

Source: City Manager

Agenda Item No: Supplemental
Information

To: **City Council**

From: **City Manager and Staff**

Council Meeting Date: Sep 16, 2013

Re: EEC recommendations for residential building codes corrected letter- Supplemental information for Council

EXECUTIVE SUMMARY:

An incorrect letter from the Environment and Energy Commission was mistakenly introduced at the September 3, 2013 City Council meeting. The introduced letter was submitted as supplemental information for Agenda items B239-13 through B246-13. The corrected letter, dated April 17, 2013 is attached here as supplemental information.

DISCUSSION:

The Environment and Energy Commission (EEC) was requested by City Council to review changes to the building code in regards to energy efficiency. The commission originally submitted their recommendations to City staff in a letter dated January 17, 2013. Upon further review of their recommendations, the EEC re-submitted their letter to staff and City Council on April 17, 2013. The January 17, 2013 letter to staff was mistakenly submitted as supplemental information to Agenda items B239-13 through B246-13 at the September 3, 2013 City Council meeting.

The recommendations from the April 17, 2013 letter are the recommendations Council heard at their June 17 pre-Council meeting. Those recommendations are to adopt the 2012 energy code as written or accept the three compromises as recommended by the EEC. Those compromises are:

1. The amount of attic insulation
2. The amount of wall insulation
3. Perimeter foundation insulation

Staff apologizes for the confusion and have attached the correct letter, which has been seen by the City Council before, for clarification.

FISCAL IMPACT:

None

VISION IMPACT:

<http://www.gocolumbiamo.com/Council/Meetings/visionimpact.php>

By adopting the 2012 energy code, newer homes will be more energy efficient

SUGGESTED COUNCIL ACTIONS:

The Environment and Energy Commission requests that Council amend the proposed changes to building codes with the recommendations from the EEC.

FISCAL and VISION NOTES:					
City Fiscal Impact Enter all that apply		Program Impact		Mandates	
City's current net FY cost	\$0.00	New Program/ Agency?		Federal or State mandated?	
Amount of funds already appropriated	\$0.00	Duplicates/Expands an existing program?		Vision Implementation impact	
Amount of budget amendment needed	\$0.00	Fiscal Impact on any local political subdivision?		Enter all that apply: Refer to Web site	
Estimated 2 year net costs:		Resources Required		Vision Impact?	Choose One
One Time	\$0.00	Requires add'l FTE Personnel?		Primary Vision, Strategy and/or Goal Item #	
Operating/ Ongoing	\$0.00	Requires add'l facilities?		Secondary Vision, Strategy and/or Goal Item #	
		Requires add'l capital equipment?		Fiscal year implementation Task #	

ENVIRONMENT & ENERGY COMMISSION

City of Columbia & County of Boone

City Hall, Conference Room 1A

April 17, 2013

Mayor McDavid and Council Members,

The Environment & Energy Commission has reviewed the 2012 Energy Code (Chapter 11 of the International Residential Code), and the recommendations of the Building Code Commission. The BCCC has done extensive research into the energy conservation sections of the residential code, and deserves recognition for this effort. The recommendations of the EEC are as follows:

Insulation of hot water piping: The EEC agrees with the BCCC's proposal of eliminating hot water insulation requirements except in the case of hot water circulating pump piping.

Wood frame wall insulation: The 2012 Energy Code requires R20 or R13+5 (R13 batt and R5 cladding). We agree with the BCCC that this new insulation requirement be kept in force. The BCCC has proposed an exception allowing high density batts to substitute for exterior continuous insulation cladding, however this does not meet the letter of *R402.1.3 U-Factor Alternative*. The EEC does not agree with the BCCC proposal allowing high density batts to substitute for continuous insulation cladding.

Termite exemption for slab-on-grade and foundation insulation: The EEC recommends the retention of section *R402.2.9 Slab-on-grade-floor* insulation requirement in the 2012 International Energy Conservation Code. We suggest using standard termite barrier details which has been allowed as an option by City Authorities for some time. This is not in agreement with the BCCC recommendations for an exemption.

Ceiling or Attic R-value: The 2012 Code recommends an increase in Attic insulation from R-38 to R-49, and in the case of an "Energy Band" truss, reduction to R-38 is allowed. The EEC Recommends that this requirement, which may result in reduced mechanical equipment size if properly implemented, will be cost effective. Contractors using proper "Manual J" Calculations will reduce equipment size, thus reduce overall building cost and energy use compared to the old Code. This reduced HVAC equipment size can directly reduce electric utility demand charges, reaping benefits to the City Utility as well as to the consumer. This is not in agreement with BCCC recommendations which propose to keep 2009 insulation requirements.

Air leakage: The 2012 Code requires a blower door test on all new houses to determine air leakage. The EEC would agree with BCCC that a relaxed standard which requires a visual inspection of air leakage control measures during construction is feasible. The blower door test should be allowed as an option at the discretion of the Building Inspector in questionable or disputed cases.

Duct leakage: The 2012 Code requires a duct pressure test on all new houses to determine duct leakage. Mechanical contractors are more aware of leakage requirements, and testimony shows they are taking care to seal ductwork. The EEC would agree with the BCCC that a relaxed standard which requires a visual inspection of duct leakage control measures during construction be allowed. The duct pressure test should be allowed as an option at the discretion of the Building Inspector in questionable or disputed cases.

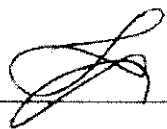
Outdoor air duct: The EEC agrees with the BCCC recommendation of a single outside air duct, with insect screen and damper, routed to the furnace return air intake to satisfy Section R303 and M1507 Mechanical Ventilation requirements. This duct should be 4" for houses less than 1500 square feet, 6" for houses less than 2400 square feet, and 8" for larger houses. If there are multiple furnaces, the requirements may be applied to the area served by the furnace, or to one of the multiple furnaces as long as the furnace is properly sized to handle the additional heating or cooling load imposed by the outside air. The duct should be placed as to discharge into the return air filter, to reduce allergens or dust from outdoors.

Building cavities as return air The EEC agrees with the BCCC that building cavities may be used as return air cavities without full duct lining, as long as leakage to outside air, attics, or unconditioned spaces is prevented by visually inspection.

High efficacy lamps: The EEC agrees with the BCCC recommending that the 2012 requirement that 75 percent of the *lamps* in light fixtures be high efficacy type, be changed to read 75 percent of the *fixtures shall* be high efficacy. This allows a few multiple bulb fixtures, such as candelabras, to be conventional bulbs, while retaining the requirement for high efficacy bulbs in most areas.

Programmable thermostats: The 2012 Code specifies that the initial heating setpoint shall be 70F and the cooling setpoint be 78F. The EEC agrees with the BCCC in recommending that this paragraph be changed from *shall* to *should*, which makes the requirement non-mandatory.

Respectfully Yours,

By:  _____
Signature

Lawrence Lile,

Vice Chair and Acting Chair

Environment and Energy Commission

Introduced by _____

First Reading _____

Second Reading _____

Ordinance No. _____

Council Bill No. B 241-13

AN ORDINANCE

repealing Article IV of Chapter 6 of the City Code relating to the 2009 Edition of the International Plumbing Code and enacting in lieu thereof a new Article IV adopting the 2012 Edition of the International Plumbing 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 IV of Chapter 6 of the Code of Ordinances, City of Columbia, Missouri, relating to the 2009 Edition of the International Plumbing Code is hereby repealed and in lieu thereof a new Article IV, relating to the 2012 Edition of the International Plumbing Code, is hereby enacted reading in words and figures as follows:

CHAPTER 6. BUILDINGS AND BUILDING REGULATIONS

...

ARTICLE IV. PLUMBING CODE

Sec. 6-51. Adopted.

The 2012 Edition of the International Plumbing Code, published by the International Code Council, Inc., one 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 2012 Edition of the International Plumbing Code shall remain on file in the office of the city clerk and shall be kept available for public use, inspection and examination.

Sec. 6-52. - 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: These regulations shall be known as the Plumbing Code of Columbia, Missouri, hereinafter referred to as "this code."

101.5 License Required:

(a) No individual shall engage in the business of plumbing in the City of Columbia unless licensed as a master plumber under the provisions of this code.

(b) No individual, firm, partnership or corporation shall engage in the business of installing, repairing or altering plumbing unless the plumbing work performed in the course of such business is under the general supervision of a licensed master plumber, and under the direct supervision of a licensed master plumber or licensed journeyman plumber employed on such installation or alteration full time to assure proper and accurate work as prescribed by this code.

(c) No person who has obtained a master plumber's license shall allow his name to be used by another person for the purpose of obtaining permits, or for doing business or work under this license. Every person licensed shall notify the board of the address of his 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.

(d) All work authorized by a plumbing permit shall be done under the direct supervision of a licensed master or journeyman plumber.

(e) A maximum 1:3, journeyman to apprentice plumber ratio is allowed.

101.6 Board of plumbing examiners: There is hereby created a board of plumbing examiners, consisting of five (5) members, one of whom shall be the director of community development or the director's designee, who shall be a non-voting, ex-officio secretary of the board; a second member, who shall be a master plumber; a third member, who shall be a journeyman plumber; and a fourth member and a fifth member, who shall be persons not engaged in, working at, employed by, or connected with plumbing, a plumbing firm, contractor, or the plumbing industry. Members appointed by the council shall be residents of the City of Columbia. Members shall be appointed by the council at the second regular meeting of the council in May, biennially in odd-numbered years, for a term of two (2) years, beginning on the first day of June and serving until their successors are appointed and qualified. The second and third members of the board shall have at least six (6) years in, or working at, the plumbing business at the time of their appointment. The first meeting of the calendar year, the board shall select one of its members to serve as chair and the code official 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.

101.7 Meetings of the board: The board shall meet on call of the chair or a majority of the membership, and the call shall include the time, place and purpose of such meetings. Applicants scheduled for examination at such meetings shall be notified at least three (3) days prior to the date of the meeting. 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. The members shall serve without compensation.

101.8 Examination and certification: The board shall establish standards and procedures for the qualifications, examination, and licensing of master plumbers, journeyman plumbers, residential plumbers and apprentice plumbers, and shall issue an appropriate certificate of competency to each person who meets the qualifications therefore and successfully passes the standard examination for master plumber or journeyman plumber as prepared and published by Thomson Prometric, ATTN: National Construction Program, 1260 Energy Lane, St. Paul, MN 55108 or the ICC National Standardized Examinations Program, www.iccsafe.org/contractor (1-877-783-3926) for Contractor Trades Testing. The board shall keep an official record of all transactions.

