



CHANGES IN THE DESIGN AND CONSTRUCTION HOUSING CODE OF THE YEAR 1997 AND THE NEW PROPOSAL OF 2004.



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HISTORY OF HOUSING CODES IN EL SALVADOR





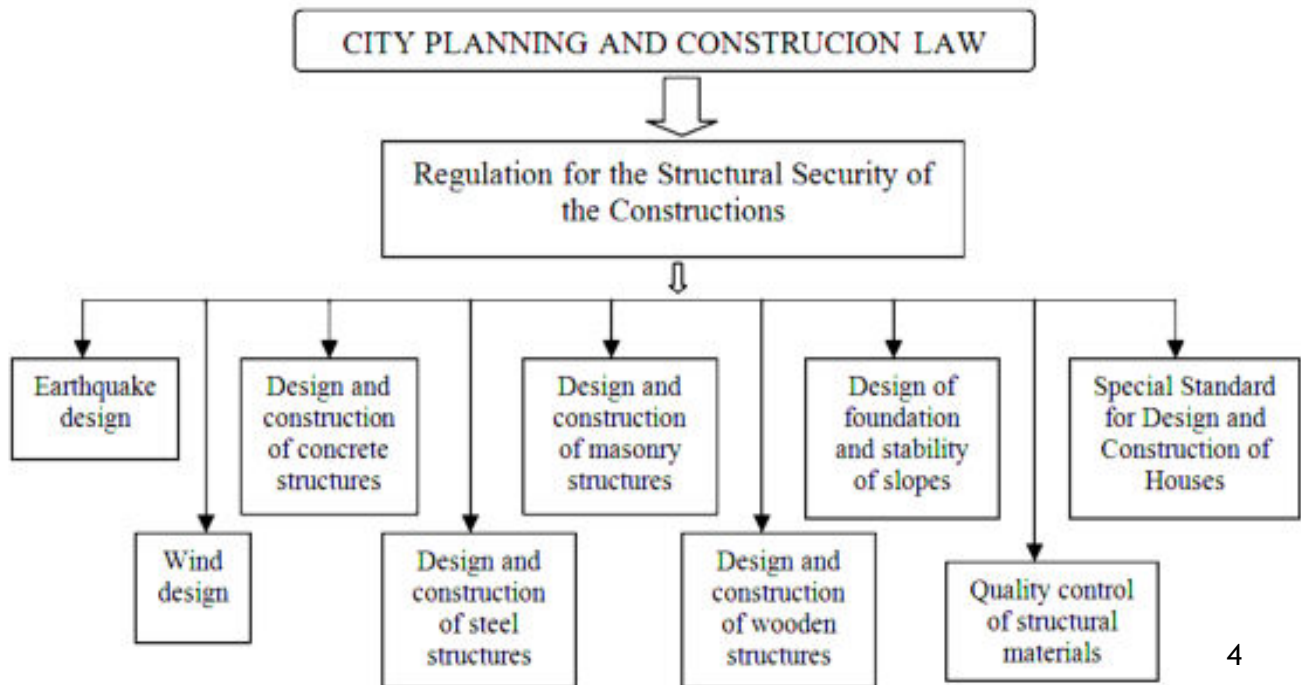
HISTORY OF CODES IN EL SALVADOR

Earthquake	Magnitude Richter		
03/05/1965	6.3 o 6.5	⇒	Appears first code in 1966
10/10/1986	7.5	⇒	Emergency code 1986 (it was suppose to last only for 1 year)
In 1997 a new code appear to substitute the emergency code			
13/01/2001	7.6	⇒	Hospital code is been done and a Proposal code for housing is issue
13/02/2001	6.6		in 2004

Damage occurred in rural hosing and landslides



DISTRIBUTION OF THE CODES 1997







TAISHIN PROJECT

EARTHQUAKE-RESISTANT POPULAR HOUSING





INVESTIGATION IN TAISHIN



BLOCK PANEL
(REFABRICATE)



INVESTIGATION IN TAISHIN



ADOBE



INVESTIGATION IN TAICHUNG



CONFINED MASONRY OF
SOIL CEMENT BRICKS



INVESTIGATION IN TAISHIN



REINFORCED MASONRY
OF CEMENT BLOCKS



OBJECTIVE OF THE PROJECT

- ⦿ First phase

Its main objective was to improve the seismic capacity of the 4 constructive systems most popular in the rural areas

