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## **FENCES AND WALLS**

# **116**

### **Handouts Included:**

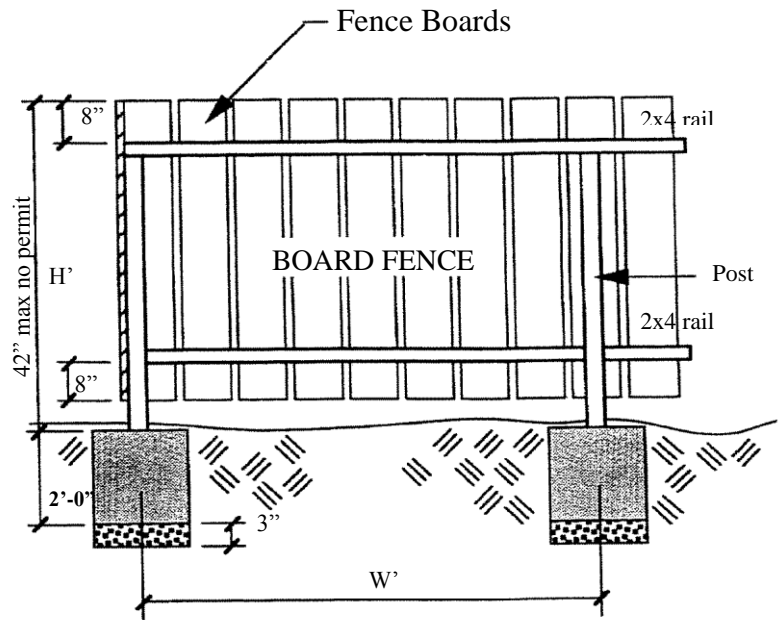
**116 Wood Fence**

**117 Masonry Fence**

**118 Masonry Pilaster**

### WOOD FENCES

- Posts must be redwood No. 2 grade or better or treated post.
- Set posts in 12" diameter concrete base, 27" deep on 3" of loose gravel.



### Fence Specifications

Height (in Feet)	Post Material (Size in inches)	Section Width (in feet)
4	4" x 4" posts	6-8
5	4" x 4" posts	6-8
6	4" x 4" posts	6

### Concrete Mix:

The concrete mix for footings must meet the strength of  $F'c = 4500$  psi minimum, Type V cement, Water Cement ratio 0.45

Construction of masonry fences require permits. Wood fences lower than 42 inches high and not supporting surcharge or top or toe of slope does not require a building permit from the City of Aliso Viejo Building & Safety. However, it is regulated by the California Building Code.

The following specifications are from the 2016 California Building Code used by the City of Aliso Viejo.

**I. Wall Height**

Fence height is measured from the top of the footing to the top of the wall.

**II. Masonry Fence Specifications**

Use the following specifications when constructing a masonry fence.

**1. Concrete Mix**

The concrete mix for footings must meet the strength of F'c = 4500 psi minimum, Type V Cement, Water Cement ratio 0.45

**2. Mortar Mix**

Mortar mix must meet the strength of F'c= 1800 psi minimum, or the following:  
1 part Portland cement  
3 ½ parts sand  
¼ part hydrated lime or lime putty  
Plastic cement may be used with 3 parts sand to 1 part plastic cement.

**3. Reinforcing Steel**

Reinforcing steel must be deformed and comply with ASTM specifications A615-82, Grade 40. When one continuous bar cannot be used, a lap or splice of 40-bar diameters is required.

**4. Grout Mix**

Grout must meet the strength of F'c=2000 psi minimum, or the following:  
• 1 part Portland cement  
• 3 parts sand  
• 2 parts pea gravel (3/8 – inch aggregate)  
Water added to pouring consistency without segregation of the grout constituents.  
Use of plastic cement is not allowed for grout.

