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CHAPTER 12 BUILDINGS AND BUILDING REGULATIONS* ARTICLE III. ELECTRICITY ANNEX H. ADMINISTRATIVE PROVISIONS

Commented [E12Mar14-1]: Reviewed this entire document at the 12 Mar 14 Electrical Commission Meeting. Staff owes some research per notes below.

*Cross reference(s)--Airport zoning, § 5-36 et seq.; erosion and sedimentation control, Ch. 15; fire prevention codes and standards, § 17-101 et seq.; floodplain management, Ch. 18; open housing, § 22-41 et seq.; planning and development, Ch. 34; preservation, Ch. 37; awnings, § 42-176 et seq.; subdivisions, Ch. 43; zoning, App. A. --State law reference(s)--Powers of home rule units, Ill. Const. art. VII, § 6.

ARTICLE III. ELECTRICITY* ANNEX H. ADMINISTRATIVE PROVISIONS

Commented [E12Mar14-2]: Reviewed this entire document at the 12 Mar 14 Electrical Commission Meeting. Staff owes some research per notes below.

Section 12-31: shall be deleted in its entirety and replaced with 12-31 ELECTRICAL CODE ADMINISTRATIVE PROVISIONS below.

Sec. 12-3931. ANNEX H. ELECTRICAL CODE ADMINISTRATIVE PROVISIONS adopted.

Annex H of the adopted Electrical Code shall be adopted, yet replaced in its entirety with the following. Further this adoption shall delete the 2010 adoption of International Building Code Appendix K as these provisions amend and replace them as well.

Commented [s22mar-3]: With the exception of Section 111, this appendix contains only administrative provisions that are intended to be used by a jurisdiction to implement and enforce NFPA 70, the National Electrical Code. Annex H of NFPA 70 also contains administrative and enforcement provisions, and these provisions may or may not be completely compatible with or consistent with Chapter 1 of the IBC, whereas the provisions in IBC Appendix K are compatible and consistent with Chapter 1 of the IBC and other ICC codes. Section 111 contains technical provisions that are unique to this appendix and are in addition to those of NFPA 70. The provisions of Appendix K are specific to what might be designated as an Electrical Department of Inspection and Code Enforcement and could be implemented where other such provisions are not adopted.

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.

Commented [s22mar-4]: Below find the provisions of the adopted 2009 IBC Appendix K, with highlighted proposed modifications for this adoption. Staff feels that adopting this independent of the I Series adoption will simplify access for contractors as most would not have I series code books to simply reference our proposed modifications.

101.2.1 (A) Installation and Use of Equipment. Utilization Equipment shall be installed and used per the Manufacturer's written recommendations/instructions and if Listed or Labeled shall be installed and used in accordance with the listing or labeling.

101.2.1 (B) 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 NOT be installed in the following locations:

1. In Hazardous Locations.
2. If equipment uses propane, gas or burning-burns fossil fuels.

Commented [JPC5]: Intention here is to limit the responsibility for Aurora to Inspect/test and Accept the installation of equipment is not listed and labeled by an NRTL.

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.

Commented [JPC6]: DesPlaines, Arlington Heights

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.

Commented [2013Apr7]: Hoffman Estates specifies the link to the appeals in IBC adoption. Good 5Apr13

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

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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 & Two Family structures: refer to the adopted International Residential Code -Appendix J.
- b. Non-One & Two Family structures: refer to the adopted International Existing Building Code.

2. In addition to 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. Insufficient outlets as defined by the adopted International Property Maintenance Code and the City of Aurora Occupancy Standards.
- e. Improper wiring or installation that was not installed per the applicable code at the date of the installation.
- f. Deterioration or Damage
- g. Corroded, Rusted Switchgear, Bussing, Branch Circuit Panelboards
- h. Electrical wiring of all types, not supported in an approved manner.
- i. Splices unenclosed in approved boxes other than knob & tube wiring in areas where Knob and Tube are permitted to remain.
- j. Absence of or use of unapproved connectors for splices and termination into boxes or cabinets.
- k. Wiring with insulation deterioration or other damaged conditions.
- l. Flexible cords used as a substitute for fixed wiring.
- m. Flexible cords where running through or concealed within walls, ceilings, dropped-ceilings, baseboard and floors.
- n. Boxes or conduit with excessive numbers of conductors based upon permitted installation date.
- o. Knob and Tube wiring in areas other than concealed inside within walls framing cavities and/or within limited access or lockable attics.
- p. Exposed fuse blocks or exposed terminal-bleat type light fixtures in areas where Knob and Tube would not be permitted to remain.
- q. Other items determined imminently dangerous by the Authority Having Jurisdiction.

