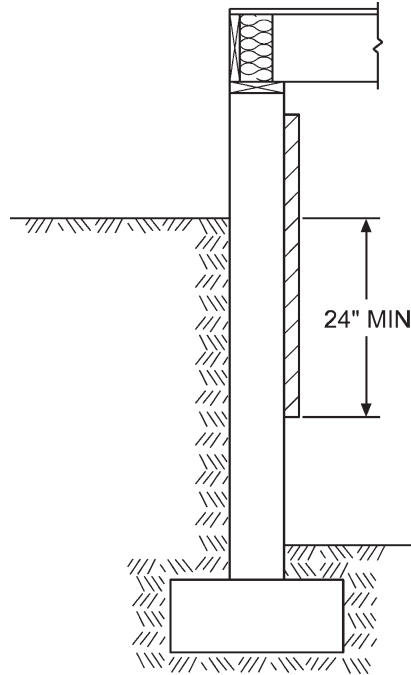


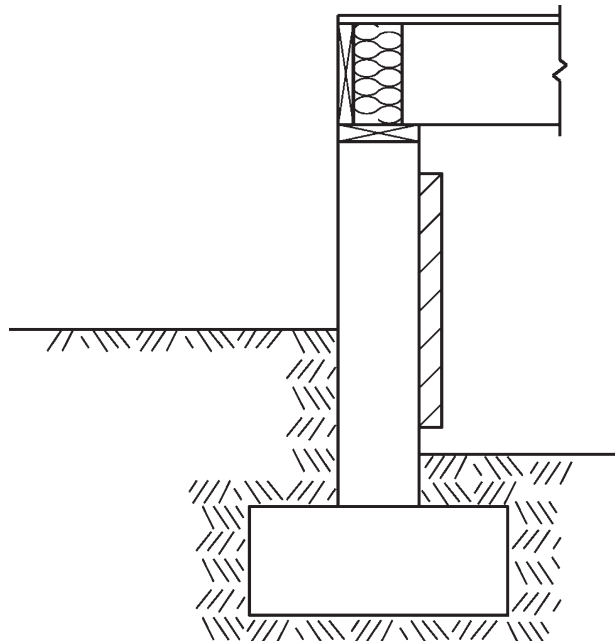
APPENDIX

The sections and construction details in Details 502.2.1.5(1), 502.2.1.5(2), 502.2.1.5(3), 502.2.1.5(4) and 502.2.1.5(5), and Tables 502.2.3.1(1), 502.2.3.1(2), 502.2.3.1(3), 502.2.3.2, 502.2.3.3, 502.2.3.5 and 502.2.3.6 are intended to be representative and not all-inclusive. Adopting agencies are encouraged to add construction details and sections appropriate to their specific areas. Utilization of these tables should be correlated with local industry group practices and model code research recommendations.



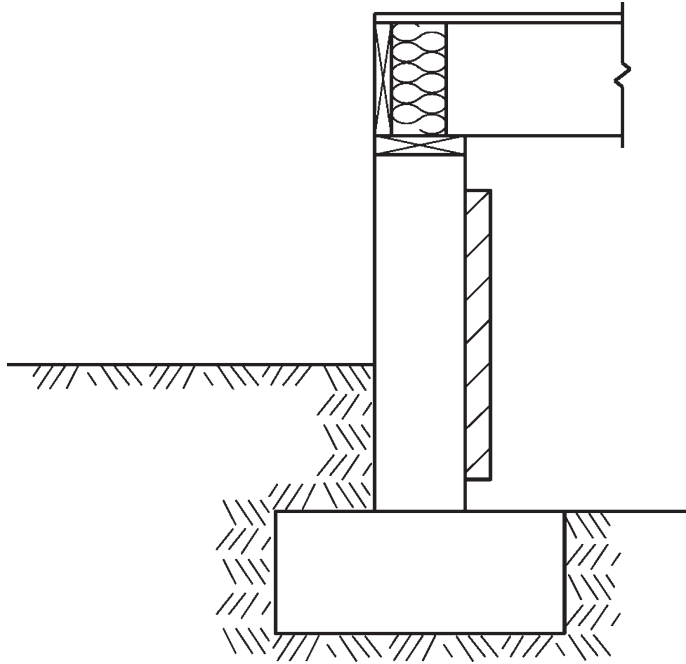
For SI: 1 inch = 25.4 mm.