101.8.1 Reciprocity: The board 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 examination by one of the two testing agencies noted in 101.8 applicable for the type of license requested.

101.9 Re-examinations: Any person, who fails to pass the examination, as prescribed by the board, may apply for re-examination after the expiration of thirty (30) days.

101.10 Temporary permit: The board may issue a temporary license pending the examination, providing the applicant holds a similar license from an equivalent board. Such permit shall not be valid for more than sixty (60) days.

101.11 Application: Any person desiring to be certified as a licensed plumber shall make written application to the board. Applicants are required to appear and interview before the board of plumbing examiners unless waived by the board. A fee of fifty dollars (\$50.00) must be submitted with the application. The fee shall be refunded to the applicant if the applicant appears at the board meeting at which the interview is scheduled.

101.12 Before the issuance of a certificate of competency to a contracting master plumber or the registration of a plumbing contractor, the applicant shall file a surety bond for not less

than ten thousand dollars (\$10,000.00), subject to the approval of the city counselor, conditioned that the applicant will indemnify and keep harmless the City of Columbia from all liability, from any accident or damages arising from negligence or non-skillfulness in doing or protecting applicant's work, or for any unfaithful or inadequate work done in pursuance of the license, and that applicant will also restore the street, sidewalk, pavement or other public property or right-of-way, and fill all excavations to be made, so as to leave the sidewalk, street, pavement or other public property or right-of-way in as good shape or condition as applicant found them, and indemnify and keep the city harmless from any damage suffered by the failure to do and keep and maintain them in good repair in accordance with community development department standards and specifications of the City of Columbia, Missouri, for a period of one (1) year next thereafter, and that applicant will pay all fines imposed for the violation of any rule or regulation adopted by the city and in force during the term of the license and pay all fees set forth in this ordinance.

101.13 Expiration and revocation of certificate: All certificates of competency issued by the board shall be valid from the date of issuance until the renewal date as listed in Section 101.15, or when revoked by the board. Business licenses required of plumbers, contractors, and contracting master plumbers shall expire annually in accordance with the provisions of Chapter 13 of the Code of Ordinances.

The board may revoke any certificate if obtained through non-disclosure, misstatement, or misrepresentation of a material fact, or if a penalty has been imposed upon a certificate holder under the provisions of this ordinance. Before a certificate can be revoked, the certificate holder shall have notice in writing enumerating the charges against the certificate holder, and be entitled to a hearing by the board, not sooner than five days from receipt of the notice. The certificate holder shall be given an opportunity to present testimony, oral or written, and shall have the right to cross-examination. All testimony shall be given under oath. The board shall have the power to administer oaths. The decision of the board shall be based upon the evidence produced at the hearing and made a part of the record thereof. Any person aggrieved by a decision of the board may appeal to the circuit court as provided in chapter 536 of the Revised Statutes of Missouri. A person whose certificate has been revoked shall not be permitted to apply for renewal within one year of the date of revocation.

101.14 License fees: A plumbing contractor or contracting master plumber shall pay annual business license fees to the City of Columbia in an amount to be determined under the provisions of chapter 13 of the Code of Ordinances. A master plumber, a journeyman plumber, and apprentice plumber employed by a licensed plumbing contractor shall pay no business license fees.

101.14.1 Certificate fees: Certificate fees are as follows;

City of Columbia Journeyman Certificate	\$30.00
City of Columbia Master Certificate	\$90.00

101.14.2 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, or November of the renewal year are not required to pay a renewal fee in December.

101.15 Certificate renewal: A master plumber, journeyman plumber or a maintenance journeyman plumber certificate shall be renewed every three (3) years. The renewal fee is thirty dollars (\$30.00) for a journeyman certificate, ninety dollars (\$90.00) for a master certificate. Reexamination is not a renewal requirement. Failure to renew by the January 1 date of the renewal year shall result in expiration of the certificate. An individual requesting renewal of an expired certificate must apply for a new plumbing certificate and shall pay a fee according to the following schedule:

1. Ten dollars (\$10.00) from January 2 to March 30 of the first year after expiration.
2. Fifty dollars (\$50.00) from April 1 to December 31 of the first year after expiration.
3. One hundred dollars (\$100.00) after January 2 of the second year after expiration plus an additional one hundred dollars (\$100.00) for each additional year or fraction of a year after expiration.

101.16 Qualifications for examination:

Master Plumber: Applicants for examination shall:

1. Submit completed application to the director of community development including name, address, telephone number, type of certificate requested, and other information as required.
2. Prove four thousand (4,000) hours of active employment under direct supervision of a master plumber, as a journeyman plumber or be registered with the State of Missouri as a licensed professional engineer and be actively engaged in the business of plumbing contracting. Time enrolled in an appropriate plumbing trade school or plumbing training program beyond the journeyman level may be considered by the board as partial fulfillment of this requirement.
3. List names, address and telephone number of all previous employers under which applicant has worked as an apprentice or journeyman plumber, including dates and years. Provide evidence of hours worked, employment records, time cards, etc.
4. Successfully complete examination as required by the board of plumbing examiners.

Journeyman Plumber: Applicants for examination shall:

1. Submit a completed application to the director of community development including name, address, telephone number, type of certificate requested, and other information as required.
2. Prove eight thousand (8,000) hours of active, on the job training only, during employment, under the supervision of a journeyman plumber, as an apprentice plumber. Time enrolled in an appropriate plumbing trade school or plumbing apprenticeship training program may be considered by the board as partial fulfillment of this requirement.
3. List names, address and telephone number of all previous employers under which applicant has worked as an apprentice including dates and years. Provide evidence of hours worked, employment records, time cards, etc.
4. Successfully complete examination as required by the board of plumbing examiners.

Maintenance Plumbers Certificate: Maintenance plumbers are authorized to perform routine plumbing maintenance on fixtures and equipment only for a specified employer. Applicants for examination shall:

1. Submit a completed application to the director of community development including name, address, telephone number, type of certificate requested, and other information as required.
2. Prove six thousand (6,000) hours of active employment as an apprentice plumber. Time enrolled in an appropriate plumbing trade school or apprenticeship training program may be considered by the board as partial fulfillment of this requirement.
3. List names, address and telephone number of all previous employers under which applicant has worked as an apprentice including dates and years. Provide evidence of hours worked.
4. Successfully complete examination as required by the board of plumbing examiners.

Residential Journeyman Plumber: (limited license for one- and two-family detached dwelling units only). Applicants for examination shall:

1. Submit completed application to the director of community development including name, address, telephone number, type of certificate requested, and other information as required.
2. Prove six thousand (6,000) hours of active employment as an apprentice plumber. Time enrolled in an appropriate plumbing trade school or apprenticeship program may be considered by the board as partial fulfillment of this requirement.
3. List names, address and telephone number of all previous employers under which applicant has worked as an apprentice including dates and years. Provide evidence of hours worked.
4. Successfully complete examination as required by the board of plumbing examiners.

Apprentice Plumber: Applicants for examination shall:

1. Submit completed application to the director of community development including name, address, telephone number, employer's name, signature of a licensed master plumber, and other information as required.

Section 103 DEPARTMENT OF COMMUNITY DEVELOPMENT - DIVISION OF BUILDING AND SITE DEVELOPMENT

103.1 Director: The administration and enforcement of this ordinance shall be the duty of the director of community development , who is hereby 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.

103.2 Appointment: Delete

103.3 Deputies: Delete

103.4 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.

103.5 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 such employee is the owner of the building; nor shall such employee engage in any work which conflicts with such employee's official duties or with the interest of the department.

106.4 By whom application is made: Application for a permit shall be made by a licensed master plumber, except as provided herein. Plumbing permits may be issued to the general contractor, on behalf of the master plumber, for new one- and two-family dwellings and building alteration or building additions for one- and two-family dwellings to install all or part of any plumbing system. All plumbing work must be performed by a plumber licensed by the City of Columbia, or as allowed by ordinance.

Any permit required by this code may be issued to any person to do any work regulated by this code in a single-family dwelling used exclusively for living purposes, including the usual accessory buildings and quarters in connection with such buildings, provided the person is a bona fide owner of the dwelling, will occupy the dwelling, and will personally purchase all material and perform all labor authorized by the permit. Any person obtaining a permit under this section shall not be issued another permit within two (2) years.

The applicant shall meet all qualifications established by rules promulgated with this code or by ordinance, resolution, or statute. The full names and addresses of the owner, lessee, applicant and of the responsible officers, if the owner or lessee is a corporate body, shall be stated in the application.

Exception: Plumbers holding a maintenance plumbers certificate who are regular employees of the firm or corporation for which the work is to be performed, may obtain a permit to do plumbing work on the premises of the firm or corporation provided the work is not associated with work requiring a building permit.

106.6.2 Fee schedule: For the purpose of this code, any fixture, accessory, appliance or equipment of any nature requiring a permanent or rigid connection to any sewer or water line, will be classified as a fixture and the permit will be assessed as such. The plumbing permit fees shall be as follows:

\$48.60	for each tap or opening into any public sewer, or private sewer that is connected to a public sewer
\$ 3.78	per fixture for the first twenty-five fixtures, and for each additional fixture or opening, \$1.08
\$ 2.16	for each floor drain, garage drain, or any other fixture, appliance, or waste line connecting directly with the drainage system of the building

Any required re-inspection will be charged in accordance with the Building Code of Columbia, Missouri.

In no case shall the fee for permits be less than sixteen dollars and twenty cents (\$16.20) for structures not previously plumbed or alterations of, or extensions to, existing plumbing.

106.6.3 Fee refunds. The code official shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder which was erroneously paid or collected.
2. Not more than seventy-five (75) percent of the permit fee paid when no work has been done under a permit issued in accordance with this code.
3. Delete in its entirety.

The code official shall not authorize the refunding of any fee paid, except upon written application filed by the original permittee not later than one hundred eighty (180) days after the date of fee payment.

108.4 Penalties: Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall install plumbing work in violation of an approved plan or directive of the code official, or of a permit or certificate issued under the provisions of this code, shall be guilty of an ordinance violation, punishable by a fine of not more than one thousand dollars (\$1,000.00) or by imprisonment not exceeding ninety (90) days, or both such fine and imprisonment. Each day that a violation continues shall be deemed a separate offense.