**NOTE:** Fill cells solid with grout where steel occurs.

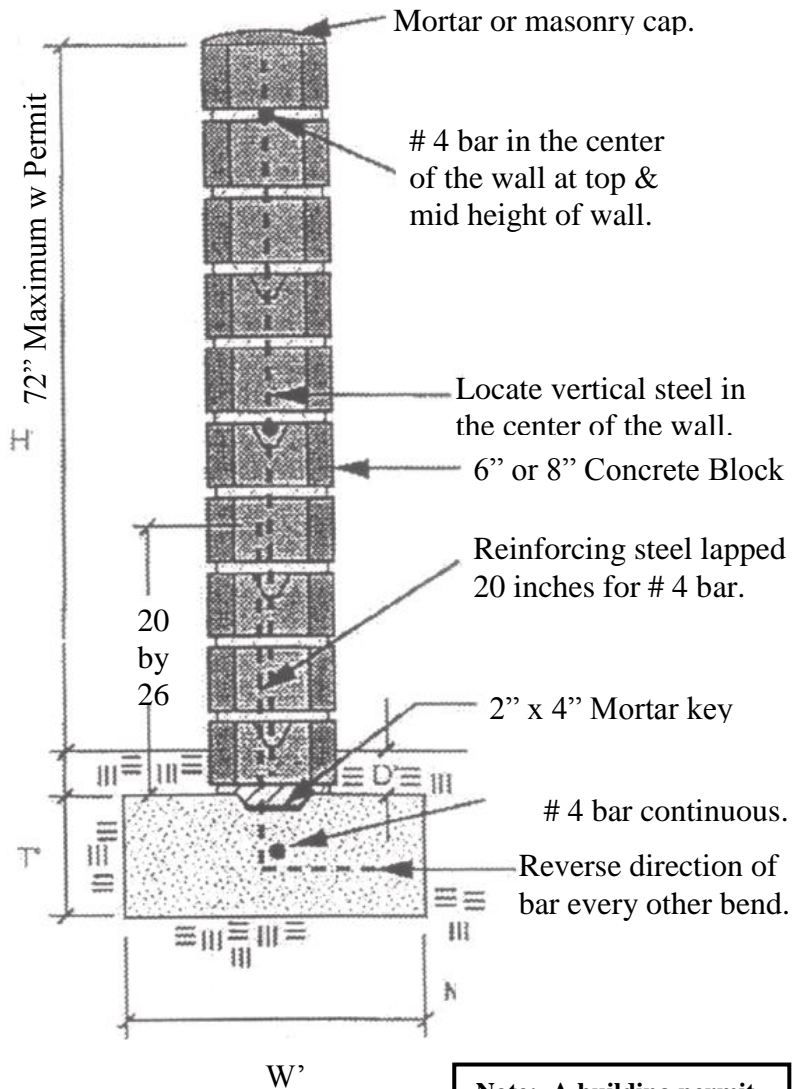
Rod or vibrate immediately. Re-rod or re-vibrate grout about 10 minutes after pouring to insure solid consolidation. Stop grout 2 inches from top of masonry units when grouting of second lift is to be continued at another time.

**5. Mortar Key**

To insure proper bonding between the footing and the first course of block, a mortar key must be formed by embedding a flat 2x4 flush with and at the top of the freshly poured footing. It should be removed after the concrete has started to harden (about 1 hour). A mortar key may be omitted if the first course of block is set into the fresh concrete when the footing is poured, and a good bond is obtained.

**6. Soil**

All footing must extend at least 24 inches into undisturbed natural soil compacted to at least 90 percent density. Soil should be dampened prior to placing concrete in footings. A soils report, completed by a licensed engineer, may be required.

