

ARTICLE 12-III ELECTRICITY

<u>Sec</u>	<u>12-31</u>	<u>Annex</u>	<u>H</u>	<u>Electrical</u>	<u>Code</u>	<u>Administrative</u>	<u>Provisions</u>	<u>Adopted</u>
<u>Sec</u>	<u>12-32</u>			<u>Electrical</u>	<u>Code</u>		<u>Ordinance</u>	<u>Adopted</u>
<u>Secs</u>		<u>12-33</u>			<u>-</u>		<u>12-100</u>	<u>(Reserved)</u>

Editor's note— Ord. No. 018-014, § 1(Exh. A), adopted January 23, 2018, repealed the former Art. III, §§ 12-31–12-100, and enacted a new Art. III as set out herein. The former Art. III pertained to similar subject matter and derived from Ord. No. 092-37, § 1, 6-2-92; Ord. No. 093-05, § 4, 1-5-93; Ord. No. 099-41, §§ 1–4, 6–12, 6-8-99; Ord. No. 001-17, § 1, 2-27-01.

Sec 12-31 Aurora Electrical Code Administrative Provisions

SECTION 101 - GENERAL

101.1 Purpose. A purpose of this code is to establish minimum requirements to safeguard public health, safety and general welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of electrical systems and equipment.

101.2 Scope. This code applies to the design, construction, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of electrical systems and equipment.

101.3 Appeals: Appeals shall be conducted by the Electrical Commission as defined in Article I of the Aurora Building Code and per the adopted rules of the Commission.

SECTION 102 - APPLICABILITY

102.1 General. The provisions of this code apply to all matters affecting or relating to structures and premises, as set forth in Sec.101.

102.2 Existing installations. Except as otherwise provided for in this chapter, a provision in this code shall not require the removal, alteration or abandonment of, nor prevent the continued utilization and maintenance of, existing electrical systems and equipment lawfully in existence at the time of the adoption of this code.

102.2.1 Practical Safeguarding for Existing Installations. Existing electrical installations that do not comply with the provisions of this code shall be permitted to continue in use unless the authority having jurisdiction determines that the lack of conformity with this code presents an imminent danger to occupants. Where changes are required for correction of hazards, a reasonable amount of time shall be given for compliance, depending on the degree of the hazard.

1. Non-Compliant Existing Conditions and Installations at existing structures undergoing repairs, renovations, alteration, extensive alterations or reconstruction may remain unless indicated to be remedied in proportion to the extent of the project per the adopted existing structures code:

a. One- and Two-Family structures; refer to the adopted International Residential Code - Appendix BO.

b. Non-One- and Two-Family structures; refer to the adopted International Existing Building Code.

2. In addition by further determination of the authority having jurisdiction, the following are hereby determined to constitute an imminent danger to occupants.

a. Inadequate Service Capacity

b. Inadequate Service Grounding

i. Grounding location more than 5 feet from water service entry and per Art 250.68 (C).

ii. Grounding or bonding locations where non-conductive materials interrupt the required conductive path per Art 250.68 (B).

c. Improper fusing

d. Improper wiring or installation that was not installed per the applicable code at the date of the installation.

e. Deterioration or Damage

f. Corroded, Rusted Switchgear, Bussing, Branch Circuit Panelboards

g. Electrical wiring, of all types, not supported in an approved manner.

h. Splices unenclosed in approved boxes other than knob and tube wiring in areas where Knob and Tube are permitted to remain.

i. Absence of or use of unapproved connectors for splices and termination into boxes or cabinets.

j. Wiring with insulation deterioration or other damaged conditions.

k. Flexible cords used as a substitute for fixed wiring.

l. Flexible cords where running through or concealed within walls, ceilings, dropped-ceilings, baseboard and floors.

m. Boxes or conduit with excessive numbers of conductors based upon permitted installation date.

n. Knob and Tube wiring in areas other than concealed within framing cavities or within limited access or lockable attics.

o. Exposed fuse blocks or exposed terminal-cleat type light fixtures in areas where Knob and Tube would not be permitted to remain.

p. Other items determined imminently dangerous by the Authority Having Jurisdiction.