108.5 Stop work orders. Upon notice from the code official, work on any plumbing system that is being done contrary to the provisions of this code or in a dangerous or unsafe, manner, shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any plumbing work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe conditions, shall be liable to a fine of not less than one hundred dollars (\$100.00) or more than one thousand dollars (\$1,000.00).

109.1 Application for appeal: Any aggrieved person shall have the right to petition the building construction codes commission regarding a decision of the code official to refuse to grant a modification of the provisions of this code covering the manner of construction or materials to be used in the erection, alteration or repair of a plumbing system. Application for appeal shall be filed in accordance with the procedures set out in Section 113 of the International Building Code as amended and adopted by the City of Columbia, Missouri.

109.2 through 109.7 Delete.

305.4.1 Sewer Depth: Building sewers that connect to private sewage disposal systems shall be a minimum of thirty (30) inches below finish grade at the point of septic tank connection.

Building sewers shall be a minimum of thirty (30) inches below grade.

405.3.1.1 Water closets, urinals, lavatories, bidets: All water closets shall be spaced at least fifteen (15) inches from the centerline of the fixture to any wall or plumbing fixture except the centerline of the water closet may be spaced twelve (12) inches if located next to the bathtub.

410.2 Add exception: In business, mercantile, and storage occupancies where drinking fountains are required, the following exceptions are permitted to substitute for one hundred percent (100%) of the required drinking fountains if the required number is not greater than one (1):

1. A water cooler or bottled water dispenser;
2. Individual bottles of water;
3. A break room sink, bar sink, or kitchen sink provided all sinks have an approved standard faucet per IPC 424.1.

602.3.1 Availability. A potable public water supply system shall be considered available to a building when any portion of the property is located within two hundred twenty-five (225) feet of the public water main.

606.1 Location of full-open valves. Full-open valves shall be installed in the following locations:

1. On the building water service pipe from the public water supply near the curb.
2. On the water distribution supply pipe at the entrance into the structure.
3. On the discharge side of every water meter.
Exception: Water meters not located inside a building.

4. On the base of every water riser pipe in occupancies other than multiple-family residential occupancies which are two (2) stories or less in height and in one- and two-family residential occupancies.
5. On the top of every water down-feed pipe in occupancies other than one- and two-family residential occupancies.
6. On the entrance to every water supply pipe to a dwelling unit, except where supplying a single fixture equipped with individual stops.
7. On the water supply pipe to a gravity or pressurized water tank.
8. On the water supply pipe to every water heater.

701.2 Sewer required: Every building in which plumbing fixtures are installed and every premises having drainage piping shall be connected to a public sewer, where available, or where a public sewer is not available, a private sewage disposal system shall be provided conforming to Chapter 29 of the Code of Ordinances and the Building Code of Columbia, Missouri.

701.2.1 Public system available: A public sewer system shall be considered available to a building when any portion of the property is located within two hundred twenty-five (225) feet of the public sewer.

SECTION 2. The repeal of Article IV of Chapter 6 of the Code of Ordinances, City of Columbia, Missouri, relating to the 2009 Edition of the International Plumbing 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, 2013.

PASSED this _____ day of _____, 2013.

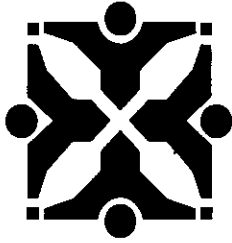
ATTEST:

City Clerk

Mayor and Presiding Officer

APPROVED AS TO FORM:

City Counselor



Source: Community Development - BSD 

Agenda Item No:

To: City Council

From: City Manager and Staff 

Council Meeting Date: Sep 3, 2013

Re: Update of Building Codes

EXECUTIVE SUMMARY:

The Building Construction Codes Commission has completed their review of the 2012 International Code Council Codes and 2011 National Electrical Code for adoption by the city. There are numerous minor changes and several major changes. The new codes provide clarity and enhance the life safety, protection of property, and energy efficiency of buildings. Among the major changes, the cost implications of the energy efficiency chapter of the residential code is the largest concern.

DISCUSSION:

Numerous meetings were held evaluating the effect of the new codes and determining what local addendums would be needed. These meetings were staffed by representatives of the Building and Site Development Division of the Community Development Department and the Fire Department.

Some of the most significant changes deal with the energy conservation requirements of the code. Staff has attached memorandums from both the BCCC and the Environment and Energy Commission (EEC). Members of the BCCC and EEC met to discuss the changes in the code. The BCCC brought forth their suggestions and the EEC agreed with all but three items. Staff supports the BCCC's recommendations on the basis that the codes are specifically designed to be minimum requirements. The EEC has made recommendations for higher standards on the broader basis of long term energy conservation.

The three differences between the BCCC and EEC recommendations are:

1. The amount of attic insulation.
2. The amount of wall insulation (changing from 2x4 framing to 2x6 framing).
3. Perimeter foundation insulation.

If the codes are to continue to be minimum standards, the recommendation of the BCCC should be adopted. Adopting the higher standards of insulation recommended by the EEC, on the other hand, would be in keeping with the City's commitment to conservation of energy resources. It is important that the new codes be adopted even if there is to be further consideration of the energy code requirements.

Below are some of the other significant changes and the BCCC's recommendations. Where no recommendations are listed, the BCCC is in favor of adopting the code as written:

International Residential Code:

1. Manufactured wood I-joists used in floor assemblies will be required to have ½" of gypsum board applied to the underside of the floor framing member. The new code requires a closer on the door between the residence and garage. The BCCC chose not to adopt this provision due to the inconvenience to the home owner.

2. Whole house mechanical ventilation is required (an exhaust fan running intermittently or continuously).
The BCCC made provisions to add an exterior opening ducted to the return ductwork to provide additional natural ventilation in lieu of mechanical ventilation.
3. The BCCC has now defined that grass and landscaped areas are not walking surfaces therefore adjacent walls do not require guards.
4. A simplified wall bracing section has been added which is applicable to how homes are constructed in Columbia and will simplify construction and inspection of braced walls.
5. The 2012 code requires additional hold downs are required for long span rafters and trusses.
6. Continuous sidewall flashing is now acceptable in lieu of step flashing only.
7. The 2012 code requires a drip edge is now required at roofs.
8. The BCCC has amended the code so that the use of purple primer on waste and vent piping obviates the need for testing.
9. The BCCC decided to delete the requirement for Arc Fault Circuit Interrupters in one and two family dwellings.
10. The BCCC amended the requirement for sanitary sewer backwater valves that the waste piping does not need to be separated based on the flood rim of the fixture.
11. The BCCC has established a maximum number of receptacles based on the circuit breaker amperage. This simplifies the code requirements.
12. The supplemental electrode (additional grounding rod) requirement was deleted by the BCCC.

International Building Code:

1. The 2012 code more clearly defines different types of care facilities.
2. Children's structures (playgrounds) are more broadly regulated.
3. The area of furniture manufacturing and sales where a sprinkler system is required is now defined. The BCCC has accepted the code change and removed our current amendment.
4. Basements with walls or partitions must be sprinklered.
5. Educational occupancies are required to have an Emergency Voice/Alarm Communication System (EV/ACS). The BCCC recommended this requirement only apply to occupancies over 75 people.
6. Reduced exit widths are allowable for buildings equipped with EV/ACS.
7. Carbon monoxide alarms are now required in buildings with residential or institutional occupancies that have fuel burning appliances.
8. Exits may now be arranged to serve a portion of a story instead of the entire story.
9. Retained the reference to the 2009 International Energy Conservation code due to the complexity of the 2012 IECC and the fact that there is no software that meets the 2012 IECC requirements.
10. Firestop system third party inspections are now mandatory in risk category III or IV buildings.
11. No thermal barrier is required on the floor side of a structural insulated panel system floor.
12. Foam plastic meeting certain requirements may be used in plenums.
13. Toilet facilities are no longer required in parking garages.
14. Chapter 34 provisions take precedence over other codes. The BCCC has included an amendment which further clarifies which other codes are applicable.
15. The previous amendment regarding retaining walls has been removed as it is adequately addressed by the code book.

Other changes include the number of members for a quorum and the ability of alternates to sit on the commission for any absent member.

FISCAL IMPACT:

None.

VISION IMPACT:

<http://www.gocolumbiamo.com/Council/Meetings/visionimpact.php>

By adopting the 2012 ICC Codes, new homes will be more energy efficient.

SUGGESTED COUNCIL ACTIONS:

Passage of the ordinances.

FISCAL and VISION NOTES:					
City Fiscal Impact Enter all that apply		Program Impact		Mandates	
City's current net FY cost	\$0.00	New Program/Agency?	No	Federal or State mandated?	No
Amount of funds already appropriated	\$0.00	Duplicates/Expands an existing program?	No	Vision Implementation impact	
Amount of budget amendment needed	\$0.00	Fiscal Impact on any local political subdivision?	No	Enter all that apply: Refer to Web site	
Estimated 2 year net costs:		Resources Required		Vision Impact?	Yes
One Time	\$0.00	Requires add'l FTE Personnel?	No	Primary Vision, Strategy and/or Goal Item #	9.3.3
Operating/Ongoing	\$0.00	Requires add'l facilities?	No	Secondary Vision, Strategy and/or Goal Item #	
		Requires add'l capital equipment?	No	Fiscal year implementation Task #	

Significant changes from the 2009 to 2012 IRC energy code:

Background:

The BCCC spent eight weeks reviewing the energy code portion of the IRC, far longer than they spent on any other portion of the code. During this period they sought the advice of several experts including:

Terry Freeman, Energy Services Supervisor, Water & Light
Fred Malicoat, P.E., Malicoat-Winslow Engineers (chairman of the BCCC)
Guy Ford, Missouri Insulation Supply
Dan Riepe, Home Performance Experts

The committee also reviewed the following documents:

- North Carolina 2012 Energy Code
- BCAP - Kansas City Residents Buying 2012 IECC Homes Will Save Thousands
- USDoE – Missouri Energy and Cost Savings
- BCAP - Illinois – Your Home, More Affordable with the 2012 IECC
- Alliance for Environmental Sustainability – Comparing IECC in Illinois to Above-Code Programs
- BCAP - Local Energy Code Action Kit for Municipalities in Missouri
- Texas A&M University Energy Systems Laboratory – A Comparison of Building Energy Code Stringency: 2009 IRC Versus 2012 IRC for Single-Family Residences in Texas
- Midwest Energy Efficiency Alliance – 2012 International Energy Conservation Code (Residential)
- Instructions for the Residential Building Data Collection Checklist 2012 IECC – Residential Provisions
- Carroll County Maryland – 2012 IECC Residential Energy Efficiency Code Requirement Flow Chart
- USDoE – Residential Code Change Proposals for the 2015 IECC
- Energy Efficient Codes Coalition – Estimate of Energy and Cost Savings from Proposed IECC Code Changes for 2012
- USDoE – Guide to the Changes between the 2009 and 2012 International Energy Conservation Code
- Testimony Regarding Montgomery County (MD) Department of Permitting Services Proposal to Adopt the 2012 International Residential and Energy Conservation Codes
- USDoE – Air Leakage Guide
- Association of Professional Energy Consultants – Measuring the Baseline Compliance Rate for Residential and Non-Residential Buildings in Illinois Against the 2009 International Energy Conservation Code
- BCAP – True Cost of the 2009 International Energy Conservation Code

The committee members who attended included:

John Page, Owner, J-Bar Construction
Fred Malicoat, P.E., Owner, Malicoat-Winslow Engineers
Kas Carlson, Owner, C&C Construction
Jay Creasy, Benchmark Testing and Inspections
Doug Muzzy, Owner, Muzzy Builders
David Weber, P.E., Allstate Consultants
Phil Clithero, Kliethermes Custom Homes
Dan McCray, McCray Builders

Others in regular attendance included:

David Forward, Chief Building Inspector, Boone County
Phil Teeple, P.E., Building Regulations Supervisor, City of Columbia
Stephen Adair, Building Inspector, City of Columbia
Shane Creech, P.E., Building and Site Development Manager, City of Columbia

General issues:

The 2012 code allows for a prescriptive based approach and a simulated performance alternative. In the discussions and based on the APEC report, the way to higher compliance is thru having an easy to understand prescriptive compliance option. The BCCC has drafted a one page section of a house that shows what insulation goes where and other important energy considerations. This is based on work done by North Carolina. When dealing with a large number of builders of various size and complexity, the KISS (keep it simple stupid) method should be adopted to achieve a high rate of compliance.

The simulated performance option will still be available however the APEC study showed that both the modelers and code officials did not properly perform or understand the modeling and there were substantial compliance problems.

The Department of Energy plans to achieve 50% better energy performance over the 2006 code by changing the energy code. They are limited to heating, cooling, water heating, and lighting. However they do not get to take credit for increased efficiency of the furnace or air conditioner as it is considered an appliance which falls under the NAECA. The DoE is mandating that furnaces be 90% efficient starting in March of 2013. They are currently required to be 78% efficient. This presents its own unique challenges to the building community. All of the studies reviewed by the committee were based on 78% efficient furnaces. The result of this is the magnitude of savings shown by some studies will be reduced by the required appliance changes.

Individual Changes

Wall Insulation requirements

The code requires R-20 or R-13+5 for exterior walls. Essentially for most builders this would mean 2x6 framing for exterior walls. BCAP estimates the increased framing cost for their model 2,400 ft² house at \$1,404. This does not include additional costs for jamb extensions for windows and doors. The usable area of the home is also reduced. The Texas A&M study found that the increased wall insulation accounted for 3.3% energy savings above the 2009 code. The structural requirements should govern and it is the BCCC's opinion that at a minimum the wall cavity should be filled with insulation. High density batts are also available for 2x4 walls though they are more expensive (approximately 2.5x more expensive than R-13 batts).

BCCC recommendation: Walls must meet an R-20, R-13+5, or be completely filled with insulation. On a 2x4 wall, the minimum R-value shall be R-15.

Slab-on-grade floors

The 2012 code requires that for slab on grade floors a minimum of 2' of R-10 insulation be provided either interior or exterior, vertically or horizontally. The code says this insulation is not required in jurisdictions designated by the building official as having a very heavy termite infestation. The committee views adding this insulation as a route and place for termites to enter buildings and live. According to the IRC we are in the "moderate to heavy" termite infestation probability portion of the country.

BCCC recommendation: Exempt the requirement for slab-on-grade floor insulation unless it is a heated floor.

Air leakage

The 2012 code requires a blower door test on all new houses to determine the rate of air leakage. Based on testimony by Terry Freeman of the Columbia Water & Light Department and Dan Riepe of Home Performance Experts, the houses currently being constructed and blower door tested meet the code requirements of less than 3 air changes per hour. Texas A&M research found that meeting the air leakage requirements would provide the most substantial cost saving of any of the changes in the 2012 code. Mr. Freeman also stated that walls of current houses are often too tight to meet fresh air requirements. The other issue with blower door tests is that they are performed when construction is near completion and addressing flaws in the building envelope would be difficult and expensive. The test alone costs approximately \$250.

BCCC recommendation: Ensure the building envelope is properly sealed at the insulation inspection. Allow the blower door test if a contractor does not agree with the building inspector as an option.

Mechanical ventilation

The proposed code requires mechanical ventilation but this is not mentioned in the Energy Efficiency chapter. It is specified in Section R303 – Light, Ventilation and Heating and is further specified in Section M1507 – Mechanical Ventilation. The code requires for a 1,500 square foot, 3 bedroom home, continuous exhaust of 45 CFM. This is 64,800 ft³ per day, or for a house with 8' ceilings, 5.4 air changes per day. The report by the Montgomery County Energy and Air Quality Advisory Committee found that the code requirements for air leakage and mechanical ventilation are at odds with each other. Montgomery County, MD is a county of approximately 1 million residents. Two Illinois jurisdictions had concerns about this as well as stated in the APEC report. The tight envelope requires forced mechanical ventilation which increases energy use compared with the natural ventilation thru the walls. Terry Freeman made similar comments. The Montgomery County Energy and Air Quality Advisory Committee proposed to keep houses naturally ventilating. The BCCC has provided a middle of the road solution because they often see combustion air intakes filled with insulation and are also concerned that if there is a fan that runs continuously or intermittently, people could shut it off.

BCCC recommendation: Provide a duct from the return air to the outside. A 4" duct for houses < 1,500 ft², a 6" duct for houses < 2,400 ft², and an 8" duct for larger houses. The duct would be insulated to prevent condensation, contain a manual damper to adjust to the required amount of fresh air, and have a screen on the exterior to stop insects and animals.

Duct tightness

The adopted code requires testing if the duct is outside of the building's thermal envelope. Nemow Insulation has done a significant amount of duct testing in Columbia. When Phil Teeple contacted Nemow, they stated they had one failure in over 90 tests. Similar sentiments were echoed by Mr. Freeman and Mr. Riepe. Boone County requires the ducts to be sealed but not tested. Ducts which have been subsequently tested in Boone County have passed. The test costs \$400.

BCCC recommendation: Allow a duct test if a contractor does not agree with the visual inspection performed by the building inspector.

Building cavities as ducts/plenums

The energy code does not allow building framing cavities to be used as ducts or plenums. The mechanical code still allows this. This would require all returns to be ducted. BCAP mentions this change but only caught the ducts in floor joists, and not the returns that go up the walls to the grills and estimated this would cost \$172. Ducting the returns in the wall would add substantial costs above and beyond those BCAP figured.

BCCC recommendation: Amend the energy code to conform to the mechanical code.

Hot water pipe insulation

The code has a list of 9 different instances combined with a table with pipe diameter and run length to determine if hot water pipes should be insulated. Water use in homes is on an intermittent basis. The committee based on their experience with standard and recirculating water systems did not see value in insulating the hot water pipes due to the substantial increase in costs and minimal energy savings.

BCCC recommendation: Amend the energy code to remove the hot water pipe insulation requirement.

ENVIRONMENT & ENERGY COMMISSION

City of Columbia & County of Boone

City Hall, Conference Room 1A

January 17, 2013

Mayor McDavid and Council Members,

The Environment & Energy Commission has reviewed the 2012 Energy Code (Chapter 11 of the International Residential Code), and the recommendations of the Building Code Commission. The BCCC has done extensive research into the energy conservation sections of the residential code, and deserves recognition for this effort. The recommendations of the EEC are as follows:

Insulation of hot water piping: Along with BCCC, the EEC recommends eliminating hot water insulation requirements except in the case of hot water circulating pump piping.

Wood Frame Wall Insulation: The 2012 Energy Code requires R20 or R13+5 (R13 batt and R5 cladding). We agree with the BCCC that this new insulation requirement be kept in force. The Code also allows an overall U-Factor of 0.057, roughly equivalent to an average R-value of R17.5. As this can be achieved with a high-density R-15 batt in a standard 2X4 wall, we recommend that this be an allowable method as it meets the letter of the new code.

Termite Exemption for slab-on-grade and foundation insulation: We recommend that the Columbia jurisdiction continue to exempt houses from slab and foundation insulation requirements as this is a heavy termite infestation area, and these kinds of insulation can allow termites access to walls. This practice has a long history and is consistent with BCCC recommendations.

Cieling or Attic R-Value: The 2012 Code recommends an increase in Attic insulation from R-38 to R-49, and in the case of an "Energy Band" truss, R-38 is allowed. The EEC Recommends that this requirement, which may result in reduced mechanical equipment size if properly implemented, will be cost effective. Contractors using proper "Manual J" Calculations will reduce equipment size, thus reduce overall building cost and energy use compared to the old Code. This reduced HVAC

equipment size can directly reduce electric utility demand charges, reaping benefits to the City Utility as well as to the consumer. This is not in agreement with BCCC recommendations.

Air Leakage: The 2012 Code requires a blower door test on all new houses to determine air leakage. The EEC would agree with BCCC that a relaxed standard which requires a visual inspection of air leakage control measures during construction is feasible. The blower door test should be allowed as an option at the discretion of the Building Inspector in questionable or disputed cases.

Duct Leakage: The 2012 Code requires a duct pressure test on all new houses to determine duct leakage. Mechanical contractors are more aware of leakage requirements, and testimony shows they are taking care to seal ductwork. The EEC would agree with the BCCC that a relaxed standard which requires a visual inspection of duct leakage control measures during construction be allowed. The duct pressure test should be allowed as an option at the discretion of the Building Inspector in questionable or disputed cases.