DETAIL 502.2.1.5(1)
INSULATION HAS 3-INCH TOP INSPECTION GAP AND EXTENDS 24 INCHES BELOW GRADE



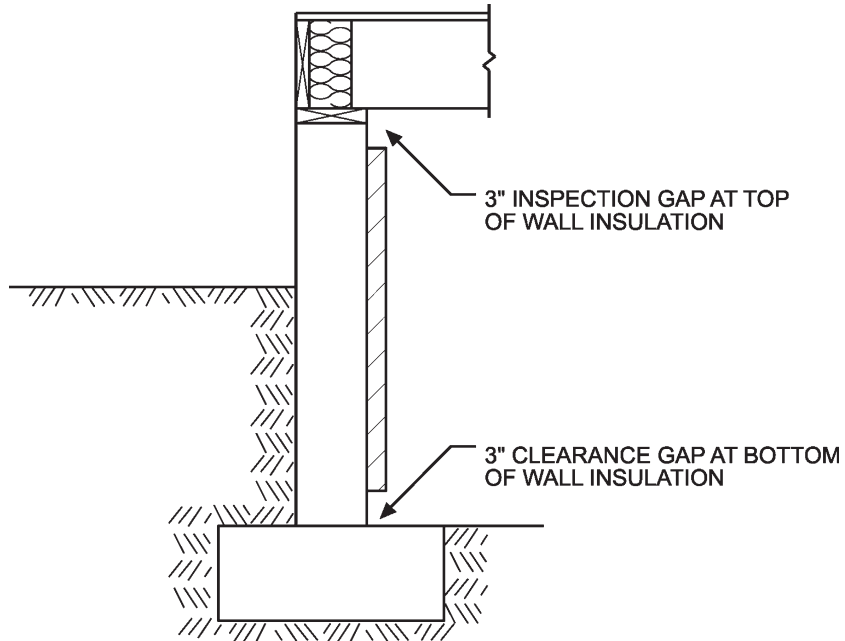
For SI: 1 inch = 25.4 mm.

DETAIL 502.2.1.5(2)
INSULATION HAS 3-INCH TOP INSPECTION GAP AND EXTENDS DOWN TO 3 INCHES ABOVE INTERIOR GROUND SURFACE



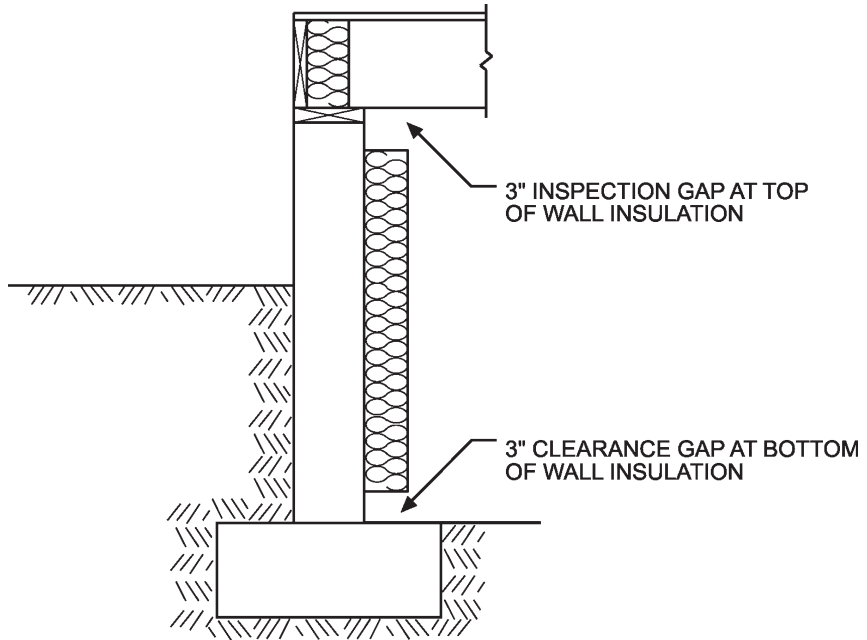
For SI: 1 inch = 25.4 mm.

