



General Instructions for Completion of Request for Electrical Inspection (REI) Forms (Electrical Permits)

Important First Step: Verify that the Department of Labor and Industry is the inspection authority for the project. Approximately 40 cities have adopted local electrical inspection authority and may have their own inspection forms and fee schedules. Inspection jurisdiction and inspector information is available at: www.dli.mn.gov/CCLD/ElectricalInspect.asp. **Please do not submit a Request for Electrical Inspection form to the department if the project is located in a municipality that has adopted local electrical inspection authority.**

Required Form Fields: All forms must be accurately completed. **Field names that are marked with an asterisk * are required, as applicable.** The REI form is a multipurpose form, so there are different fields for use by different entities such as contractors, homeowners, registered employers, etc.; only the applicable fields are required to be completed. However, completing **all fields** will assist the department and the electrical inspectors to provide more timely electrical inspections.

Before You Begin Wiring: At or before the commencement of any new electrical wiring installation that is required to be inspected by law and by the Department of Labor and Industry, the person lawfully responsible for making such installation shall submit to the department a Request for Electrical Inspection and the applicable fees. **Note that an investigation fee may be assessed when a Request for Electrical Inspection is not filed at or before the commencement of electrical work required to be inspected.** The fee calculation portion of the REI form only summarizes the provisions of Minnesota Statutes 326B.37 at www.dli.mn.gov/CCLD/PDF/eli_2007FeeSchedule.pdf.

In all cases, the inspection fee schedule in Minnesota statutes is used to resolve any contested situations. Electrical inspectors are required to audit electrical inspection fees at the time of a final inspection; if necessary, the permit holder may be invoiced for additional fees that are due.

VERY IMPORTANT: It is essential that the project location portion of the form correctly identify the geographical location of the project. In other words, the geographical location of the project is the city or township (Civil TWP or Survey TWP) in which the project is physically located. The geographical location very often is different than the mailing address used by the building's occupant. Complete location information must be provided, including county, township or city (not both), building number and street name. If the project location does not have a specific number and street name, please provide concise directions to the project site, and also provide the township number and range number, section number, fire number, GPS coordinates or other unique identifier. If necessary, the occupant's "mailing address" should be provided in the Project Description field or another unused text field on the form.

Project Description: Since the Inspection Fee Worksheet is not required to be submitted to the department, it's important that the Project Description field adequately describe the project. Please be detailed in order to enable the inspector to identify the specific electrical work covered by the permit.

Rough-in Inspection: All electrical wiring must be inspected before it is concealed in any manner. The permit holder is required by law to notify the electrical inspector sufficiently in advance in order to complete the inspection before the installation of insulation, drywall, sheathing, paneling, filling of trenches, pouring of concrete, or other actions that will conceal electrical wiring. Wiring that is concealed prior to a required inspection must be exposed in order to allow the required inspection to be made.

If wiring will be concealed, check the “Yes” box in the “Rough-in Inspection Required?” field on the form. If wiring will NOT be concealed, check the “No” box in the “Rough-in Inspection Required?” field on the form.

Check either the “Ready Now” or “Will Schedule” box in the “Single Inspection Other Than Rough-in?” field, as necessary.

Final Inspection: All electrical wiring must be inspected before it is utilized and the associated space is occupied by the intended user. The installer of the wiring is responsible for scheduling the final inspection.

