The Minnesota Energy Code requires that all penetrations through an exterior wall air barrier be sealed. Sealing of the opening applies to all penetrations including the service entrance, conduit, cables, panels, recessed luminaires and electrical boxes.

EQUIPMENT LISTING AND LABELING

41 **Minnesota Rules 3800.3620** All electrical equipment, including luminaires, devices and appliances used as part of or in connection with an electrical installation shall be listed and labeled by a Nationally Recognized Testing Laboratory (NRTL) as having been tested and found suitable for a specific purpose.

42 **NEC 110.3** Listed electrical equipment shall be installed and used in accordance with the listing requirements and manufacturer's instructions.

ELECTRICAL SERVICES

43 **NEC 230.70** The service disconnecting means shall be installed at a readily accessible location either outside a building or structure or inside nearest the point of entrance of the service-entrance conductors.

44 **NEC 310.15 Conductor Sizes For 120/240-Volt 3-Wire, Single-Phase, Dwelling Services And Feeders**

Copper	Aluminum	Service Rating
4 AWG	2 AWG	100 amps
1 AWG	2/0	150 amps
2/0	4/0	200 amps
400 kcmil	600 kcmil	400 amps

45 **NEC 110.14** Conductors of dissimilar metals shall not be intermixed unless the device is listed for the purpose.

46 **NEC 300.7** Portions of raceways or sleeves passing from the interior to the exterior of a building or subject to different temperatures shall be filled with an approved material to prevent condensation from entering equipment.

47 **NEC 230.54** Service entrance and overhead service conductors shall be arranged so that water will not enter the service enclosure.

48 **NEC 300.9** The interior of raceways installed in wet Ground-fault circuit-interrupter (GFCI) protection shall be provided for all 125-volt, 15 and 20 amp receptacle outlets installed outdoors, in boathouses, crawl spaces locations above grade shall be considered a wet location.

49 **NEC 300.4** Conductors 4 AWG or larger shall be protected by a bushing when entering an enclosure through a raceway.

50 **NEC 230.70** Service disconnecting means shall not be located in a bathroom

51 **NEC 240.24** Overcurrent devices shall be readily accessible and not located in bathrooms or in the vicinity of easily ignitable materials such as clothes closets.

52 **NEC 408.36** Back-fed overcurrent devices that are shall be secured by an additional approved device.

53 **NEC 110.26** Working space shall be a minimum of 3 feet in the direction of access to live parts and the width of the equipment or 30 inches whichever is greater, extending from the floor to 6½-feet and shall not be used for storage. The space below and above the panel from the floor to the ceiling is dedicated for electrical wiring and no piping, ducts or apparatus shall be in this zone.

54 **NEC 110.26** Illumination shall be provided for the working space about service equipment and panelboards.

GROUNDING AND BONDING

55 **NEC 250.28** The main bonding jumper (*generally the green bonding screw provided by the panel manufacturer*) shall be installed in the main service panel.

56 **NEC 250.32** Buildings supplied by a feeder or branch circuit shall have an equipment grounding conductor run with the supply conductors and connected to the grounding electrode system at the building.

57 **NEC 250.50** All grounding electrodes that are present at each building or structure shall be bonded together to form the grounding electrode system.

58 **NEC 250.52** Acceptable grounding electrodes include a metal underground water pipe, a metal frame of a building or structure, a rod, pipe or plate electrode, a concrete encased electrode and a ground ring

59 **NEC 250.53** A metal underground water pipe electrode shall be supplemented by an additional electrode.

60 **NEC 250.53** Unless a rod, pipe and plate electrode has a resistance to ground of 25 ohms or less, it shall be supplemented with another acceptable electrode other than an underground water pipe..

61 **NEC 250.104** The interior metal water piping and other metal piping that may become energized shall be bonded to the service equipment with a bonding jumper sized the same as the grounding electrode conductor.

62 **NEC 250.64** The grounding electrode conductor shall be continuous, securely fastened and protected from physical damage. Grounding electrode conductors are not required to comply with the minimum cover requirements in 300.5

Equivalent Size of Service Entrance Conductor		Size of the Grounding Electrode Conductor	
Copper	Aluminum	Copper	Aluminum
4 AWG	2	8	6
1 AWG	2/0	6	4
2/0 or 3/0	4/0 or 250	4	2

UNDERGROUND WIRING

63 **NEC 300.5** Direct buried cable or conduit or other raceways shall meet the following minimum cover requirements:

Direct Burial Cable	Rigid or Intermediate Metal Conduit	Non Metallic Raceway (PVC)
24 inches	6 inches	18 inches
The minimum cover for 120-volt residential branch circuits rated 20 amps or less and provided with GFCI protection at their source is permitted to be 12-inches.		

64 **NEC 300.5** Underground service conductors shall have their location identified by a warning ribbon placed in the trench at least 12" above the underground installation.

65 **NEC 300.5** Where subject to ground movement, direct buried cables and raceways shall be installed with expansion capability to prevent damage to the enclosed conductors or to the connected equipment.

66 **NEC 110.14** Wire splicing devices for direct burial conductors shall be listed for such use.

67 **NEC 300.5** Conductors emerging from underground shall be installed in rigid metal conduit, intermediate metal conduit, or Schedule 80 rigid nonmetallic conduit from 18" below grade or the minimum cover distance up to the point of termination above ground.

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This is a general overview of residential electrical requirements and no claim is made that this information is complete or beyond question.

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(651) 284-5026 or 1-800-DIAL DLI
www.dli.mn.gov dli.electricity@state.mn.us
Inspector Directory:
www.dli.mn.gov/CCLD/ElectricalInspect.asp

Provided by Tokle Inspections 2/1/2020

Electrical Inspection Checklist for Dwellings

Based on the
2017 National Electrical Code® (NEC®).

An owner (i.e. homeowner) who files a Request for Electrical Inspection form with the Department of Labor & Industry or other electrical inspection authority is signing an affidavit that they own and occupy the residence and they will personally perform all of the electrical work, including the planning and laying out.

The term "owner" is defined as a natural person who physically performs electrical work on premises the person owns and actually occupies as a residence or owns and will occupy as a residence upon completion of construction. Owner and homeowner are synonymous.

A separate permit with the required fees must be submitted to the Department at or before the start of any electrical work that is required to be inspected.

A homeowner is exempt from having to possess a personal electrical license. It is illegal for unlicensed homeowners to install electrical wiring in two-family dwellings, apartment buildings, condominium buildings, certain townhouse buildings, manufactured homes in parks, recreational vehicles in parks, floating buildings on public waterways, or in or on any property that is rented, leased, or occupied by others.

All wiring including underground cable and conduit must be inspected before it is concealed by insulation, sheet-rock, paneling, or other materials. Except for the final connection to switches, receptacles, and lighting fixtures, all ground wires and other wires in boxes must be spliced and pigtailed for the rough-in inspection.

The installer must notify the inspector for final inspection when the wiring is complete, before the wiring is utilized and the space occupied.