DETAIL 502.2.1.5(3)
INSULATION HAS 3-INCH TOP INSPECTION GAP AND EXTENDS DOWN TO 3 INCHES
ABOVE TOP OF WALL FOOTING OR CONCRETE FLOOR



For SI: 1 inch = 25.4 mm.

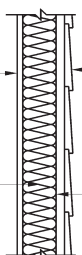
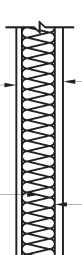
DETAIL 502.2.1.5(4)
TYPICAL RIGID FOAM INSULATION TERMITE INSPECTION GAPS



For SI: 1 inch = 25.4 mm.

DETAIL 502.2.1.5(5)
TYPICAL POROUS INSULATION TERMITE INSPECTION GAPS

TABLE 502.2.3.1(1)
WALL ASSEMBLIES
 (U_w selected shall not exceed the U_o determined by Section 502.2.3.1 for any wall section)

WALL DETAILS ^a		TYPE AND SPACING OF FRAMING (nominal)	R-VALUE OF CAVITY INSULATION	R-VALUE OF SHEATHING	U_w ^b		
Typical interior finish— 1. Gypsum wallboard; 2. Lath and plaster; or 3. 3/8" minimum wood paneling	Typical exterior finish— 1. Stucco; 2. Wood or plywood siding; or 3. Brick veneer						
<p align="center">WOOD STUD CONSTRUCTION</p>  <p>INTERIOR FINISH EXTERIOR FINISH</p> <p>INSULATION SHEATHING</p>		4" Studs @ 16" o.c.	11	noninsulating	0.085		
			13	noninsulating	0.076		
			13	3	0.064		
			13	5	0.056		
			13	7	0.051		
			15	noninsulating	0.070		
			15	3	0.059		
			15	5	0.053		
			15	7	0.048		
			6" Studs @ 16" o.c.	19	noninsulating	0.058	
				19	3	0.050	
				19	5	0.046	
				19	7	0.041	
				21	noninsulating	0.052	
				21	3	0.046	
				21	5	0.042	
				21	7	0.038	
			6" Studs @ 24" o.c.	21	noninsulating	0.050	
		<p align="center">STEEL STUD CONSTRUCTION</p>  <p>INTERIOR FINISH EXTERIOR FINISH</p> <p>INSULATION SHEATHING</p>		4" Studs @ 16" o.c.	11	noninsulating	0.14
					13	noninsulating	0.13
	6" Studs @ 16" o.c.			19	noninsulating	0.11	
	4" Studs @ 24" o.c.			11	noninsulating	0.12	
				13	noninsulating	0.11	
	6" Studs @ 24" o.c.			19	noninsulating	0.10	

For SI: 1 inch = 25.4 mm.

a. Details shown are for insulation and are not complete construction details.

b. U_w calculated based on the ASHRAE *Fundamentals Handbook* 2001.

