

**ORDINANCE NO. 20111020-089**

**AN ORDINANCE REPEALING AND REPLACING ARTICLE 4 OF CHAPTER 25-12 (ELECTRICAL CODE) OF THE CITY CODE TO ADOPT THE 2011 NATIONAL ELECTRICAL CODE AND LOCAL AMENDMENTS TO THE ELECTRICAL CODE.**

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:**

**PART 1.** Article 4 of City Code Chapter 25-12 (*Technical Codes*) is repealed and replaced with a new Article 4 to read:

**ARTICLE 4. ELECTRICAL CODE.**

**§ 25-12-111 ELECTRICAL CODE.**

(A) The National Electrical Code, 2011 edition, of the National Fire Protection Association (2011 Electrical Code) is adopted and incorporated into this Electrical Code, including Annex H, with deletions and amendments in Sections 25-12-113 (*Local Amendments to the Electrical Code - Administration*) and 25-12-114 (*Local Amendments to the Electrical Code - Technical*).

(B) The following provisions of the 2011 Electrical Code are deleted:

Section 80.2	Section 200.6(B)	Section 334.10(3)
Section 80.15	Section 210.12(B)	Section 338.10(A)
Section 80.19(C)	Section 210.24	Section 338.12(A)(2)
Section 80.19(D)	Section 225.32	Section 340.10
Section 80.19(E)	Section 230.70(A)(1)	Article 394
Section 80.21	Section 230.70(A)(3)	Section 410.36(B)
Section 80.23(B)	Section 250.52(A)(3)	Section 680.23(A)(4)
Section 80.27	Section 250.119(A)	Section 680.41
Section 80.29	Section 300.3(C)(1)	
Section 80.31	Section 300.5(A)	
Section 80.33	Section 310.110	
Section 80.35	Article 320	
Section 110.12	Section 330.30	
Section 110.26(E)(1)(a)	Section 334.10(1)	
Section 200.6(A)	Section 334.10(2)	

(C) The city clerk shall file a copy of the 2011 Electrical Code with the official ordinances of the City.

## § 25-12-112 CITATIONS TO THE ELECTRICAL CODE.

In the City Code, "Electrical Code" means the 2011 Electrical Code adopted by Section 25-12-111 (*Electrical Code*) as amended by Sections 25-12-113 (*Local Amendments to the Electrical Code - Administration*) and 25-12-114 (*Local Amendments to the Electrical Code – Technical*).

## § 25-12-113 LOCAL AMENDMENTS TO THE ELECTRICAL CODE – ADMINISTRATION.

The following provisions are local amendments to Annex H (*Administration and Enforcement*) of the 2011 National Electrical Code. Each provision in this Section is a substitute for the identically numbered provision deleted by Section 25-12-111(B) (*Electrical Code*) or is an addition to the Electrical Code.

### 80.2 Definitions.

**Agent.** A person designated by an electrical contractor to obtain an electric permit on behalf of the electrical contractor. An agent must be the owner or an employee of the electrical contractor.

**Approved.** Acceptable to the authority having jurisdiction, and cables, raceways, equipment, and apparatus shall be certified, listed and labeled by a nationally recognized testing laboratory (NRTL) that maintains periodic inspection of production of labeled and listed equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner. An approved NRTL shall be recognized by the Occupational Safety and Health Administration (OSHA).

**Authority Having Jurisdiction.** The organization, office, or individual responsible for approving equipment, materials, and installation, or a procedure.

**Chief Electrical Inspector.** An electrical inspector designated by the building official to administer the requirements of this Code; the Chief Electrical Inspector must be an employee of the City; maintain a current Texas Department of Licensing and Regulation master electrical license and certification as a residential and commercial electrical inspector, or electrical inspector general under the certification program established by the International Code Council (ICC) or the International Association of Electrical Inspectors (IAEI), and have at least 10 years of experience as an engineer, contractor, or superintendent of electrical construction, or a combination thereof, with at least five years of experience in a responsible supervisory capacity and five years of experience as an electrical inspector.

**Citation.** A citation for violation of the Electrical Code issued by the director or building official under the requirements of City Code Chapter 1-3 (*Citation Program*).

**Commercial Building or Structure.** A building or structure that is not included in the definition of residential building or structure as provided under this section.

**Electrical Contractor.** Under the State of Texas Chapter 1305 Title 8, Occupations Code means a person engaged in electrical contracting.

**Electrical Contracting.** The business of designing, installing, erecting, repairing, maintaining, or altering electrical wires or conductors to be used for light, heat, power, or signaling purposes. The term includes the installation or repair of ducts, raceways, or conduits for the reception or protection of wires or conductors and the installation or repair of any electrical machinery, apparatus, or system used for electrical light, heat, power, or signaling.

**Electrical Inspector.** An electrical inspector authorized by the building official to perform electrical inspections under the requirements of this Code. An electrical inspector must be an employee of the City; have a current Texas Department of Licensing and Regulation Master Electrical License that was issued at least two years before the date the inspector is hired by the City; and have a current certification as a residential and commercial electrical inspector, or electrical inspector general under the certification program established by the International Code Council (ICC), or the International Association of Electrical Inspectors (IAEI), or obtain such certifications within two years after the date of hire and maintain the certifications thereafter.

**Electrical Work.** The installing, maintaining, altering, repairing or erecting of any electrical wiring apparatus, raceways, or equipment used in connection therewith, whether inside or outside of any building or structure, lot or premises, under the terms and provisions of this code.

**License.** An electrical license issued by the Texas Department of Licensing and Regulation (TDLR).

**Residential Building or Structure.** Single-family, two-family, and multi-family dwelling units of five stories or less in height and located in a residential zone.

