

**ZONE 3 BASEMENT WALL INSULATION INCREASE**



**PUBLIC CODE CHANGE PROPOSAL FORM  
FOR PUBLIC PROPOSALS IN THE INTERNATIONAL CODES**

**2006/2007 CODE DEVELOPMENT CYCLE**

**CLOSING DATE: All Proposals Must Be Received by March 24, 2006**

**The 2006/2007 Code Development Hearings are scheduled for  
September 20 to 30, 2006 in Orlando, FL**

- 1) **Name:** Ronald Majette **Date:** March 24, 2006  
**Jurisdiction/Company:** United States Department of Energy  
**Submitted on Behalf of:** United States Department of Energy  
**Address:** 1000 Independence Avenue, EE-2J, IJ-018  
**City:** Washington **State:** DC **Zip Code:** 20585  
**Phone:** 202-586-7935 **Ext.:** **Fax:** 202-586-4617 **E-mail address:** [Ronald.majette@ee.doe.gov](mailto:Ronald.majette@ee.doe.gov)

- 2) **\*Signature:** \_\_\_\_\_  
*\* I hereby grant and assign to ICC all rights in copyright I may have in any authorship contributions I make to ICC in connection with this proposal. I understand that I will have no rights in any ICC publications that use such contributions in the form submitted by me or another similar form and certify that such contributions are not protected by the copyright of any other person or entity.*

**Signature for electronic submittal:** When submitting proposals electronically, to complete the submittal process, print a copy of the ICC Electronic [Copyright Release](#) form found at [www.iccsafe.org](http://www.iccsafe.org), fill in the requested information, send to ICC. One completed form is required. This must be done for each code change cycle and can be used for code changes and public comments.

- 3) Indicate appropriate International Code(s) associated with this Public Proposal – Please use Acronym: IECC, IRC  
 If you have also submitted a separate coordination change to another I-Code, please indicate the code: \_\_\_\_\_  
 (See section below for list of names and acronyms for the International Codes).

4) **Be sure to format your proposal and include all information as indicated on Page 2 of this form.**

- 5) Proposals should be sent to the following offices via regular mail or email. An e-mail submittal is preferred, including an electronic version, in either Wordperfect or Word. The only formatting that is needed is **BOLDING**, ~~STRIKEOUT~~ AND UNDERLINING. Please do not provide additional formatting such as tabs, columns, etc., as this will be done by ICC

Please use a separate form for each proposal submitted. Note: All code changes received will receive an acknowledgment.

Please check here if separate graphic file provided.

Graphic materials (Graphs, maps, drawings, charts, photographs, etc.) must be submitted as separate electronic files in .CDR,.IA,.TIF or .JPG format (300 DPI Minimum resolution; 600 DPI or more preferred) even though they may also be embedded in your Word or Wordperfect submittal.

<b>Code</b>	<b>Send to:</b>	<b>Acronym</b>	<b>ICC Code Name</b>
IBC	International Code Council	<b>IBC</b>	International Building Code
ICC EC	Chicago District Office	<b>ICC EC</b>	ICC Electrical Code–Administrative Provisions
IEBC	Attn: Diane Schoonover	<b>IECC</b>	International Energy Conservation Code
IFC	4051 West Flossmoor Road	<b>IEBC</b>	International Existing Building Code
IFGC	Country Club Hills, IL 60478-5795	<b>IFC</b>	International Fire Code
IPC	Fax: 708/799-0320	<b>IFGC</b>	International Fuel Gas Code
IPSDC	<a href="mailto:codechanges@iccsafe.org">codechanges@iccsafe.org</a>	<b>IMC</b>	International Mechanical Code
IPMC		<b>ICC PC</b>	ICC Performance Code
IWUIC		<b>IPC</b>	International Plumbing Code
IZC		<b>IPSDC</b>	International Private Sewage Disposal Code
		<b>IPMC</b>	International Property Maintenance Code
IECC	International Code Council	<b>IRC</b>	International Residential Code
ICC PC	Birmingham District Office	<b>IWUIC</b>	International Wildland-Urban Interface Code
IMC	Attn: Annette Sundberg	<b>IZC</b>	International Zoning Code
IRC	900 Montclair Road		
	Birmingham, AL 35213-1206		
	Fax: 205/592-7001		
	<a href="mailto:codechangesbhm@iccsafe.org">codechangesbhm@iccsafe.org</a>		

**ZONE 3 BASEMENT WALL INSULATION INCREASE**

**CODE CHANGE PROPOSAL**

Please provide all of the following items in your code change proposal. Your proposal may be entered on the following form, or you may attach a separate file. However, please read the instructions provided for each part of the code change proposal. The sections identified in parentheses are the applicable sections from CP #28 Code Development. The full procedures can be downloaded from [www.iccsafe.org](http://www.iccsafe.org).

