



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

Department Source: Community Development - BSD

To: City Council

From: City Manager & Staff

Council Meeting Date: April 18, 2016

Re: Adoption of the 2015 International Code Council Family of Codes, with Amendments

## Executive Summary

The Building Construction Codes Commission (BCCC) has completed its review of the 2015 International Code Council family of codes and the 2014 National Electrical Code for adoption by the City. While the majority of the code changes in this cycle consist of clarifications and reformatting, there are several major code changes including required storm shelters for educational (K through 12 schools) and critical emergency operations use groups (911 call stations, fire, rescue, ambulance, and police stations), as well as new commercial and residential energy efficiency requirements. The Environment and Energy Commission (EEC) also has provided recommendations on the energy efficiency requirements in the International Residential Code (IRC) and the International Building Code (IBC).

## Discussion

The Building Construction Codes Commission is authorized by Chapter 6 of the City Code to "review the Building and other codes periodically for updating and recommending changes." After obtaining authorization to review the 2015 codes from the City Council in March 2015, the BCCC and its committees met frequently from May 2015 to January 2016, evaluating the effect of the new codes and recommending local amendments. BCCC members, representatives of the Building and Site Development Division of the Community Development Department, the Fire Department, and the Inspections Division of Boone County Resource Management attended the meetings.

The Environment and Energy Commission (EEC), following its charge in Chapter 2 of the City Code to "Act in an advisory capacity to the council in all matters pertaining to environmental protection, which could include questions of energy efficiency and conservation, and of changing technology," has reviewed the BCCC recommendations. The EEC has provided several recommended amendments to the energy efficiency requirements for single and two family construction and commercial structures, including multiple-family and institutional residential structures. A summary of the EEC recommendations is provided at the end of this discussion and in the attachments.

Below is a list of selected major code changes and other proposed amendments. All amendments appear in bold font/strikethrough in the attached proposed ordinances.



## Significant Code Changes

1. **Storm shelters.** The most significant change of this code cycle is the new storm shelter requirement (ICC 500) in the 2015 International Building Code (IBC). Because Central Missouri is in an area where the design wind speed for tornadoes is 250 mph [See attached Figure 304.2(1)] the 2015 IBC section 423 requires storm shelters to be constructed in accordance with ICC 500 for the following use groups;

**423.3 Critical emergency operations.** 911 call stations, emergency operations centers and fire, rescue, ambulance and police stations.

Exception: Buildings meeting the requirements for shelter design in ICC 500.

**423.4 Group E occupancies.** All group E occupancies with an occ. load of 50 or more.

Exceptions:

1. Group E daycare facilities.
2. Group E occupancies accessory to places of religious worship.
3. Buildings meeting the requirements for shelter design in ICC 500.

None of the existing buildings in the City would meet the requirements for shelter design in ICC 500 if they were built today.

The 2015 IBC is not clear how building additions may trigger the requirement for a storm shelter. According to an ICC representative, the authority having jurisdiction would determine the requirement for constructing a storm shelter for an addition on a case by case basis. An administrative policy would likely need to be established to clarify the issue.

There will be many additional structural, engineering, and procedural requirements for shelters designed in compliance with ICC 500. Because of the additional expense related to these requirements, the BCCC members want to make sure all stakeholders are aware of this major code change. The BCCC proposes no amendments to these new provisions.

2. **Energy efficiency.** As in the last code cycle the BCCC reviewed new energy code requirements and considered both the benefits of the new requirements and the associated expenses. The BCCC recommends adopting the 2015 Energy Code requirements with the following amendments.

### **Commercial**

- a. The 2015 International Energy Efficiency Code **Section C408** requires **System Commissioning**. All members agreed system commissioning, adjusting, and balancing is advisable. It is the opinion of the committee that the additional required plans and documentation are both cumbersome, time consuming, and expensive. Consensus was that system balancing, performance, and control can be achieved without these additional burdens and suggest the following amendments.



**C408.2 Mechanical systems and service hot water heating systems commissioning and completion requirements. Amend as follows;**

Prior to the final mechanical and plumbing inspections, the registered design professional or approved agency ~~shall~~ **should** provide evidence of mechanical system commissioning and completion in accordance with the provisions of this section.

**C408.3.1 Functional testing. Amend as follows.**

Prior to passing final inspection, the registered design professional ~~shall~~ **should** provide evidence that the lighting control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the construction documents and manufacturer's instructions.

- b. As in the last code cycle the BCCC voted to keep the amendment to IBC 1301.1.2 for R-2, R-3, and R-4 use groups (attached). This amendment prescribes insulation values, thermal envelope sealing, and thermal transmittance values for windows.

**Residential One and Two Family**

- a. **N1101.3 Scope.** Add the attached figure labeled 2015 Residential Energy Code Requirements and make it a prescriptive means of code compliance. The committee believes building to this diagram both meets the intent of the code and simplifies the requirements for builders and inspection staff. Consensus was that simplification would translate to more consistent compliance, energy efficiency and affordability.
- b. **N1102.2.9 Basement walls. Amend first sentence as follows;** Walls associated with ~~conditioned~~ **finished** basements shall be insulated from the top of the basement wall down...  
This is applicable only to the foundation wall portions of unfinished basements. To insulate these walls before it is determined what the use will be and where plumbing, mechanical, and electrical components will be located leads to excess cost and duplication of work. This amendment is in line with the goal of affordability.
- c. **N1102.4.1.2 Testing. Amend as follows (Amended portion in bold font);** The building or dwelling unit shall be blower door tested **as deemed necessary by the building official** and verified as having an air leakage rate...Because dwellings never fail the blower door test when constructed per the prescriptive code requirements the blower door test is unnecessary. When, through un-craftsman-like work, compliance with prescriptive code requirements is questionable, the blower door test may be



required. Because blower door testing is several hundred dollars this amendment is in line with the goal of affordability.