Commented [JPC8]: Comes from Annex H

Commented [JPC9]: These examples are from Decatur

Commented [JPC10]: Aurora Staff suggestion - this topic though has varied through past code editions.

Commented [E12Mar14-11]: Bonding Improvements staff research

Commented [StfMar14-12]: Referencing these sections seems prudent to staff.

Commented [JPC13]: Feel this topic is better dealt with in the tiered approach of (residential code) Appendix J and likely not required in Commercial applications at all.

Commented [JPC14]: Arlington Heights, DesPlaines

Commented [JPC15]: Should mention be made of condition of K&T AND/OR where inappropriately buried in insulation materials.

Commented [JPC16]: Has this been pretty constant through the years?

Commented [StfMar14-17]: Some fill requirements have modestly changed since '75 #6 & #8.

Commented [E12Mar14-18]: Staff will research

Commented [JPC19]: Suggest adding additional definition to what Decatur has here--See the exception in NEC 410.5

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 designated 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 re-inspected.

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.

102.6 Materials and Products required but not yet available: Materials or products mandated by this code may be considered not yet available by the code official due to the following:
Lack of testing and listing approvals by manufacturers.
Lack of availability at local suppliers.

Commented [2013Apr20]: Language from MN adoption of the 2011 - specifically addressing AFCI's and the AFCI/GFCI requirement for ungrounded outlets in Jan 2014. Good 5Apr13

Commented [JPC21]: Check if covered in the front end of the code so this can be eliminated

Commented [StfMar14-22]: Staff feels this is adequately covered in 90.4

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.

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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:

[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.]

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. Electrical-Telecommunication wiring, devices, appliances, apparatus or equipment operating at less than 26-50 volts, and not capable of supplying more than 50 watts of energy, AND not associated with fire alarm or other life safety 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.
9. Wiring replacement for industrial machinery from existing switch or existing disconnect where the circuit conductors are of adequate size.
10. Wiring replacement for electrified signage from existing switch or existing disconnect where the circuit conductors are of adequate size.
11. Replacement of meter sockets or masts on services where no new conduit or conductors are changed enlarged or replaced.
12. Radio and Television transmitting stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installation of towers and antennas. [IBC exemption] Items indicated in NEC 90.2(B).
13. Single family owner occupied home Projects not requiring special knowledge (see IBC section 117): where the equipment and material costs are less than \$100250.

Commented [E12Mar14-23]: Staff to come back to this topic

Commented [JPC17mar24]: IBC

Commented [JPC25]: Rockford

Commented [JPC26]: Does this appropriately cover low voltage

Commented [E12Mar14-27]: Add a note about swimming pools

Commented [JPC28]: Rockford

Commented [JPC29]: Rockford

Commented [JPC30]: Additional Signage Exemptions due to listing issues.

Commented [JPC31]: 2011 Decatur - amendments

Commented [JPC17mar32]: IBC

Commented [CJ33]: OK

Commented [JPC17mar34]: Stab at a simpler smaller job not requiring a permit. No Service work, No alternative energy systems, no vehicle charging stations.

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.

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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 -

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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 the *International Residential Code* or 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 Nonmetallic-sheathed cable. ~~Deleted. The use of Type NM, NMC and NMS (nonmetallic-sheathed) cable wiring methods shall not be limited based on height, number of stories or construction type of the building or structure.~~

111.5 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.

111.6 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.

111.7 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.

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Commented [JPC35]: 2016 Staff Recommendation

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Commented [JPC36]: Section Deleted -- Specify Conduit ordinance here instead and refer to Art. 220???

Commented [JPC37]: This comes from Annex H of the NEC

Commented [JPC38]: This is added to cover listing and labeling issues

Commented [JPC39]: Similar in DesPlaines, Downers Grove