- ⦿ Second phase

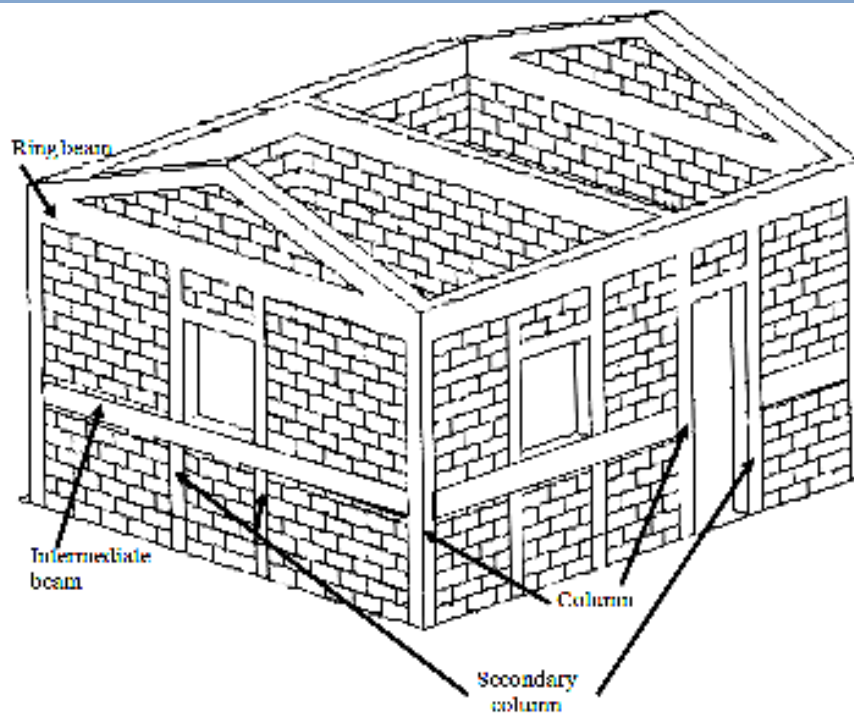
The second phase investigation is to revise and validate the minimum requirements in the housing code of El Salvador, also to generate inputs and give recommendations for the elaboration of a technical guideline for panel block and 3 technical standards for social housing of one story of adobe, cement block and soil-cement brick