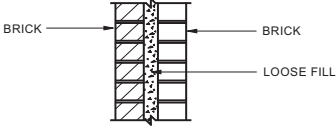
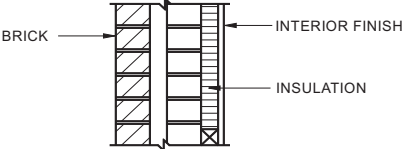
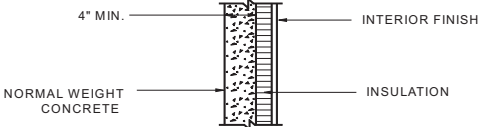
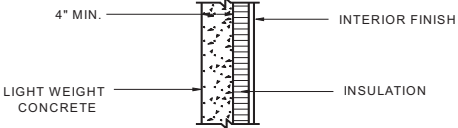
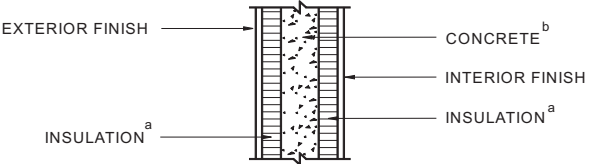
TABLE 502.2.3.1(2)
WALL ASSEMBLIES
 (U_w selected shall not exceed the U_o determined by Section 502.2.3.1 for any wall section)

WALL DETAILS ^f	R-VALUE OR TYPE	U _w AND R _o FOR WALL THICKNESS LISTED ^a				
			6"	8"	10"	12"
PLAIN CONCRETE MASONRY BLOCK CONSTRUCTION						
Plain block wythe	No insulation, no interior finish	U_w R_o	0.37 2.70	0.33 3.03	0.31 3.23	0.30 3.33
	Loose fill in cores, no interior finish	U_w R_o	0.18 5.56	0.13 7.69	0.11 9.09	0.09 11.11
Interior finish: 1/2" gypsum board on furring strips	No insulation, interior finish	U_w R_o	0.24 4.17	0.23 4.35	0.22 4.55	0.21 4.76
	No insulation, foil-backed gypsum board interior finish	U_w R_o	0.18 5.56	0.17 5.88	0.16 6.25	0.16 6.25
Cavity insulation and interior finish: 1/2" gypsum board on furring strips	1" extruded polystyrene, interior finish	U_w R_o	0.13 7.69	0.13 7.69	0.12 8.33	0.12 8.33
	2" expanded polystyrene, interior finish	U_w R_o	0.09 11.11	0.09 11.11	0.09 11.11	0.09 11.11
	2" extruded polystyrene, interior finish	U_w R_o	0.08 12.50	0.08 12.50	0.08 12.50	0.08 12.50
	2" polyisocyanurate, interior finish	U_w R_o	0.06 16.67	0.06 16.67	0.06 16.67	0.06 16.67
Interior finish: 1/2" gypsum board over fibrous batt or loose fill between studs out from wall	R-11, 2 x 3 studs, interior finish	U_w R_o	0.07 14.29	0.07 14.29	0.07 14.29	0.07 14.29
	R-13, 2 x 3 studs, interior finish	U_w R_o	0.06 16.67	0.06 16.67	0.06 16.67	0.06 16.67
	R-19, 2 x 4 studs, interior finish	U_w R_o	0.05 20.00	0.05 20.00	0.05 20.00	0.05 20.00
MULTI-WYTHE WALLS		U_w AND R_o FOR WALL THICKNESS LISTED^{b,c,d,e}				
Plain block and clay wythes	No insulation, no interior finish	U_w R_o	0.32 3.13	0.26 3.85	0.24 4.17	0.22 4.55
	Loose fill in cavity, no interior finish	U_w R_o	NA NA	0.12 8.33	0.12 8.33	0.11 9.09
Cavity insulation and interior finish: 1/2" gypsum board on furring strips	Loose fill, interior finish	U_w R_o	0.11 9.03	0.10 10.00	0.10 10.00	0.10 10.00
	Loose fill foil-backed gypsum board, interior finish	U_w R_o	0.10 10.00	0.09 11.11	0.09 11.11	0.09 11.11
	1" expanded polystyrene in cavity, interior finish	U_w R_o	NA NA	0.13 7.69	0.12 8.33	0.12 8.33
	2" expanded polystyrene in cavity, interior finish	U_w R_o	NA NA	0.08 12.50	0.08 12.50	0.08 12.50
	1" extruded polystyrene in cavity, interior finish	U_w R_o	NA NA	0.11 9.09	0.11 9.09	0.11 9.09
	2" extruded polystyrene in cavity, interior finish	U_w R_o	NA NA	0.07 14.29	0.07 14.29	0.07 14.29
	1" polyisocyanurate in cavity, interior finish	U_w R_o	NA NA	0.08 12.50	0.08 12.50	0.08 12.50
	2" polyisocyanurate in cavity, interior finish	U_w R_o	NA NA	0.05 20.00	0.05 20.00	0.05 20.00
	1" expanded polystyrene in cavity foil-backed gypsum board, interior finish	U_w R_o	NA NA	0.09 11.11	0.09 11.11	0.09 11.11
	1" extruded polystyrene in cavity foil-backed gypsum board, interior finish	U_w R_o	NA NA	0.08 12.50	0.08 12.50	0.08 12.50