**Subcontractor.** A person or company licensed as an electrical contractor who enters into an agreement with another contractor or owner to perform work on an electrical wiring system.

**Texas Department of Licensing and Regulation.** The State of Texas Department responsible for the administration and enforcement of Title 8, Occupations Code Chapter 1305 and 16 Texas Administrative Code, Chapter 73.

**80.15 Electric Board.** The Electric Board is established in Chapter 2-1, Article 25 (*Electric Board*) of the City Code.

**80.19(C) Issuance of Permits.**

**(1) Standard Permits.**

- (a) Except as provided in Section 80.19(C)(5) (*Homestead Permit*), the building official may issue an electrical permit only to an electrical contractor who is registered with the City as an electrical contractor, (see Section 80.36(C)).
- (b) The building official shall review the application, plans specifications, and other data filed by an applicant for a permit. Other departments may review the plans as necessary to verify compliance with applicable laws.
- (c) The building official shall issue a permit to an applicant if the building official finds that the work described in an application for a permit and in the plans, specifications, and other support data filed with the application conform to the requirements of this Code and other applicable laws and ordinances and that the required fees have been paid.
- (d) When the building official issues a permit, the building official shall either endorse the plans and specifications in writing or stamp "REVIEWED" on the plans and specifications. A person shall not change, modify, or alter the reviewed plans and specifications without authorization from the building official. All work regulated by the Electrical Code shall be done in accordance with the reviewed plans.
- (e) All buildings and/or tenant finish outs in excess of 5,000 square feet shall require a drawing stamped by an electrical engineer. Buildings and/or tenant finish outs of 5,000 square feet and less shall require a drawing with the signature and license number of the master electrician record for a licensed electrical contractor, or stamped by an electrical engineer. Projects employing meter module units shall have signed approval data indicating type and location from Austin Energy Meter Services prior to electrical plan review submittal.
- (f) The building official may issue a permit for the construction of part of an electrical system before the plans and specifications for the entire system have been submitted or approved if adequate information and detailed statements have been filed that comply with the requirements of this Code. The holder of a permit issued under this Section shall proceed at the permit holder's own risk, without assurance that the permit for the entire building, structure, or building service will be granted.

- (2) Permit Required.** Except as specified in Section 80.19(C)(3), no electrical system regulated by this Code shall be installed, altered, repaired, replaced or remodeled unless an electrical permit has been obtained. In addition an electrical permit shall be required to remove an Austin Energy meter seal.

**(3) Exempt Work.**

- (a) An electrical permit is not required for the following:
- (i) replacement of an approved cable or cord and plug connected motor or portable appliance;
  - (ii) replacement of components to approved equipment or to a fixed approved appliance of the same type and rating, in the same location;
  - (iii) temporary holiday decorative lighting;
  - (iv) replacement of a snap, single, three-way, four-way or dimmer switch, ceiling paddle fan, luminaire and lamps, when the maximum voltage is 480 and the maximum ampacity is 30;
  - (v) reinstallation of a receptacle, or replacement of a receptacle with a ground-fault circuit interrupter receptacle, or installation of a tamper-resistance receptacle, or installation of an arc-fault circuit interrupter receptacle or weather-resistance receptacle;
  - (vi) replacement of an overcurrent protection device, or fuse of the same voltage and amperage, and in the same location, when the service will not be de-energized;
  - (vii) repair or replacement of an electrode or transformer of the same size and capacity for a sign or gas tube system;
  - (viii) replacement of insulating material to a splice;
  - (ix) removal of electrical wiring;
  - (x) temporary wiring for experimental purposes in a suitable experimental laboratory;
  - (xi) the wiring for a temporary theater, motion picture, or television stage set;
  - (xii) installation or repair of an electrical device, appliance, apparatus, equipment, or electrical wiring operating at less than 25 volts;
  - (xiii) installation or repair of a low-energy power, control and signal circuit of Class II and Class III as defined in the National Electrical Code;
  - (xiv) the following activities, if performed in connection with the transmission of electrical energy: the installation, alteration, or repair of electrical wiring, apparatus, or equipment; or the generation, transmission, distribution, or metering of electrical energy;

- (xvi) the operation of signals or the transmission of intelligence by a public or private utility in the exercise of its function as a serving utility; or
  - (xvii) buildings or structures which are owned and occupied by the State or Federal government, except for the electrical service.
- (b) Work that is exempt from the permit requirements of this Code must comply with this Code and other applicable laws.
- (4) **Emergency Repair Permits.** An applicant for a permit to make emergency electrical repairs on non-exempt work shall identify the emergency on the permit application.
- (5) **Homestead Permit.** A person who is not licensed to perform electrical work may perform electrical work within a residence owned by the person if all of the following requirements are met:
- (a) the residence is the person's homestead and principal residence;
  - (b) the electrical work does not include the main electric service;
  - (c) the person has not secured a homestead permit for another residence within the prior 12 month period;
  - (d) the person has owned and occupied the property as of January 1 of the tax year in which the person applies for a homestead permit;
  - (e) A person must obtain a homestead permit and pay required permit fees before beginning any electrical, mechanical, or plumbing work. A person must apply for a homestead permit in person and must file an affidavit stating that the location at which the work is to be done is the person's homestead;
  - (f) person who has obtained a homestead permit may not allow or cause any person to perform electrical, mechanical, or plumbing work under the permit. The building official may suspend or revoke a homestead permit if work done under the permit is performed by anyone other than the person who obtained the permit;
  - (g) A person may not transfer a permit to another person;
  - (h) A person performing electrical, mechanical, or plumbing work under a homestead permit shall present a picture identification to verify that the person is authorized to perform work under the homestead permit when requested by the building official or his designee; and
  - (i) A homestead permit shall not be issued for electrical, mechanical, or plumbing work on a mobile, modular or manufactured home unless the homeowner owns the land on which the mobile, modular or manufactured

home is located. A homestead permit shall not be issued if the mobile, modular or manufactured home is located in a mobile home park, mobile home community or other commercial premises.

