

# Wisdom & Associates, Inc.

PO Box 3413  
Kenai, Alaska 99611  
907-283-0629

7984 Kenai Spur Highway  
Kenai, Alaska 99611

## Foundation Requirements

The state of Alaska has adopted the International Residential Code with amendments. This is a list of common issues that we encounter during code inspections. This is not a full list of all requirement in the building code, contact us if you have questions.

### Table R401.4.1 Load Bearing Values

TABLE R401.4.1  
PRESUMPTIVE LOAD-BEARING  
VALUES OF FOUNDATION MATERIALS<sup>a</sup>

CLASS OF MATERIAL	LOAD-BEARING PRESSURE (pounds per square foot)
Crystalline bedrock	12,000
Sedimentary and foliated rock	4,000
Sandy gravel and/or gravel (GW and GP)	3,000
Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000
Clay, sandy, silty clay, clayey silt, silt and sandy siltclay (CL, ML, MH and CH)	1,500 <sup>b</sup>

### R403.1.3 Minimum reinforcement Seismic D0-D2:

- #4, 48" on center vertically
- Standard hook required on end
- Extends 14" from footing into stemwall

### R403.1.6 Foundation Anchorage

- Minimum ½" diameter anchor bolts
- Minimum 7" embedment
- Maximum 6 feet o.c. for single story, 4 feet o.c. for two story
- 3" X 3" plate washers required on all exterior and braced walls
- Interior bearing walls bolted maximum 6' o.c.
- Plates 24" or less one bolt in middle third

**Table R403.1(2) Footing Width**

- Every 2' of extra building width (beyond 32 feet) adds 2" to footing width and 1" of footing thickness

**TABLE R403.1(1)  
MINIMUM WIDTH AND THICKNESS FOR CONCRETE FOOTINGS FOR LIGHT-FRAME CONSTRUCTION (inches)<sup>a, b</sup>**

SNOW LOAD OR ROOF LIVE LOAD	STORY AND TYPE OF STRUCTURE WITH LIGHT FRAME	LOAD-BEARING VALUE OF SOIL (psf)					
		1500	2000	2500	3000	3500	4000
50 psf	1 story—slab-on-grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story—with crawl space	16 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story—plus basement	21 × 6	16 × 6	13 × 6	12 × 6	12 × 6	12 × 6
	2 story—slab-on-grade	14 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story—with crawl space	19 × 6	14 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story—plus basement	25 × 7	19 × 6	15 × 6	12 × 6	12 × 6	12 × 6
	3 story—slab-on-grade	17 × 6	13 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	3 story—with crawl space	22 × 6	17 × 6	13 × 6	12 × 6	12 × 6	12 × 6
	3 story—plus basement	28 × 9	21 × 6	17 × 6	14 × 6	12 × 6	12 × 6
70 psf	1 story—slab-on-grade	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story—with crawl space	18 × 6	13 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	1 story—plus basement	24 × 7	18 × 6	14 × 6	12 × 6	12 × 6	12 × 6
	2 story—slab-on-grade	16 × 6	12 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	2 story—with crawl space	21 × 6	16 × 6	13 × 6	12 × 6	12 × 6	12 × 6
	2 story—plus basement	27 × 9	20 × 6	16 × 6	14 × 6	12 × 6	12 × 6
	3 story—slab-on-grade	19 × 6	14 × 6	12 × 6	12 × 6	12 × 6	12 × 6
	3 story—with crawl space	25 × 7	18 × 6	15 × 6	12 × 6	12 × 6	12 × 6
	3 story—plus basement	30 × 10	23 × 6	18 × 6	15 × 6	13 × 6	12 × 6

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 pound per square foot = 47.9 N/m<sup>2</sup>.

a. Interpolation allowed. Extrapolation is not allowed.

b. Based on 32-foot-wide house with load-bearing center wall that carries half of the tributary attic, and floor framing. For every 2 feet of adjustment to the width of the house, add or subtract 2 inches of footing width and 1 inch of footing thickness (but not less than 6 inches thick).