For SI: 1 inch = 25.4 mm, 1 pound per cubic foot = 0.1572 kg/m³.

- a. The U_w values are for blocks made with concrete having a density of 80 pounds per cubic foot; for other densities, the U_w must be calculated based on the R -values provided in NCMA *TEK 6-1A* or the ASHRAE *Fundamentals Handbook 2001*.
 - b. 8" composite wall: 4" dense outer wythe and hollow-unit inner wythe.
 - c. 10" cavity wall: 4" dense outer wythe, 2" air space and 4" hollow-unit inner wythe.
 - d. 12" cavity wall: 4" dense outer wythe, 2" air space and 6" hollow-unit inner wythe.
 - e. 14" cavity wall: 4" dense outer wythe, 2" air space and 8" hollow-unit inner wythe.
 - f. Refer to drawings in Tables 502.2.3.1(1) and 502.2.3.1(3).
- NA = Not Applicable.

TABLE 502.2.3.1(3)
WALL ASSEMBLIES
 (U_w selected shall not exceed the U_o determined by Section 502.2.3.1 for any wall section)

WALL DETAILS ^d	R-VALUE OF INSULATION	U_w	R_o
Interior finish 1/4" gypsum board applied on furring strips			
BRICK MASONRY CONSTRUCTION WITH LOOSE FILL 	Solid grout in space	0.38	2.63
	2" space with loose fill R-4	0.16	6.25
	4" space with loose fill R-8	0.10	10.00
BRICK MASONRY CONSTRUCTION WITH INSULATION 	4	0.12	8.33
	6	0.09	11.11
	11	0.07	14.29
NORMAL-WEIGHT CONCRETE CONSTRUCTION 	4	0.18	5.56
	6	0.13	7.69
	7	0.12	8.33
	11	0.08	12.50
LIGHTWEIGHT CONCRETE CONSTRUCTION 	4	0.17	5.88
	6	0.12	8.33
	7	0.11	9.09
	11	0.08	12.50
INSULATING CONCRETE FORM SYSTEM (ICF)^c 	12	0.07	13.55
	15	0.06	16.55
	16	0.06	17.55
	17	0.05	18.55
	20	0.05	21.55
	22	0.04	23.55

For SI: 1 inch = 25.4 mm.

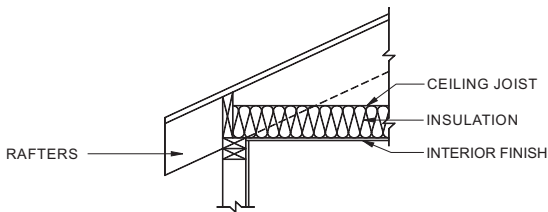
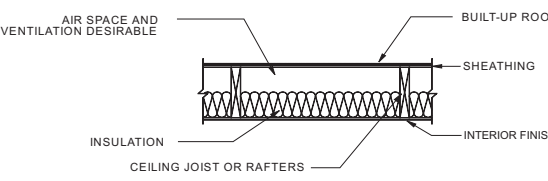
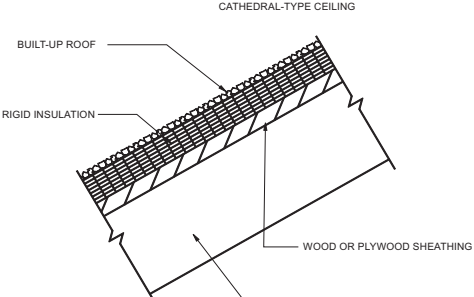
a. The R-value listed is the sum of the values for the exterior and interior insulation layers.