**80.19(D) Registered Industrial Plant Program.** Electrical work may be performed in a facility operating under the registered industrial plant program authorized by the Building Code, other than a health care facility or public school, without obtaining the City permits required by Section 80.19(C) provided all of the following conditions are met:

- (1) The work is limited to the repair, modification, or installation of equipment or branch circuits. Work involving sub-panels, panels, electrical service, or other similar work requires permits issued under Section 80.19;
- (2) The work is performed by an electrical contractor employee with the proper license classification or licensed master electrician employed by the facility, and in accordance with Section 80.40 (*Supervision*);
- (3) The work is inspected by a certified electrical inspector who was approved by the City before performing inspections under this program. The inspector must be a licensed master electrician licensed by the Texas Department of Licensing and Regulation and a certified commercial electrical inspector by the International Code Council or the International Association of Electrical Inspectors; and
- (4) The facility shall maintain records on all work performed under this program in accordance with the Building Code. Records must include:
  - (a) a description and location of the work;
  - (b) the name and license number of each person performing the work; and
  - (c) the name of the approved inspector, dates of inspection, results of inspections, and a statement signed by the approved inspector testifying that the finished work complies with all the applicable provisions of this Code.

**80.19(E) Permit and Registration Fees.** The council shall establish permit and registration fees under separate ordinance.

**80.19(H) Time Limitation on Application; Permit Expiration and Reactivation.** Time limits on permit applications and requirements for permit expiration and reactivation, including an administrative review fee for expired permits, are set forth in Chapter 25-12, Article 13 (*Administration of Technical Codes*).

**80.19(I) Special Inspections Program.** Electrical work may be performed under this program in occupied residential and commercial buildings or structures within the zoning jurisdiction of the City.

- (1) Participation in this program is subject to the requirements of this subsection.
  - (a) An electrical contract participating in the program shall:
    - (1) register with the City annually under this program and pay a special inspection program registration fee established per the requirements of Section 80.19(E);
    - (2) submit a completed compliance form to the building official for each permit, no later than one business day from the completion of the permitted electrical work; and
    - (3) obtain permit as required in Section 80.19(C)(2), no later than one business day from the work start date.
  - (b) Scope of work under the program may not:
    - (1) exceed a dollar evaluation of \$2,000.00;
    - (2) include the disconnection, reconnection, or repair of electrical work;
    - (3) involve penetration of a fire rated wall or component;
    - (4) require an electrical rough inspection; or
    - (5) include more than one stand alone electrical permit.
- (2) The building official shall randomly inspect the electrical work performed for one out of five residential permits and one out of ten commercial permits, and the electrical contractor shall provide access to the permitted work.

**80.21 Plan Review Fees.** The council shall establish plan review fees under a separate ordinance.

### **80.36 Licenses and Registration.**

**(A) License Required.** Except as provided in Subsection 80.19(C)(5)(*Homestead Permit*), an electrical license is required to perform electrical work.

**(B) License Display.** A licensee shall be in possession of the licensee's license at all times when performing electrical work and shall display the license on request of the building official or owner of the premises or property on which the licensee is working, offering to work, or has worked. A licensee shall present a picture identification to verify identity.

**(C) Registration.** To perform electrical contracting in the jurisdiction of the City, an electrical contractor shall register with the City. To register as a City electrical contractor, the contractor shall be a licensed electrical contractor in accordance with the



requirements of the Texas Department of Licensing and Regulation's Title 8, Occupations Code Chapter 1305, and 16 Texas Administrative Code, Chapter 73.

- (1) At the time of registration, an electrical contractor shall designate the name of the licensed master electrician of record employed by the contractor;
- (2) The master electrician of record shall not have a City electrical contractor's registration for more than one contracting business;
- (3) The master electrician of record shall appear in person to register the electrical contracting business;
- (4) An electrical contractor may designate a maximum of three agents to obtain electric permits on behalf of the contractor under the contractor's registration; and
- (5) Except as otherwise provided in this Subsection, an electrical contractor must employ a licensed master electrician as the master electrician of record at all times.
- (6) The electrical contractor is not required to employ a licensed master electrician of record provided the electrical contractor is the licensed master electrician of record.

**(D) Vehicle Display of License.** City registered electrical contractors shall identify all vehicles used in the performance of electrical work in accordance with the requirements of Section 1305.166 (*Display of License*) of the State of Texas Title 8, Occupations Code Chapter 1305 and Section 73.51 (*Electrical Contractor's Responsibilities*) of 16 Texas Administrative Code Chapter 73. Information displayed shall be:

- (1) printed in letters and numbers that are at least two inches high and in a color that contrasts with the color of the background surface, and the numbers shall be preceded by the letters "TECL";
- (2) permanently affixed in conspicuous places on both sides of the vehicle; and
- (3) the assigned vehicle numbers are limited to use for one company.

**80.37 Suspension of Registration.** This section applies to an electrical contractor registered in the City as an electrical contractor.

**(A)** Except as provided in Subsection 80.37(C), if an electrical contractor violates Section 80.39 (*Offenses*) three times within a 12 month period, the building official may, by written notice, return receipt request, suspend the City registration of an electrical contractor. The first suspension under this Section shall be for six months from the date that a notice of suspension is received. Subsequent suspensions shall be for one year from the date that a notice of suspension is received.

**(B)** The building official may suspend the registration of an electrical contractor after each occurrence of the following offenses: Section 80.39(A)(14) (tampering with an electric meter to commit theft of service), and Section 80.39(A)(2) or (A)(17) (endangering or causing injury to person or property).