Outdoor Air Duct: The EEC agrees with the BCCC recommendation of a single outside air duct, with insect screen and damper, routed to the furnace return air intake to satisfy Section R303 and M1507 Mechanical Ventilation requirements. This duct should be 4" for houses less than 1500 square feet, 6" for houses less than 2400 square feet, and 8" for larger houses. If there are multiple furnaces, the requirements may be applied to the area served by the furnace, or to one of the multiple furnaces as long as the furnace is properly sized to handle the additional heating or cooling load imposed by the outside air. The duct should be placed as to discharge into the return air filter, to reduce allergens or dust from outdoors.

Building Cavities as Return Air The EEC agrees with the BCCC that building cavities may be used as return air cavities without full duct lining, as long as leakage to outside air, attics, or unconditioned spaces is prevented by visually inspection.

High Efficacy Lamps: The EEC recommends that the 2012 requirement that 75 percent of the *lamps* in light fixtures be high efficacy type, be changed to read 75 percent of the *fixtures* be high efficacy. This allows a few multiple bulb fixtures, such as candelabras, to be conventional bulbs, while retaining the requirement for high efficacy bulbs in most areas. Previously the 2009 amendment changed *shall* to *should* in this paragraph.

Programmable Thermostats: The 2012 Code specifies that the initial heating setpoint shall be 70F and the cooling setpoint be 78F. The EEC recommends that this paragraph be changed from *shall* to *should*, which makes the requirement non-mandatory.

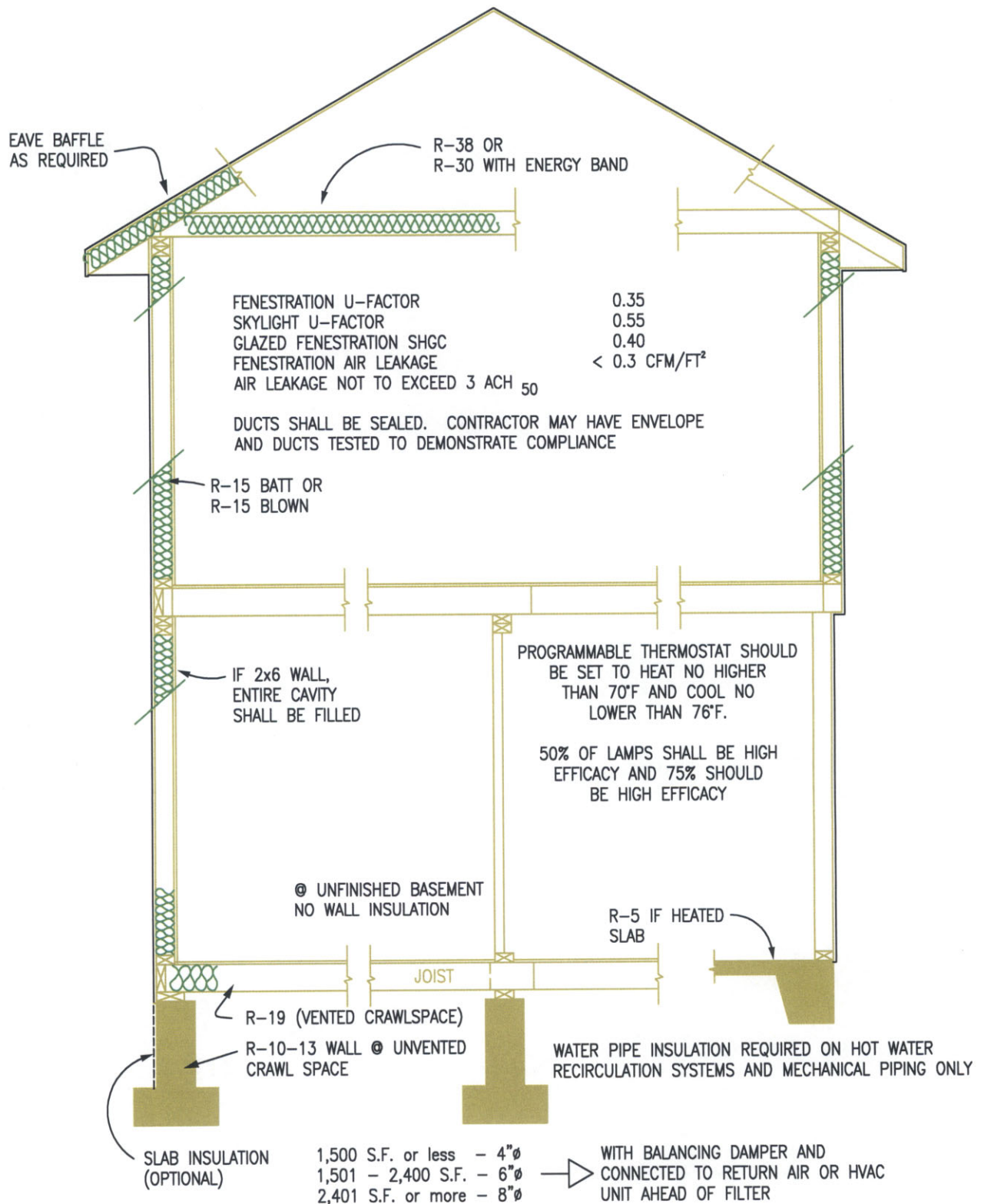
Respectfully Yours,

Karl Skala,

Chair

Environment and Energy Commission

RESIDENTIAL ENERGY CODE REQUIREMENTS DIAGRAM



THIS SHEET IS NOT AN EXHAUSTIVE LIST. SEE IRC CHAPTER 11 FOR FULL REQUIREMENTS

ALTERNATIVE 1.1

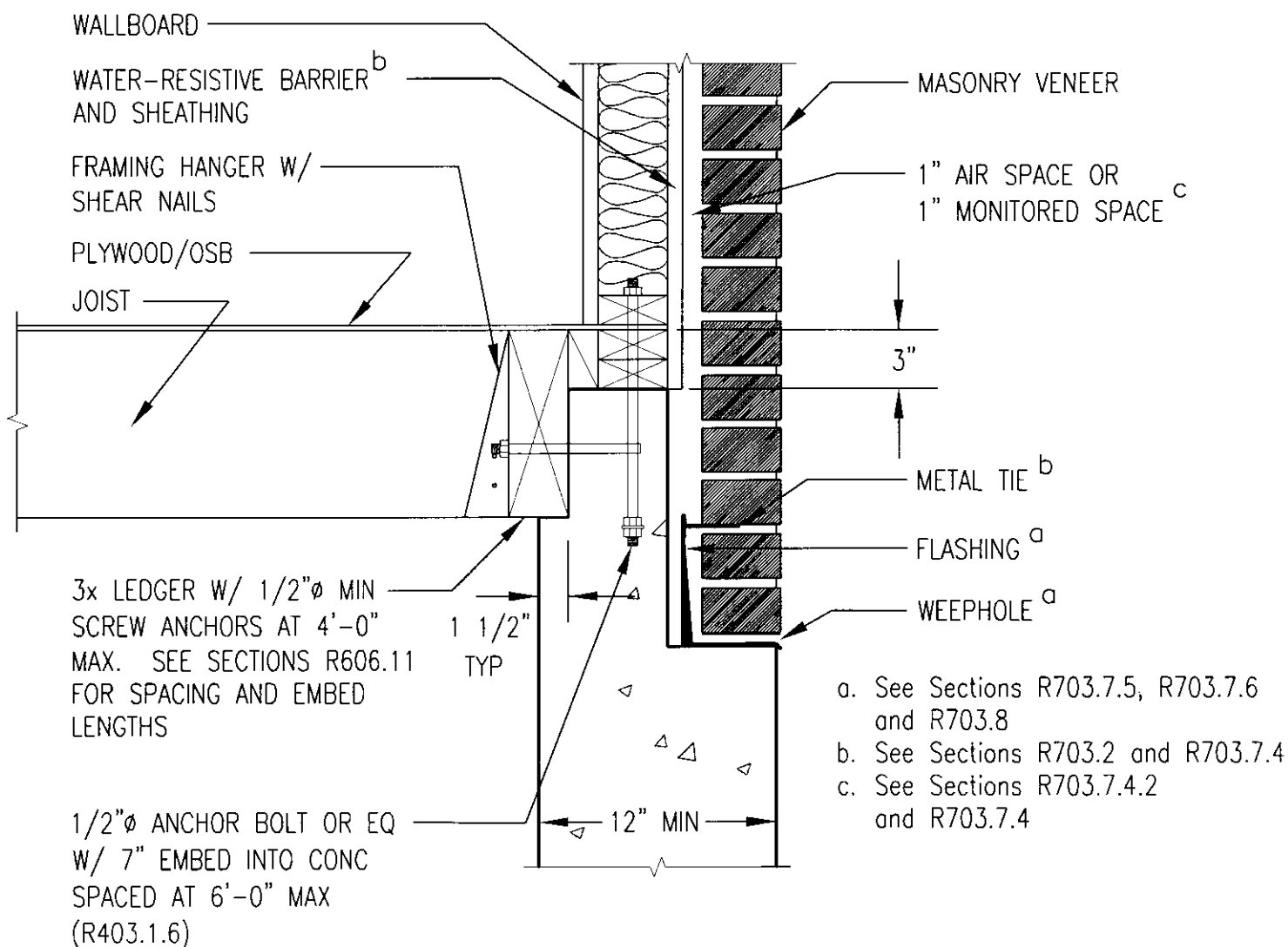
Joist Perpendicular to Wall W/ Brick

2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

*This figure is provided as an example. This is not an all inclusive list of code requirements.



