

~~ITEM # 12
DATE: 01-27-15~~

COUNCIL ACTION FORM

SUBJECT: 2014 NATIONAL ELECTRICAL CODE

BACKGROUND:

The National Electrical Code (NEC), published by the National Fire Protection Association (NFPA), is the model code of standards for electrical construction and maintenance in use throughout the United States. The Code is updated at three year intervals to reflect the latest improvements in public safety technologies. The State of Iowa, all major Iowa communities, and the City of Ames regularly adopt the most recent edition of the NEC.

The State of Iowa has adopted the 2014 edition of the NEC, and it became effective on January 1, 2015. The City of Ames follows State adoption to assure consistency of State and local standards. Electricians doing work within the City of Ames are required by their State licensure to follow the NEC adopted by the State, which as of January 1, 2015, would be the 2014 NEC. The City of Ames is currently regulated by the last adopted NEC, which is the 2011 version of the code.

The first step in the code adoption process is an in depth review of the 2014 NEC by Inspections staff. Staff receives not only the 2014 NEC code book, but also reference materials that describe the significant changes between the 2011 and 2014 versions of the code. Research is conducted with staff from other Iowa jurisdictions to understand their process and any stumbling blocks that they encountered along the way. Once a thorough review is complete, the process moves on to the City's Building Board of Appeals.

The Building Board of Appeals is a seven member board appointed by the Mayor with the approval of the City Council. Each member is qualified by experience and training in matters pertaining to building construction. The membership of the Board consists of the following professionals:

- Licensed Architect
- Professional Engineer
- General Contractor
- Homebuilder
- Licensed Journeyman or Master Electrician, or Electrical Contractor
- Licensed Journeyman or Master Plumber, or Plumbing Contractor
- Licensed Master HVAC Technician, or Mechanical Contractor

The Building Board of Appeals is tasked with reviewing proposed text amendments to Ames *Municipal Code*, Chapter 5, Building, Electrical, Mechanical and Plumbing Code. Proposed text amendments are reviewed by the Board with a public hearing and recommendation to the City Council.

On October 20, 2014, Inspections staff sent an e-mail to all contractors who have done business with the Inspection Division over the past year to notify them of the proposed 2014

NEC adoption process, and to notify them that their attendance and input at the November 3, 2014, Building Board of Appeals meeting would be welcome.

The Building Board of Appeals held its public hearing on November 3, 2014. The Board then passed a motion to recommend to the City Council approval of the 2014 NEC with the State of Iowa exceptions and one local amendment. One local contractor attended the Board meeting and did not provide input.

The proposed local amendment is the same amendment as was adopted by the City of Ames with the adoption of the 2011 NEC. This amendment limits the use of nonmetallic-sheathed cable in other than one- and two-family or multi-family dwellings. The State adopted exceptions include the same two exceptions that were adopted with the 2011 NEC which limits the requirements for ground fault circuit interruption (GFCI) receptacles in certain instances where receptacles are not readily accessible or receptacles for appliances in dedicated spaces. Three new exceptions were added by the State, two of which lessen the requirements for arc fault circuit interrupters (AFCI) in certain existing situations, and the third new exception is a clarification on compliance with the adopted International Energy Code.

SIGNIFICANT CHANGES:

Below is an overview of the significant changes of the proposed 2014 NEC from the currently adopted 2011 code. Although this is not an inclusive list, it does highlight the majority of new changes from the previous code cycle.

The following four new articles have been added to the 2014 NEC:

- Article 393 - Low-voltage suspended ceiling power distribution systems
- Article 646 - Modular data centers
- Article 728 - Fire resistive cable systems
- Article 750 - Energy management systems

The following are some changes in the 2014 NEC for single and multifamily dwelling units:

- Section 210.8(A)(7) will expand GFCI protection for all receptacles located within 6 feet of dwelling unit sinks. This removes the words “located in areas other than kitchens” to require GFCI protection for all 125-volt, single-phase, 15 and 20 ampere receptacles installed within 6 feet of the outside edge of dwelling unit sinks (including kitchen sinks).
- Section 210.8(A)(10) will require GFCI protection for dwelling laundry area receptacles.
- Section 210.8(D) will require GFCI protection for dishwashers in dwellings.
- Section 210.12(A) will expand AFCI protection for all 120-volt, single-phase, 15 and 20 ampere branch circuits supplying outlets and devices in kitchen and laundry areas of dwellings.
- Section 680.21(C) will require GFCI protection for all pool pump motors regardless of amperage.