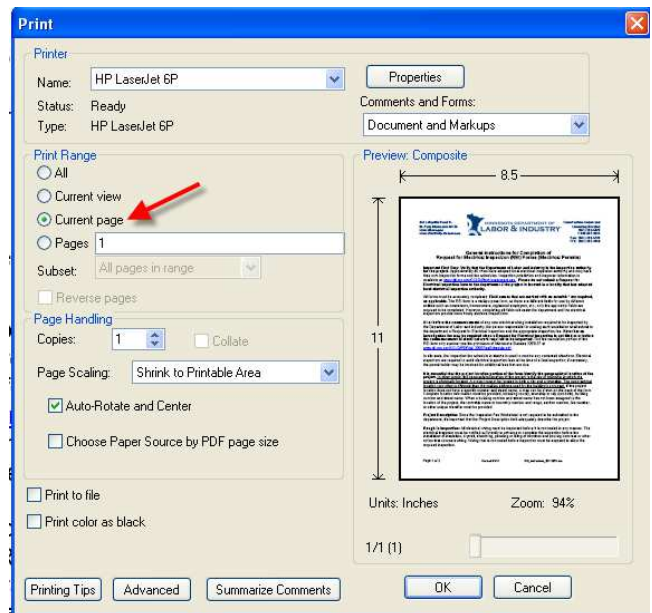
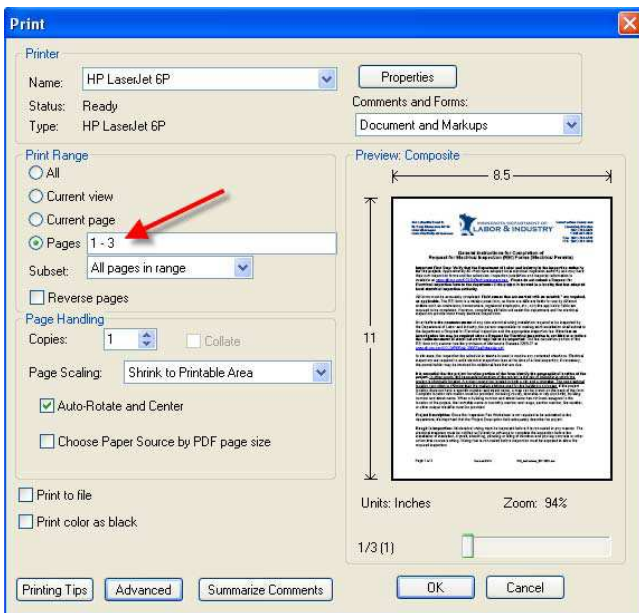
Scheduling of Inspections: Unless specific arrangements are made with the inspector, requested inspections are performed during normal business hours, Monday through Friday, exclusive of holidays. Inspections must be scheduled by directly calling the inspector between the hours of 7:00 a.m. and 8:30 a.m. weekdays only. Some inspectors have websites that enable inspections to be scheduled online. Inspection area and inspector contact information is available on the department’s web site at www.dli.mn.gov/CCLD/ElectricalInspect.asp. The permit holder requesting or scheduling the inspection must arrange for the inspector to gain access to the project in order to inspect the installed wiring.

Expiration of Request for Electrical Inspection forms: A Request for Electrical Inspection with an associated inspection fee of \$250 or less becomes void 12 months after the filing date. It is the responsibility of the person installing the electrical wiring to schedule all inspections, including final inspections. A new Request for Electrical Inspection shall be filed on all unfinished work when the work is not completed within 12 months from the filing date of the original Request for Electrical Inspection certificate.

Printing Instructions:

It’s not necessary to print all pages in the REI packet of documents. You can print selected pages by clicking on “File” in the menu bar, click on “Print”, and in the “Print” window select the appropriate options.

On the menu bar, click on File and Print to launch the Print Window:



Procedure for Submission of REI Forms and Fees

Inspection Fee Schedule: The complete inspection fee schedule can be accessed at www.dli.mn.gov/CCLD/PDF/eli_2007FeeSchedule.pdf. **Note that the minimum inspection fee is \$35. In other words, there is a minimum inspection fee of \$35 for each trip the inspector makes to the project site.** The total inspection fee is the total of all calculated inspection fees, or \$35 multiplied by the number of required inspection trips to the project site, **whichever is greater**. Depending on circumstances, the permit holder may be invoiced for additional inspection fees if the number of inspection trips to the project site is in excess of the calculated fees.

Surcharge Fee: In addition to the inspection fee, a surcharge fee of \$5 is required on all Requests for Electrical Inspection. This surcharge is required by Minnesota Statutes Section 326B.148 effective July 1, 2010.

Payment: All checks must be payable to the Department of Labor and Industry. The Department of Labor and Industry does not accept cash as payment for licenses, inspections, copy requests and other DLI services. Accepted methods of payment include checks or money orders.

Department Copy of REI (permit): The Request for Electrical Inspection form must be completed and forwarded to the Department of Labor and Industry along with the applicable fees at or before commencement of the electrical wiring. It is not required to submit the Inspection Fee Worksheet to the department.

Electrical Utility Copy of REI (permit): A copy of the Request for Electrical Inspection is required by law to be filed with the electrical utility company that supplies power to the installation before connection or reconnection of utility electrical service. Make a copy of the original form. Submit it to the electrical utility when required for the connection or reconnection of electrical service.

***PLEASE NOTE:** State law requires that the Request for Electrical Inspection be on file with the Department of Labor and Industry before the utility copy is submitted to the electrical utility.*

Permit Holder/Installer Copy of REI (permit): IMPORTANT - You must keep a copy of the Request for Electrical Inspection (permit) for your records. You will NOT receive a copy of the form or any type of acknowledgement from the Department of Labor and Industry upon submitting the Request for Electrical Inspection form and the applicable fees.

