(Portions of text and tables not shown are unaffected by the errata)

### 1<sup>st</sup> through 11<sup>th</sup> PRINTING (July 19, 2019)

### **CHAPTER 4**

### FOUNDATIONS

### TABLE R403.3(2)

### AIR-FREEZING INDEX FOR U.S. LOCATIONS BY COUNTY

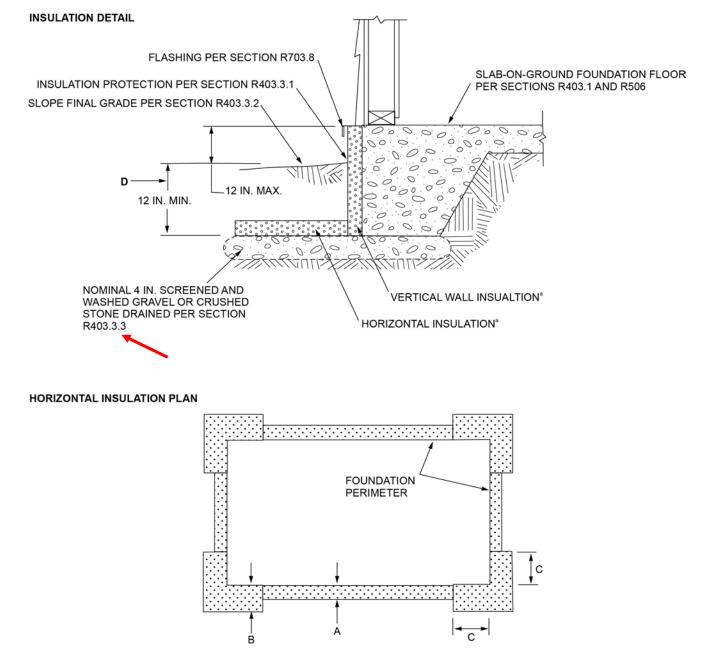
STATE		AIR-FREEZING INDEX														
	1500 or less	2000	2500	3000	3500	4000										
Montana	Mineral	Broadwater, Golden Valley, Granite, Lake, Lincoln, Missoula, Ravalli, Sanders, Sweet Grass	Big Horn, Carbon, Jefferson, Judith Basin, Lewis and Clark, Meagher, Musselshell, Powder River, Powell, Silver Bow, Stillwater, Westland	Carter, Cascade, Deer Lodge, Falcon, Fergus, Flathead, <del>Gallanting</del> <u>Gallatin,</u> Glacier, Madison, Park, Petroleum, Ponder, Rosebud, Teton, Treasure, Yellowstone	Beaverhead, Blaine, Chouteau, Custer, Dawson, Garfield, Liberty, McCone, Prairie, Toole, Wibaux	Daniels, Hill, Phillips, Richland, Roosevelt, Sheridan, Valley										

(Portions of text and tables not shown are unaffected by the errata)

1<sup>st</sup> through 9<sup>th</sup> PRINTING (November 7, 2014)

#### CHAPTER 4 FOUNDATIONS

#### FIGURE R403.3(1):



For SI: 1 inch = 25.4 mm.

a. See Table R403.3(1) for required dimensions and *R-values* for vertical and horizontal insulation and minimum footing depth

