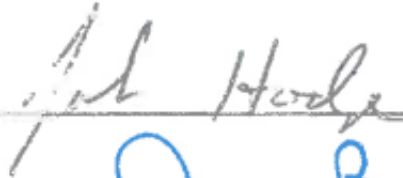




**The information contained within this handout has been approved by  
the following:**

Representative from the Fire Department:

John Hodge, Fire Inspector

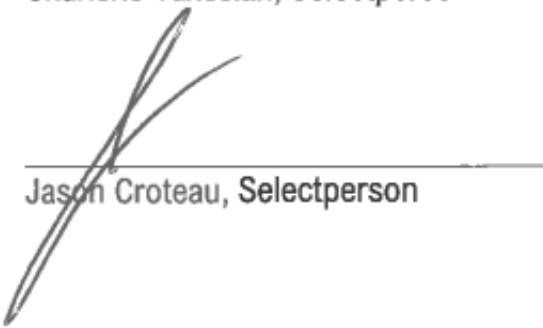
A handwritten signature in black ink, appearing to read "John Hodge", written over a horizontal line.

Representative from the Building/Planning Department:

Jennifer Beauregard, Planning Director

A handwritten signature in blue ink, appearing to read "Jenn Beauregard", written over a horizontal line.

Board of Selectmen:

A handwritten signature in black ink, appearing to read "Kevin Cote", written over a horizontal line.  
Kevin Cote, ChairA handwritten signature in black ink, appearing to read "Jaie Bergeron", written over a horizontal line.  
Jaie Bergeron, Vice ChairA handwritten signature in black ink, appearing to read "Charlene Takesian", written over a horizontal line.  
Charlene Takesian, SelectpersonA handwritten signature in black ink, appearing to read "Heather Corbett", written over a horizontal line.  
Heather Corbett, SelectpersonA handwritten signature in black ink, appearing to read "Jason Croteau", written over a horizontal line.  
Jason Croteau, Selectperson