(C) An action by the building official under this section may be appealed to the Electrical Board.

(D) Enforcement action taken under this section is not an exclusive remedy for a violation.

### **80.39 Offenses.**

(A) No person, including but not limited to a permittee, licensee, contractor, or subcontractor, shall:

- (1) permit an unlawful or fraudulent use of an electrical permit;
- (2) perform, or cause to be performed, electrical work that causes injury to a person or property;
- (3) supervise, perform, or cause to be performed, electrical work in violation of the supervision requirements set forth in this Code;
- (4) perform electrical work for which a license or permit is required without the required correct classification of license or permit;
- (5) perform electrical work in violation of restrictions imposed on a restricted license;
- (6) display, cause, permit to be displayed, or possess an instrument purporting to be a license to perform electrical work that is false, expired, suspended, or altered;
- (7) fail or refuse to display a license to perform electrical work in response to a request from the building official;
- (8) permit the use of a license to perform electrical work by, a person other than the person to whom the license was issued;
- (9) employ a person not licensed as a master electrician/contractor, journeyman electrician, residential wireman, or apprentice electrician to perform electrical work that requires an electrical license under this Code;
- (10) request the building official to perform inspections of incomplete work or work that has not been properly reviewed by the permit holder or the designated supervisor, on three or more occurrences in a 12 month period;
- (11) advertise or otherwise represent to the public that the person is a City registered electrical contractor or licensed electrician of a particular class or type or that the person is authorized or willing to perform functions or services that may only be performed under this Code by City registered electrical contractor or a licensed electrician of a particular class or type, unless the person possesses a license of the required class or type issued under this Code;
- (12) employ a person to perform electrical work for which the person is not qualified under this Code;

- (13) supervise a person who is performing electrical work for which the person is not qualified under this Code;
- (14) tamper or interfere with the proper action or registration of an electrical meter to commit theft of service, as that offense is described in the Texas Penal Code;
- (15) obtain a permit for a business other than the business identified on the permittee's City's electrical contractor registration;
- (16) perform electrical work under a permit for a business other than the business identified on the permit authorizing the electrical work;
- (17) perform, or cause to be performed, electrical work in a manner that endangers a person or property;
- (18) fail to provide notification of the change of a business address or contact information provided on the application for a City registration on or before the 10th day after the change occurs;
- (19) refuse to provide picture identification when requested by the building official; or
- (20) fail to comply with the requirements of this Code.

**(B)** A person who violates the requirements of this Section commits an offense. An offense under this Section is a Class C misdemeanor, punishable by a fine not to exceed \$500 for each offense. Each day a person commits an offense or remains in violation of a provision of this Section is a separate offense.

**(C)** Eligibility for license reinstatement is not a defense to prosecution under this Section for performing electrical work without a license.

**(D)** Proof of a culpable mental state is not required for conviction of an offense under this Section.

**80.40 Supervision.** There shall be at least one licensed journeyman electrician, licensed master electrician or licensed residential wireman on each site requiring an electrical permit to provide supervision of the electrical work. The ratio of the licensed master electrician, licensed journeyman electrician, or residential wireman to licensed apprentice electricians shall not exceed one licensed master electrician, licensed journeyman electrician or residential wireman to five licensed apprentice electricians. An inspection request shall not be forwarded to the building official unless the designated supervisor has reviewed the work. A residential wireman is restricted to supervise only residential projects.

**80.41 Special Requirements for Installations below Regulatory Flood Datum.**

**(A)** For the purpose of this Section, regulatory flood datum (RFD) has the meaning assigned in Section 1612 (*Flood Loads*) of the Building Code.

**(B)** A lighting circuit, switch, receptacle, and luminaire operating at a maximum of 120 volts to ground may be installed below the RFD if the circuit can be de-energized by automatic operating electrical disconnect equipment. The electrical circuit must be de-energized before water is present on the floor of the affected areas. If any equipment is flooded, its particular circuit shall not be re-energized until the circuit and equipment have been approved by the wiring and equipment manufacturer for reuse after submergence in water or replaced and approved for use by the building official.

**(C)** Except for a switch, receptacle, and luminaire, all other electrical equipment permanently installed below the RFD must be of the submersible type rated by the equipment manufacturer for submergence for not less than 72 hours for a head of water above the equipment to the RFD.

**(D)** An electrical wiring system installed below the RFD must be suitable for continuous submergence in water. Only a submersible type splice will be permitted below the RFD. A conduit located below the RFD must be installed so that it will be self-draining if subject to flooding.

**(E)** Electrical power equipment and components of elevator systems must be located above the RFD. An automatic type elevator must be provided with a home station located above the RFD to which the elevator will automatically return after use.

**(F)** An electrical unit heater installed below the RFD must be capable of being disconnected as outlined in Subsection (B). An electrical control on a gas or oil furnace located below the RFD shall not exceed 120 volts to ground and the control circuits must be automatically de-energized before water is present on the floor of the affected area.

**(G)** Sump pumping equipment of any type must be provided with a float operated warning alarm that acts independently of any other float actuating device used to start and stop pumping equipment. A building and structure utilizing sump-pumping equipment must have automatic starting standby electrical generating equipment located above the RFD. The standby generating equipment must be capable of remaining in continuous operation at 125 percent of the anticipated duration of the design flood.

**(H)** A control center, privately owned transformer, distribution and main lighting panel, and switchgear, in addition to other stationary equipment, must be located above the RFD. Portable or moveable electrical equipment may be located below the RFD if the equipment can be disconnected by a single plug or socket assembly of the submersible type and rated for not less than 72 hours for the head of water above the assembly to the RFD.

