



## Notice concerning ELECTRICAL WIRING and INSPECTIONS

Counties of Benton & Mille Lacs \_ Electrical Inspector Tim Emery \_ Phone (320) 692-4104

Office Hours 7:00 AM to 8:30 AM Monday through Friday

It is the responsibility of the person filing the *Request for Inspection* to call for all required inspections.

Building Permits do not include electrical wiring. A separate *Request for Inspection* must be filed with the Dept. of Labor & Industry, at or before commencement of any electrical wiring that is required by law to be inspected. An owner who wishes to do his own electrical wiring may obtain a *Request for Inspection* form by sending one dollar (\$1.00) with a request for such form to the MN Dept. of Labor & Industry, Electrical Lic. & Inspection, 443 Lafayette Rd. N., St. Paul, MN 55155-4342

### LIMITATIONS ON WIRING BY HOMEOWNERS

*Minnesota Statute § 326.01, Subd. 6e. Definition of Owner. An owner is 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.*

A *Request for Inspection* is an affidavit, filed by the owner, that he is physically going to perform all of the electrical work and that the person owns and occupies his residence or owns and will occupy his residence upon completion of construction. **An owner may not install electrical wiring on property that is rented, leased, or occupied by others.** All wiring in mobile home parks must be performed by licensed electrical contractors. Persons other than the owner performing electrical work under the *Request for Inspection* signed by the owner, and persons who file fraudulent *Request for Inspection* forms, will be prosecuted.

**The inspection fee**, to be filed with the *Request for Inspection* form, is determined as follows:

Each Service/ Supply to a structure	0-400 amp capacity.....	\$ 25.00
	401-800 amp capacity .....	50.00
	Above 800 amp capacity .....	75.00
Each Circuit, Feeder, or Tap .....	0-200 amp capacity .....	5.00
	Above 200 amp capacity .....	10.00
Each bonding inspection of a swimming pool or equipotential plane .....		20.00
<b>Maximum Fee: Dwelling</b>	<b>0-500 amp service (max. 2 inspections) .....</b>	<b>80.00</b>
<b>Minimum Fee: Per inspection trip .....</b>		<b>20.00</b>

*For dwelling services exceeding 500 amps the maximum limitation does not apply. When reinspection or additional inspections are necessary to determine that unsafe conditions have been corrected, a reinspection fee of \$20 may be assessed in writing by the inspector. Request for Inspection certificates on installations with inspection fees of \$250 or less are void 12 months from the original filing date. Upon expiration, a new Request for Inspection must be filed on all unfinished work. MN Rules 3800.3780.*

All lighting fixtures, electrical equipment and material, devices, and appliances must be Listed and Labeled by a Nationally Recognized Testing Laboratory; for U.L., E.T.L., C.S.A., etc... *MN Rules 3800.3620.*

- NOTE! 1.)** All concrete floor areas used for livestock, are required to contain metal mesh or bars, which must be bonded to the grounding electrode system of the structure and require rough-in inspections before covering.
- 2.)** Re-bar in the footings of any building, must be bonded to the electrical system of that building.
- 3.)** Within 3 ft. of an in-ground pool, the concrete deck must contain metal mesh or bars, which must be bonded, and inspected before covering.

**CALL THE ELECTRICAL INSPECTOR BEFORE POURING CONCRETE.**

A rough-in inspection must be done before any wiring is covered by insulation, sheetrock, paneling, etc. Where wiring is concealed before inspection, the person responsible for concealing the wiring shall be responsible for all costs resulting from uncovering and replacing the covering material. *MN Rules 3800.3770.*

***Underground wiring must be inspected before the trench is back-filled.***

**All wire splices must be made in electrical boxes.** Do not conceal junction boxes in walls, ceilings, or nonaccessible attics and under-floor areas. The volume of boxes must be sufficient for the number of conductors, devices, and cable clamps contained in the box. Nonmetallic boxes are marked with the cubic inch capacity. If a single-gang box is too small, use a 4x4 inch square box. Use a plaster ring to convert this box to the proper size opening for fixtures, switches, and receptacles. The following information may be used to calculate the required volume for boxes:

	<u>With #14 wire</u>	<u>With #12 wire</u>
For each separate insulated wire	2 cu in .....	2.25 cu in
All ground wires combined	2 cu in .....	2.25 cu in
For each device (switch or receptacle)	4 cu in .....	4.50 cu in
All internal cable clamps combined	2 cu in .....	2.25 cu in
<i>Example:</i> 2-gang switch box with four "14-2 with ground" cables in the box.	8 insulated wires All ground wires Two switches All internal cable clamps Total	16 cu in 2 cu in 8 cu in <u>2 cu in</u> 28 cu in [minimum box size required]

In all boxes there must be a minimum wire length of six inches. The outer cable jacket must extend into the box a minimum of ¼ inch. In device boxes with more than one ground wire in the box, the ground wire must be spliced with a "wire tail" or "pig tail" to be attached to the receptacle or switch grounding terminal screw as only one wire is permitted under a terminal screw. All splices, including ground wires, must be spliced with an approved splice cap or "wire nut". All metal boxes and metal plaster rings must be grounded.

**All ground wires and other wires in boxes must be spliced for the rough-in inspection.**

**NM Cable Installation:**

Type NM cable (nonmetallic cable) must be strapped at intervals not exceeding 4½ feet, within 8 inches of nonmetallic boxes, and within 12 inches of metal boxes. To properly strap cables next to boxes it is important to bore holes in framing members at least 10 to 12 inches away from the box. Nonmetallic cable must not be installed closer than 1¼ inches from the face of the framing member to prevent damage from screws and nails. This applies to cables installed through bored holes, cables strapped to the side of a framing member, and to shallow grooves in rigid polystyrene insulation. Cables closer than 1¼ inches must be protected with metal plates or metal sleeves. **Where more than three NM cables containing two or more current-carrying conductors [14 or 12 AWG], are bundled together and pass through wood framing that is to be fire- or draft-stopped using thermal insulation or sealing foam, the allowable ampacity of each conductor must be adjusted downward.**

**Receptacle Placement:**

Generally, receptacles in habitable rooms shall be installed so that no point along the floor line in any wall space is more than 6 ft. from an outlet in that space. Generally at kitchen countertops, receptacle outlets shall be installed so that no point along the wall line is more than 24 inches from a receptacle outlet in that space. In bathrooms, a receptacle must be within 3 ft. of the basin.

Outlet boxes must not be used as the sole support of ceiling paddle fans unless the box is approved and labeled for such use. Recessed lighting fixtures installed in insulated ceilings must be labeled as Type IC (insulation contact) and are required by the Energy Code to be air-tight. Light fixtures in bathtub & shower areas must be listed for damp or wet locations, depending on use.

**Circuits Required:** Minimum 20 amp circuits: two (2) circuits required for kitchen countertop receptacles; one (1) circuit for bathroom receptacles; one (1) circuit for laundry receptacles. Also one, circuit (15-20 amp) dedicated to the central heating unit.

Ground-fault circuit-interrupter (**GFCI**) protection must be provided for all receptacle outlets; in bathrooms, garages, grade-level portions of accessory buildings, crawl spaces, unfinished basements, at kitchen countertops, outdoors, and receptacles within 6 ft. of any sink. In addition, any 120v, 15-20 amp outlet for a boat hoist must be GFCI protected.

Arc-fault circuit-interrupter [**AFCI**] protection must be provided for all [120v, 15-20 amp] outlets in bedrooms [including the smoke alarm outlet, and lighting outlets].

WET LOCATION receptacles require covers that provide protection [weatherproof] even with an appliance cord plugged-in.

**Fill out the circuit directory**, on the electrical panel, to specifically identify each circuit or feeder originating from the panel.

**A final electrical inspection is required** when all wiring has been completed and all devices, fixtures, appliances, and equipment have been installed. and the electrical system is energized and has been tested.