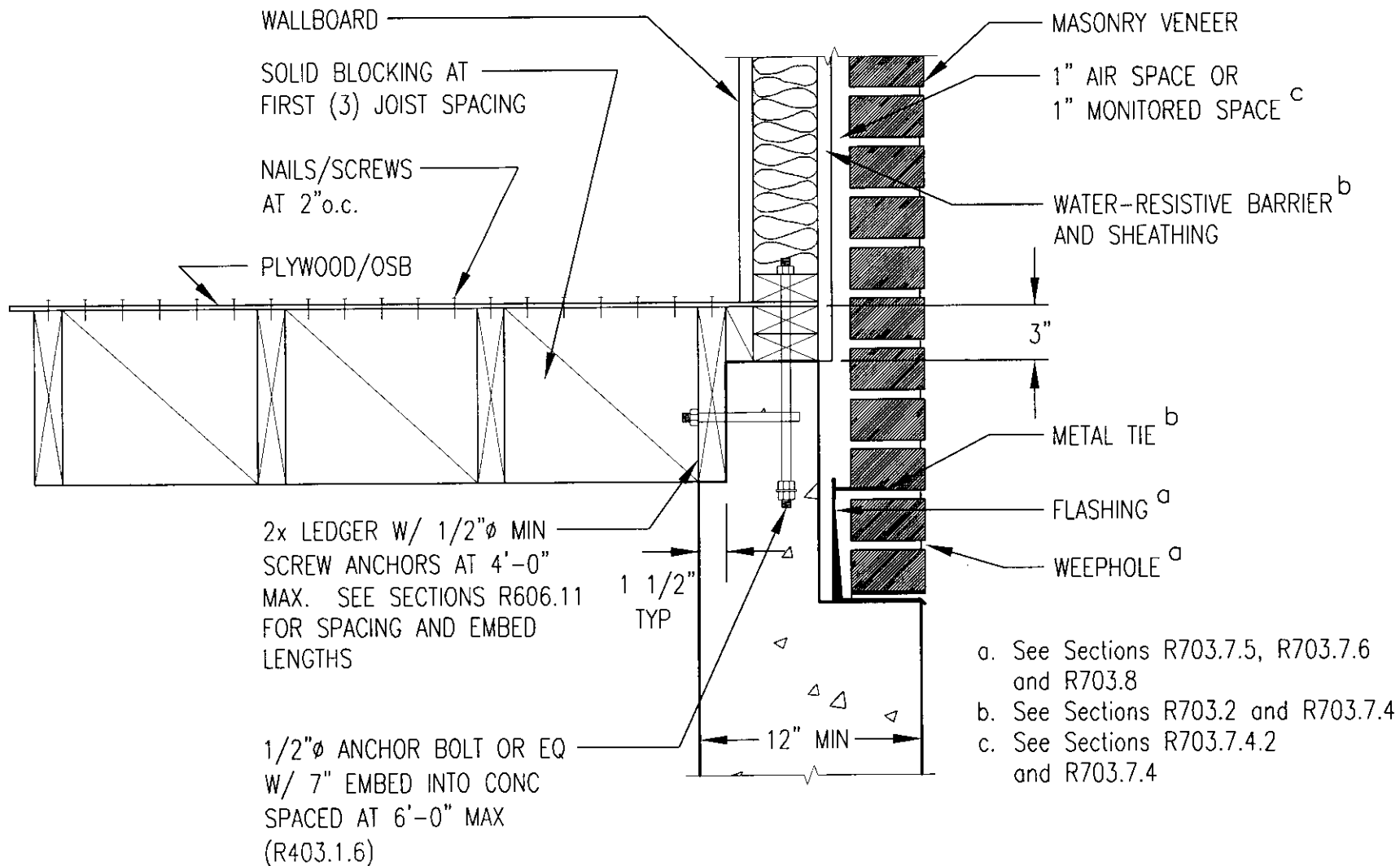
ALTERNATIVE 1.2

Joist Parallel to Wall W/ Brick

2012 IRC

Section R404 Foundations and Retaining Walls
Section R404.1 Concrete and Masonry Foundation Walls

*This figure is provided as an example. This is not an all inclusive list of code requirements.



ALTERNATIVE 1.3

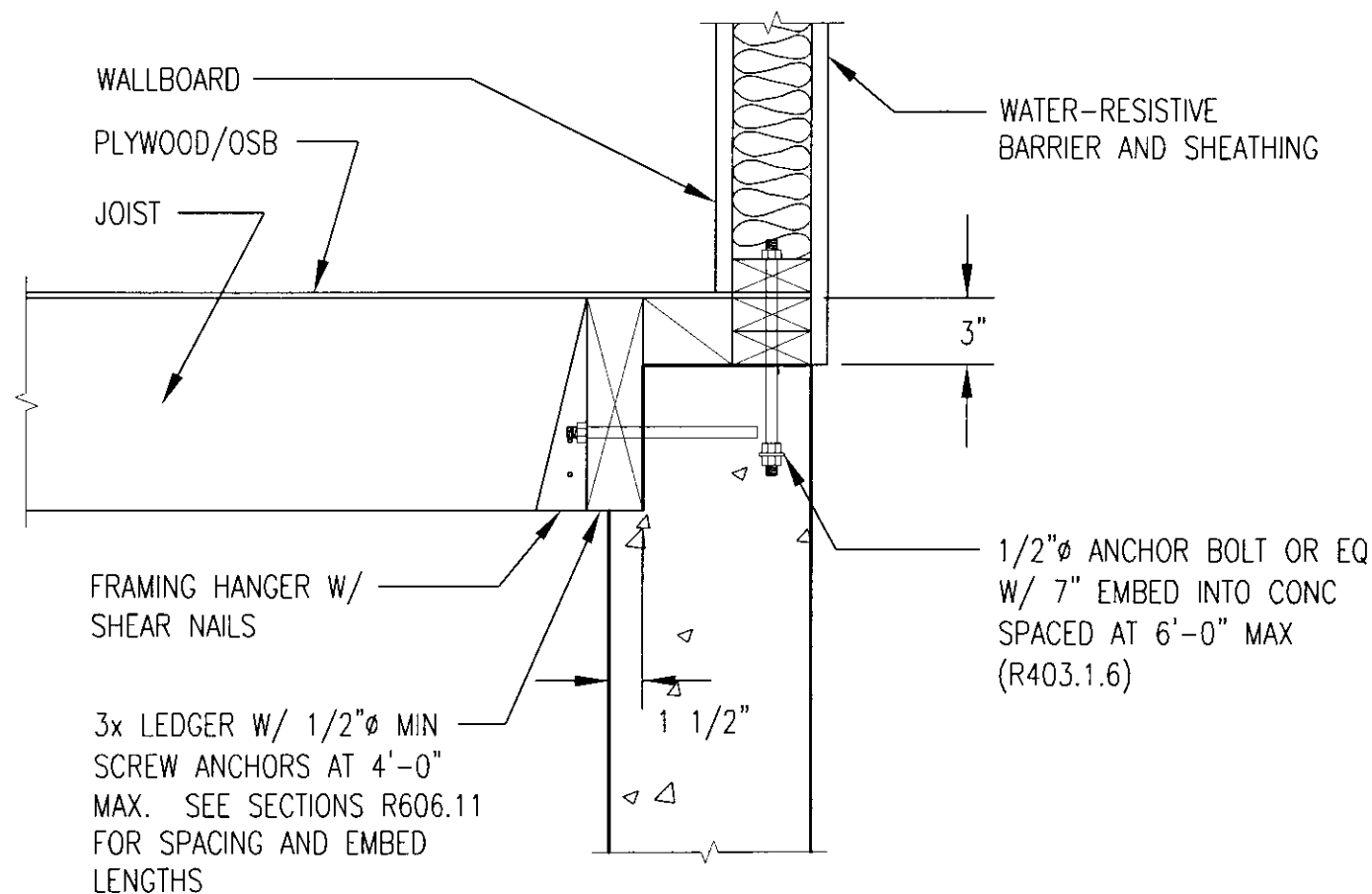
Joist Perpendicular to Wall W/O Brick

2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.



ALTERNATIVE 1.4

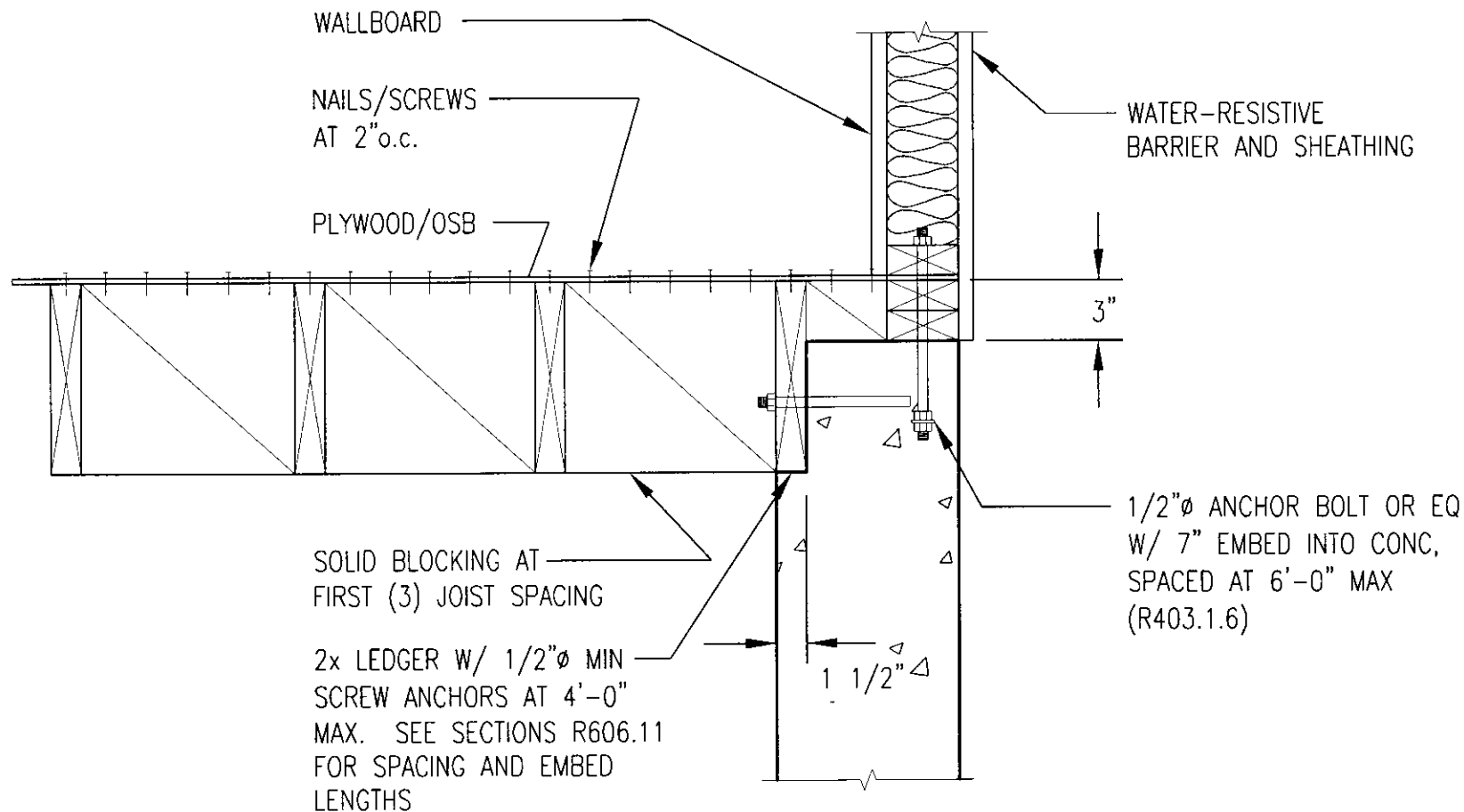
Joist Parallel to Wall W/O Brick

2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.



