

No. 7, the height of backfill against a foundation wall shall not exceed 4 feet (1219 mm). ~~When the height of fill is more than 12 inches (305 mm) above the interior grade of a crawl space or floor of a basement, the thickness of the plywood sheathing shall meet the requirements of Table R404.2.3.~~

**R404.2.4 Backfilling.** Wood foundation walls shall not be backfilled until the basement floor and first floor have been constructed or the walls have been braced. For crawl space construction, backfill or bracing shall be installed on the interior of the walls prior to placing backfill on the exterior.

**R404.2.5 Drainage and dampproofing.** Wood foundation basements shall be drained and dampproofed in accordance with Sections R405 and R406, respectively.

**R404.2.6 Fastening.** Wood structural panel foundation wall sheathing shall be attached to framing in accordance with Table R602.3(1) and Section R402.1.1.

**R404.3 Wood sill plates.** Wood sill plates shall be a minimum of 2-inch by 4-inch (51 mm by 102 mm) nominal lumber. Sill plate anchorage shall be in accordance with Sections R403.1.6 and R602.11.

TABLE R404.1.1(3)  
10-INCH FOUNDATION WALLS WITH REINFORCING  
WHERE d > 6.75 INCHES<sup>a</sup>

WALL HEIGHT	HEIGHT OF UNBALANCED BACKFILL <sup>e</sup>	MINIMUM VERTICAL REINFORCEMENT <sup>b, c</sup>		
		Soil classes and later soil load <sup>d</sup> (psf per foot below grade)		
		GW, GP, SW and SP soils 30	GM, GC, SM, SM-SC and ML soils 45	SC, MH, ML-CL and inorganic CL soils 60
6 feet 8 inches	4 feet (or less)	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	5 feet	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	6 feet 8 inches	#4 at 56" o.c.	#5 at 56" o.c.	#5 at 56" o.c.
7 feet 4 inches	4 feet (or less)	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	5 feet	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	6 feet	#4 at 56" o.c.	#4 at 56" o.c.	#5 at 56" o.c.
7 feet 4 inches	7 feet 4 inches	#4 at 56" o.c.	#5 at 56" o.c.	#6 at 56" o.c.
	4 feet (or less)	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	5 feet	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
8 feet	6 feet	#4 at 56" o.c.	#4 at 56" o.c.	#5 at 56" o.c.
	7 feet	#4 at 56" o.c.	#5 at 56" o.c.	#6 at 56" o.c.
	8 feet	#5 at 56" o.c.	#6 at 56" o.c.	#6 at 48" o.c.
8 feet 8 inches	4 feet (or less)	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	5 feet	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	6 feet	#4 at 56" o.c.	#4 at 56" o.c.	#5 at 56" o.c.
8 feet 8 inches	7 feet	#4 at 56" o.c.	#5 at 56" o.c.	#6 at 56" o.c.
	8 feet 8 inches	#5 at 56" o.c.	#6 at 48" o.c.	#6 at 32" o.c.
	4 feet (or less)	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
9 feet 4 inches	5 feet	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	6 feet	#4 at 56" o.c.	#5 at 56" o.c.	#5 at 56" o.c.
	7 feet	#4 at 56" o.c.	#5 at 56" o.c.	#6 at 56" o.c.
9 feet 4 inches	8 feet	#5 at 56" o.c.	#6 at 56" o.c.	#6 at 40" o.c.
	9 feet 4 inches	#6 at 56" o.c.	#6 at 40" o.c.	#6 at 24" o.c.
	4 feet (or less)	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
10 feet	5 feet	#4 at 56" o.c.	#4 at 56" o.c.	#4 at 56" o.c.
	6 feet	#4 at 56" o.c.	#5 at 56" o.c.	#5 at 56" o.c.
	7 feet	#5 at 56" o.c.	#6 at 56" o.c.	#6 at 48" o.c.
10 feet	8 feet	#5 at 56" o.c.	#6 at 48" o.c.	#6 at 40" o.c.
	9 feet	#6 at 56" o.c.	#6 at 40" o.c.	#6 at 24" o.c.
	10 feet	#6 at 48" o.c.	#6 at 32" o.c.	#6 at 24" o.c.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot per foot = 0.157 kPa/mm.