- d. **N1102.4.4 Rooms containing fuel burning appliances. Delete.** This section requires rooms “where open combustion air ducts provide combustion air to open combustion fuel-burning appliances” (Typically 80% efficiency gas furnaces and water heaters) to be isolated from the building thermal envelope by means of insulation and fully gasketed doors. The committee believes this requirement, in conjunction with the requirement to bring combustion air into the room, may cause unintended negative consequences such as **freezing** of water pipes or builders using less efficient electric equipment. The committee also believes isolating this room from the thermal envelope entails unnecessary expense.
- e. **Appendix U (Appendix RB in the International Energy Conservation Code) Solar Ready Provisions.** This appendix is not mandatory unless adopted by the adopting ordinance. The BCCC believes the provisions of this appendix will only add unnecessary construction documentation requirements and does not propose adoption of this appendix.

- 3. **Accessibility.** The BCCC is proposing two accessibility amendments to IBC chapter 11 as follows;

**1104.4 Multistory buildings and facilities. Amend exception 1 as follows (Amended portion in bold font);**

**Exceptions:**

- 1. An accessible route is not required **in private buildings or facilities that are less than three stories or** to stories and mezzanines that have an aggregate area of not more than 3,000 square feet and are located above and below accessible levels. This exception shall not apply to:
  - 1.1 Multiple tenant facilities of group M occupancies containing five or more tenant spaces used for sales and rental of goods and where at least one such tenant space is located on a floor level above or below the accessible levels;
  - 1.2 Stories or mezzanines containing offices of health care providers (Group B or I);
  - 1.3 Passenger transportation facilities and airports (Group A-3 or B) or;
  - 1.4 Government Buildings.

This language intends to conform with the ADA which states;

**Exceptions:**

- 1. In private buildings or facilities that are less than three stories or that have less than 3000 square feet per story, an accessible route shall not be required to connect



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stories provided that the building or facility is not a shopping center, a shopping mall, the professional office of a health care provider, a terminal, depot or other station used for specified public transportation, an airport passenger terminal, or other type of facility as determined by the Attorney General.

**1109.5.1 Minimum number (Drinking fountains). Amend as follows; ~~No fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons.~~**

As the code is written a minimum of two drinking fountains is always required because the maximum height for wheelchair accessibility is 34" and the minimum for standing persons is 36" the BCCC. The BCCC voted that if the plumbing code only required one drinking fountain it could meet the standard for wheelchair accessibility. The intent was to limit cost. Note: **Staff has some concerns regarding this amendment; a member of Great Plains ADA Center has stated the proposed amendment is in direct conflict with ADA requirements.**

4. **Existing structures.** Chapter 34 **Existing Structures** has been removed from the IBC. The provisions of this chapter are now contained in the International Existing Building Code (IEBC). IBC section 101.4.7 states, "The provisions of the International Existing Building Code shall apply to matters governing the repair, alteration, change of occupancy, addition, to and relocation of existing buildings." The IEBC goes into much greater detail and clarification than Chapter 34 provided without changing the intent of the provisions.
5. Also of note are;
  - A. The BCCC recommendation to adopt appendices R and S in the 2015 International Residential Code. These appendices establish requirements for "Light Straw-Clay Construction" and "Strawbale Construction".
  - B. The BCCC recommendation to add a commission member "Experienced in Energy Conservation". (IBC amendment section 113.1.2)

## **EEC Recommendations**

The Environment and Energy Commission has made a number of recommendations regarding energy efficiency that differ from the BCCC recommendations, which are summarized below and in the attachments to this report.

The EEC recommendations would make the following changes to the draft ordinance:



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1. Revise the proposed 2015 Residential Energy Code Requirements diagram to require mandatory air leakage testing, state a target air leakage rate, and require blower door and duct pressure tests; require termite barriers.
2. Revise Table 301.2(1) to rate Missouri as “moderate to heavy” termite risk rather than “very heavy” risk as recommended by the BCCC (moderate to heavy is the rating given to Missouri in the published code);
3. Amend the International Residential Code N1102.4.1.2 to require blower door (air leakage) testing (currently it is not recommended a requirement by BCCC);
4. Amend IBC 1301.1.2 to change required insulation values for use groups R-2, R-3, and R-4 (housing other than 1 or 2 family) from R38 to R49 for ceiling or roof and R15 to R20 for exterior walls; require slab insulation rated R10 and require a termite barrier in accordance with R318.3j; and change window “U” value (thermal transmittance rating) from 0.55 to 0.40.
5. Adopt Appendix U, Solar Ready Provisions, as part of the International Residential Code.