The following are some changes in the 2014 NEC for commercial and industrial projects:

- Section 110.26(C)(3) will lower the requirement for panic hardware on personnel doors from 1200 amperes to 800 amperes.

- Section 110.26(E)(2)(a)&(b) will extend dedicated space requirements to outdoor equipment.
- Section 210.64 will require a receptacle within 50 feet of all non-dwelling service equipment.
- Section 590.4(J) will prohibit temporary branch circuits and feeders from being laid on the floor or ground.
- Section 700.28 will require an engineer to design selective coordination for emergency systems

ALTERNATIVES:

1. Set the public hearing for February 10, 2015, to review the proposed changes to the Ames *Municipal Code*, Chapter 5 and the proposal to adopt the 2014 edition of the National Electrical Code (NEC) with one local amendment and State of Iowa exceptions.
2. Direct staff to work with the Building Board of Appeals to develop further local amendments to the recommended codes.

MANAGER'S RECOMMENDED ACTION:

The Building Board of Appeals has reviewed the proposal and has recommended approval to the City Council. Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1, thereby setting a public hearing for February 10, 2015.

MINUTES OF THE REGULAR MEETING OF THE BUILDING BOARD OF APPEALS

AMES, IOWA

NOVEMBER 3, 2014

Call to Order

The regular meeting of the Building Board of Appeals was called to order by Chairman Larry Cormicle at 4:00 p.m., November 3, 2014, in Room 235 in City Hall, 515 Clark Avenue. Present from the Building Board of Appeals were Larry Cormicle, Brad Heemstra, Larry Brandt, Nathan Werstein, and Dan Nuntini.

Staff members present were Seana Perkins, Scott Ripperger, Nick Patterson, and Jessica Spoden.

Guests present were appellant Jeff Rains of BSB Design, general contractor Keith Dallenbach, two members of the Sigma Chi building committee, and Dan Krogman from Kurrent Electric.

Moved by Heemstra, seconded by Brandt, to approve the minutes of July 7, 2014

Vote on Motion: 5-0

Motion passed unanimously

Old Business

None

New Business

A. Appeal of the Electrical code, NEC-2011 Section 334.10 and City of Ames local code amendment 5.205 by Sigma Chi Beta Omicron.

Jeff Rains gave a summary of the project. The history of the amendment in place restricting the use of metal cable primarily refers to commercial structures. It is still allowed in multi-family structures although fraternity houses do not fall under that category because they have sleeping units, not dwelling units. The code defines a dwelling unit as a sleeping unit with a kitchen. The Sigma Chi sleeping units have a space for a microwave and small refrigerator but not a range, so based on this, the electrical code classifies the fraternity as an "other structure" which was eliminated by the adoption of the City of Ames amendment. Since the fraternity is a residential use, and the appellant believes the intent of the amendment was to limit the use of metal cable in commercial structures, they are asking for the ability to use metal cable in this application.

Steve (keith?) Dallenbach stated that this is a financial hardship for the fraternity. The project is being funded by donations from alumni and the cost to have use NM cable is close to \$20,000.

Rains added that their electrician suggested using metal cable in the kitchen area.

Seana Perkins reviewed the steps taken by the City regarding the Code Modification request. The definition of fraternity does not meet the exemption criteria. Our local amendment 5.205 prohibits the use of metal cable in this type of application, so the City denied the request.

Brad Heemstra stated that there have been many discussions over the years about upgrading fraternities and sororities for safety, but as a City we have chosen not to allow romex in fraternities. He asked how long this policy has been in place.

Nick Patterson stated that the City of Ames adopted this particular amendment in 2002 and it has gone through several code adoptions. Inspections over the years of fraternities and sororities have shown more wear and tear and abuse than other residential properties.

Dallenbach stated that exceptions have been issued to Greek housing for multiple reasons usually based on economic conditions as non-profits. The economic situation of a donated building for residences is worth considering. Is this a hardship being placed on fraternities and sororities? He is not concerned about abuse in this new building or this being a building that can't take abuse. The walls will be built in a way that makes the building more durable to address those concerns.

Jessica Spoden confirmed that economic hardship has been a reason for other variances that have been issued by the City.

Cormicle asked if the other variances were for life safety issues or appearance and zoning. Spoden clarified that they have not been for life safety.

Dallenbach does not believe that romex has been proven to be a dangerous product.

Rains stated that the owner is concerned about the original intent of the code. Commercial applications are understandable, but this is a residential project.

Brandt asked how many fraternities or sororities are currently involved in major construction and have they filed for variances? The City has not allowed romex in commercial buildings since the 1950's.