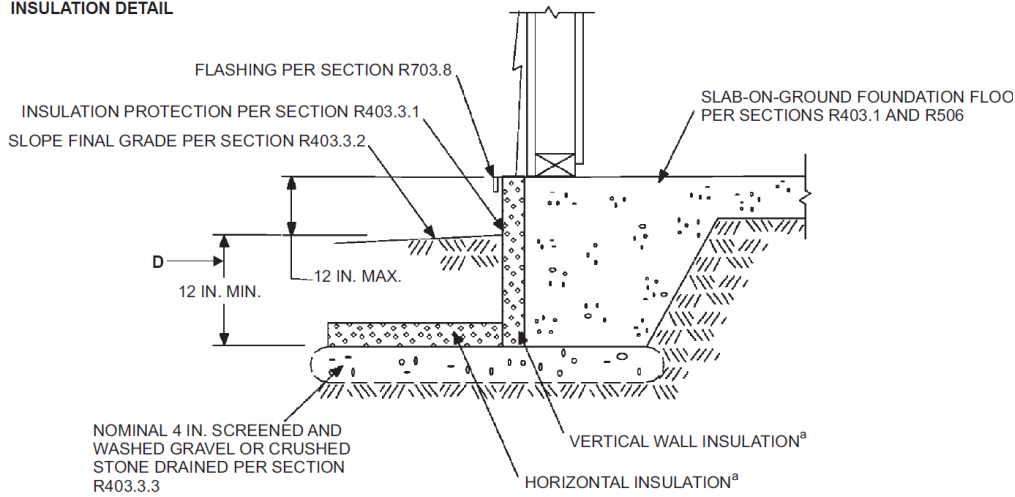
### IRC 403.1.3.3 Slab On Grade Monolithic Pour

- Minimum one #4 top and bottom of footing, or two #4 or one #5 in the middle third of footing
- Interior monolithic footings 12" deep

### Figure R403.3 Frost Protected Shallow Foundation

- Minimum 16" below grade and minimum 4"-6" above grade, minimum 22"-24" footing depth

#### INSULATION DETAIL



**TABLE R403.3(1)**  
**MINIMUM FOOTING DEPTH AND INSULATION REQUIREMENTS FOR FROST-PROTECTED FOOTINGS IN HEATED BUILDINGS\***

AIR FREEZING INDEX ("F-days) <sup>b</sup>	MINIMUM FOOTING DEPTH, D (Inches)	VERTICAL INSULATION R-VALUE <sup>c, d</sup>	HORIZONTAL INSULATION R-VALUE <sup>c, e</sup>		HORIZONTAL INSULATION DIMENSIONS PER FIGURE R403.3(1) (Inches)		
			Along walls	At corners	A	B	C
1,500 or less	12	4.5	Not required	Not required	Not required	Not required	Not required
2,000	14	5.6	Not required	Not required	Not required	Not required	Not required
2,500	16	6.7	1.7	4.9	12	24	40
3,000	16	7.8	6.5	8.6	12	24	40
3,500	16	9.0	8.0	11.2	24	30	60
4,000	16	10.1	10.5	13.1	24	36	60

#### **R404 MINIMUM Foundation Wall Reinforcement – 4' or less in height**

- Minimum one #4 bar, 48" o.c. vertically
- Must have hook on bottom
- Must extend minimum 14" into foundation wall from footing
- Minimum one #4 bar horizontally in top 12" of the wall

#### **R404 Minimum Foundation Wall Reinforcement – Greater than 4' height**

- **Horizontal Reinforcement:**
  - Walls between 4' and 8' height, one #4 bar within top 12 inches of wall and one #4 bar near mid height
  - Walls over 8' height, one #4 bar within top 12 inches of wall and one #4 bar at third points
- **6" Thick Wall - Vertical Reinforcement – Min. #4 bar 48" o.c. vertically.** Based on Group 1 Soils
  - **8 foot wall height**
    - up to 6 feet backfill - #5 at 39" OR #4 @ 25"
    - up to 7 feet backfill - #5 at 34" OR #4 @ 22"
    - up to 8 feet backfill - #5 at 27" OR #4 @ 18"
  - **9 foot wall height**
    - up to 6 feet backfill - #5 at 36" OR #4 @ 23"
    - up to 7 feet backfill - #5 at 33" OR #4 @ 21"
    - up to 8 feet backfill - #5 at 24" OR #4 @ 15"
    - up to 9 feet backfill - #5 at 19" OR #4 @ 12"
  - **10 foot wall height**
    - up to 6 feet backfill - #5 at 34" OR #4 @ 22"
    - up to 7 feet backfill - #5 at 30" OR #4 @ 20"
    - up to 8 feet backfill - #5 at 22" OR #4 @ 14"
    - up to 9 feet backfill - #5 at 27" OR #4 @ 11"
    - up to 10 feet backfill - #5 at 13" OR #4 @ 9"
- **8" Thick Wall - Vertical Reinforcement – Min. #4 bar 48" o.c. vertically.** Based on Group 1 Soils
  - **8 foot wall height**
    - up to 8 feet backfill - #5 at 29" OR #4 @ 19"
  - **9 foot wall height**
    - up to 8 feet backfill - #5 at 25" OR #4 @ 16"
    - up to 9 feet backfill - #5 at 25" OR #4 @ 16"
  - **10 foot wall height**
    - up to 8 feet backfill - #5 at 25" OR #4 @ 16"
    - up to 9 feet backfill - #5 at 24" OR #4 @ 15"
    - up to 10 feet backfill - #5 at 19" OR #4 @ 12"
- **Exceeds 10 feet, check manufacturer' specifications**

Sincerely

Robert Moss

Wisdom and Associates, Inc.

Cell: 907-398-4372