## Fiscal Impact

Short-Term Impact: None

Long-Term Impact: None

## Vision & Strategic Plan Impact

### Vision Impacts:

Primary Impact: Environment, Secondary Impact: Health, Social Services & Affordable Housing, Tertiary Impact: Not Applicable

### Strategic Plan Impacts:

Primary Impact: Not Applicable, Secondary Impact: Not Applicable, Tertiary Impact: Not Applicable

### Comprehensive Plan Impacts:

Primary Impact: Livable & Sustainable Communities, Secondary Impact: Not applicable, Tertiary Impact: Not Applicable



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## Legislative History

Date	Action
03/02/15	REP33-15 Council authorized the Building Construction Codes Commission to review the 2015 International Codes.
07/20/15	R 120-15 Council directed the City Clerk to place on file for a period of ninety days the 2015 International code Council family of codes and the 2014 National Electric Code.

## Suggested Council Action

Adopt the 2015 International Code Council family of Codes (International Residential Code, International Building Code, International Energy Conservation Code, International Existing Buildings Code, International Plumbing, Mechanical, and Fuel Gas Codes, International Fire Code) and the 2014 National Electric Code to be in full force and effect on October 1, 2016.

Introduced by \_\_\_\_\_

First Reading \_\_\_\_\_

Second Reading \_\_\_\_\_

Ordinance No. \_\_\_\_\_

Council Bill No. B 104-16

### **AN ORDINANCE**

repealing Article III of Chapter 6 of the City Code relating to the 2006 Edition of the International Code Council Electrical Administrative Provisions referencing the 2011 National Electrical Code and enacting in lieu thereof a new Article III adopting the NFPA 70 2014 National Electrical Code; and fixing the time when this ordinance shall become effective.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF COLUMBIA, MISSOURI, AS FOLLOWS:

SECTION 1. Article III of Chapter 6 of the Code of Ordinances, City of Columbia, Missouri, relating to the 2006 Edition of the International Code Council Electrical Administrative Provisions referencing the 2011 National Electrical Code, is hereby repealed and in lieu thereof a new Article III, relating to the NFPA 70 2014 National Electrical Code is hereby enacted reading in words and figures as follows:

#### **CHAPTER 6. BUILDINGS AND BUILDING REGULATIONS**

...

#### **ARTICLE III. Electrical Code**

Sec. 6-31. Adopted.

The NFPA 70 2014 National Electrical Code, published by the National Fire Protection Association, one (1) copy of which has been on file with the city clerk for a period of ninety (90) days prior to the adoption of this article, is hereby adopted by reference and made a part of the Code of Ordinances, City of Columbia, Missouri as fully as if set forth in its entirety. At least one (1) copy of the NFPA 70 2014 National Electrical Code shall remain on file in the office of the city clerk and shall be kept available for public use, inspection and examination.

Sec. 6-32. Amendments.

The code adopted by this article is hereby amended by substituting the following sections in lieu of those sections with corresponding numbers in the code, or, where there



is no corresponding section in the code, the following sections shall be enacted as additions to the code:

*101.1 Title.* This ordinance shall be known as the Electrical Code of the City of Columbia, Missouri and will be referred to as “this code.”

*101.4 Conductors.* Conductors normally used to carry current shall be of copper unless otherwise provided in this code. Where the conductor material is not specified, the material and the sizes given in this code shall apply to copper conductors. Where other materials are used, the size shall be changed accordingly. Aluminum and copper-clad aluminum will be approved as outside feeders of 100 amperes or larger and must terminate nearest the point of entrance of the feeder; or as designed and recommended by a registered professional engineer or registered architect.

*(FPN):* For aluminum and copper-clad aluminum conductors, see Section 250.120 (B), 310-14.

## SECTION 301 DEPARTMENT OF COMMUNITY DEVELOPMENT - DIVISION OF BUILDING AND SITE DEVELOPMENT

*301.1 Administration and enforcement.* The administration and enforcement of this code shall be the duty of the director of community development who shall be referred to as the authority having jurisdiction in this code. The authority having jurisdiction is authorized to take such action as may be reasonably necessary to enforce the provisions of this code. Such persons may be appointed and authorized as assistants or representatives of the director, as may be necessary, to carry out the provisions of this code.

*301.2 Emergency power.* In case of an emergency, the director is hereby empowered to cause the discontinuance of electrical service to any electrical wiring, devices, appliances and equipment found to be immediately dangerous to life or property until such wiring, devices, appliances and equipment have been made safe in accordance with the minimum requirements of this code.

*301.3 Restriction of employees.* An employee connected with the Department of Community Development - Division of Building and Site Development shall not be engaged in or directly or indirectly connected with the furnishing of labor, materials or appliances for the construction, alteration or maintenance of a building, or the preparation of plans or of specifications therefore, unless the employee is the owner of the building; nor shall such employee engage in any work which conflicts with employee’s official duties or with the interest of the department.

*302.9 Liability.* Any officer or employee charged with the enforcement of this code, while acting on behalf of the city, shall not thereby render such individual liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of any act performed in the discharge of official duties. Any suit instituted against any officer or employee because of an act performed by that officer or employee in

the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final termination of the proceedings. The officer or employee shall not be liable for costs in any action, suit or proceeding that is instituted pursuant to the provisions of this code; and any officer or employee acting within the scope of employment and in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of official duties in connection therewith. Nothing contained herein shall be deemed a waiver of the immunities and protection afforded to the city or officers and employees pursuant to state and federal law.