The installer copy of the form can be used as evidence to the electrical inspector that proper procedures have been followed.

Please submit REI forms together with the applicable fees to:

**MN Dept of Labor & Industry
PO Box 64218
St. Paul, MN 55164-0218**

Thank you for your cooperation!



General Instructions for Calculating Electrical Inspection Fees (One- and Two Family Dwellings)

Refer to the statutory fee schedule available at www.dli.mn.gov/CCLD/PDF/eli_2007FeeSchedule.pdf for the complete fee schedule. The statutory language supersedes any summarized inspection fee information on Request for Electrical Inspection (REI) forms (electrical permits) or any instructional materials.

If the Request for Electrical Inspection (REI) form (electrical permit) is completed online in a fillable-PDF form, enter the correct quantities in the appropriate fields; the inspection fee will be automatically calculated.

If a printed form is being completed manually,
multiply the number written in the quantity field by the correct fee and enter the result in total field.

1. **Service/Power Source:** Enter the number of services or power sources based on the ampere rating of the service disconnect or main circuit breaker, or the total rating of all service disconnects or main circuit breakers where more than one are installed. If the rating is up to 400 amperes, the fee is \$35. If the rating is 401 to 800 amperes, the fee is \$60. If the rating is more than 800 amperes, the fee is \$100. **Reminder: Strict National Electrical Code rules limit the number of services or power supplies to buildings or other structures. See the NEC for more information.**
2. **Feeders and Circuits 0 – 200 Amperes:** Enter the correct quantity of feeders and circuits. The inspection fee is \$6 per feeder or circuit.
3. **Feeders and Circuits Over 200 Amperes:** Enter the correct quantity of feeders and circuits. The inspection fee is \$15 per feeder of circuit.
4. **One- and Two-Family Dwellings (New):** The flat rate fee of \$100 applies to each separate dwelling unit for new dwellings with a combination of up to 30 feeders and circuits. A fee of \$6 is applicable for each additional feeder or circuit over 30.
5. **One- and Two-Family Dwellings (Existing):** The flat rate fee of \$100 applies to each separate dwelling unit where 15 or more feeders or circuits are installed or extended in connection with any addition, alteration, or repair to existing dwellings. Where less than 15 feeders or circuits are installed or extended in connection with any addition, alteration, or repair to existing dwelling units, the inspection fee is \$6 for each feeder or circuit.
6. **Reconnected Feeders and Circuits:** Enter the correct quantity of feeders and circuits. The inspection fee is \$2 per feeder or circuit. This fee is applicable for replacement of existing panelboards.
7. **Separate Bonding Inspections:** Enter the correct quantity of separate bonding inspections. The inspection fee is \$35 per separate bonding inspection.
8. **Inspection of concrete-encased grounding electrodes:** Enter the correct quantity of concrete-encased electrode inspections. The inspection fee is \$35 per separate inspection.
9. **Technology System Devices:** Enter the number of technology system devices or apparatuses. The inspection fee is 75 cents per system device or apparatus.
10. **Total Inspection Fee:** The total inspection fee is the total of all the preceding inspection fees, or \$35 multiplied by the number of required inspection trips to the project site, whichever is greater. In other words, after submitting the initial calculated inspection fees, the installer may be invoiced for additional inspection fees if the number of inspection trips to the project site is in excess of the calculated fees.
11. **Surcharge Fee:** A surcharge fee of \$5 is imposed on every permit effective 7/1/2010 as per M.S. 326B.148.
12. **Grand Total: Double-check all calculations and computations for accuracy. Incomplete or inaccurate forms will be returned to the submitter.**
13. **Submit:** Print or copy the number of forms needed (e.g. department, installer, electrical utility), and submit the completed form and fee payment to the Department of Labor and Industry at the address located on the upper left-hand corner of the form. The electrical utility will require a copy of the completed form for connection of the electrical service. **Please retain a copy for your records!**



326B.37 INSPECTION FEE SCHEDULE.

Subdivision 1. **Schedule.** State electrical inspection fees shall be calculated in accordance with subdivisions 2 to 14.

Subd. 2. **Fee for each separate inspection.** The minimum fee for each separate inspection of an installation, replacement, alteration, or repair is \$35. Except as otherwise provided in this section, the maximum number of separate inspections allowed without payment of an additional fee is the whole number resulting from dividing by 35 the total fee calculated in accordance with this section. Where additional separate inspections are necessary, additional fees are required to result in a value equal to the total number of separate inspections multiplied by 35. The fee for any inspections needed after a "final inspection" is performed shall be calculated without consideration of any fee paid before the final inspection.