CHANGES IN THE CONSTRUCTION FOR CONFINED MASONRY



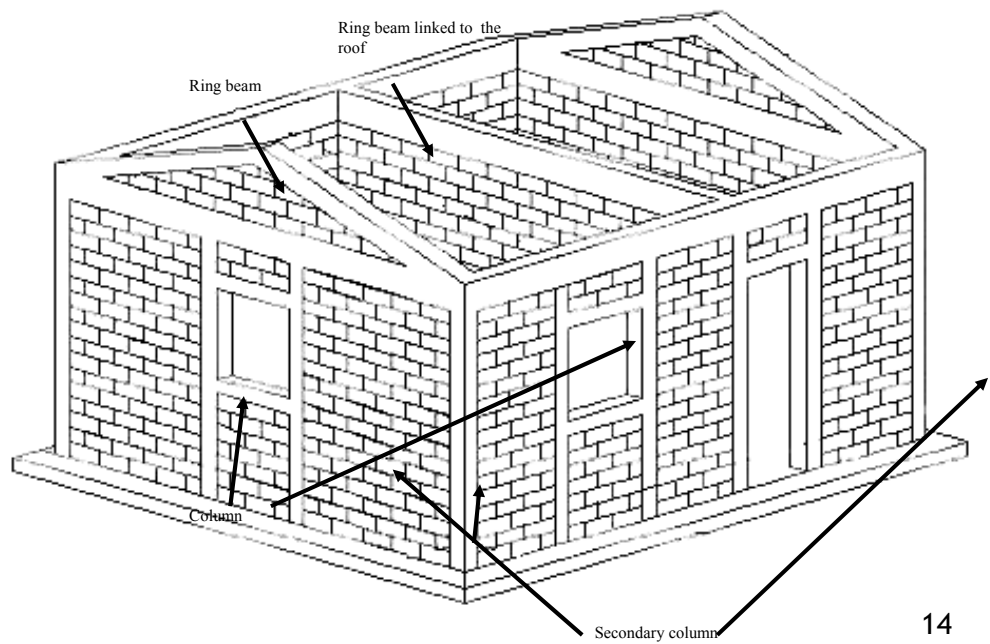


CONSTRUCTION OF CONFINED MASONRY STRUCTURES 1997



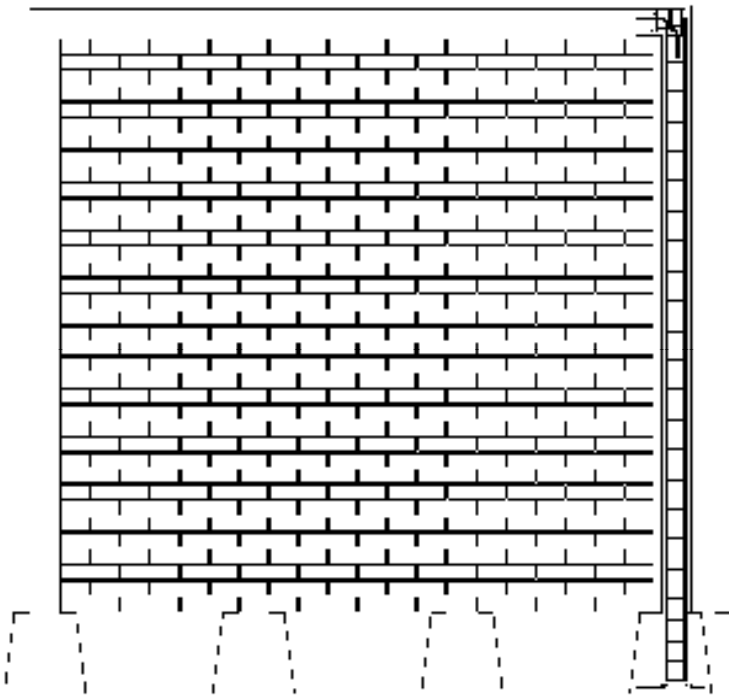


CONSTRUCTION OF CONFINED MASONRY STRUCTURES 2004





TESTS MADE IN EL SALVADOR FOR CONFINED MASONRY (USING SOIL-CEMENT BRICKS)

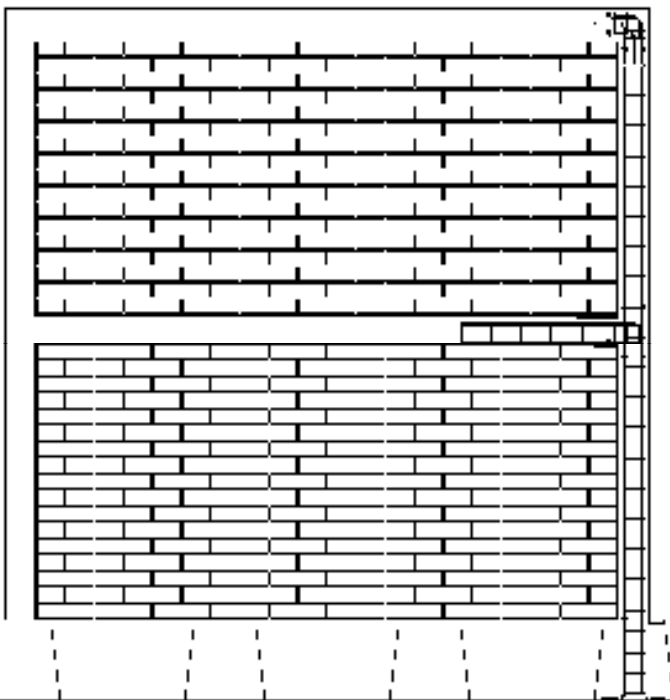


Types of load apply to the specimen

- Monotonic loading
- Cyclic loading



TESTS MADE IN EL SALVADOR FOR CONFINED MASONRY (USING SOIL-CEMENT BRICKS)