102.3 Maintenance. Electrical systems, equipment, materials and appurtenances, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe, hazard-free condition. Devices or safeguards that are required by this code shall be maintained in compliance with the code edition under which installed. The owner or the owner's authorized agent shall be responsible for the maintenance of the electrical systems and equipment. To determine compliance with this provision, the building official shall have the authority to require that the electrical systems and equipment be reinspected.

102.4 Additions, alterations and repairs. Additions, alterations, renovations and repairs to electrical systems and equipment shall conform to that required for new electrical systems and equipment without requiring that the existing electrical systems or equipment comply with all of the requirements of this code. Additions, alterations and repairs shall not cause existing electrical systems or equipment to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing electrical systems and equipment shall meet the provisions for new construction, except where such work is performed in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

102.5 Subjects not regulated by this code. Where no applicable standards or requirements are set forth in this code, or are contained within other laws, codes, regulations, ordinances or bylaws adopted by the jurisdiction, compliance with applicable standards of nationally recognized standards as are approved shall be deemed as prima facie evidence of compliance with the intent of this code. Nothing herein shall derogate from the authority of the building official to determine compliance with codes or standards for those activities or installations within the building official's jurisdiction or responsibility.

SECTION 103 - PERMITS

103.1 Types of permits. An owner, authorized agent or contractor who desires to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace electrical systems or equipment, the installation of which is regulated by this code, or to cause such work to be done, shall first make application to the building official and obtain the required permit for the work.

Exception: Where repair or replacement of electrical systems or equipment must be performed in an emergency situation, the permit application shall be submitted within the next working business day of the department of electrical inspection.

103.2 Work exempt from electrical permit(s). The following work shall be exempt from the requirement for a permit:

1. Listed cord- and plug-connected temporary decorative lighting.
2. Reinstallation of attachment plug receptacles, but not the outlets therefor.

3. Replacement of branch circuit overcurrent devices of the required capacity in the same location.
4. Temporary wiring for experimental purposes in suitable experimental laboratories or temporary system for testing or servicing of electrical equipment or apparatus [IBC exemption].
5. Telecommunication wiring, devices, appliances, apparatus or equipment operating at less than 50 volts, and not associated with fire alarm , other life safety systems and low-voltage suspended ceiling systems.
6. Minor maintenance such as changing a switch, receptacle, light fixture, ceiling fans less than 35 lbs., ballasts and bulbs; providing wiring and junction boxes are not altered.
7. Repair or replacement of branch circuit overcurrent devices w/devices appropriately sized for the conductors.
8. Wiring replacement for mechanical equipment from existing switch or existing disconnect where the circuit conductors are of adequate size. 7. Wiring replacement for industrial machinery from existing switch or existing disconnect where the circuit conductors are of adequate size.
9. Wiring replacement for electrified signage from existing switch or existing disconnect where the circuit conductors are of adequate size.
10. Single family owner occupied home projects not requiring special knowledge (see IBC section 117): where the equipment and material costs are less than \$500.
 - a. Example of exception items that require special knowledge include electrical items covering the service, solar systems and / or EV charging stations.

Exemption from the permit requirements of this code shall not be deemed to grant authorization for work to be done in violation of the provisions of this code or other laws or ordinances of this jurisdiction.

SECTION 104 - CONSTRUCTION DOCUMENTS

104.1 Information on construction documents. Construction documents shall be drawn to scale upon suitable material. Electronic media documents are permitted to be submitted where approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that such work will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

104.2 Penetrations. Construction documents shall indicate where penetrations will be made for electrical systems and shall indicate the materials and methods for maintaining required structural safety, fire-resistance rating and fireblocking.

104.3 Load calculations. Where an addition or alteration is made to an existing electrical system, an electrical load calculation shall be prepared to determine if the existing electrical service has the capacity to serve the added load.

SECTION 105 - ALTERNATIVE ENGINEERED DESIGN

105.1 General. The design, documentation, inspection, testing and approval of an alternative engineered design electrical system shall comply with this section.

