

## Rotated Foundation

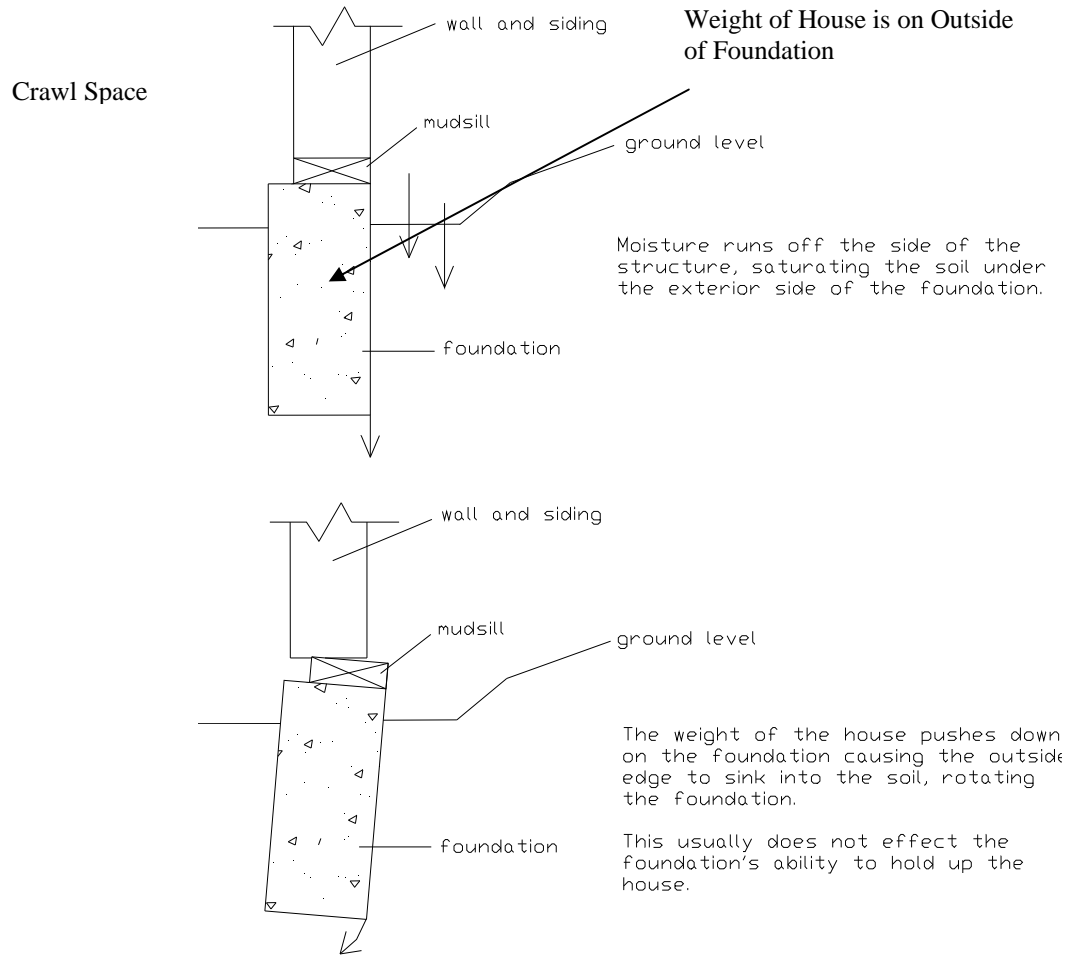


Image 6

Foundations are designed to do two things; hold the house up and secure bolts a retrofit. Rotation can cause the floor to sag slightly which may be unattractive, but otherwise has little impact on serving its two functions.

## Brick Foundations

In some cases it is possible to bolt into the brick. Foundation core samples must be taken to prove this. If it passes the core test, you can bolt into it. .



Successful core sample by certified testing agency was taken here and deemed OK for bolting.

Image 7



Image 8

This foundation should have segments of parallel foundations with new shear walls built in the crawls space. .