ALTERNATIVE 2.1

Joist Perpendicular to Wall

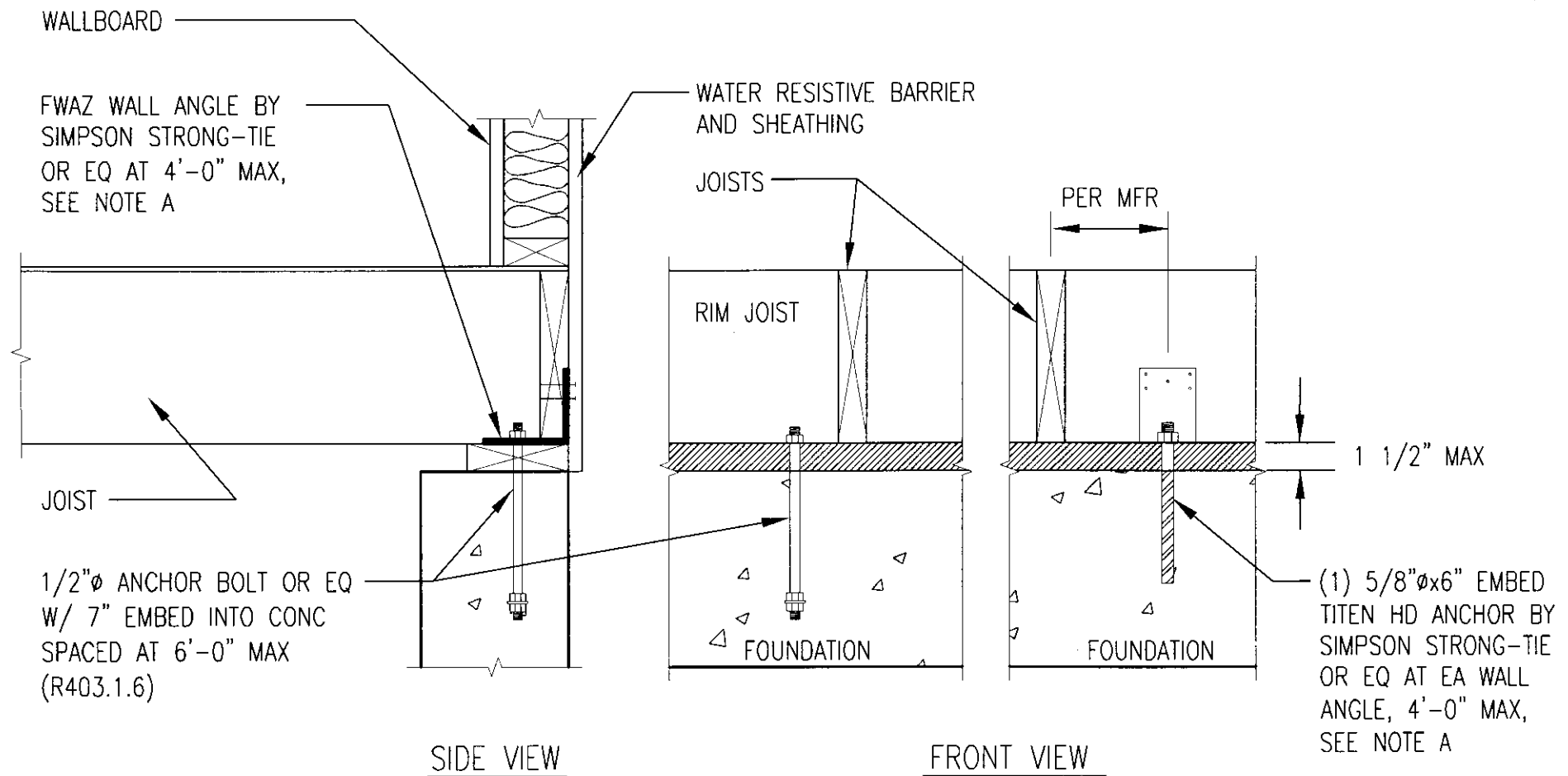
2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.

NOTE A: Refer to the manufacturers tables for required spacing and placement of FWAZ wall angles



ALTERNATIVE 2.2

Joist Parallel to Wall

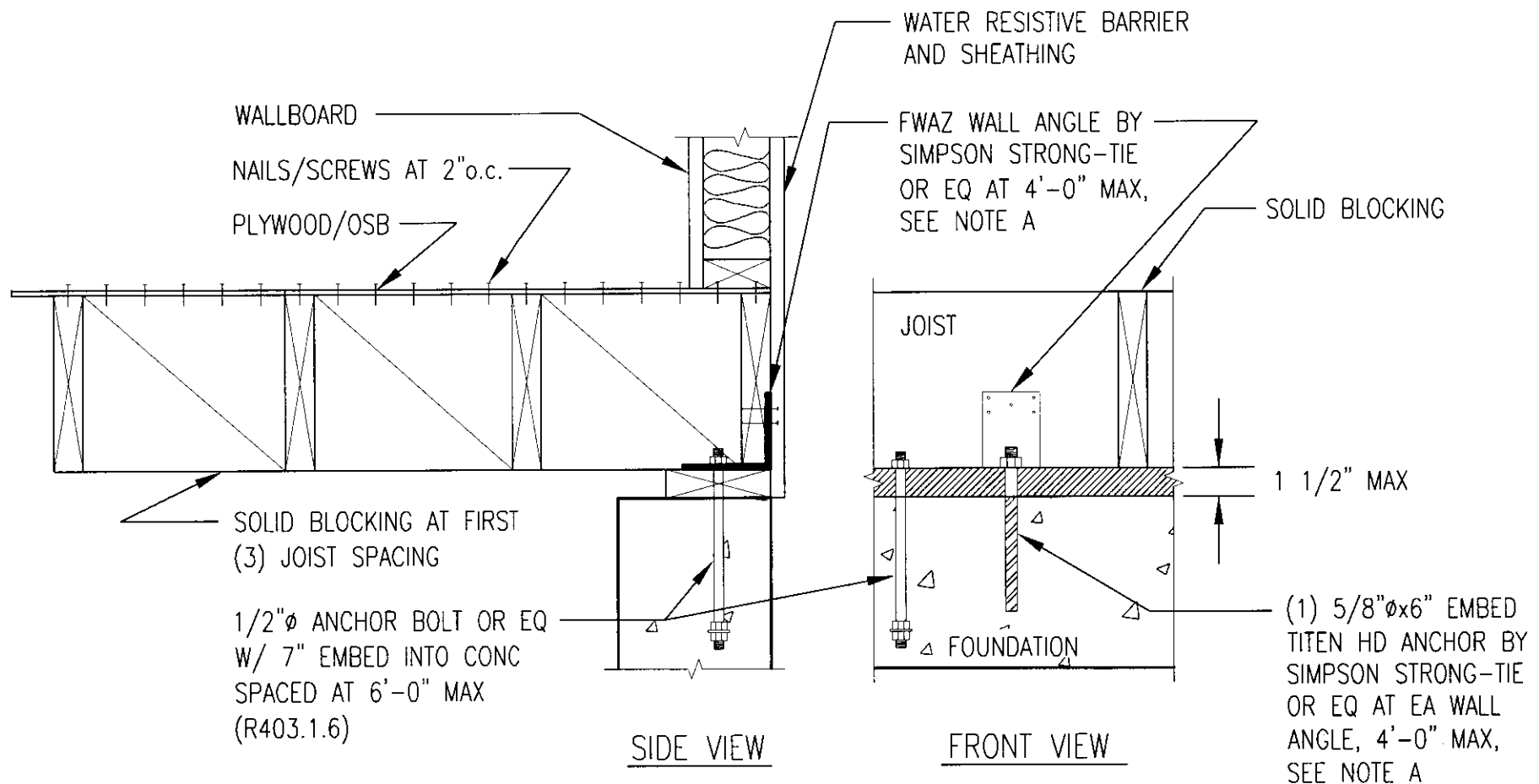
2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.

NOTE A: Refer to the manufacturers tables for required spacing and placement of FWAZ wall angles