b. The manufacturer shall be consulted for the U_w and R_o values if the insulated concrete form system (ICF) uses metal form ties to connect the interior and exterior insulation layers.

c. These values shall be permitted to be used for concrete masonry wall assemblies with exterior and interior insulation layers.

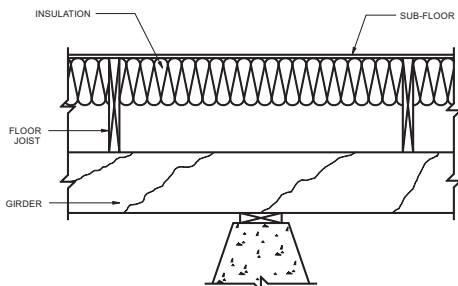
d. Details shown are for insulation and are not complete construction details.

**TABLE 502.2.3.2
ROOF/CEILING ASSEMBLIES**
(U_r selected shall not exceed the value specified in Section 502.2.3.2)

ROOF DETAILS ^{a, b, c}	R-VALUE OF INSULATION ^c	U_r	R_o
Typical interior finish— 1. Gypsum wallboard; or 2. Lath & plaster 	19	0.050	20.00
	22	0.040	25.00
	30	0.030	33.33
	38	0.025	40.00
	19	0.050	20.00
	22	0.040	25.00
	30	0.030	33.33
	38	0.025	40.00
	Wood decking		
	9	0.080	12.50
	Plywood		
	10	0.080	12.50
	19	0.050	20.00
	30	0.030	33.33

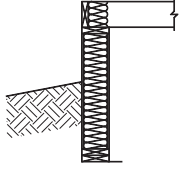
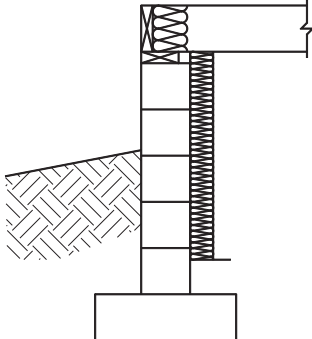
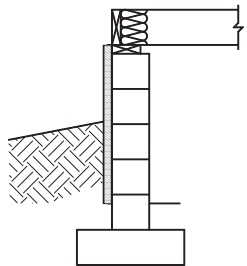
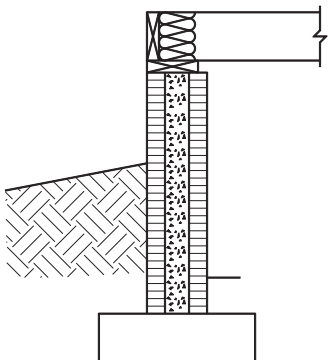
- a. Details shown are for insulation and are not complete construction details.
- b. Skylights not exceeding one percent of the roof are permitted.
- c. Insulation installed between joints.

**TABLE 502.2.3.3
FLOOR ASSEMBLIES**
(U_o selected shall not exceed the U_o specified in Section 502.2.3.3)

FLOOR DETAILS ^a	R-VALUE OF INSULATION	U_r	R_o
	No insulation	0.32	3.13
	7	0.11	9.09
	11	0.08	12.50
	19	0.05	20.00

- a. Details shown are for insulation and are not complete construction details.