Types of load apply to the specimen

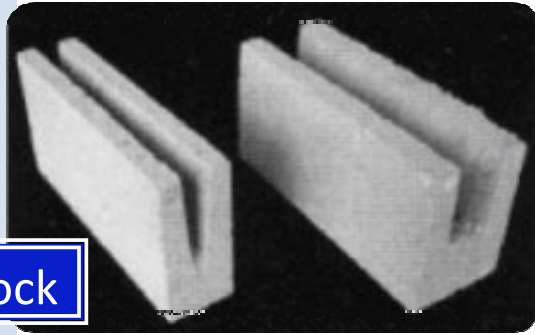
- Cyclic loading

CHANGES IN THE CONSTRUCTION FOR REINFORCED MASONRY

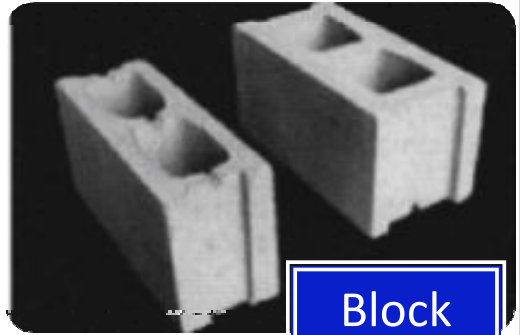




TYPES OF BLOCKS USE IN THE CONSTRUCTION



Solera Block

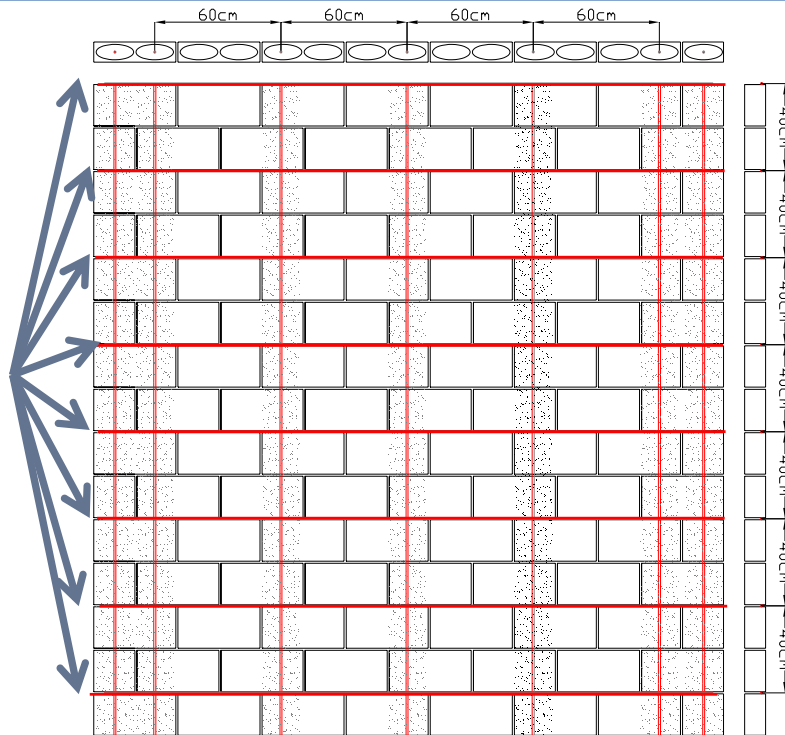
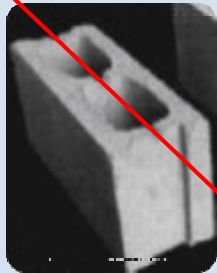