## **SECTION 304 BOARD OF ELECTRICAL EXAMINERS**

**304.1 Board of electrical examiners.** A board of electrical examiners consisting of six (6) persons is hereby created. One (1) member shall be the director of community development or the director's designee, who shall be a non-voting ex-officio secretary to the board; the remaining five (5) members shall be appointed by the city council. One (1) member shall be a registered professional engineer, one (1) member shall be a licensed electrical contractor, one (1) member shall be a licensed electrician, and two (2) members shall be laymen. The first two (2) persons appointed to the board shall serve for three (3) years, the second two (2) persons shall serve for two (2) years, and the last person shall serve for one year. Thereafter, each member of the board shall serve for three (3) years and until a replacement is appointed and qualified. The first meeting of the calendar year, the board shall select one of its members to serve as chair and the authority having jurisdiction shall designate a clerk from the department to serve as secretary to the board, who shall keep a detailed record of all proceedings on file in the building and site development division. The board of electrical examiners shall be empowered to select examinations, and authorize testing for electricians' licenses and certificates, to approve or disapprove applications for electricians' licenses and certificates, and to issue or revoke electricians' licenses or certificates. The board shall meet upon the call of the chair, or upon the call of a majority of its membership, however, it shall meet within at least thirty (30) days after filing of an application for examination as an electrician for the purpose of examining such applicant or applicants. The chair of the board is authorized to excuse any member from attendance at a board meeting; provided, that the member requested to be excused before the meeting. Any member who is absent, without being excused, from twenty-five (25) percent of the regular board meetings held in a calendar year shall automatically forfeit the office. It shall be the duty of the chair to promptly notify the council of the vacancy. Applicants scheduled for examination shall be notified of the date, time and place of examination at least three (3) days prior to the date of examination.

**304.2 Certificate of competency.** It shall be unlawful for any person to engage in the installation, alteration or repair of electrical wiring, equipment, apparatus or fixtures for light, heat or power purposes; installation or additions to sound, audio visual or communication equipment in or on any building, structure, or premises within the corporate limits of the City of Columbia, Missouri, unless issued a certificate of competency by the board of electrical examiners, except as provided by Section 401.4 Exception 2. This shall not be

construed to cover cases where the connected electrical load is not increased or where no new electrical wiring is required.

*304.3 Types of certificates.* The board of electrical examiners is herein empowered to provide for the following types of certificates:

1. Electrical Contractor or Master Certificate (Type A)
2. Electrical Sign Contractor Certificate (Type B)
3. Journeyman Certificate, 8,000-Hrs (Type C-8 General)
4. Journeyman Certificate, 6,000-Hrs (Type C-6 General)
5. Sign Wireman Certificate (Type D)
6. Security-Fire Alarm Certificate (Type F)
7. Communication and Sound Certificate (Type G)
8. Maintenance Electrician Certificate (Type H)
9. Apprentice Electrician Certificate (Type E)

*304.3.1 Requirements.* Certificates will be issued to applicants who meet the following requirements:

*Apprentice (Type E)* Submit application stating name, address and telephone number and employer's signature. No fee required.

*Journeyman (Type C-8)*

1. Submit application to director of community development stating name, address, telephone number and type of certificate requested.
2. Prove 8,000 hours active employment as an apprentice electrician. Time in an appropriate electrical apprenticeship program or trade schools may be considered for credit toward 8,000 hours requirement.
3. List names, address and telephone number of all previous employers under which applicant worked as an apprentice electrician.
4. Successfully complete examination required by the board of electrical examiners.

*Journeyman (Type C-6)*

1. Submit application to director of community development stating name, address, telephone number and type of certificate requested.
2. Prove 6,000 hours active employment as an apprentice electrician. Time in an appropriate electrical apprenticeship program or trade schools may be considered for credit toward 6,000 hours requirement.
3. List names, address and telephone number of all previous employers under which applicant worked as an apprentice electrician.
4. Successfully complete examination required by the board of electrical examiners.

*Contractor or Master (Type A)*

1. Submit application to director of community development stating name, address, telephone number and type of certificate requested.
2. Prove 4,000 hours active employment as journeyman electrician C-8, 6,000 hours

as journeyman electrician C-6 or be registered with the State of Missouri as a professional engineer or architect and be actively engaged in the business of electrical contracting.

3. List names, address and telephone number of all previous employers under which applicant worked as an apprentice or journeyman electrician.
4. Successfully complete examination required by the board of electrical examiners.

*General Security-Fire Alarm (Type F)* Submit application to director of community development stating name, address, telephone number and type of certificate requested, along with a certificate or statement to install manufacture system.

*Communication and Sound (Type G)* Submit application to director of community development stating name, address, telephone number and type of certificate requested, along with a certificate or statement to install manufacture system.

*(Type B, D, and H)*

1. Submit application to director of community development stating name, address, telephone number and type of certificate requested.
2. List name, address and telephone number of all previous employers under which applicant worked in a capacity similar to that covered by the requested certificate.
3. Successfully complete examination required by the board of electrical examiners.

*304.4. Application for certificate.* The board of electrical examiners shall approve or disapprove the issuance of a certificate upon (1) the filing of the proper application, (2) completion of examination when required, (3) payment of the required fee. This section shall not apply to apprentice electricians.

*304.5 Type of examination required.* The type of examination required will be determined by the board of electrical examiners and will be selected from the standard examination list as prepared and published by Thomson Prometric, 1260 Energy Lane, St. Paul, MN 55108, or the ICC National Standardized Examinations Program, [www.iccsafe.org/contractor](http://www.iccsafe.org/contractor) (1-877-STD-Exam), or any state issued and approved exam.