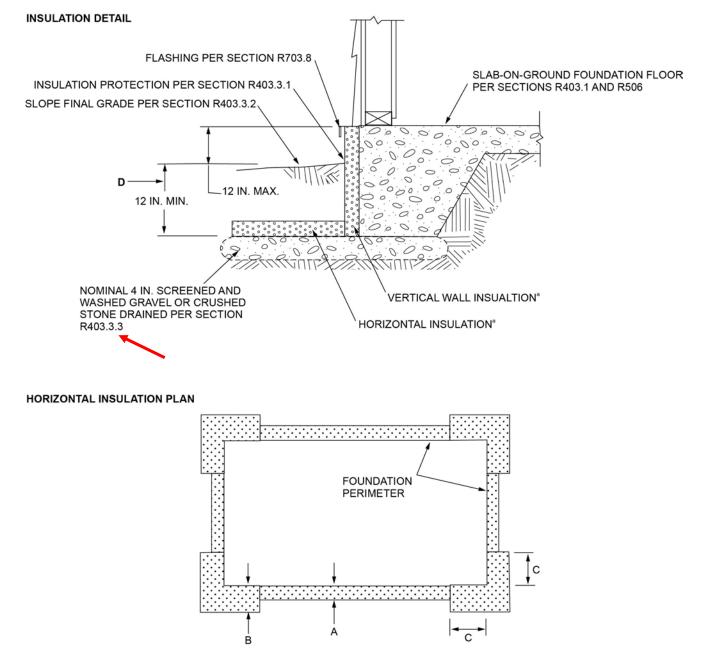
#### FIGURE R403.3(1) INSULATION PLACEMENT FOR FROST PROTECTED FOOTINGS IN HEATED BUILDINGS

(Portions of text and tables not shown are unaffected by the errata)

#### 1<sup>st</sup> through 9<sup>th</sup> PRINTING (November 3, 2014)

CHAPTER 4 FOUNDATIONS

FIGURE R403.3(1):



For SI: 1 inch = 25.4 mm. a. See Table R403.3(1) for required dimensions and *R-values* for vertical and horizontal insulation and minimum footing depth

#### FIGURE R403.3(1) INSULATION PLACEMENT FOR FROST PROTECTED FOOTINGS IN HEATED BUILDINGS

(Portions of text and tables not shown are unaffected by the errata)