**Code Sections/Tables/Figures Proposed for Revision (3.3.2): IECC Table 402.1.1. IRC Table N1102.1**

**Name/Company/Representing (3.3.1):** Ronald Majette / United States Department of Energy

**Proposal:**  
**IECC:**

Revise as follows:

**Table 402.1.1 Insulation and Fenestration Requirements by Component<sup>(a)</sup>**

Climate Zone	Fenestration U-Factor	Skylight <sup>(b)</sup> U-Factor	Glazed Fenestration SHGC	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement <sup>(c)</sup> Wall R-Value	Slab <sup>(d)</sup> R-Value & Depth	Crawl Space <sup>(e)</sup> Wall R-Value
1	1.20	1.60	0.40	30	13	6	13	0	0	0
2	0.75	1.05	0.40	30	13	6	13	0	0	0
3	0.65	0.90	0.40 <sup>(e)</sup>	30	13	6	19	0 5/13	0	5/13
4 except Marine	0.40	0.60	NR	38	13	8	19	10 / 13	10, 2 ft	10 / 13
5 and Marine 4	0.35	0.60	NR	38	19 or 13+5 <sup>(g)</sup>	13	30 <sup>(f)</sup>	10 / 13	10, 2 ft	10 / 13
6	0.35	0.60	NR	49	19 or 13+5 <sup>(g)</sup>	15	30 <sup>(f)</sup>	10 / 13	10, 4 ft	10 / 13
7 and 8	0.35	0.60	NR	49	21	21	30 <sup>(f)</sup>	10 / 13	10, 4 ft	10 / 13

Remainder of table unchanged.

**IRC:**

Revise as follows:

**Table N1102.1 Insulation and Fenestration Requirements by Component<sup>(a)</sup>**

Climate Zone	Fenestration U-Factor	Skylight <sup>(b)</sup> U-Factor	Glazed Fenestration SHGC	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement <sup>(c)</sup> Wall R-Value	Slab <sup>(d)</sup> R-Value & Depth	Crawl Space <sup>(e)</sup> Wall R-Value
1	1.20	1.60	0.40	30	13	6	13	0	0	0
2	0.75	1.05	0.40	30	13	6	13	0	0	0
3	0.65	0.90	0.40 <sup>(e)</sup>	30	13	6	19	0 5/13	0	5/13
4 except Marine	0.40	0.60	NR	38	13	8	19	10 / 13	10, 2 ft	10 / 13
5 and Marine 4	0.35	0.60	NR	38	19 or 13+5 <sup>(g)</sup>	13	30 <sup>(f)</sup>	10 / 13	10, 2 ft	10 / 13
6	0.35	0.60	NR	49	19 or 13+5 <sup>(g)</sup>	15	30 <sup>(f)</sup>	10 / 13	10, 4 ft	10 / 13
7 and 8	0.35	0.60	NR	49	21	21	30 <sup>(f)</sup>	10 / 13	10, 4 ft	10 / 13

Remainder of table unchanged.

## **ZONE 3 BASEMENT WALL INSULATION INCREASE**

### **Supporting Information (3.3.4 & 3.4):**

The purpose of this proposal is to add basement wall insulation requirements for climate zone 3. Currently, no insulation is required for conditioned basements (floor insulation is required over unconditioned basements) in Zone 3. Though basements are uncommon in Zone 3, there are some and they tend to be in the colder parts of the zone where winter temperatures can reach as low as single digits. When basements are used as a conditioned living space, they often have furred in walls that allow space for insulation.

Energy simulation analyses shows that foundation wall insulation in cold climates is cost effective. For conditioned basements, the Building Foundation Design Handbook reports that R-5 insulation wall insulation 8 ft. deep saves 0.16 MBtu/lineal foot of foundation perimeter of heating energy use compared to an uninsulated wall in Atlanta. Assuming a house with a 130 ft. perimeter basement, this is 20.8 MBtus a year. Assuming \$10/MBtu natural gas cost, this insulation will save \$208 a year in heating costs. For example, with an estimated insulation cost of \$900, the simple payback will be in less than five years in Atlanta. The lost floor space from insulating basement walls should be minimal as conditioned basements are normally finished, and exterior insulation is an option.

Basement wall insulation is a necessary requirement to alleviate perverse incentives that now exist in the code and in above-code programs for climate zone 3. A builder can lower construction costs by classifying the basement as conditioned, which eliminates the requirement to insulate the floor above the basement and to insulate ducts in the basement. In other words, the code now penalizes the builder in terms of code compliance for building more energy efficiently. Worse yet, the code (as well as beyond-code programs based on it such as Energy Star Homes, and the Federal tax credit) provides a considerable credit for putting all ducts inside the “conditioned space,” which may often be the case in homes with conditioned basements. Clear reductions in energy efficiency (conditioned basements with uninsulated ducts and no insulation in the building envelope) should not be rewarded by by allowing yet more reductions in energy efficiency for code compliance as a trade-off credit.

Cost data: A Midwest builder estimated the cost of basement wall insulation at \$900 (Energy Design Update, August 1998). *Builder Magazine* reports that a Colorado builder estimates total costs of \$500 to \$1000 for R-11 vinyl wrap (NAHB September 1996).

### **Referenced Standards (3.4 & 3.6):** N/A

**Cost Impact (3.3.4.6):** The code change proposal will increase the cost of construction.