**(I)** All components of emergency lighting systems installed below the RFD must be located so that a component of the emergency lighting system is not within reach of personnel working at floor level in the area where an emergency lighting system is used unless the emergency lighting circuit(s) are provided with ground-fault circuit interrupters having a maximum leakage current to ground sensitivity of 5 milliamperes.

(J) The building official shall verify that all incoming main city power service equipment, including all metering equipment, is located two feet above the RFD before releasing electrical utilities or issuing a certificate of occupancy.

## § 25-12-114 LOCAL AMENDMENTS TO THE ELECTRICAL CODE – TECHNICAL.

The following provisions are local amendments to the 2011 National Electrical Code. Each provision in this Section is a substitute for the identically numbered provision deleted by Section 25-12-111(B) (*Electrical Code*) or is an amendment to the Electrical Code.

### 110.12 Mechanical Execution of Work.

(A) **Neat and Workmanlike.** All electrical work shall be installed in a neat and workmanlike manner. For the purpose of this Code, workmanlike manner is defined as, but not limited to:

- (1) skillfully installed per the requirements of this Code;
- (2) equipment, raceways, and cables shall be installed parallel or perpendicular to the building or structure's structural members;
- (3) where raceways or cables are grouped, cables or raceways shall remain straight, parallel or perpendicular to the building or structure's structural members;
- (4) cable shall be cut to length to prevent sagging or looping, except moderate sagging where flexibility is required; and
- (5) all boxes, cabinets, enclosures, and devices shall be installed level, parallel or perpendicular to the building or structure's structural members.

(B) **Unused Openings.** Unused openings, other than those intended for the operation of equipment, those intended for mounting purposes, or those permitted as part of the design for listed equipment, shall be closed to afford protection substantially equivalent to the wall of the equipment. Where metallic plugs or plates are used with nonmetallic enclosures, they shall be recessed at least 6 mm (1/4 in.) from the outer surface of the enclosure.

(C) **Integrity of Electrical Equipment and Connections.** Internal parts of electrical equipment, including busbars, wiring terminals, insulators, and other surfaces, shall not be damaged or contaminated by foreign materials such as paint, plaster, cleaners, abrasives, or corrosive residues. There shall be no damaged parts that may adversely affect safe operation or mechanical strength of the equipment such as parts that are broken, bent, cut, or deteriorated by corrosion, chemical action, or overheating.

**110.12(C) Removal of Abandoned Raceways and Cables.** All abandoned raceway systems and cables shall be removed and the remaining raceway system(s) and cable(s) shall be supported in accordance with this Code, when the ceiling grid or support walls are remodeled during the remodeling of a building or structure. For the purpose of this Code, abandoned raceways and cables are raceways and cables not in use, not terminated to boxes, cabinets, or equipment or not identified for future use with a tag.

**110.12(D) Removal of Abandoned Wiring.** Each abandoned wiring system shall be removed from all buildings and structures. When a building, structure, or portion thereof, is being remodeled, the remaining wiring system(s) shall be supported in accordance with this Code. For the purpose of this Code, abandoned wiring is wiring not in use, not terminated in a box, cabinet, or equipment or not identified for future use with a tag.

**110.26(E)(1)(a) Dedicated Electrical Space.** For indoor installations, dedicated electrical space equals the width and depth of the equipment and extends from the floor to a height of 25 feet above the equipment or to the structural ceiling, whichever is lower. Piping, ducts, or equipment that is foreign to the electrical installation shall not be located in this zone.

## **200.6 Means of Identifying Grounded Conductors.**

**(A) Sizes Smaller than 8 AWG.** An insulated grounded conductor smaller than 8 AWG shall be identified by one of the following means:

- (1) A continuous white outer finish.
- (2) A continuous gray outer finish.
- (3) Three continuous white stripes along the conductor's entire length on other than green insulation.
- (4) Wires that have their outer covering finished to show a white or gray color but have colored tracer threads in the braid identifying the source of manufacture shall be considered as meeting the provisions of this section.
- (5) The grounded conductor of a mineral-insulated, metal-sheathed cable shall be identified at the time of installation by distinctive marking at its terminations.
- (6) A single-conductor, sunlight-resistant, outdoor-rated cable used as a grounded conductor in photovoltaic power systems, as permitted by 690.31, shall be identified at the time of installation by distinctive white marking at all terminations.
- (7) Fixture wire shall comply with the requirements for grounded conductor identification as specified in 402.8.

- (8) For aerial cable, the identification shall be as above, or by means of a ridge located on the exterior of the cable so as to identify it.

**(B) Sizes 8 AWG and Larger.** An insulated grounded conductor of 8 AWG or larger shall be identified by one of the following means:

- (1) A continuous white outer finish.
- (2) A continuous gray outer finish.
- (3) Three continuous white stripes along its entire length on other than green insulation.
- (4) At the time of installation, by a distinctive white or gray marking at its terminations. This marking shall encircle the conductor or insulation.

**210.24 Branch-Circuit Requirements --- Summary.** All 120 volt, single phase, 15 or 20 ampere receptacle outlets, or combination of receptacle and lighting outlets shall be calculated not less than 180 volt-amperes for each outlet and the number of outlets for each branch circuit shall not exceed the rating of the branch-circuit. See the National Electrical Code Sections 210.19, 210.20, and 210.21 for additional specific requirements applying to branch circuits.

*Informational note: a branch circuit rated at 15 amperes is limited to 10 outlets; a branch circuit rated at 20 amperes is limited to 13 outlets.*

**225.31(A) Delta Feeder.** The feeder disconnect(s) for a 3 phase, 4 wire delta connected system where the mid-point of one phase winding is grounded, feeder, or branch circuit load(s) requiring a neutral shall not originate from the feeder disconnect enclosure. See Section 408.3(D)(1) of this Code.