## 1<sup>st</sup> through 7<sup>th</sup> PRINTING (12-04-2012)

#### CHAPTER 4 FOUNDATIONS

#### **TABLE R403.4**

			MINIMU	JM DEP	TH OF		BLE R4		OTING	IS (D), (	inches)							
	LOAD BEARING VALUE OF SOIL (pst)																	
1500						20	00			30	00		4000					
MH, CH, CL, ML					SC, GC, SM, GM, SP, SW					GP,	GW							
			Wall width (Inches)				Wall width (inches)				h (Inche	5)	Wall width (inches)					
	6	8	10	12	6	8	10	12	6	8	10	12	6	8	10	12		
Conventional light-frame construction																		
1100 plf	6	4	4	4	6	4	4	4	6	4	4	4	6	4	4	4		
1800 plf	8	6	4	4	6	4	4	4	6	4	4	4	6	4	4	4		
2000 plf	16	14	12	10	10	8	6	6	6	4	4	4	6	4	4	4		
			4-Inch I	brick ve	neer ove	r light-fr	ame or 8	Hinch h	ollow co	norete m	asonry							
1-story 1500 plf 6 4 4 4 6 4 4 6 4 4 6 4 4 6 4 4													4					
2700 plf	14	12	10	8	10	8	6	4	6	4	4	4	6	4	4	4		
4000 plf	22	22	20	18	16	14	12	10	10	8	6	4	6	4	4	4		
			_		8-Inch	solid or	fully gr	outed m	sonry									
2000 plf	10	8	6	4	6	4	4	4	6	4	4	4	6	4	4	4		
3600 plf	20	18	16	16	14	12	10	8	8	6	4	4	6	4	4	4		
5300 plf	32	30	28	26	22	22	20	18	14	12	10	8	10	8	6	4		
	1800 plf 2000 plf 1500 plf 2700 plf 4000 plf 2000 plf 3600 plf 5300 plf	w   1100 plf 6   1800 plf 8   2000 plf 16   1500 plf 6   2700 plf 14   4000 plf 12   2000 plf 10   3600 plf 20   5300 plf 32	MH, CH   Wall widt   6 8   1100 plf 6 4   1800 plf 8 6   2000 plf 16 14   1500 plf 6 4   2000 plf 14 12   4000 plf 22 22   2000 plf 10 8   3600 plf 20 18   5300 plf 32 30	MH, CH, CL, ML   Wall width (inche   6 8 10   1100 plf 6 4 4   1800 plf 8 6 4   2000 plf 16 1 12   1500 plf 6 4 4   2700 plf 14 12 10   4000 plf 22 22 20   2000 plf 10 8 6   3600 plf 20 18 16   5300 plf 32 30 28	MH, CH, CL, ML   Wall width (inches) 6 8 10 12   1100 plf 6 4 4 4   1200 plf 6 4 4 4   2000 plf 16 14 12 10   1500 plf 6 4 4 4   2000 plf 16 14 12 10   1500 plf 6 4 4 4   2000 plf 12 20 18 16   1500 plf 6 4 4 4   2000 plf 12 20 18 16   3000 plf 22 22 20 18   2000 plf 10 8 6 4   3600 plf 20 18 16 16   3300 plf 32 30 28 26	MH, CH, CL, ML Sc, Wall width (Inches) W   Wall width (Inches) W W   6 8 10 12 6   100 plf 6 4 4 4 6   1800 plf 8 6 4 4 6   2000 plf 16 14 12 10 10   4 Inch brick veneer over   1500 plf 6 4 4 6   2700 plf 14 12 10 8 10   4000 plf 22 22 20 18 16   2000 plf 10 8 6 4 6   3600 plf 20 18 16 14	1500 20   MH, CH, CL, ML SC, GC, SM,   Wall width (Inches) Wall width   6 8 10 12 6 4   6 8 10 12 6 4 4 6 4   100 plf 6 4 4 4 6 4   100 plf 6 4 4 4 6 4   2000 plf 16 14 12 10 10 8   4-inch brick veneor over light-ft   1500 plf 6 4 4 6 4   2000 plf 12 10 8 10 8   8 10 8 10 8   20 18 16 14   2000 plf 8 8   2 2 18 16 14   2 <th 2<="" colspan="2" td=""><td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP.   Wall width (inches) Wall width (inches) Wall width (inches)   6 8 10 12 6 8 10   6 8 10 12 6 8 10   Conventional light-fram   1100 plf 6 4 4 6 4 4   2000 plf 16 14 12 10 10 8 6   4 inch brick wonser over light-frame or i 1500 plf 6 4 4 6 4 4   2000 plf 14 12 10 8 6 4 4 6 4 4   2000 plf 12 20 18 16 16 14 12 10 8 6   4000 plf 22 22 20 18 16 16 14 12 10   2000 plf 10 8 6<td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SV Wall width (Inches) Wall width (Inches) Wall width (Inches) Wall width (Inches) 10 12 6 8 10 12 6 8 10 12 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td><td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW V   Wall width (Inches) Wall width (Inches) Wall width (Inches) V   6 8 10 12 6 8 10 12 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 4 6 4 4 6 4 4 6 6 6 6   2000 plf 16 14 12 10 10 8 6 4 6 4 4 6 4 4 6 4 6 4 6 6 4 6</td><td>2000 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP,   Wall width (inches) Wall width</td><td>1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (inches) Wall width</td><td>2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (Inches) Wall widt</td><td>1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches) Wall width (inches)</td><td>1500 2000 3000 44   Image: Index colspan="6"&gt;Image: Index colspan="6" Index cols</td><td>1500 2000 3000 4000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches)   6 8 10 12 6 8 10 12 6 8 10   1100 plif 6 4 4 6 4 4 4 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td></td></th>	<td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP.   