Block





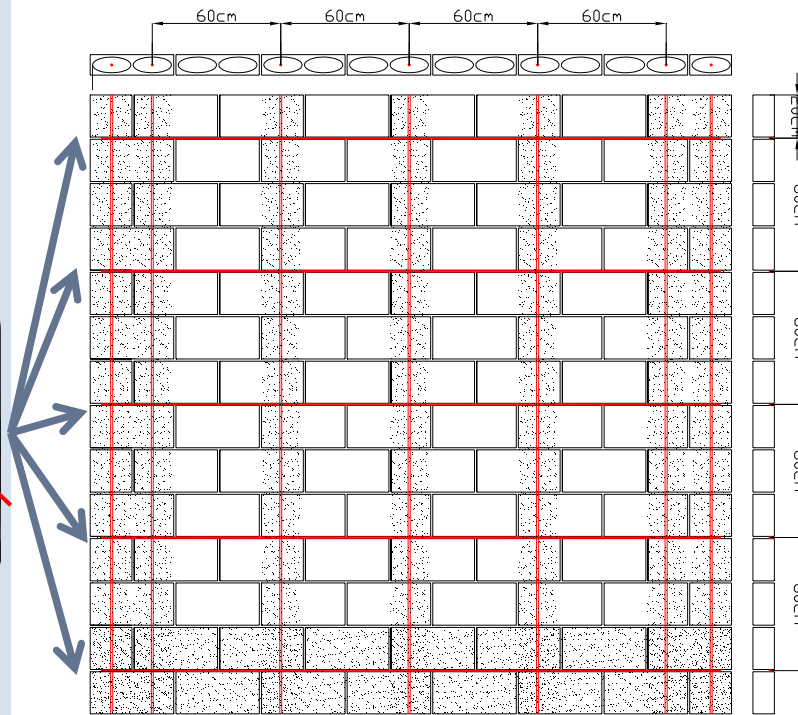
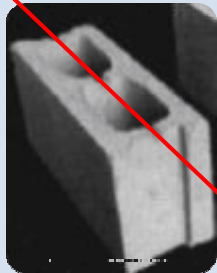
CONSTRUCTION OF REINFORCED MASONRY STRUCTURES 1997





CONSTRUCTION OF REINFORCED MASONRY STRUCTURES 2004

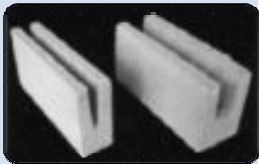
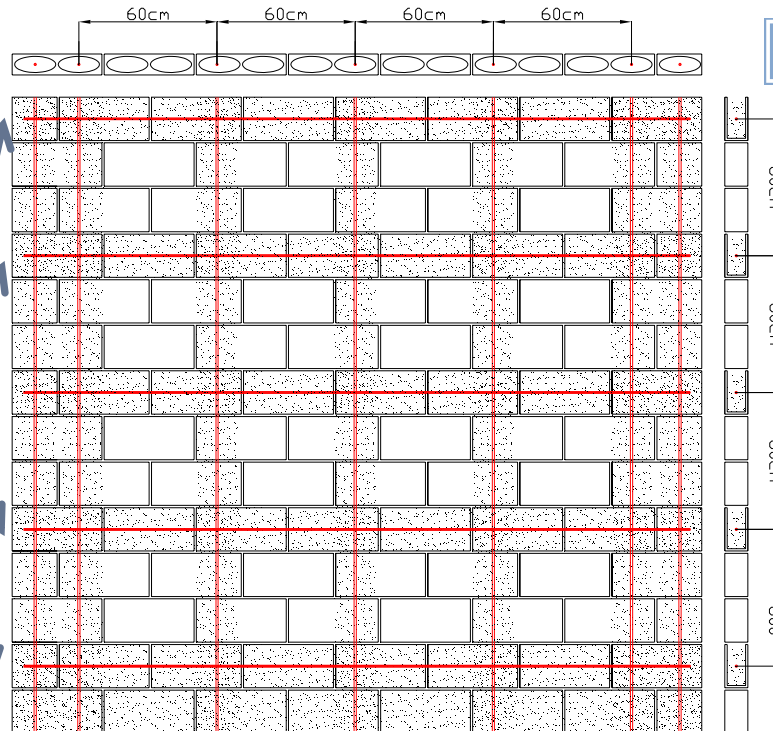
Option 1