Subd. 3. **Fee for service, generator, other power source, or feeder to separate structure.** The inspection fee for the installation, addition, alteration, or repair of each service, change of service, temporary service, generator, other power supply source, or feeder to a separate structure is:

- (1) 0 ampere to and including 400 ampere capacity, \$35;
- (2) 401 ampere to and including 800 ampere capacity, \$60; and
- (3) ampere capacity above 800, \$100.

Where multiple disconnects are grouped at a single location and are supplied by a single set of supply conductors the cumulative rating of the overcurrent devices shall be used to determine the supply ampere capacity.

Subd. 4. **Fee for circuit, feeder, feeder tap, or set of transformer secondary conductors.** The inspection fee for the installation, addition, alteration, or repair of each circuit, feeder, feeder tap, or set of transformer secondary conductors, including the equipment served, is:

- (1) 0 ampere to and including 200 ampere capacity, \$6; and
- (2) ampere capacity above 200, \$15. Where existing feeders and circuits are reconnected to overcurrent devices installed as part of the replacement of an existing disconnect, switchboard, motor control center, or panelboard, the inspection fee for each circuit or feeder is \$2.

Subd. 5. **Inspection fee for dwelling.**

(a) The inspection fee for a one-family dwelling and each dwelling unit of a two-family dwelling is the following:

- (1) The fee for each service or other source of power as provided in subdivision 3;
- (2) \$100 for up to 30 feeders and circuits; and
- (3) for each additional feeder or circuit, the fee as provided in subdivision 4. This fee applies to each separate installation for new dwellings and where 15 or more feeders or circuits are installed or extended in connection with any addition, alteration, or repair to existing dwellings. Where existing feeders and circuits are reconnected to overcurrent devices installed as part of the replacement of an existing panelboard, the fee for each reconnected feeder or circuit is \$2. The maximum number of separate inspections shall be determined in accordance with subdivision 2. The fee for additional inspections or other installations is that specified in subdivisions 2, 4, 6, and 8. The installer may submit fees for additional inspections when filing the request for electrical inspection. The fee for each detached accessory structure directly associated with a dwelling unit shall be calculated in accordance with subdivisions 3 and 4. When included on the same request for electrical inspection form, inspection fees for detached accessory structures directly associated with the dwelling unit may be combined with the dwelling unit fees to determine the maximum number of separate inspections in accordance with subdivision 2.

(b) The inspection fee for each dwelling unit of a multifamily dwelling with three or more dwelling units is \$70 for a combination of up to 20 feeders and circuits and \$6 for each additional feeder or circuit. This fee applies to each separate installation for each new dwelling unit and where ten or more feeders or circuits are installed or extended in connection with any addition, alteration, or repair to existing dwelling units.

Where existing feeders or circuits are reconnected to overcurrent devices installed as part of the replacement of an existing panelboard, the fee for each reconnected feeder or circuit is \$2. The maximum number of separate inspections for each dwelling unit shall be determined in accordance with subdivision 2. The fee for additional inspections or for inspection of other installations is that specified in subdivisions 2, 4, 6, and 8.

These fees include only inspection of the wiring within individual dwelling units and the final feeder to that unit where the multifamily dwelling is provided with common service equipment and each dwelling unit is supplied by a separate feeder or feeders extended from common service or distribution equipment. The fee for multifamily dwelling services or other power source supplies and all other circuits is that specified in subdivisions 2 to 4.

(c) A separate request for electrical inspection form must be filed for each dwelling unit that is supplied with an individual set of service entrance conductors. These fees are the one-family dwelling rate specified in paragraph (a).

Subd. 6. Additions to fees of subdivisions 3 to 5.

(a) The fee for the electrical supply for each manufactured home park lot is \$35. This fee includes the service or feeder conductors up to and including the service equipment or disconnecting means. The fee for feeders and circuits that extend from the service or disconnecting means is that specified in subdivision 4.

(b) The fee for each recreational vehicle site electrical supply equipment is \$6 for each circuit originating within the equipment. The fee for recreational vehicle park services, feeders, and circuits is that specified in subdivisions 3 and 4.

(c) The fee for each street, parking lot, or outdoor area lighting standard and each traffic signal standard is \$5. Circuits originating within the standard or traffic signal controller shall not be used when calculating the fee for each standard.

(d) The fee for transformers for light, heat, and power is \$15 for transformers rated up to ten kilovolt-amperes and \$30 for transformers rated in excess of ten kilovolt-amperes. The previous sentence does not apply to Class 1 transformers or power supplies for Class 1 power-limited circuits or to Class 2 or Class 3 transformers or power supplies.