**TABLE 502.2.3.5
CRAWL SPACE FOUNDATION WALL ASSEMBLIES
(U-factor selected shall not exceed the U-factor determined by Section 502.2.3.5)**

WALL DETAILS ^a	R-VALUE OF INSULATION	U-FACTOR
<p align="center">WOOD FOUNDATION</p> 	11	0.10
	13	0.09
	19	0.06
<p align="center">CONCRETE/MASONRY FOUNDATION—INTERIOR INSULATION</p> 	5	0.15
	10	0.08
	11	0.08
	13	0.07
	19	0.05
<p align="center">CONCRETE/MASONRY FOUNDATION—EXTERIOR INSULATION</p> 	3	0.20
	5	0.15
	10	0.08
	15	0.06
<p align="center">INSULATING CONCRETE FORM SYSTEM (ICF)^{b, c, d}</p> 	12	0.08
	15	0.06
	16	0.06
	17	0.06
	20	0.05
	22	0.04

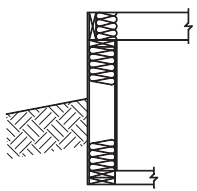
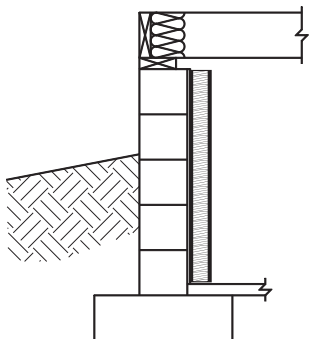
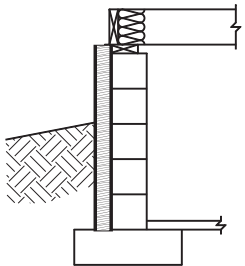
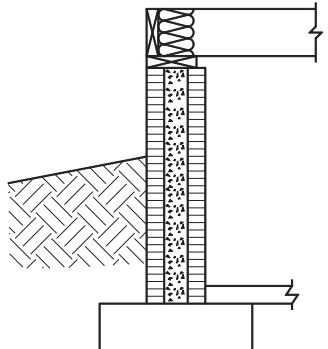
a. Details shown are for insulation and are not complete construction details.

b. The R-value listed is the sum of the values for the exterior and interior insulation layers.

c. The manufacturer shall be consulted for the U-factor if the insulated concrete form system (ICF) uses metal form ties to connect the interior and exterior insulation layers.

d. These values shall be permitted to be used for concrete masonry wall assemblies with exterior and interior insulation layers.

TABLE 502.2.3.6
BASEMENT FOUNDATION WALL ASSEMBLIES
(U-factor selected shall not exceed the U-factor determined by Section 502.2.3.6)

WALL DETAILS ^a	R-VALUE OF INSULATION	U-FACTOR
<p>WOOD FOUNDATION</p> 	11	0.08
	13	0.08
	19	0.06
<p>CONCRETE/MASONRY FOUNDATION—INTERIOR INSULATION</p> 	5	0.15
	6.5	0.12
	10	0.08
	11	0.08
	19	0.06
<p>CONCRETE/MASONRY FOUNDATION—EXTERIOR INSULATION</p> 	3	0.20
	5	0.15
	10	0.09
	15	0.06
<p>INSULATING CONCRETE FORM SYSTEM (ICF)^{b, c, d}</p> 	12	0.07
	15	0.06
	16	0.06
	17	0.05
	20	0.05
	22	0.04

- a. Details shown are for insulation and are not complete construction details.
- b. The *R*-value listed is the sum of the values for the exterior and interior insulation layers.
- c. The manufacturer shall be consulted for the *U*-factor if the insulated concrete form system (ICF) uses metal form ties to connect the interior and exterior insulation layers.
- d. These values shall be permitted to be used for concrete masonry wall assemblies with exterior and interior insulation layers.

APPENDIX REFERENCED STANDARDS

ASHRAE-2001	<i>ASHRAE Fundamentals Handbook</i>	Tables 502.2.3.1(1) and 502.2.3.1(2)
NCMA TEK 6-1A	R-Values of Multi-Wythe Concrete Masonry Walls	Table 502.2.3.1(2)