Spoden stated that another fraternity has received a variance for their parking requirements.

Rains again stated that this project is not a commercial building. Brandt countered that it is the equivalent of a boarding house.

Discussion was held about cooking units and heating elements.

Heemstra reiterated that since 2002 other Greek houses have had to use metal cable in similar situations. He then asked for clarification on whether it was the City's intent in 2002 to not allow romex in fraternities. What prompted the decision at that time?

Brandt stated that the code changed allowing romex to be in some type III, IV, and V construction, which prompted the decision by the City not to go along with it.

Nathan Werstein asked about the timing of this decision in relation to the adoption of the 2014 NEC. Spoden stated that the 2014 NEC will not be in effect until January 2015 and this project is underway now.

Heemstra expressed concern about pulling out one project and changing direction on a code that has been in effect since 2002.

Moved by Brandt, seconded by Heemstra, to deny the appeal

Vote on Motion: 5-0

Motion passed unanimously

B. 2014 NEC Code Adoption

Perkins presented the proposed timeline for the 2014 NEC code adoption: 1st reading and public hearing November 25, 2014; 2nd reading December 9, 2014; 3rd reading December 23, 2014. Adoption date would be effective January 1, 2015 to align the City of Ames with the State of Iowa adoption process. The State of Iowa will likely have exceptions to the 2014 NEC. In the memo to the Board, staff laid out options for the Board to consider. One option is to adopt the 2014 NEC straight up with our local amendments. The second option is to follow the State of Iowa and adopt it following their exceptions and our local amendments.

Heemstra asked how the Board will know what the State exceptions are. Will the Board circle back on the State exceptions? Is the memo suggesting the Board just adopt what the State does when they do not know what the State is going to do? Will the Board revisit what the State has decided?

Perkins stated that one of the options is just to adopt what the State adopts assuming that the State is going through the process and will choose the exceptions that are right for the State of Iowa and the City of Ames would trust that.

Ripperger stated that no matter what the State does, the City of Ames is still bound by the State code. We can make it more restrictive, but we cannot make it less restrictive.

Spoden concurred by saying the State would not be making the NEC more restrictive, if anything, they would be making it less restrictive. Spoden also stated that if the State was to make changes at a later date, those changes would automatically be adopted by the City code.

Discussion was held on the state adoption. Spoden stated that the State is not required to adopt the National Electrical Code. The history of the State has been to make the code less restrictive.

Cormicle and Heemstra questioned if the City of Ames was going to accept the less restrictive stance that the State adopts. Should the Board wait to adopt the 2014 NEC until after the State has adopted it to see what exceptions they have adopted? If the State makes the code lenient, the Board can reconvene and subsequently adopt local ordinances.

Moved by Heemstra, seconded by Nutini, to adopt the 2014 NEC with the State of Iowa exceptions and our local amendment

Vote on Motion: 5-0

Motion passed unanimously

Board Comments

None

Adjournment

The Board adjourned at 4:43pm

Eileen Carter, Recording Secretary

Ames Municipal Code Chapter 5 – EXCERPTS

Sec. 5.100. TITLE & ADOPTION.

(11) **Electrical.** The National Electrical Code, 2011 **2014** edition, published by the National Fire Protection Association, One Batterymarch Park, Quincy, Massachusetts, and ~~as adopted by the Iowa Electrical Examining Board~~ is hereby adopted as the electrical code of the City of Ames and shall govern electrical work and installations in the City of Ames, except for such specific, higher standards and requirements as have been or may from time to time be enacted by the City of Ames.

Sec. 5.205. ELECTRICAL.

The provisions of the National Electrical Code (NEC), 2011 **2014** edition, are hereby amended as follows:

- (1) Section 334.10, ***Nonmetallic-Sheathed Cable, Uses Permitted***, of the said National Electric Code is amended by deleting Subsection (3) therefrom and inserting in lieu thereof a new Subsection (3): All other structures shall be wired using other methods as allowed by the NEC.
- (2) Add the following exceptions to Article 210.8(A)(2), ***paragraph (A), subparagraph (2) Ground-Fault Circuit-Interrupter Protection for Personnel, Dwelling Units (A)(2)***:
 - (a) Exception No. 1-~~to (2)~~: Receptacles that are not readily accessible.
 - (b) Exception No. 2-~~to (2)~~: 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), (A)(7), or (A)(8).
 - (c) Receptacles installed under the exceptions to 210.8(A)(2) shall not be considered as meeting the requirements of 210.52(G).
- (3) Add the following exceptions to Article 210.8(A)(5), ***Ground-Fault Circuit-Interrupter Protection for Personnel, Dwelling Units (A)(5)***:
 - (a) Exception No. 2-~~to (5)~~: Receptacles that are not readily accessible.
 - (b) Exception No. 3-~~to (5)~~: 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), (A)(7), or (A)(8).
 - (c) Receptacles installed under the exceptions to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G).
- (4) ***Delete section 210.12(B), Arc-Fault Circuit-Interrupter Protection, Branch Circuit Extensions or Modifications – Dwelling Units.***
- (5) ***Delete exception to section 220.12, Lighting Load for Specified Occupancies, and insert in lieu thereof the following exception:***
Exception: Where the building is designed and constructed to comply with an energy code adopted by the local authority, the lighting load shall be permitted to be calculated at the values specified in the energy code.
- (6) ***Delete section 406.4(D)(4), General Installation Requirements, Replacements, Arc-Fault Circuit Interrupter Protection.***

ORDINANCE NO.

AN ORDINANCE TO AMEND THE MUNICIPAL CODE OF THE CITY OF AMES, IOWA, BY REPEALING SECTIONS 5.100(11), 5.205(1), (2) AND (3) AND ENACTING NEW SECTIONS 5.100(11), 5.205(1), (2), (3), (4), (5) AND (6) THEREOF, FOR THE PURPOSE OF ADOPTING BY REFERENCE THE 2014 EDITION OF THE NATIONAL ELECTRICAL CODE WITH LOCAL EDITS REPEALING ANY AND ALL ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT TO THE EXTENT OF SUCH CONFLICT; PROVIDING A PENALTY; AND ESTABLISHING AN EFFECTIVE DATE.

BE IT ENACTED, by the City Council for the City of Ames, Iowa, that:

Section One. The Municipal Code of the City of Ames, Iowa shall be and the same is hereby amended by repealing Sections 5.100(11), 5.205(1), (2) and (3) and enacting new Sections 5.100(11), 5.205(1), (2), (3), (4), (5) and (6) as follows:

“Sec. 5.100. TITLE & ADOPTION.

(11) **Electrical.** The National Electrical Code, 2014 edition, published by the National Fire Protection Association, One Batterymarch Park, Quincy, Massachusetts, is hereby adopted as the electrical code of the City of Ames and shall govern electrical work and installations in the City of Ames, except for such specific, higher standards and requirements as have been or may from time to time be enacted by the City of Ames.

Sec. 5.205. ELECTRICAL.

The provisions of the National Electrical Code (NEC), 2014 edition, are hereby amended as follows:

(1) Section 334.10, Nonmetallic-Sheathed Cable, Uses Permitted, is amended by deleting Subsection (3) therefrom and inserting in lieu thereof a new Subsection (3): All other structures shall be wired using other methods as allowed by the NEC.

(2) Add the following exceptions to Article 210.8(A)(2), Ground-Fault Circuit-Interrupter Protection for Personnel, Dwelling Units:

(a) Exception No. 1: Receptacles that are not readily accessible.

(b) Exception No. 2: 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), (A)(7), or (A)(8).

(c) Receptacles installed under the exceptions to 210.8(A)(2) shall not be considered as meeting the requirements of 210.52(G).

(3) Add the following exceptions to Article 210.8(A)(5), Ground-Fault Circuit-Interrupter Protection for Personnel, Dwelling Units:

(a) Exception No. 2: Receptacles that are not readily accessible.

(b) Exception No. 3: 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), (A)(7), or (A)(8).

(c) Receptacles installed under the exceptions to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G).

(4) Delete section 210.12(B), Arc-Fault Circuit-Interrupter Protection, Branch Circuit Extensions or Modifications – Dwelling Units.

(5) Delete the exception to section 220.12, Lighting Load for Specified Occupancies, and insert in lieu thereof the following exception:

Exception: Where the building is designed and constructed to comply with an energy code adopted by the local authority, the lighting load shall be permitted to be calculated at the values specified in the energy code.

(6) Delete section 406.4(D)(4), General Installation Requirements, Replacements, Arc-Fault Circuit Interrupter Protection.”

Section Two. Violation of the provisions of this ordinance shall constitute a municipal infraction punishable as set out by law.

Section Three. All ordinances, or parts of ordinances, in conflict herewith are hereby repealed to the extent of such conflict, if any.

Section Four. This ordinance shall be in full force and effect from and after its passage and publication as required by law.

Passed this _____ day of _____, _____.

Diane R. Voss, City Clerk

Ann H. Campbell, Mayor