(e) The fee for transformers and electronic power supplies for electric signs and outline lighting is \$5 per unit.

(f) The fee for technology circuits or systems, and circuits of less than 50 volts, is 75 cents for each system device or apparatus.

(g) The fee for each separate inspection of the bonding for a swimming pool, spa, fountain, an equipotential plane for an agricultural confinement area, or similar installation is \$35. Bonding conductors and connections require an inspection before being concealed.

(h) The fee for all wiring installed on center pivot irrigation booms is \$35 plus \$5 for each electrical drive unit.

(i) The fee for retrofit modifications to existing lighting fixtures is 25 cents per luminaire.

(j) When a separate inspection of a concrete-encased grounding electrode is performed, the fee is \$35.

(k) The fees required by subdivisions 3 and 4 are doubled for installations over 600 volts.

Subd. 7. Investigation fee: work without electrical inspection request.

(a) Whenever any work for which a request for electrical inspection is required has begun without the request for electrical inspection form being filed with the commissioner, a special investigation shall be made before a request for electrical inspection form is accepted.

(b) An investigation fee, in addition to the full fee required by subdivisions 1 to 6, shall be paid before an inspection is made. The investigation fee is two times the minimum fee specified in subdivision 2 or the inspection fee required by subdivisions 1 to 6, whichever is greater, not to exceed \$1,000. The payment of the investigation fee does not exempt any person from compliance with all other provisions of the department rules or statutes nor from any penalty prescribed by law.

Subd. 8. Reinspection fee. Notwithstanding the provisions of subdivisions 2 and 5, when reinspection is necessary to determine whether unsafe conditions identified during a final inspection have been corrected and the conditions are not the subject of an appeal pending before the commissioner or any court, a reinspection fee of \$35 shall be assessed in writing by the inspector.

Subd. 9. **Supplemental fee.** When inspections scheduled by the installer are preempted, obstructed, prevented, or otherwise not able to be completed as scheduled due to circumstances beyond the control of the inspector, a supplemental inspection fee of \$35 shall be assessed in writing by the inspector.

Subd. 10. **Special inspection.** For inspections not covered in this section, or for requested special inspections or services, the fee is \$80 per hour, including travel time, plus the standard mileage rate per mile traveled, plus the reasonable cost of equipment or material consumed. This provision is applicable to inspection of empty conduits and other jobs as may be determined by the commissioner. This fee may also be assessed when installations are not accessible by roadway and require alternate forms of transportation or are located in the Northwest Angle, or when inspections are performed outside of Minnesota. For purposes of this subdivision, the standard mileage rate is the standard mileage rate effective at the time of travel, as established by the Internal Revenue Service for computing the deductible costs of operating an automobile for business expense purposes.

Subd. 11. **Inspection of transitory project.**

(a) For inspection of transitory projects including, but not limited to, festivals, fairs, carnivals, circuses, shows, production sites, and portable road construction plants, the inspection procedures and fees are as specified in paragraphs (b) to (i).

(b) The fee for inspection of each generator or other source of supply is that specified in subdivision 3. A like fee is required at each engagement or setup.

(c) In addition to the fee for generators or other sources of supply, there must be an inspection of all installed feeders, circuits, and equipment at each engagement or setup at the hourly rate specified in subdivision 10, with a one-hour minimum.

(d) An owner, operator, or appointed representative of a transitory enterprise including, but not limited to, festivals, fairs, carnivals, circuses, production companies, shows, portable road construction plants, and similar enterprises shall notify the commissioner of its itinerary or schedule and make application for initial inspection a minimum of 14 days before its first engagement or setup. An owner, operator, or appointed representative of a transitory enterprise who fails to notify the commissioner 14 days before its first engagement or setup may be subject to the investigation fees specified in subdivision 7. The owner, operator, or appointed representative shall request inspection and pay the inspection fee for each subsequent engagement or setup at the time of the initial inspection. For subsequent engagements or setups not listed on the itinerary or schedule submitted to the commissioner and where the commissioner is not notified at least 48 hours in advance, a charge of \$100 may be made in addition to all required fees.

(e) Amusement rides, devices, concessions, attractions, or other units must be inspected at their first appearance of the year. The inspection fee is \$35 per unit with a supply of up to 60 amperes and \$40 per unit with a supply above 60 amperes.

(f) An additional fee at the hourly rate specified in subdivision 10 must be charged for additional time spent by each inspector if equipment is not ready or available for inspection at the time and date specified on the application for initial inspection or the request for electrical inspection form.