105.2 Design criteria. An alternative engineered design shall conform to the intent of the provisions of this code and shall provide an equivalent level of quality, strength, effectiveness, fire-resistance, durability and safety. Materials, equipment or components shall be designed and installed in accordance with the manufacturer's installation instructions.

105.3 Submittal. The registered design professional shall indicate on the permit application that the electrical system is an alternative engineered design. The permit and permanent permit records shall indicate that an alternative engineered design was part of the approved installation.

105.4 Technical data. The registered design professional shall submit sufficient technical data to substantiate the proposed alternative engineered design and to prove that the performance meets the intent of this code.

105.5 Construction documents. The registered design professional shall submit to the building official two complete sets of signed and sealed construction documents for the alternative engineered design. The construction documents shall include floor plans and a diagram of the work.

105.6 Design approval. Where the building official determines that the alternative engineered design conforms to the intent of this code, the electrical system shall be approved. If the alternative engineered design is not approved, the building official shall notify the registered design professional in writing, stating the reasons therefor.

105.7 Inspection and testing. The alternative engineered design shall be tested and inspected in accordance with the requirements of this code.

SECTION 106 - REQUIRED INSPECTIONS

106.1 General. The building official, upon notification, shall make the inspections set forth in this section.

106.2 Underground. Underground inspection shall be made after trenches or ditches are excavated and bedded, piping and conductors installed, and before backfill is put in place. Where excavated soil contains rocks, broken concrete, frozen chunks and other rubble that would damage or break the raceway, cable or conductors, or where corrosive action will occur, protection shall be provided in the form of granular or selected material, approved running boards, sleeves or other means.

106.3 Rough-in. Rough-in inspection shall be made after the roof, framing, fireblocking and bracing are in place and all wiring and other components to be concealed are complete, and prior to the installation of wall or ceiling membranes.

106.4 Contractors' responsibilities. It shall be the responsibility of every contractor who enters into contracts for the installation or repair of electrical systems for which a permit is required to comply with adopted state and local rules and regulations concerning licensing.

SECTION 107 - PREFABRICATED CONSTRUCTION

107.1 Prefabricated construction. Prefabricated construction shall meet the Aurora Electrical code(s) and is subject to Sections 107.2 through 107.5.

107.2 Evaluation and follow-up inspection services. Prior to the approval of a prefabricated construction assembly having concealed electrical work and the issuance of an electrical permit, the building official shall require the submittal of an evaluation report on each prefabricated construction assembly, indicating the complete details of the electrical system, including a description of the system and its components, the basis upon which the system is being evaluated, test results and similar information, and other data as necessary for the building official to determine conformance to this code.

107.3 Evaluation service. The building official shall designate the evaluation service of an approved agency as the evaluation agency and review such agency's evaluation report for adequacy and conformance to this code.

107.4 Follow-up inspection. Except where ready access is provided to electrical systems, service equipment and accessories for complete inspection at the site without disassembly or dismantling, the building official shall conduct the in-plant inspections as frequently as necessary to ensure conformance to the approved evaluation report or shall designate an independent, approved inspection agency to conduct such inspections. The inspection agency shall furnish the building official with the follow-up inspection manual and a report of inspections upon request, and the electrical system shall have an identifying label permanently affixed to the system indicating that factory inspections have been performed.

107.5 Test and inspection records. Required test and inspection records shall be available to the building official at all times during the fabrication of the electrical system and the erection of the building; or such records as the building official designates shall be filed.

SECTION 108 - TESTING

108.1 Testing. Electrical work shall be tested as required in this code. Tests shall be performed by the permit holder and observed by the building official.

108.1.1 Apparatus, material and labor for tests. Apparatus, material and labor required for testing an electrical system or part thereof shall be furnished by the permit holder.

108.1.2 Re-inspection and testing. Where any work or installation does not pass an initial test or inspection, the necessary corrections shall be made so as to achieve compliance with this code. The work or installation shall then be resubmitted to the building official for inspection and testing.