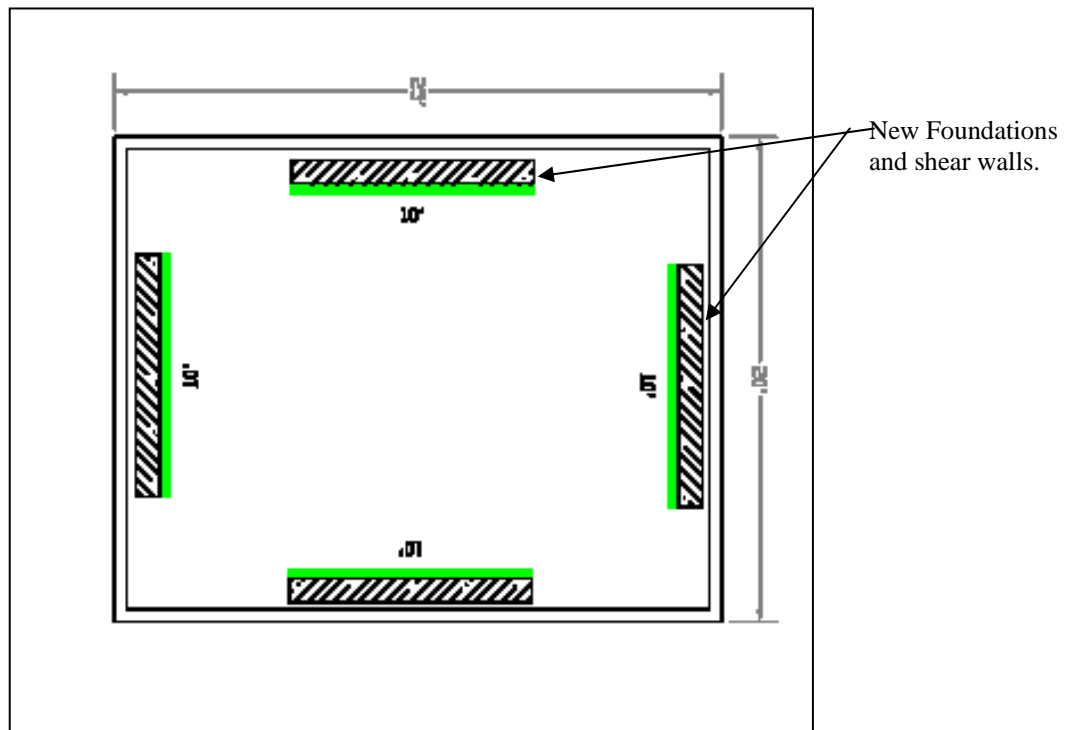
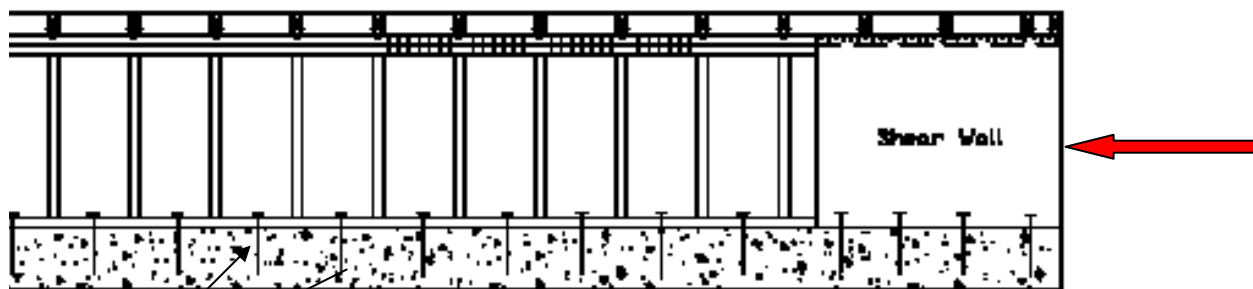


Image 9

Segments of new foundations and shear walls placed in the crawlspace alongside the brick. This can also be used for deficient foundations or no foundation at all. .



BOLT TWO FEET APART

Earthquake Force Goes Into Entire Weak Foundation

## Bench Piers



Image 10  
Foundation Crack



Image 11  
Dig under crack for new concrete



Image 12  
Drilling into Foundation for Rebar



Image 13  
All Rebar Installed.



Image 14  
Concrete in Hole

## TESTS and BUILDING CODES

STRUCTURAL ENGINEER'S ASSOCIATION OF SOUTHER CALIFORNIA-November 1992

### RESIDENTIAL FOUNDATION ANCHORAGE TEST REPORT

The strength of the concrete did not appreciably affect the performance of the foundation in weaker concrete ( $f'_c$  approximately 1500psi).

#### 1997 UNIFORM CODE FOR BUILDING CONSERVATION

TABLE A-1-D—ALLOWABLE VALUES FOR EXISTING MATERIALS

3. Existing footings, wood framing, structural steel and reinforced steel	$f'_c = 1,500$ psi (10.34 MPa) unless otherwise shown by tests <sup>4</sup> Allowable stress same as D.F. No. 1 <sup>4</sup> $f = 18,000$ lbs. per square inch (124.1 N/mm <sup>2</sup> ) maximum <sup>4</sup> $f = 20,000$ lbs. per square inch (137.9 N/mm <sup>2</sup> ) maximum <sup>4</sup>
3.1 Plain concrete footings	
3.2 Douglas fir wood	
3.3 Reinforcing steel	
3.4 Structural steel	

<sup>1</sup>Material must be sound and in good condition.

<sup>2</sup>A one-third increase in allowable stress is not allowed.

<sup>3</sup>Shear values of these materials may be combined, except the total combined value shall not exceed 300 pounds per foot (4380 N/m).

<sup>4</sup>Stresses given may be increased for combinations of loads as specified in the Building Code.