*304.6 Reciprocity.* The board of electrical examiners will honor licenses issued from other jurisdictional areas provided the applicant meets the minimum experience requirements of the City of Columbia, Missouri, and provides certification of having satisfactorily completed the Thomson Prometric or ICC examination applicable for the type of license requested.

*304.7 Work authorized by type of certificate.* The scope of work authorized by each type of certificate shall be as follows:

1. The Electrical Contractor or Masters Certificate (Type A) shall authorize the grantee to engage in the business of contracting for the installation, repair, altering, and making additions to electrical wiring, heating devices, lights, motors, fixtures, conduits, generators, appliances and appurtenances and to supervise construction or installation of same.

2. An Electrical Sign Contractor Certificate (Type B) shall authorize the grantee to engage in the business of contracting for the fabrication, installation, repair, alteration or making additions to electrical signs, and to make the electrical connections thereto within five (5) feet of the work authorized to be installed. Any electrical sign contractor personally performing electrical sign work shall be a certificated sign wireman.
3. An Electrical Journeyman, Type C-8 shall authorize the grantee to perform electrical work under persons or firms holding contractor license (Type A).
4. An Electrical Journeyman, Type C-6 shall authorize the grantee to perform electrical work under persons or firms holding contractor license (Type A).
5. A Sign Wireman Certificate (Type D) shall authorize the grantee to perform electrical work on any electrical sign and to make connections to or disconnections from the power source within five (5) feet of an electrical sign.
6. Security-Fire Alarm Certificate (Type F) shall authorize the grantee to engage in the business of contracting and to install, repair and make alterations on burglar and fire alarm equipment and to make electrical connections thereto within five (5) feet of the equipment authorized to be installed.
7. Communication and Sound Certificate (Type G) shall authorize the grantee to engage in the business of contracting and to install, repair and make alterations on communication and sound equipment and to make electrical connections thereto within five (5) feet of the equipment authorized to be installed.
8. A Maintenance Certificate (Type H) shall authorize the grantee to perform electrical routine maintenance only, on equipment applicable to grantee's trade and for a specified employer. In addition, with 6,000 hours the grantee shall be authorized to take the journeyman electric exam.
9. An Apprentice Electrical Certificate (Type E) shall authorize the grantee to perform electrical work only when under the immediate supervision of an electrician holding a Type C, D, G or H Certificate. The ratio shall not exceed three apprentices to one master or journeyman electrician.

**304.9 Insurance requirements.** It shall be unlawful for any person holding a Type A, B, F or G Certificate to engage in work authorized by such certificate in the corporate limits of the city without first having filed with the city business license administrator a certificate of comprehensive liability insurance with a minimum of \$100,000 per claim bodily injury, \$100,000 per claim property damage with \$300,000 aggregate per occurrence. Such insurance shall insure the proper construction, erection, and maintenance of the electrical work in accordance with the provisions of this code and shall insure the city from any and all claims or demands for damages by reason of any negligence of the electrical contractor

or contractor's agents, or by reason of defects in the construction, or damages resulting from any part thereof. The city requires a thirty (30) day cancellation notice from the insurance company.

*304.10 Work allowed under license.* No person who has obtained an Electrical Contractor's Certificate (Type A) shall allow his/her name to be used by another person for the purpose of obtaining permits, or for doing business or work under such license. Every person licensed shall notify the board of the address of licensee's place of business, if any, and the name under which such business is carried on, and shall give immediate notice to the board of any change in either.

*304.11 Re-examination.* Any person, who fails to pass the examination, as prescribed by the board, may apply for re-examination.

*304.12 License Fees.* Electrical contractors with Type A, B, F or G Certificate shall pay annual business license fees to the city in an amount to be determined under the provisions of chapter 13 of the Code of Ordinances.

*304.13 Certificate Issuance.* All applicants approved by the board for Journeyman certificate shall pay a thirty dollar (\$30.00) fee prior to the issuance of the certificate. Master certificates shall require a payment of ninety dollars (\$90.00) prior to the issuance of the certificate. Certificates issued in September, October, and November of the renewal year are not required to pay a renewal fee in December.

*304.14 Certificate Renewal.* All certificated electricians holding Type A, B, C, D, F, G and H certificates shall renew their certificate every three (3) years and pay a renewal fee of thirty dollars (\$30.00) for a Journeyman certificate, and ninety dollars (\$90.00) for a Master certificate. The first renewal date is January 1. Failure to renew by the January 1 date of the renewal year will result in the certificate expiring. Individuals holding expired certificates will be required to make application for a new certificate, and pay a renewal fee.

*401.4 Exceptions to work authorized.* No permit to install or perform any work authorized by Type A, B, F, or G license shall be granted to any person other than a contractor, except as follows: All electrical permits may be issued to the general contractor on behalf of the master electrical contractor for new one and two family dwellings and building alteration or building additions for one and two family dwellings. All electrical work must be performed by an electrician licensed by the City of Columbia, or as allowed by ordinance.

*Exception No. 1.* Electricians holding a Type C-6 or C-8 certificate who are regular employees of the firm or corporation for which the work is to be performed, may obtain a permit to do electrical work on the premises of the firm or corporation provided the work is not associated with work requiring a building permit.

*Exception No. 2.* A permit may be issued to any person to do work in a single family dwelling used exclusively for living purposes, including the usual accessory

buildings and quarters in connection with such building, provided that the person is a bona fide owner of the dwelling, will occupy the dwelling for a period of not less than one year, will personally purchase all materials and perform all labor authorized by the permit, and that the applicant shall file an affidavit certifying that these conditions will be met before the issuance of the permit. Any person obtaining a permit under this section shall not be issued another permit within two (2) years.