SECTION 109 - RECONNECTION

109.1 Connection after order to disconnect. A person shall not make utility service or energy source connections to systems regulated by this code, which have been disconnected or ordered to be disconnected by the building official, or the use of which has been ordered to be discontinued by the building official until the building official authorizes the reconnection and use of such systems.

SECTION 110 - CONDEMNING ELECTRICAL SYSTEMS

110.1 Authority to condemn electrical systems. Wherever the building official determines that any electrical system, or portion thereof, regulated by this code has become hazardous to life, health or property, the building official shall order in writing that such electrical systems either be removed or restored to a safe condition. A time limit for compliance with such order shall be specified in the written notice. A person shall not use or maintain a defective electrical system or equipment after receiving such notice.

Where such electrical system is to be disconnected, written notice as prescribed in this code shall be given. In cases of immediate danger to life or property, such disconnection shall be made immediately without such notice.

SECTION 111 - ELECTRICAL PROVISIONS

111.1 Adoption. Electrical systems and equipment shall be designed, constructed and installed in accordance with NFPA 70 as applicable, except as otherwise provided in this code.

111.2 Abatement of electrical hazards. All identified electrical hazards shall be abated. All identified hazardous electrical conditions in permanent wiring shall be brought to the attention of the building official responsible for enforcement of this code. Electrical wiring, devices, appliances and other equipment which is modified or damaged and constitutes an electrical shock or fire hazard shall not be used.

111.3 Appliance and fixture listing. Electrical appliances and fixtures shall be tested and listed in published reports of inspected electrical equipment by an approved agency or OSHA Nationally Recognized Testing Laboratory -or- International Accreditation Service (IAS) Recognized Testing Laboratory and installed in accordance with all instructions included as part of such listing.

111.4 Cutting, notching and boring. The cutting, notching and boring of wood and steel framing members, structural members and engineered wood products shall be in accordance with this code.

111.5 Smoke alarm circuits. Single- and multiple-station smoke alarms required by this code and installed within new dwelling units shall not be connected as the only load on a branch circuit. Such alarms shall be supplied by branch circuits having lighting loads consisting of lighting outlets in habitable spaces.

111.6 Equipment and door labeling. Doors into electrical control panel rooms shall be marked with a plainly visible and legible sign stating ELECTRICAL ROOM or similar approved wording. The disconnecting means for each service, feeder or branch circuit originating on a switchboard or panelboard shall be legibly and durably marked to indicate its purpose unless such purpose is clearly evident.

SECTION 112 - LIABILITY FOR DAMAGES

112.1 Liability for Damages. This code shall not be construed to affect the responsibility or liability of any party owning, designing, operating, controlling, testing per NEC or OSHA requirements, or installing any electrical equipment for damages to persons or property caused by a defect therein, nor shall the Electrical Commission members or the City of Aurora or any of its employees be held as assuming any such liability by reason of inspection, re-inspection, other examination authorized or any lack of inspection thereof. `

(Ord. No. 018-014, § 1(Exh. A), 1-23-18)

Sec 12-32 Electrical Code Ordinance Adopted

That certain document, two (2) copies of which are on file in the office of the Building Code Official, being marked and designated as the City of Aurora Electrical Ordinance.

2023 NFPA -70 National Electrical Code; As published by the National Fire Protection Association and adopted as the Electrical Ordinance of the City of Aurora, Illinois in the State of Illinois: for the control and regulation of installation and/or alteration of electrical systems and electrical equipment; for the utilization of electricity for light, heat or power. Each and all of the regulations, penalties, conditions and terms of said edition of NFPA-70 are hereby referred to and amended in part hereof as if fully set out in this article, with the additions, insertions, deletions, and changes prescribed in ARTICLE III. Sec. 12-31 through 12-100.Ord. No. 092-37, § 1, 6-2-92; Ord. No. 099-41, §§ 1, 11, 6-8-99).

Article 100 Definitions added:

Nearest the Point of Entrance- Within 5 feet.

110.3(D) is added to read:

Examination and Inspection of Non-Labeled Manufacturing Equipment.