(g) In addition to the fees specified in paragraphs (a) and (b), a fee of one hour at the hourly rate specified in subdivision 10 must be charged for inspections required to be performed on Saturdays, Sundays, holidays, or after regular business hours.

(h) The fee for reinspection of corrections or supplemental inspections where an additional trip is necessary may be assessed as specified in subdivision 8.

(i) The commissioner shall retain the inspection fee when an owner, operator, or appointed representative of a transitory enterprise fails to notify the commissioner at least 48 hours in advance of a scheduled inspection that is canceled.

Subd. 12. **Negotiated fee.** When the fee calculated in accordance with subdivisions 2 to 11 results in a total fee that unreasonably exceeds the cost of inspection, the commissioner may negotiate a fee that more reasonably offsets the cost of inspection.

Subd. 13. **Handling fee.** The handling fee to pay the cost of printing and handling of the paper form requesting an electrical inspection is up to \$1.

Subd. 14. **National Electrical Code used for interpretation of provisions.** For purposes of interpretation of this section and Minnesota Rules, chapter 3800, the most recently adopted edition of the National Electrical Code shall be prima facie evidence of the definitions, interpretations, and scope of words and terms used.

PLAN YOUR WIRING PROJECT

01 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

02 The installer shall schedule a final inspection when the electrical work is completed prior to the wiring being utilized and the space occupied. MN Rules 3800.3780

GENERAL CIRCUIT REQUIREMENTS



03 **NEC 406.4 and 406.12** All 125-volt, 15- and 20- amp receptacles installed or replaced in dwelling units shall be listed tamper-resistant. Exceptions include a receptacle located more than 66-inches above the floor, a receptacle in space dedicated for an appliance that is not readily moved and replacement non-grounding receptacles.

04 **NEC 210.12** All branch circuits supplying 125-volt, 15 and 20 amp outlets in dwelling unit family

rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar areas shall be protected by a listed combination type AFCI device. AFCI protection is also required where branch circuit wiring in the above rooms is modified, replaced or extended.

05 **NEC 210.11 and 422.12** In addition to the branch circuits installed to supply general illumination and receptacle outlets in dwelling units, the following minimum requirements apply:

- Two 20-amp circuits for the kitchen receptacles
- One 20-amp circuit for the laundry receptacles
- One 20-amp circuit for the bathroom receptacles
- An individual branch circuit for central heating equipment

06 **NEC 406.4 and 406.9** Receptacles installed in wet locations and receptacles in wet locations that are or replaced shall be listed as weather-resistant type.

07 **NEC 300.3** All conductors of the same circuit, including grounding and bonding conductors, shall be contained in the same raceway, cable, or trench.

08 **NEC 408.4** Every circuit and circuit modification shall be legibly identified as to its clear, evident and specific purpose or use in sufficient detail on a directory located on the face or inside of the electrical panel doors.

09 **NEC 240.4** Conductors shall be protected in accordance with their ampacity per Table 310.16 and 240.4(D)

10 **NEC 406.3** Receptacle outlets shall be of the grounding type, be grounded, and have proper polarity.

NEC 310.15 Maximum Overcurrent Protection

Fuse or Circuit Breaker Size	Minimum Wire Size	
	Copper	Aluminum
15 amp	14	N/A
20 amp	12	N/A
30 amp	10	8
40 amp	8	6
50 amp	6	4

Note: Conductors that supply motors, air-conditioning units, and other equipment may have overcurrent protection that exceeds the limitations in the above chart.

11 **NEC 210.52** Receptacle outlets in habitable rooms shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6-feet from a receptacle outlet. A receptacle shall be installed in each wall space 2-feet or more in width.

12 **NEC 210.52** At kitchen countertops, receptacle outlets shall be installed so that no point along the wall line is more than 24 inch measured horizontally from a receptacle outlet in that space. Countertop spaces separated by range tops, sinks or refrigerators are separate spaces.

13 **NEC 210.52** A receptacle outlet shall be installed at each counter space 12-inches or wider and at each island counter or peninsular space greater than 24-inches by 12-inches. Receptacles shall be located not more than 20-inches above the countertop, or not more than 12-inches below the countertop.

14 **NEC 210.52 & 406.9** At least one receptacle accessible at grade level shall be installed at the front and back of a dwelling. and shall have a cover that is weatherproof whether or not an attachment plug cap is inserted.

15 **NEC 210.52** Balconies, decks and porches, regardless of size, that are accessible from inside a dwelling unit shall have at least one receptacle installed within the perimeter.