Work performed under any permit shall be subject to all applicable regulatory provisions of this code.

**404.2** The director of community development shall issue a permit for proposed work set forth in the application if in compliance with this and all other ordinances and regulations of the City of Columbia, Missouri, and upon payment of fees set forth hereinafter. In no case shall the fees for permits be less than the following:

For alterations of or extensions to existing wiring, or any other electrical permit.....	\$35.00
For each service entrance panel 225 amperes or less.....	\$35.00
For each service entrance panel over 225 amperes .....	\$0.175/Amp
For each circuit (whether 2-wire, 3-wire or 3-phase) For first fifteen.....	\$2.35 each
For all over fifteen .....	\$2.19 each
For each connection of hot air or hot water heating plant .....	\$7.00 each
For installation of or addition to sound, audio-visual or Communication equipment .....	\$35.00
Swimming pool .....	\$75.00

Re-inspection fees will be charged in accordance with the Building Code of Columbia, Missouri.

First failed inspection.....	\$35.00
Failed re-inspection of prior correction notice.....	\$70.00

In addition to persons authorized hereunder, an application for permit may be submitted by a general contractor or the owner of a new one- or two-family dwelling. Fees may be paid at the date of application or through billing by the finance department. Failure to pay any billed fee within thirty (30) days of billing shall nullify any permit for which billing was made and work shall cease until fees are actually received by the city. Permit revocation and work stoppage are remedial steps which may be taken in addition to any other remedy for collection authorized by law.

**1003.1 Penalties.** Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof, shall be guilty of a misdemeanor and upon conviction thereof, shall be punished by a fine of not more than one thousand dollars (\$1,000.00) or by imprisonment not exceeding one (1) year, or by both such fine and imprisonment. Each day that a violation continues shall be deemed a separate offense.

## SECTION 1101 BUILDING CONSTRUCTION CODES COMMISSION

*1101.1 Board of appeals established.* Delete in its entirety.

*1101.3 Application for Appeal.* The applicant for an electrical permit, the holder of an electrical permit, or the owner or agent of a building or structure wherein electrical work is to be installed may appeal a decision of the authority having jurisdiction refusing to grant modification of the provisions of the Electrical Code covering the manner of installation, or materials to be used in the installation, to the building construction codes commission. Application for appeal shall be filed in accordance with the procedures set out in Section 113 of the Building Code of Columbia, Missouri.

*1102 Membership.* Delete in its entirety.

*1103 Procedures.* Delete in its entirety.

*1201.1.1 Adoption.* Electrical systems and equipment shall be designed and constructed in accordance with the 2012 International Residential Code or NFPA 70 National Electrical Code 2011 edition as applicable, except as otherwise provided in this code.

*1201.1.2 Amendments to NFPA 70, NEC 2011 as follows:*

*210.8 Ground-Fault Circuit-Interrupter Protection for Personnel. (A) Dwelling Units.* All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified in 210.8(A)(1) through (10) shall have ground-fault circuit-interrupter protection for personnel.

*Exception No. 1 to (2) Garages and accessory buildings.* Receptacles in locations that are not readily accessible. (e.g., on the ceiling of a garage).

*Exception No. 2 to (2) Garages and (5) Unfinished basements.* A single receptacle or a duplex receptacle for two appliances located within dedicated space for each appliance that, in normal use, is not easily moved from one place to another and that is cord-and-plug connected in accordance with 400.7(A)(6), (A7), or (A8).

*Add the following Exception to (3) Outdoors.* GFCI receptacles located in exterior soffits and used for seasonal decorative lighting are not required to be readily accessible.

*Exception to (7) Sinks.* Where the receptacles are installed within 1.8 m (6 feet) of the outside edge of the sink.

- (a) Receptacles installed for specific appliances such as clothes washers, refrigerators, garbage disposals, dishwashers, and microwave ovens shall



not be required to be GFCI protected where located within 6 feet of laundry, utility, kitchen or wet bar sink in a dwelling.

- (b) A duplex receptacle may be used for a single appliance provided the duplex receptacle is located behind the appliance which, in normal use, is not easily moved and the receptacle is not readily accessible for the use of power tools. This receptacle must be marked "not GFCI protected". Receptacles installed under the exceptions to 210.8 (A)(7) shall not be considered as meeting the requirements of 210.52 (G).

*210.8(D) Kitchen Dishwasher Branch circuit.* Delete this section.

*210.12 Arc-Fault Circuit Interrupter Protection. (A) Dwelling Units.* All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit bedrooms and for smoke detectors shall be protected by a listed arc-fault circuit interrupter, combination-type, installed to provide protection of the branch circuit. The rest of 210.12(A) remains as stated.

*Add the following Exception No. 4:* Arc-Fault Circuit Interrupter Protection is not required in one and two-family dwellings which are regulated by the International Residential Code.

*210.52 Dwelling unit receptacle outlets (C) Countertops (5) Receptacle outlet location.* Exception to (5): Delete the second sentence to the first paragraph that reads; "Receptacles mounted below a countertop in accordance with this exception shall not be located where the countertop extends more than 150mm (6 inches) beyond its support base." The rest of the section remains as stated. This deletion is to allow the placement of the receptacle no more than 12 inches below the countertop, and anywhere the countertop extends beyond its support base.