Wall width (inches) Wall width (inches) Wall width (inches)   6 8 10 12 6 8 10   6 8 10 12 6 8 10   Conventional light-fram   1100 plf 6 4 4 6 4 4   2000 plf 16 14 12 10 10 8 6   4 inch brick wonser over light-frame or i 1500 plf 6 4 4 6 4 4   2000 plf 14 12 10 8 6 4 4 6 4 4   2000 plf 12 20 18 16 16 14 12 10 8 6   4000 plf 22 22 20 18 16 16 14 12 10   2000 plf 10 8 6<td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SV Wall width (Inches) Wall width (Inches) Wall width (Inches) Wall width (Inches) 10 12 6 8 10 12 6 8 10 12 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td><td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW V   Wall width (Inches) Wall width (Inches) Wall width (Inches) V   6 8 10 12 6 8 10 12 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 4 6 4 4 6 4 4 6 6 6 6   2000 plf 16 14 12 10 10 8 6 4 6 4 4 6 4 4 6 4 6 4 6 6 4 6</td><td>2000 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP,   Wall width (inches) Wall width</td><td>1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (inches) Wall width</td><td>2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (Inches) Wall widt</td><td>1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches) Wall width (inches)</td><td>1500 2000 3000 44   Image: Index colspan="6"&gt;Image: Index colspan="6" Index cols</td><td>1500 2000 3000 4000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches)   6 8 10 12 6 8 10 12 6 8 10   1100 plif 6 4 4 6 4 4 4 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td></td>		1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP.   Wall width (inches) Wall width (inches) Wall width (inches)   6 8 10 12 6 8 10   6 8 10 12 6 8 10   Conventional light-fram   1100 plf 6 4 4 6 4 4   2000 plf 16 14 12 10 10 8 6   4 inch brick wonser over light-frame or i 1500 plf 6 4 4 6 4 4   2000 plf 14 12 10 8 6 4 4 6 4 4   2000 plf 12 20 18 16 16 14 12 10 8 6   4000 plf 22 22 20 18 16 16 14 12 10   2000 plf 10 8 6 <td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SV Wall width (Inches) Wall width (Inches) Wall width (Inches) Wall width (Inches) 10 12 6 8 10 12 6 8 10 12 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td> <td>1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW V   Wall width (Inches) Wall width (Inches) Wall width (Inches) V   6 8 10 12 6 8 10 12 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 4 6 4 4 6 4 4 6 6 6 6   2000 plf 16 14 12 10 10 8 6 4 6 4 4 6 4 4 6 4 6 4 6 6 4 6</td> <td>2000 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP,   Wall width (inches) Wall width</td> <td>1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (inches) Wall width</td> <td>2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (Inches) Wall widt</td> <td>1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches) Wall width (inches)</td> <td>1500 2000 3000 44   Image: Index colspan="6"&gt;Image: Index colspan="6" Index cols</td> <td>1500 2000 3000 4000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches)   6 8 10 12 6 8 10 12 6 8 10   1100 plif 6 4 4 6 4 4 4 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td>	1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SV Wall width (Inches) Wall width (Inches) Wall width (Inches) Wall width (Inches) 10 12 6 8 10 12 6 8 10 12 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1500 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW V   Wall width (Inches) Wall width (Inches) Wall width (Inches) V   6 8 10 12 6 8 10 12 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 6 4 4 4 6 4 4 6 4 4 6 6 6 6   100 plf 6 4 4 4 6 4 4 6 4 4 6 6 6 6   2000 plf 16 14 12 10 10 8 6 4 6 4 4 6 4 4 6 4 6 4 6 6 4 6	2000 2000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP,   Wall width (inches) Wall width	1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (inches) Wall width	2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW   Wall width (Inches) Wall widt	1500 2000 3000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches)	1500 2000 3000 44   Image: Index colspan="6">Image: Index colspan="6" Index cols	1500 2000 3000 4000   MH, CH, CL, ML SC, GC, SM, GM, SP, SW GP, GW Wall width (inches)   6 8 10 12 6 8 10 12 6 8 10   1100 plif 6 4 4 6 4 4 4 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4