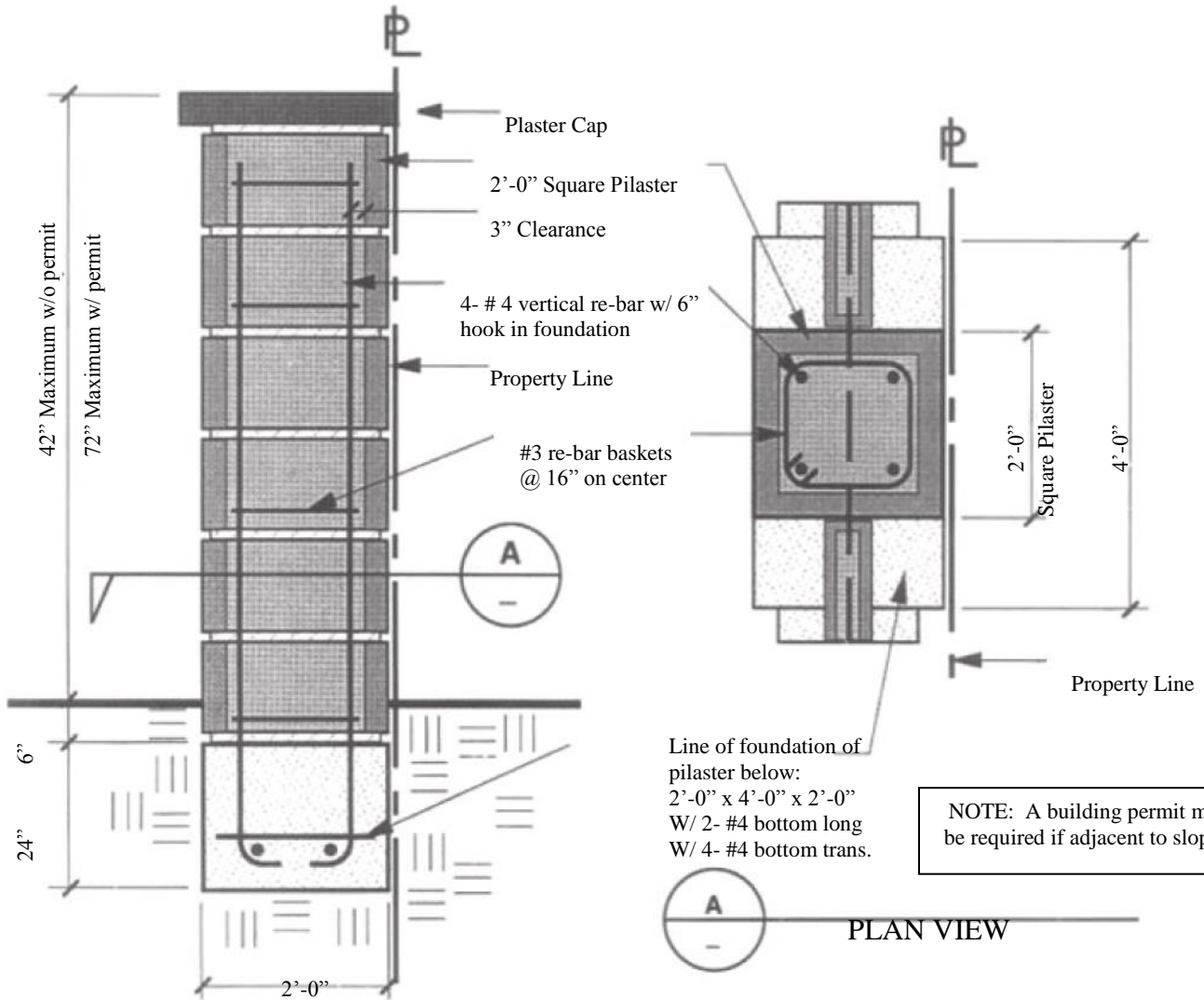


Expansion Joints Required every 25'

**Note: A building permit may be required if adjacent to slopes. Regardless of height.**

**REINFORCING STEEL REQUIREMENTS FOR MASONRY WALLS**

Wall Height	Material	W in Inches	T in Inches	D in Inches	Reinforcing Steel
4'-0"	6" Block	12"	24"	2"	#4 @ 32" o.c.
	8" Block	12"	24"	2"	#4 @ 16" o.c.
5'-0"	6" Block	12"	24"	4"	#4 @ 32" o.c.
	8" Block	18"	24"	4"	#4 @ 16" o.c.
6'-0"	6" Block	18"	24"	4"	#4 @ 24" o.c.
	8" Block	18"	24"	4"	#4 @ 16" o.c.



**NOTES:**

1. All cells shall be filled with grout per the masonry fence detail.
2. All construction must comply with the specifications for masonry fences.

**REINFORCED CONCRETE**

1. Cement shall conform to ASTM C- 150, Type V. (4500 psi) W/C 0.45
2. Aggregates shall conform to ASTM C-33 for structural normal weight concrete (1" maximum size) and ASTM C-330 for structural lightweight concrete.
3. Ready – mix concrete shall be mixed and delivered in accordance with ASTM C- 94.
4. Concrete design mixes shall be in accordance with Section 1905 of the California Building Code and shall be signed by a Registered Professional Engineer, registered in the state of California.