*210.52 Dwelling Unit Receptacle Outlets (C) Countertops (5) Receptacle Outlet Location.*

*Exception to (5):* Delete the second sentence to the first paragraph that reads; "Receptacles mounted below a countertop in accordance with this exception shall not be located where the countertop extends more than 150mm (6 inches) beyond its support base." The rest of the section remains as stated. This deletion is to allow the placement of the receptacle no more than 12 inches below the countertop, and anywhere the countertop extends beyond its support base.

*210.52 Dwelling Unit Receptacle Outlets. (E) Outdoor Outlets. (3) Balconies, Decks, and Porches.* Add the following: A receptacle is not required at an existing structure.

*210.52 (G)(1) Receptacles in Garages.* Delete first sentence, as follows: In each attached garage, and in each detached garage with electric power, the branch circuit supplying receptacles shall not supply outlets outside the garage." Retain second sentence: "At least one duplex receptacle shall be installed for each car space."

*210.63 Heating, Air-Conditioning, and Refrigeration Equipment Outlet.* Existing exception to be shown as Exception No. 1 and add:

*Exception No. 2:* Rooftop and exterior equipment on one- and two-family dwellings.

*210.64 Electrical service areas.* In other than 1- and 2-family dwellings, a 120-volt, 15- or 20-amp receptacles shall be required within 50-feet of the electrical service equipment. Add second sentence, as follows: "The receptacle shall be readily accessible and located within sight of the service equipment."

*220.14. Branch Circuit Load Calculations.* (J) Dwelling Occupancies: Delete "one-family, two-family" and add the following requirements for one- and two-family dwellings:

- (1) In one- and two-family dwellings, a 15-amp rated general purpose circuit shall be limited to a maximum of eight receptacle outlets or openings, or eight lighting outlets or openings, or any combination of receptacle outlets and lighting outlets totaling not more than eight.
- (2) In one- and two-family dwellings, a 20-amp rated general purpose circuit shall be limited to a maximum of ten receptacle outlets or openings, or ten lighting outlets or openings, or any combination of receptacle outlets and lighting outlets totaling not more than ten.
- (3) In one- and two-family dwellings, the small appliance circuits serving the kitchen countertop and similar areas, shall be limited to not more than two receptacle outlets or openings for the first two such circuits; the third and succeeding small appliance circuits shall be limited to not more than three receptacle outlets or openings per circuit.
- (4) In one- and two-family dwellings, the microwave receptacle outlet shall be a dedicated 20-amp rated circuit, and shall share with no other outlets.

*230.50 Protection Against Physical Damage.* (B) (1) Service Entrance Cables. (3) Schedule 40 rigid nonmetallic conduit or equivalent.

*250.53. Grounding Electrode System Installation.* (A)(2) Supplemental Electrode Required. Delete.

*250.94 Bonding for Other Systems.* Delete in its entirety.

*300.5 Underground Installations.* (D) Protection from Damage: (3) Service Conductors: Warning tape shall be installed a minimum of six (6) inches below grade and not less than twelve (12) inches above the electrical cables or conduit in all underground installations of 50 volts or more.

*300.5 Underground Installations. (D) Protection from Damage:*

(3) *Service Conductors:* Warning tape shall be installed a minimum of six (6) inches below grade and not less than twelve (12) inches above the electrical cables or conduit in all underground installations of 50 volts or more.

(4) *Enclosure and Raceway Damage:* Where the enclosure or raceway is subject to physical damage, the conductors shall be installed in rigid metal conduit, intermediate metal conduit, Schedule 40 rigid nonmetallic conduit, or equivalent.

*300.9 Raceways in Wet Locations Above Grade. Delete in its entirety.*

*300.11 Securing and Supporting. (A)(2) Non-Fire Rated Assemblies:* Add exception: One 3/4 inch raceway or smaller, with maximum conductor fill (for example, twelve #12 AWG), shall be permitted to be supported by the ceiling support wires.

*314.23 (B)(1) Nails and Screws:* Add last sentence to paragraph: "Screws may be installed through the interior sides of a nonmetallic box to mount or fasten the box in place regardless of its listing and labeling provided the heads of the screws are covered or coated with a nonmetallic material."

*314.25 Covers and Canopies.* Add the following: "The requirement for machine-threaded screws shall not apply to plastic outlet boxes."

*334.12 Uses not permitted. (A) Types NM, NMC, and NMS.* Types NM, NMC, and NMS cables shall not be permitted as follows: Delete the following in its entirety: (2). "Exposed in dropped or suspended ceilings in other than one- and two-family and multi-family dwellings."

*334.12 (B) Types NM and NMS.* Types NM and NMS cables shall not be used under the following conditions or in the following locations. Exception: Type NMS cable shall be permitted in wet or damp locations.

*334.15 Exposed Work. (B) Protection from Physical Damage:* Where schedule 80 PVC is stated in paragraph, replace with scheduled 40 PVC or better. Cable shall be protected from physical damage where necessary by rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 40 PVC conduit, or other approved means. Where passing through a floor, the cable shall be enclosed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, Schedule 40 PVC conduit, or other approved means extending at least 150 mm (6 inches) above the floor.