**225.32 Location.** For outside feeder and branch circuit disconnect requirements, see Subsection 230.70(A)(1) of this code.

*Exception No. 1: For towers or poles used as lighting standards, the disconnecting means shall be permitted to be located elsewhere on the premises.*

*Exception No. 2: For poles or similar structures used only for support of signs installed in accordance with Article 600, the disconnecting means shall be permitted to be located elsewhere on the premises.*

**230.54(H) Identification of Conductors at Weather Head.** All service entrance conductors shall be identified within 12 inches of a rain-tight service head.

**230.70(A)(1) Readily Accessible Location.**

The service disconnecting means shall be installed at a readily accessible location outside of the building or structure.

*Exception: Commercial Buildings and Structures. Where the customer is the only customer served by the utility transformer, the service disconnecting means shall be located on the first floor of the building or structure nearest the point of entrance of the service conductors. The disconnecting means shall be accessible from an exterior entrance and not exceeding 25 feet inside the building or structure.*

**230.70(A)(3) Remote Control.** Where the customer is the only customer served by the utility transformer, and the disconnecting means can not be located 25 feet or less from an accessible exterior entrance due to structural or other Code requirements, the disconnecting means shall not be located above the first floor, and utilize a remote control device to actuate the service disconnecting means when the device is installed meeting all of the requirements of (A)(3)(1) through (A)(3)(6).

- (1) The remote control device shall be installed outside at a readily accessible location, on the building or structure within sight of the utility transformer;
- (2) Wiring to the remote control device shall be installed outside of the building or structure in compliance with Section 230.6 of the National Electrical Code;
- (3) Mounted in a City of Austin Fire Department approved enclosure;
- (4) A sign permanently installed at the remote control device, red in color, made of a material suitable for the environment with letters of a color that contrasts with the color of the sign, capable of being read from a distance of 50 feet, and shall state "AFD Emergency Shut Off";
- (5) Maximum height to center of the remote control device shall be 6 feet, 7 inches above grade; and
- (6) A remote control device shall be installed for each service disconnect; where multiple service disconnects are permitted, the devices shall be grouped.

**230.70(D) Delta Service.** The service disconnect(s) for a 3 phase, 4 wire delta connected system where the mid-point of one phase winding is grounded, feeder or branch circuit load(s) requiring a neutral shall not originate from the service disconnect enclosure. See Section 408.3(D)(1) of this Code.

**250.52(A)(3) Concrete-Encased Electrode.** All new buildings or structures having a concrete footing or foundation shall have a concrete encased electrode as the primary grounding system. The electrode shall comply with all the requirements of Article 250 (*Grounding and Bonding*), including but not limited to the following requirements:

- (a) The electrode shall be a minimum of 20 feet of ½ inch or larger reinforcing bar encased in a minimum of 2 inches of concrete located near the bottom of the beam. A reinforcing bar may be turned upward in an exterior wall, a minimum of 8 inches (readily identifiable), and sleeved above the finished floor. The reinforcing bar shall be in close proximity of the service disconnecting means. The grounding



electrode conductor termination shall be approved and identified for use in non accessible locations and may be enclosed.

- (b) Concrete encased electrode installations for the electric utility district (EUD) locations shall require a grounding inspection port for termination of the grounding electrode conductor. The inspection port enclosure shall be accessible from the exterior wall of the building or structure and a minimum size of 4 inches X 4 inches X 2 ½ inches and identified as "Ground Port" on the cover plate or door of the port.

### **250.119 Identification of Equipment Grounding Conductors.**

(A) **Conductors Sizes 8 AWG and Larger.** Marking of conductors at each accessible point is approved for conductor size 8 AWG and larger. Equipment grounding conductors 8 AWG and larger shall comply with 250.119(A)(1) and (A)(2).

- (1) An insulated or covered conductor 8 AWG and larger shall be permitted, at the time of installation, to be permanently identified as an equipment grounding conductor at each end and at every point where the conductor is accessible.

*Exception: Conductors 8 AWG and larger shall not be required to be marked in conduit bodies that contain no splices or unused hubs.*

- (2) Identification shall encircle the conductor and shall be accomplished by one of the following:
  - (a) Stripping the insulation or covering from the entire exposed length.
  - (b) Coloring the insulation or covering green at the termination.
  - (c) Marking the insulation or covering with green tape or green adhesive labels at the termination.

**300.3(C)(1) Conductors of Different Systems.** Service, feeders or branch circuit conductors of different systems shall not occupy the same wireway, raceway, junction box, pull box, or outlet box. For separate voltage systems, a junction box cover or pull box cover shall be permanently identified as follows:

- (a) Emergency systems shall be permanently identified red in color.
- (b) 277 and 480-volt systems shall be identified yellow in color.
- (c) 240 volt three phase delta systems where the "high leg" to ground is present shall be permanently identified orange in color.

### **300.5 Underground Installations.**

(A) **Minimum Cover Requirements.** Direct-buried cable or conduit or other raceways shall be installed to meet the minimum cover requirements of Table 300.5 of the National

Electrical Code. Ungrounded conductors or cables with a cover or sheath of nonmetallic material is not approved for direct burial, except as permitted in Section 340.10 of this Code.

**300.11(D) Suspended Ceilings.** Cables, raceways, or boxes shall not be supported, or attached to the framing members (grid) of suspended ceiling systems.

**Table 310.106(A) Minimum Size of Conductors.** No. 14 AWG copper shall be permitted for residential use only. Aluminum or copper-clad aluminum shall not be smaller than No. 8 AWG.

**310.110 Conductor Identification.**

(A) Color coding of conductors shall be as follows:

(1) Single phase 120/240 volt wiring systems.

(A) (B) (N)

RED-----BLACK-----WHITE

(2) Three phase four wire 120/208 volt wiring systems.