- a. Mortar shall be Type M or S and masonry shall be laid in running bond.
- b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area of reinforcement per lineal foot of wall shall be permitted provided the spacing of the reinforcement does not exceed 72 inches.
- c. Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the soil side of the wall to the center of vertical reinforcement shall be at least 6.75 inches.
- d. Soil classes are in accordance with the Unified Soil Classification System and design lateral soil loads are for moist conditions without hydrostatic pressure. Refer to Table R405.1.
- e. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level. Where an interior concrete slab-on-grade is provided and is in contact with the interior surface of the foundation wall, measurement of the unbalanced backfill height from the exterior finish ground level to the top of the interior concrete slab is permitted.

**TABLE R404.1.1(4)**  
**12-INCH MASONRY FOUNDATION WALLS WITH REINFORCING**  
**WHERE d > 8.75 INCHES<sup>a</sup>**

WALL HEIGHT	HEIGHT OF UNBALANCED BACKFILL <sup>e</sup>	MINIMUM VERTICAL REINFORCEMENT <sup>b, c</sup>		
		Soil classes and lateral soil load <sup>d</sup> (psf per foot below grade)		
		GW, GP, SW and SP soils 30	GM, GC, SM, SM-SC and ML soils 45	SC, ML-CL and inorganic CL soils 60
6 feet 8 inches	4 feet (or less)	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	5 feet	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	6 feet 8 inches	#4 at 72" o.c.	#4 at 72" o.c.	#5 at 72" o.c.
7 feet 4 inches	4 feet (or less)	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	5 feet	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	6 feet	#4 at 72" o.c.	#4 at 72" o.c.	#5 at 72" o.c.
8 feet	7 feet 4 inches	#4 at 72" o.c.	#5 at 72" o.c.	#6 at 72" o.c.
	4 feet (or less)	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	5 feet	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
8 feet 8 inches	6 feet	#4 at 72" o.c.	#4 at 72" o.c.	#5 at 72" o.c.
	7 feet	#4 at 72" o.c.	#5 at 72" o.c.	#6 at 72" o.c.
	8 feet 8 inches	#5 at 72" o.c.	#7 at 72" o.c.	#6 at 48" o.c.
9 feet 4 inches	4 feet (or less)	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	5 feet	#4 at 72" o.c.	#4 at 72" o.c.	#4 at 72" o.c.
	6 feet	#4 at 72" o.c.	#5 at 72" o.c.	#5 at 72" o.c.
10 feet	7 feet	#4 at 72" o.c.	#5 at 72" o.c.	#6 at 72" o.c.
	8 feet	#5 at 72" o.c.	#6 at 72" o.c.	#6 at 48" o.c.
	9 feet	#6 at 72" o.c.	#6 at 56" o.c.	#6 at 40" o.c.
	10 feet	#6 at 64" o.c.	#6 at 40" o.c.	#6 at 32" o.c.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot per foot = 0.157 kPa/mm.

- a. Mortar shall be Type M or S and masonry shall be laid in running bond.
- b. Alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area of reinforcement per lineal foot of wall shall be permitted provided the spacing of the reinforcement does not exceed 72 inches.
- c. Vertical reinforcement shall be Grade 60 minimum. The distance from the face of the soil side of the wall to the center of vertical reinforcement shall be at least 8.75 inches.
- d. Soil classes are in accordance with the Unified Soil Classification System and design lateral soil loads are for moist conditions without hydrostatic pressure. Refer to Table R405.1.
- e. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground levels. Where an interior concrete slab-on-grade is provided and in contact with the interior surface of the foundation wall, measurement of the unbalanced backfill height is permitted to be measured from the exterior finish ground level to the top of the interior concrete slab is permitted.

**R404.4 Insulating concrete form foundation walls.** Insulating concrete form (ICF) foundation walls shall be designed and constructed in accordance with the provisions of this section or in accordance with the provisions of ACI 318. When ACI 318 or the provisions of this section are used to design insulating concrete form foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design unless otherwise required by the state law of the jurisdiction having authority.

**R404.4.1 Applicability limits.** The provisions of this section shall apply to the construction of insulating concrete form foundation walls for buildings not more than 60 feet

(18 288 mm) in plan dimensions, and floors not more than 32 feet (9754 mm) or roofs not more than 40 feet (12 192 mm) in clear span. Buildings shall not exceed two stories in height above grade with each story not more than 10 feet (3048 mm) high. Foundation walls constructed in accordance with the provisions of this section shall be limited to buildings subjected to a maximum ground snow load of 70 psf (3.35 kN/m<sup>2</sup>) and located in Seismic Design Category A, B or C. In Seismic Design Categories D<sub>0</sub>, D<sub>1</sub> and D<sub>2</sub>, foundation walls shall comply with Section R404.1.4. Insulating concrete form foundation walls supporting above-grade concrete walls shall be reinforced as required for the above-