*334.80 Ampacity.* The ampacity of Types NM, NMC and NMS cable shall be determined in accordance with 310.15. The ampacity shall be in accordance with the 60 degrees Celsius (140 degrees Fahrenheit) conductor temperature rating. The 90 degree Celsius (194 degree Fahrenheit) rating shall be permitted to be used for ampacity derating purposes, provided the final derated ampacity does not exceed that for a 60 degrees Celsius (140

degrees Fahrenheit) rated conductor. The ampacity of Types NM, NMC, and NMS cable installed in cable tray shall be determined in accordance with 392.11.

Where more than two NM cables containing two or more current-carrying conductors are installed, without maintaining spacing between the cables, through the same opening in wood framing that is to be fire- or draft-stopped using thermal insulation, caulk, or sealing foam, the allowable ampacity of each conductor shall be adjusted in accordance with Table 310.15(B)(2)(a). The rest of 334.80 is deleted in its entirety.

*338.10 Uses Permitted. (B)(4)(a) Interior Installations.* In addition the provisions of this article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirements of Part II of Article 334, excluding 334.80.

*404.2. Switch Connections. (C) Switches Controlling Lighting Loads:* Delete.

*404.9 Provisions for General-Use Snap Switches. (B) Grounding:* Add exception 4: In one- and two-family dwellings, switches mounted to non-metallic boxes with non-metallic face plates shall not be required to be effectively grounded.

*404.10 Mounting of Snap Switches. (B) Box Mounted.* Add last sentence to paragraph, as follows: "The requirement for machine-threaded screws shall not apply to plastic outlet boxes."

*406.4 General Installation requirements. (D) Replacements.* Delete the following sentence: "Arc-fault circuit-interrupter type and ground-fault circuit-interrupter type receptacles shall be installed in a readily accessible location."

*406.5 Receptacle Mounting.* Add last sentence to first paragraph: "The requirement for machine-threaded screws shall not apply to plastic outlet boxes."

*406.9 Receptacles in Damp or Wet Locations.*

- (A) Damp Locations. A receptacle installed outdoors in a location protected from the weather or in other damp locations shall have an enclosure for the receptacle that is weatherproof when the receptacle is covered (attachment plug cap not inserted and receptacle covers closed).

An installation suitable for wet locations shall also be considered suitable for damp locations.

A receptacle shall be considered to be in a location protected from weather where located under roofed open porches, canopies, marquees, and the like, and will not be subjected to a beating rain or water runoff. The rest of 406.9(A) is deleted in its entirety.

- (B) Wet Locations.

- (1) Receptacles of 15 and 20 Amperes in a wet location. Receptacles of 15- and 20- ampere, 125- and 250-volt receptacles installed in a wet location shall have an enclosure that is weather-proof whether or not the attachment plug cap is inserted. Weatherproof “in-use or bubble” covers not required.

The rest of 406.9(B) is deleted in its entirety.

*406.12 Tamper-Resistant Receptacles. (A) Dwelling Units.* Delete in its entirety.

Note: In the City of Columbia, tamper-resistant receptacles are required in guest rooms and guest suites of hotels and motels, and in child care facilities.

*410.24 Connection of Electric-Discharge and LED Luminaires. (B) Access to Boxes.* Delete in its entirety

*422.16 Flexible Cords. (B) Specific Appliances.* Add: (5) *Storage-Type Water heaters.* Storage-type water heaters shall be permitted to be cord-and –plug connected with a flexible cord rated at 30 amperes. Cord will not be required to be listed for this use.

*440.9 Grounding and Bonding of Air Conditioning and Refrigerating Equipment.* Where air-conditioning and refrigeration equipment are installed outdoors with wiring methods consisting of liquid-tight flexible metal conduit or electrical metallic tubing, a wire-type equipment grounding conductor, as specified in 250.118(1), shall be provided in the outdoor portion of the raceway.

*Note:* This proposed change was erroneously omitted from the printing of the 2014 NEC

*440.14 Location.* Add: Exception No 3: Cord-and-plug connected appliances.

*547.5 Wiring Methods. (F) Separate Equipment Grounding Conductor.* Add new last sentence: “Aluminum equipment grounding conductors shall not be permitted underground in agricultural buildings or areas.”

*550.15. Wiring Methods and Materials. (H) Under-Chassis Wiring (Exposed to Weather).* (2): Change Schedule 80 PVC to Schedule 40 PVC.

*590.4 General. (D) Receptacles. (2) Receptacles in Wet Locations.* Delete (2) in its entirety.

*600.6 Disconnects. (A)(1):* Change the wording of the first sentence as follows “Disconnects for signs and for outline lighting shall be located at the point where the feeder or branch circuits(s) enters the sign enclosure or pole, and shall disconnect all ungrounded conductors where they enter the sign enclosure or pole.”

680.43 *Indoor Installations*. Delete Exception No. 2.

680.74 *Bonding*. Delete the last sentence.

SECTION 2. The repeal of Article III of Chapter 6 of the Code of Ordinances, City of Columbia, Missouri, relating to the 2006 Edition of the International Code Council Electrical Administrative Provisions referencing the 2011 National Electrical Code shall not affect any offense or act committed or done or any penalty or forfeiture incurred before the effective date of this ordinance.

SECTION 3. This ordinance shall be in full force and effect from and after October 1, 2016.

PASSED this \_\_\_\_\_ day of \_\_\_\_\_, 2016.

ATTEST:

\_\_\_\_\_  
City Clerk

\_\_\_\_\_  
Mayor and Presiding Officer

APPROVED AS TO FORM:

\_\_\_\_\_  
City Counselor