(A) (B) (C) (N)

RED----BLACK----BLUE---WHITE

(3) Three phase three and four wire 120/240 volt delta wiring systems.

(A) (B) (C) (N)

RED----ORANGE----BLACK--WHITE

(4) 277/480 wye or 480 volt delta wiring systems.

(A) (B) (C) (N)

BROWN----YELLOW-----PURPLE-----GRAY

(B) Color coding of conductors shall be consistent throughout each system. Color coding of conductors also apply to Metal-Clad Cable Type (MC), including the return conductor from a switch to the outlet. The three phase color code shall be maintained for all circuits originating from a three phase power source.

*Exception No. 1: Branch circuit conductors supplied by 120/208 volt or 120/240 volt single phase.*

*Exception No. 2: When NM Cable is an approved wiring method: Color coding of branch circuit conductors is not required.*

(C) Color code shall be maintained throughout the metering and service distribution equipment, and all circuits originating from a three phase power source shall be installed in an approved raceway.

**330.12(3) Uses Not Permitted.** Type MC cable shall not be used as a service or feeder entering a surface mounted electrical cabinet or panelboard for MC cable smaller than No. 8 AWG.

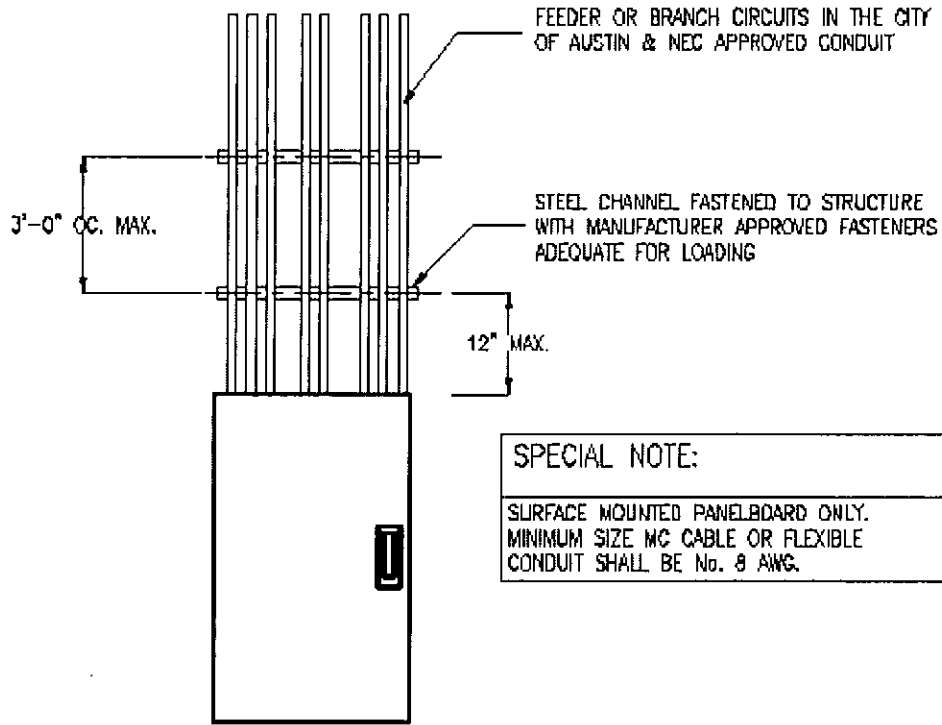
### **330.30 Securing and Supporting.**

(A) **General.** Type MC cable shall be installed in a workmanlike manner. See definition workmanlike manner in Subsection 110.12 of this Code. Type MC cable shall be installed in compliance with this Code, including Figures 1 and 2, and the National Electrical Code. When installed in a surface mounted panel type MC cable shall not be smaller than No. 8 AWG.

(B) **Securing.** Type MC cable shall be supported and secured at intervals not exceeding 6 feet (1.83m) where concealed, 3 feet (0.915m) where exposed, and within 12 inches (305 mm) of a connection to every panelboard or terminal/box.

(C) **Supporting.** Bundling of cables is limited to three cables for each support ring. If more than three cables are required in an exposed location, the cable shall be racked together and uniformly spaced in parallel runs supported by steel channel. Steel channel shall be designed and listed for the application. Cables shall be fastened to the channel with metal cable clamps designed for the channel used.

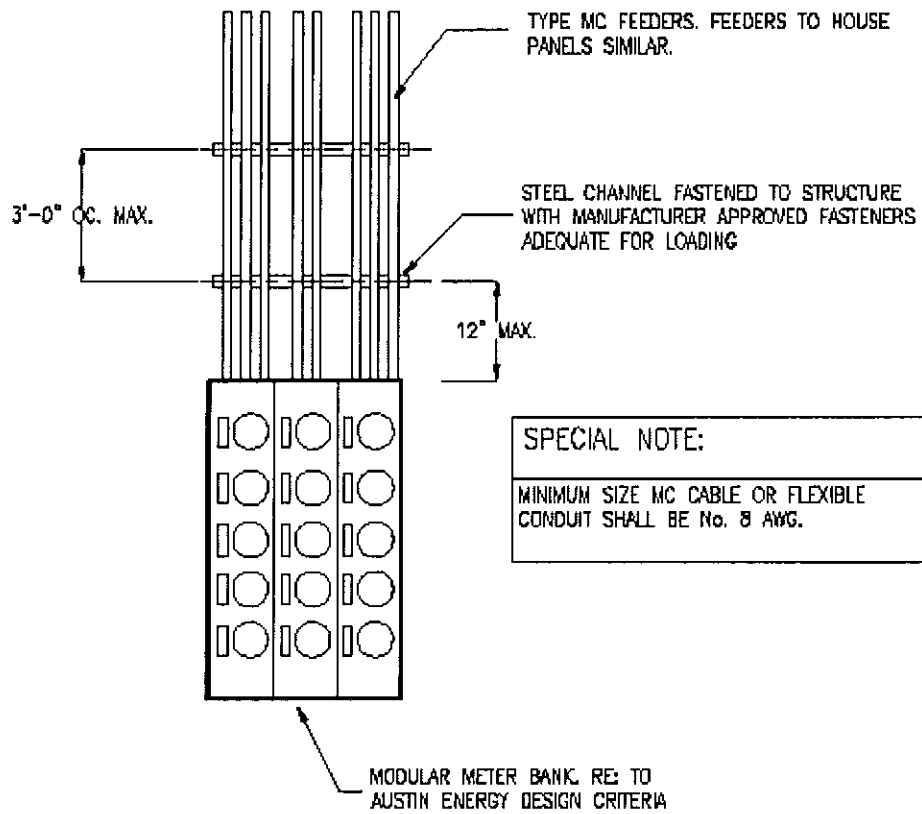
# Figure 1 - Panel board Installation - MC Cable Strapping Requirements