GFCI PROTECTION

16 **NEC 210.8** Ground-fault circuit-interrupter (GFCI) protection shall be provided for all 125-volt, 15 and 20 amp receptacle outlets installed outdoors, in boathouses, garages, unfinished accessory buildings, crawl spaces at or below grade level, unfinished basements, bathrooms, at kitchen countertops and within 6' of the outside edge of all other sinks.



17 **NEC 680.71** Hydro-massage bathtubs (a tub with a re-circulating piping system designed to discharge water upon each use) and associated components shall be supplied by an individual branch circuit and shall have ground-fault circuit-interrupter protection.

18 **NEC 680.71** All 125-volt receptacles rated not more than 30 amps that are installed within 6 feet of the inside walls of a hydromassage bathtub shall be GFCI protected.

19 **NEC 680.73** Hydromassage bathtub equipment shall be accessible without damaging the building structure or finish. When cord connected and accessible through an access panel, the receptacle shall be within 1-foot of the opening and shall face the opening.

20 **NEC 680.21(C)** All 15- and 20-amp, single-phase, 125-volt or 240-volt pool pump motors, whether cord connected or direct wired, shall be provided with GFCI protection.

An equipotential bonding grid to mitigate step and touch voltage potential shall be installed at outdoor swimming pools, spas and hot tubs, livestock areas, and at electrical equipment installed outdoors adjacent to natural and artificially made bodies of water.

WIRING METHODS



21 **NEC 314.23** All electrical boxes shall be rigidly secured to the building structure.

22 **NEC 314.27** Where spare conductors are installed to a location acceptable to a ceiling fan, a listed fan box shall be installed.

23 **NEC 334.30** Type NM (nonmetallic) cables shall be secured every 4.5 feet and within 12 inch of each box.

24 **NEC 314.17** The outer jacket of type NM cable shall be secured to the box and extend into the box at least ¼ inch.

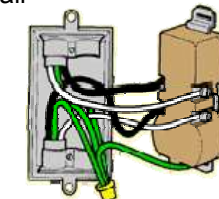
25 **NEC 300.14** The minimum length of conductors, including grounding conductors, at all boxes shall be 6 inches and extend at least 3 inches outside the box.

26 **NEC 300.4** Cables and raceways shall be protected from damage. Where installed through bored holes in wood framing members, the holes shall be bored so that the edge of the hole is not less than 1¼ inch from the nearest edge of the wood member, or shall be protected by a 1/16 inch steel plate.

NOTE: Local building codes will help you determine where holes or notches may be safely made in joists.

27 **NEC 300.22** Type NM cable shall not be installed in plenum spaces, but in dwelling units may be installed perpendicular through joist or stud spaces used as such.

28 **NEC 110.14** Only one conductor shall be installed under a terminal screw. In boxes with more than one grounding wire, the grounding wires shall be tied together with a "pigtail" attached to the grounding terminal of the device.



29 **NEC 200.7(C)** Where permanently re-identified at each location where it is visible and accessible, the conductor with white colored insulation in type NM cable may be used as an ungrounded conductor.

30 **NEC 250.134** All electrical equipment, including raceways, metal boxes and equipment shall be connected to an equipment grounding conductor.

31 **NEC 110.12** Unused openings in boxes shall be effectively closed. A non-metallic box shall be replaced if cable openings are punched but not used.

32 **NEC 408.41** Each grounded circuit conductor within a panelboard shall terminate in an individual terminal.

33 **NEC 404.2** The grounded conductor of lighting circuits shall be provided at each switch location, unless the wiring is installed in a raceway or the switch box remains accessible.



34 **NEC 314.29** Junction boxes shall be installed so that the wiring contained in them can be rendered accessible without removing any part of the building.

35 **NEC 314.16** The number of conductors and devices contained within electrical boxes determine the size. Nonmetallic boxes are marked with their cubic inch capacity.

NEC 314.16 Minimum Size Of Outlet Boxes

	Conductor Size	
	14 AWG	12 AWG
Each insulated wire	2 in ³	2.25 in ³
All ground wires (combined)	2 in ³	2.25 in ³
Each device (switch/receptacle)	4 in ³	4.4 in ³
All internal cable clamps	2 in ³	2.25 in ³

Example: a box with Four 14/2 w/ground type NMB cables:

8 insulated wires	= 16 cubic inches
All ground wires	= 2 cubic inches
1 switch	= 4 cubic inches
1 receptacle	= 4 cubic inches
All cable clamps (combined)	= 2 cubic inches
Minimum Box Volume	= 28 cubic inches

36 **NEC 410.16** Luminaires in clothes closets shall have the following minimum clearances from the storage space

- 12 inches for totally enclosed surface mounted incandescent or LED luminaires
- 6 inches for recessed totally enclosed incandescent, fluorescent or LED luminaires
- 6 inches for surface mounted or recessed fluorescent luminaires

Surface mounted fluorescent or LED luminaires listed for installation within the defined storage space are permitted.