1. Conditions deemed as posing an imminent danger shall be required to be removed from service until repaired; OR until labeled from an IAS or OSHA Nationally Recognized Testing Laboratory or field tested from a third-party testing company as accepted by the Authority Having Jurisdiction.
2. For Non-Labeled Manufacturing Equipment, equipment owner and equipment supplier shall verify that OSHA regulations are being met without assessment or

inspection by City of Aurora personnel. Aurora's inspection responsibilities will end at the connection to the permanently installed power feed for the equipment. The suitability of the power to the equipment shall be the responsibility of the owner of the equipment or the manufacturer and shall be verified by the equipment's owner prior to installation.

- a. Non-Labeled Manufacturing Equipment may NOT be installed:
 - i. In hazardous locations,
 - ii. If equipment uses propane, gas or burns fossil fuels.

210.8(D)(6) is amended to read:

Sump pumps- GFCI protection shall be provided at the panel and a single receptacle.

210.23 (F) is added to read:

Existing 12 AWG branch circuits. Existing branch circuits with 12 AWG conductors that cannot be completely traced throughout the circuit shall be served by no more than 15 ampere breakers.

225.6(A) is amended to read:

- (1) For 1000 volts, nominal, or less, 10 AWG copper or 1/0 AWG aluminum for spans up to 15 m (50 ft) in length, and 8 AWG copper or 1/0 AWG aluminum for a longer span unless supported by a messenger wire.
- (2) For over 1000 volts, nominal, 6 AWG copper or 1/0 AWG aluminum where open individual conductors, and 8 AWG copper or 1/0 AWG aluminum where in cable.

225.10 is amended to read:

The installation of outside wiring on surfaces of buildings (or other structures) shall be permitted for circuits not exceeding 1000 volts, nominal, as the following:

- (1) Auxiliary gutters
- (2) Busways
- (3) Cable trays
- (4) Cablebus
- (5) Intermediate metal conduit (IMC)
- (6) Liquidtight flexible metal conduit (LFMC)
- (7) Liquidtight flexible nonmetallic conduit (LFNC)
- (8) Messenger-supported wiring
- (9) Reinforced thermosetting resin conduit (RTRC)
- (10) Rigid metal conduit (RMC)
- (11) Rigid polyvinyl chloride conduit (PVC)
- (12) TC-ER cable- limited to a manufactured HVAC system
- (13) Wireways

230.2(F) is added to read:

Buildings with multiple electrical services shall be provided with a shunt trip that simultaneously opens all electrical services including any emergency and standby power systems. Shunt trip shall be of a mushroom style push button provided with a protective cover. Button shall be identified with a sign that reads "EMERGENCY POWER SHUTDOWN SWITCH FOR FIRE DEPT USE ONLY".

230.23 (B) Minimum Size is amended to read:

The conductors shall not be smaller than 3 AWG copper or 1/0 AWG aluminum.

Section 230.31(B) Minimum Size is amended to read:

The conductors shall not be smaller than 3 AWG copper or 1/0 AWG aluminum.

Section 230.43 Wiring Methods for 1000 Volts, Nominal, or Less is amended to read:

Service-entrance conductors shall be installed in accordance with the applicable requirements of this Code covering the type of wiring method used and shall be limited to the following methods:

1. Rigid metal conduit (RMC)
2. Intermediate metal conduit (IMC)
3. Busways
4. Auxiliary gutters
5. Rigid polyvinyl chloride conduit (PVC)- Shall be schedule 80
6. Mineral-insulated, metal-sheathed cable, Type MI
7. High density polyethylene conduit (HDPE)- Shall be schedule 80
8. Reinforced thermosetting resin conduit (RTRC)
9. Flexible bus systems

230.51(D) is added to read:

All service entrance conduit for overhead service drops shall be supported by galvanized 2 piece back-straps or an approved equal.

250.8(B)(1) is added to read:

Steel sheet-metal strap type ground clamps shall not be used for connecting a grounding electrode conductor to a grounding electrode.

250.50(A) is added to read:

Unless otherwise accepted by the building official, a concrete encased electrode shall be installed in new structures with an electrical service.

250.64(A) is amended to read:

Aluminum and copper-clad aluminum is not permitted to be used as a grounding electrode conductor.