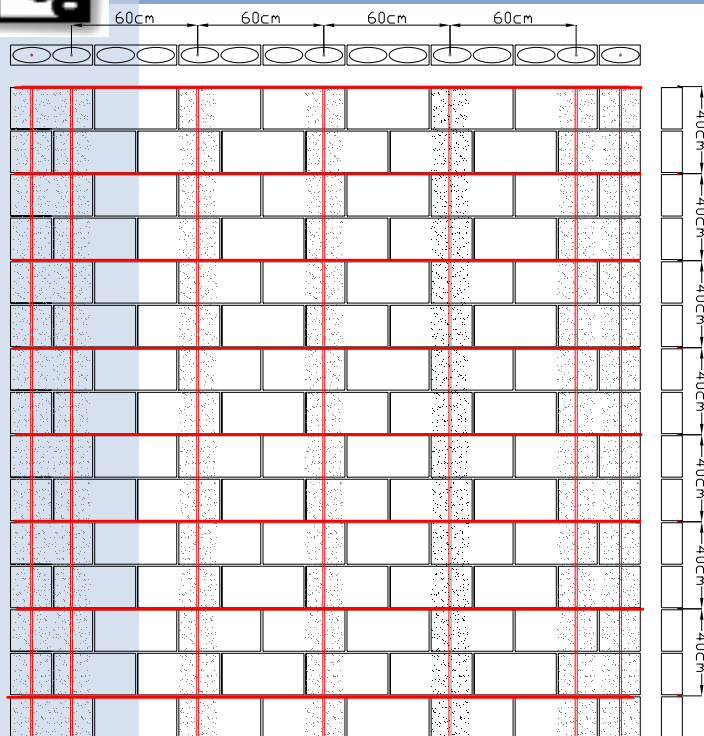
CONSTRUCTION OF REINFORCED MASONRY STRUCTURES 2004

Option 2





TESTS MADE IN EL SALVADOR FOR REINFORCED MASONRY (USING CEMENT BLOCKS)

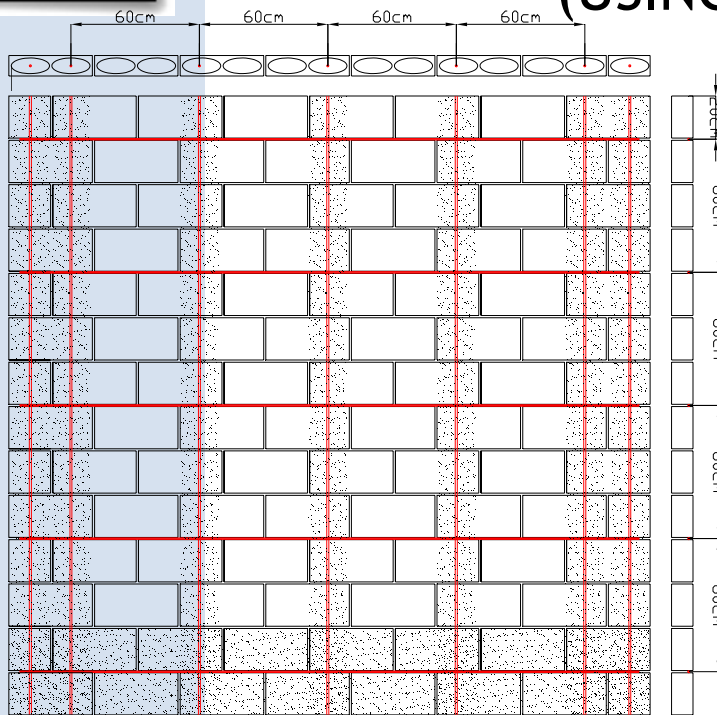


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TESTS MADE IN EL SALVADOR FOR REINFORCED MASONRY (USING CEMENT BLOCKS)

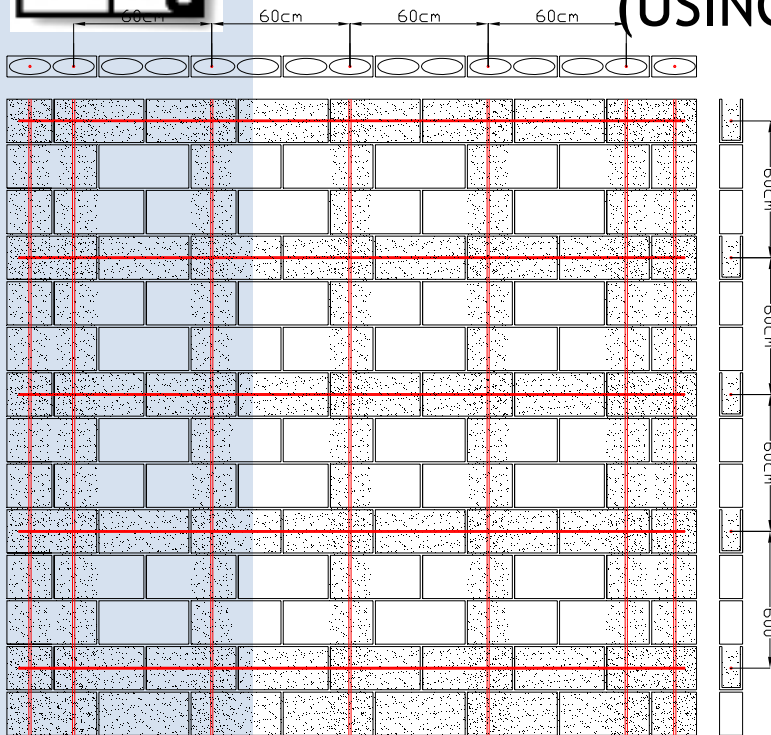


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TESTS MADE IN EL SALVADOR FOR REINFORCED MASONRY (USING CEMENT BLOCKS)