or St: 1 inch = 25.4 mm, 1 pound per square inch = 6.89 kPa.

1 plf = 14.6 N/m 1 pounds per square foot = 47.9 N/m<sup>2</sup>

(Portions of text and tables not shown are unaffected by the errata)

1<sup>st</sup> through 6<sup>th</sup> PRINTING (Posted: 06-06-12)

### CHAPTER 4 FOUNDATIONS

**R404.1.2.2 Reinforcement for foundation walls.** Concrete.....Vertical reinforcement for flat basement walls...in accordance with Table R404.1.2(9) (8). For *basement* walls....

(Portions of text and tables not shown are unaffected by the errata)

### 1<sup>st</sup> through 5<sup>th</sup> PRINTING (9-19-2011)

#### CHAPTER 4 FOUNDATIONS

**R403.1.8 Foundations on expansive soils.** Foundation and floor slabs for buildings located on expansive soils shall be designed in accordance with Section <u>1805.8</u> <u>1808.6</u> of the *International Building Code*.

(Portions of text and tables not shown are unaffected by the errata)

#### 1st through 4th PRINTING (JULY 14, 2011)

CHAPTER 4 FOUNDATIONS

TABLE R404.1.1(3)10-INCH MASONRY FOUNDATION WALLS WITH REINFORCING....

(Portions of text and tables not shown are unaffected by the errata)

### 1<sup>st</sup> and 2<sup>nd</sup> PRINTING (JULY 14, 2011)

CHAPTER 4 FOUNDATIONS



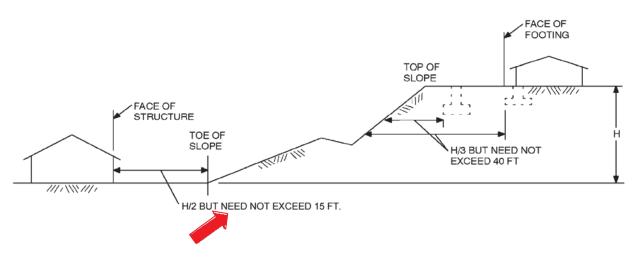


TABLE R403.4 MINIMUM DEPTH OF CRUSHED STONE FOOTINGS (*D*), (inches)

		LOAD BEARING VALUE OF SOIL (psf)															
	1500				2000						3000		4000				
	MH, CH, CL, ML				SC, GC, SM, GM, SP, SW					G	P, GW	r					
	Wa	ll widt	h (incl	nes)	W	all wid	lth (inc	ches)	Wa	all wi	dth (ir	nches)	Wall width (inches)				
		6	8	10	12	6	8	10	12	6	8	10	12	6	8	10	12
	Conventional light-frame construction																
1-story	1100 plf	6	4	4	4	6	4	4	4	6	4	4	4	6	4	4	6
2-story	1800 plf	8	6	4	4	6	4	4	4	6	4	4	4	6	4	4	4
3-story	2000	16	14	12	10	10	8	6	6	6	4	4	4	6	4	4	4
	<u>2900</u> plf																

(Portions of text and tables not shown are unaffected by the errata)

### 1<sup>st</sup> and 2<sup>nd</sup> PRINTING (SEPTEMBER 14, 2009)

#### CHAPTER 4 FOUNDATIONS

**R404.1.1 Design of masonry foundation walls.** Masonry foundation walls .....accordance with the provisions of ACI530/ASCE 5/TMS 402 TMS402/ACI 530/ASCE 5 or NCMA TR68TA. When ACI530/ASCE 5/TMS 402 TMS 402/ACI 530/ASCE 5. NCMA TR68TA or the provisions .....

**R404.1.2.3.7.2 Location of reinforcement in wall.** The center of vertical reinforcement in *basement* walls determined from Tables R404.1.2(3) R404.1.2(2) through R404.1.2(7) shall be located at the centerline of the wall. Vertical reinforcement in *basement* walls determined from Tables R404.1.2(2) or R404.1.2(8) shall be located .....