ALTERNATIVE 3.1

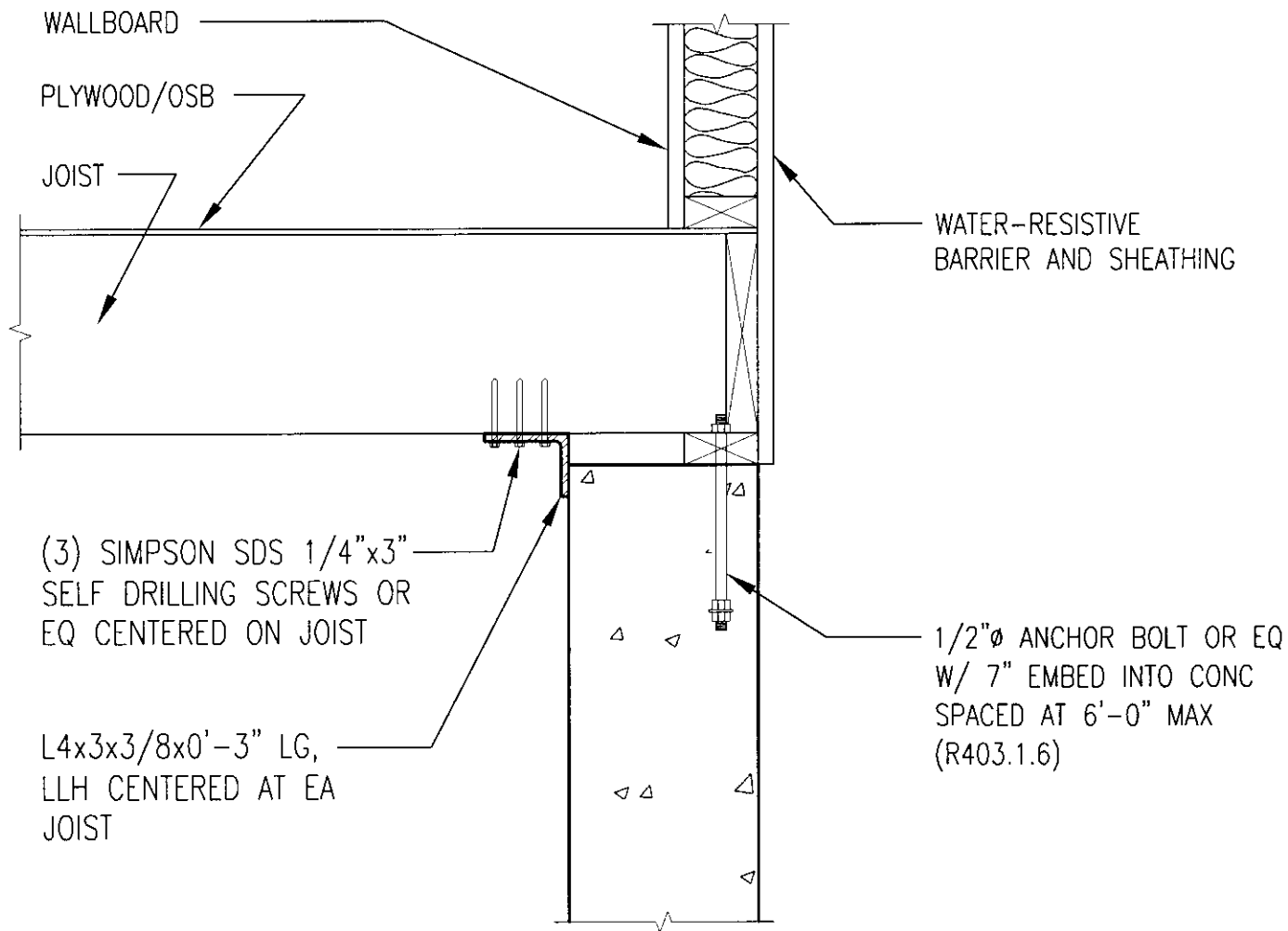
Joist Perpendicular to Wall W/O Brick

2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.



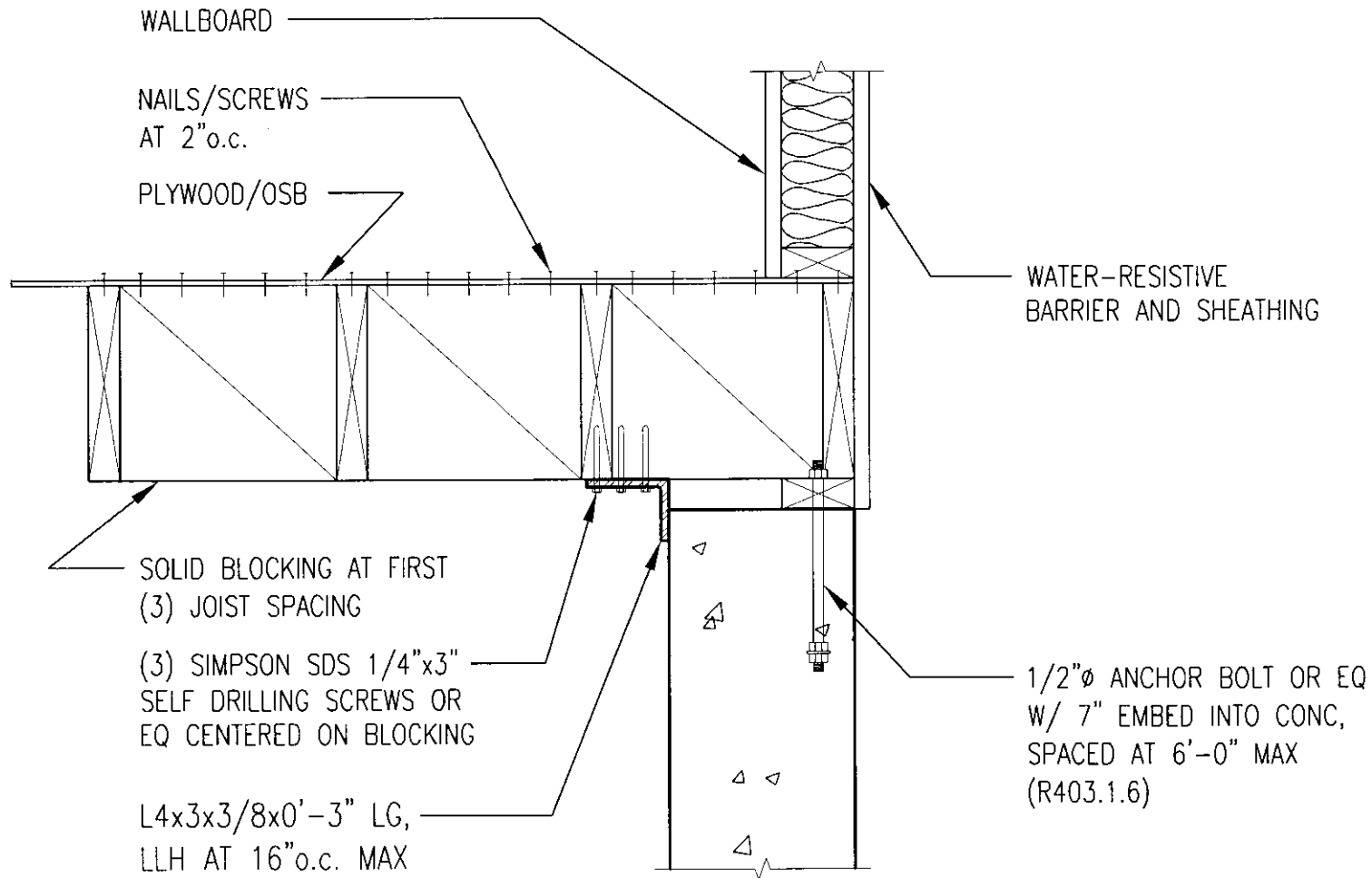
ALTERNATIVE 3.2

2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.



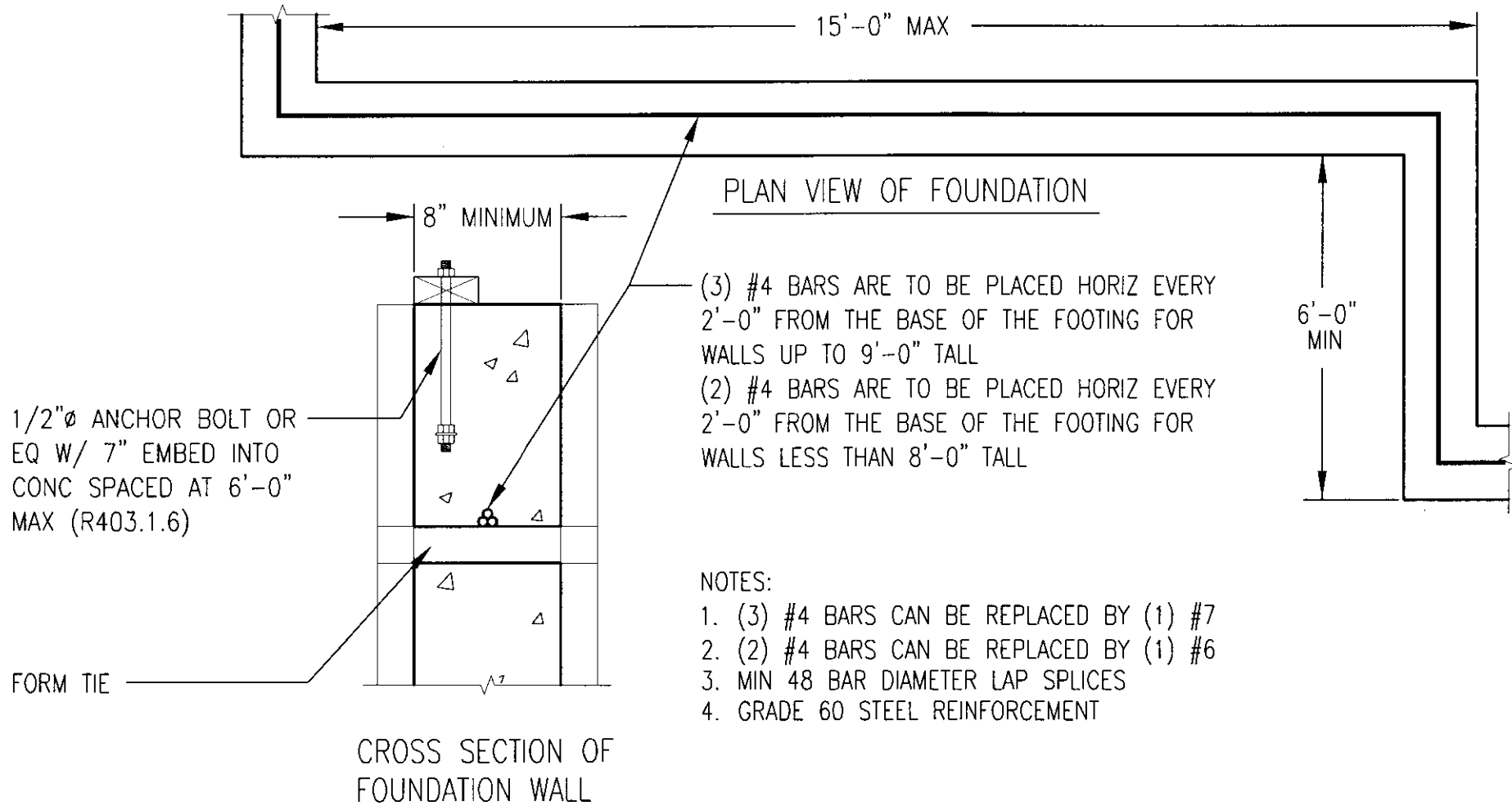
ALTERNATIVE 4

2012 IRC

Section R404 Foundations and Retaining Walls

Section R404.1 Concrete and Masonry Foundation Walls

* This figure is provided as an example. This is not an all inclusive list of code requirements.



FOUNDATION DRAINAGE

FIGURE R405.1

2012 IRC

Section R405 Foundation Drainage

Section R406 Foundation Waterproofing and Dampproofing

- * This figure is provided as an example. This is not an all inclusive list of code requirements.
- ** Either a filter fabric sock around drintile or filter fabric on the gravel shall be required, not both unless desired by the contractor.