**SPECIAL NOTE:**  
SURFACE MOUNTED PANELBOARD ONLY.  
MINIMUM SIZE MC CABLE OR FLEXIBLE  
CONDUIT SHALL BE No. 8 AWG.

**Not To Scale**

**Figure 2-Modular Meter Bank Feeder Detail**



**Not To Scale**

**334.10 Uses Permitted.** Type NM, Type NMC, and Type NMS cables shall be permitted to be used only in the following:

(A) One and two-family dwellings and their attached or detached garages, and their storage buildings.

(B) Multifamily dwellings and their associated uses permitted to be of Types III, IV, and V construction, except as prohibited in 334.12.

(C) Existing Structures. Non-metallic sheathed cable may remain as a wiring method for a non dwelling use structure, provided the structure is a remodel of a type III, IV, or V construction that was converted from a use as defined in Subsection (1) and (2) of this Section to a different use under a change of use permit, except else where not permitted in this Code. The structure must be two stories or less in height and supplied by a 120/240-volt single-phase electrical service.

**338.10 Uses Permitted.**

(A) Service-Entrance Cable: Type SE and USE, See Section 334.10 of this code.

**338.12(A)(2) Uses Not permitted.**

(2) Service-Entrance Cable: Type SE and USE, for direct burial.

**340.10 Uses Permitted.** Underground Feeder and Branch-Circuit Cable: Type UF cable is approved only for dwelling branch circuits as follows: for use underground, including direct burial in earth where branch circuits are rated at 150 volts or less to ground and 20 amperes or less.

**404.1 Scope.** Switches, All snap switches shall have a minimum rating of 20 amperes, except one-family, two-family, and multifamily dwellings.

**406.1 Scope.** Receptacles, all receptacles shall have a minimum rating of 20 ampere, except one-family, two-family, and multifamily dwellings.

**408.3(D)(1) Grounded Conductor.** Switchboards and Panelboards, for a 4-wire, delta connected system where the mid-point of one phase winding is grounded, a grounded conductor shall not be present in a panelboard or switchboard, except service equipment, service disconnect(s), and disconnect(s) to meet the requirements of Section 225.31. For services, see Subsection 230.70(D), or feeders Subsection 225.31(A) of this Code.

**410.36(B) Suspended Ceiling.** Luminaire support, framing members of suspended ceilings shall not be used to support luminaries. Each luminaire shall have two support wires installed, one on each end, at diagonal corners. Luminaries in fire rated ceilings shall be supported on all four corners. All electrical equipment installed above the suspended ceiling shall be supported by independent support. Support wire shall be the same gauge/size as the ceiling support wire or larger. Support wire shall be secured at both ends and shall be identified from other support wires in the ceiling.

**680.13 Emergency Switch for Pools.**

A clearly labeled emergency shutoff switch shall be installed to disconnect all ungrounded conductors for pool equipment and underwater lighting systems, as defined in the National Electrical Code. The switch shall be installed in a place that is readily accessible, within sight, and not less than 5 feet from the waters edge. The sign for the shut-off switch shall be red in color, with letters capable of being read from a distance of 50 feet. Sign material shall be plastic, metal or similar durable material. The sign shall read "Emergency Shut Off."

The emergency shut off switch shall be red in color and of the mushroom push to de-energize type.

*Exception: 1 and 2 family dwellings units.*

**680.23(A)(4) Voltage Limitation.** Underwater luminaire, all underwater lighting systems in permanently installed pools, spas, hot tubs, fountains and similar installations shall be a listed lighting system of 16 volt or less.

**680.41 Emergency Switch for Spas and Hot Tubs.**

A clearly labeled emergency shutoff switch shall be installed to disconnect all ungrounded conductors for spa or hot tub equipment and underwater lighting systems, as defined by the National Electrical Code. The switch shall be installed in a place that is readily accessible, within sight, and not less than 5 feet from the waters edge. The sign for the shut-off switch shall be red in color, with letters capable of being read from a distance of 50 feet. Sign material shall be plastic, metal or similar durable material. The sign shall read "Emergency Shut Off." The emergency shut off switch shall be red in color and of the mushroom push to de-energize type.

*Exception: 1 and 2 family dwellings units.*

**PART 2.** This ordinance takes effect on February 1, 2012.

**PASSED AND APPROVED**

\_\_\_\_\_ , 2011  
October 20

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§  
§  
\_\_\_\_\_  
Lee Jeffingwell  
Mayor

**APPROVED:** \_\_\_\_\_  
Karen M. Kennard  
City Attorney

**ATTEST:** \_\_\_\_\_  
Shirley A. Gentry  
City Clerk