37 **NEC 410.2** Closet storage space is the area bounded by the sides and back closet walls extending from the closet floor to a height of 6-feet' or the highest clothes-hanging rod and then out 24-inches from the sides and back of the closet walls respectively, and then continuing from there to the ceiling at a distance of 12-inches or the shelf width, whichever is greater.

38 **NEC 410.16** Incandescent luminaires with open or partially enclosed lamps and pendant fixtures or lamp-holders are not permitted in clothes closets.

39 **NEC 410.10** Luminaires installed in wet or damp locations shall be marked as suitable for use in wet or damp locations, correspondingly.

The Minnesota Energy Code requires that all penetrations through an 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

40 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.



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

ELECTRICAL SERVICES



42 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.

43 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

44 NEC 110.14 Conductors of dissimilar metals shall not be intermixed unless the device is identified for the purpose. Listed anti-oxidant compound shall be used on all aluminum conductor terminations, unless the device manufacturer states that it is not required.

45 NEC 300.7 Portions of raceways or sleeves subject to different temperatures (i.e. passing from the interior to the exterior of a building) shall be sealed with an approved material to prevent condensation from entering equipment.

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

47 NEC 300.9 The interior of raceways installed in wet locations above grade shall be considered wet locations.

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

49 NEC 230.70 Service disconnecting means shall be readily accessible and shall not be located in a bathroom

50 NEC 240.24 Overcurrent devices shall not be located in bathrooms or in the vicinity of easily ignitable materials such as clothes closets.

51 NEC 408.36 Plug-in type overcurrent devices that are back-fed shall be secured by an additional approved device.

52 NEC 110.26 Sufficient working space shall be provided around electrical equipment. The depth of that space in the direction of access to live parts shall be a minimum of 3 feet and the minimum width of that space shall be the width of the equipment or 30 inches whichever is greater. This workspace extends from the floor to 6.5' and shall not be used for storage.

53 NEC 110.26 Illumination shall be provided for all working spaces about service equipment and panelboards.

GROUNDING AND BONDING

54 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.

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

56 NEC 250.50 Acceptable grounding electrodes include a metal underground water pipe in direct contact with earth for 10 feet or more, a metal frame of a building or structure, a concrete encased electrode or a ground ring

57 NEC 250.53 A metal underground water pipe shall be supplemented by an additional electrode, such as a rod, pipe or plate electrode.

58 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.

59 NEC 250.66 The conductor that is the sole connection to a rod, pipe or plate electrode is not required to be larger than #6 AWG copper.

60 NEC 250.64 The grounding electrode conductor shall be continuous, securely fastened and protected from physical damage.

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

61 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.



62 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.

UNDERGROUND WIRING

62 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.

63 NEC 680.10 Underground wiring is not permitted under pools or within 5-feet horizontally from the walls of the pool, unless supplying permitted pool equipment.

64 NEC 300.5 Underground service laterals 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.

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

66 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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 Minnesota Electrical Inspector Directory:
www.dli.mn.gov/CCLD/PDF/elj_ElectricalInspectorDirectory.pdf

Residential Electrical Inspection Checklist

Based on the 2011 National Electrical Code ©



When an owner files a Request for Electrical Inspection form and inspection fees with the Department of Labor & Industry or other electrical inspection authority, that person is signing an affidavit that they own and occupy the residence and that they will personally perform all of the electrical work, including the laying out of such work.

"Owner" is defined in MN Stat §326B.31, Subd. 23 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.

A separate request for electrical inspection form with the required fees must be submitted to the Department at or before commencement of any electrical installation that is required by law to be inspected.

All wiring shall be inspected before it is concealed and the installer shall notify the inspector when the wiring is complete, before the wiring is utilized and the associated space occupied.

It is illegal for an owner to install electrical wiring in mobile home or recreational vehicle parks, or on property that is rented, leased, or occupied by others.

A rough-in inspection must be made before insulation, sheet-rock, paneling, or other materials cover any electrical wiring. Underground wiring must be inspected before the trench is back-filled. 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.

This brochure is only intended to be a general overview of residential electrical requirements. Reasonable efforts have been made to ensure that this information is current, complete and accurate, however no claim is made that this information is beyond question.



While there are many resources for do-it-yourself owners, please refer to accredited sources for National Electrical Code® information and have your work inspected to assure your electrical installation will be free from fire and electrical shock hazard.