250.192 Underground/Under-slab/Concrete Encased Raceway is added to read:

A conductor to serve as a 100% redundant Equipment Grounding conductor shall be installed in all underground raceways and raceways in concrete.

310.3(A) is amended to read

The minimum size of conductors for voltage ratings up to and including 2000 volts shall be 14 AWG copper or 1/0 AWG aluminum or copper-clad aluminum, except as permitted elsewhere in this Code..

310.3(A)(1) is added to read:

For individually metered units of R-2, R-3 or R-4 uses (as defined in the IBC), the minimum size conductors shall be 3 AWG copper or 1/0 aluminum or copper-clad aluminum.

310.12 is deleted.

310.15(C)(1) add the following after second paragraph:

Fill exceeding 9 conductors may occur only as an engineered design alternative per Aurora electrical administrative provisions 105, when engineering calculations are provided in conformance with fill and amperage derating per Chapter 9 of the NEC.

Table 310.15(C)(1) is revised to read:

Number of Conductors	Percent of Values in Table 310.16 Through Table 310.19 as Adjusted for Ambient Temperature if Necessary
4-6	80
7-9	70
10-above	Only permitted through engineered design

314.3 is amended to read:

Nonmetallic shall not be installed, except in corrosive environments when approved or in non-grounded circuits when they are permitted to remain.

320.10 is amended to read:

Type AC cable shall only be permitted where included as a factory assembled sub-component of a manufactured system.

322 is deleted.

324 is deleted.

326 is deleted.

330.10 is amended to read:

Type MC cable shall be permitted as follows:

1. When fished into existing walls with not more than (6) six feet exposed.
2. Where included as a factory assembled sub-component of a manufactured system.
3. For branch circuits when remodeling existing owner-occupied one-and-two family dwellings.
4. Where approved by the building official.

334 is deleted.

338.1(A) is added to read:

Only USE cable is permitted. SE cable shall only be permitted for temporary power when protected by a raceway.

338.10(B) is deleted.

340.10 is amended to read:

Uses Permitted: Type UF cables shall be permitted when remodeling existing one - and-two family dwellings, only in underground exterior applications.

348.10 is amended to read:

Uses Permitted: FMC shall only be permitted when fished into existing wall and ceiling spaces with not more than (6) six feet exposed.

350.10 is amended to add (5):

(5) LFMC shall only be permitted in lengths not to exceed (6) six feet.

352.10 is amended as follows:

When permitted the transition at grade shall be 90 degree galvanized rigid metal conduit or Schedule 80 PVC.

Exception (1) Conduits and sleeves used exclusively for utility cables.

Exception (2) Conductors encased in concrete at Light Pole Bases.

(A) deleted

(D) deleted

(E) deleted

(F) deleted

(G) deleted

(I) deleted

(J) deleted

356.10 (5) is amended to read:

Installed in lengths not longer than 1.8 m (6 ft) where secured in accordance with 356.30.

356.12 (3) is amended to read:

In lengths longer than 6 feet.

358.42(A) is added to read:

EMT shall not be installed using indenter type couplings and connectors.

362 is deleted and not permitted.

378 is deleted and not permitted.

382 is deleted and not permitted.

386.60(A) is added to read:

Grounding. All surface metal raceways shall contain an equipment grounding conductor sized per table 250.122

388 is deleted and not permitted.

393 is deleted and not permitted.

394.10 is amended to read:

Uses Permitted. New installations of Knob-and-tube wiring shall not be installed. Existing knob-and-tube wiring shall not be extended or modified.

625.40(A) is added to read:

The EVSE branch circuit shall be at minimum provided with a $\frac{3}{4}$ " raceway and a 2- $\frac{1}{8}$ " x 4 $\frac{11}{16}$ " minimum box.

690.31(H) is added to read:

EMT shall be permitted for one-and-two family dwellings.

695 Fire Pumps: shall be amended as follows.

Section 695.5 (B) (1) Fire pump meter or cabinet: shall be sized in accordance with table 430.251 (B) Conversion of Polyphase Design b, c, and d Maximum Locked Rotor Currents.