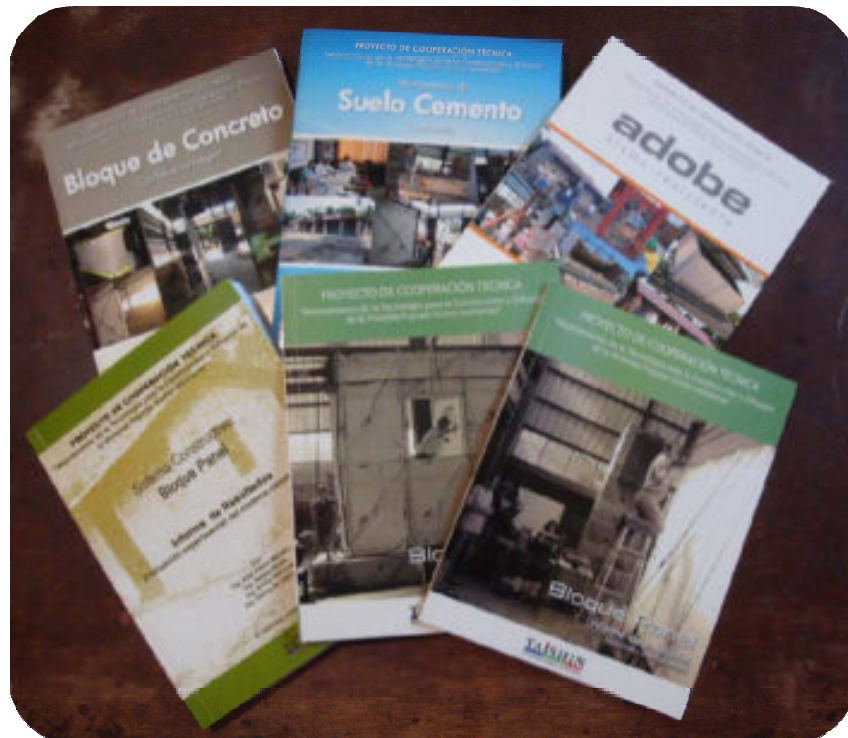


Types of load apply to the specimen

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INVESTIGATION RESULTS



CHANGES IN THE CONSTRUCTION FOR THE FOUNDATION BEAM



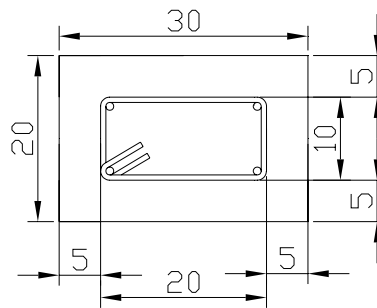


THE FOUNDATION BEAM

- 1997 Housing Code

It mentions that for a one story house the foundation beam should be continuous with a transversal section of reinforced concrete with a minimum width of 30 cm and a minimum height of 20 cm. The reinforcement shall be at least 3 longitudinal bars № 3 (diameter of 3/8 inch) and stirrup bar of No. 2 (diameter of 1/4 inch) with maximum spacing of 20 cm.

In construction usually is use a 4 longitudinal bar arrangement.



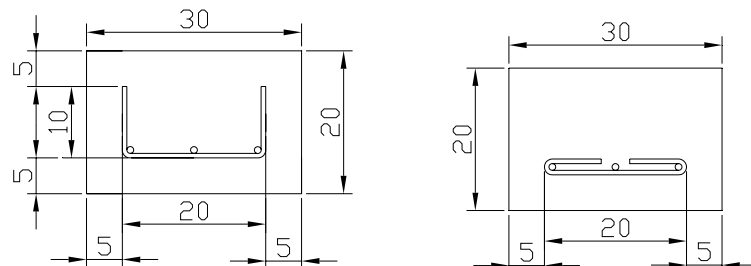


THE FOUNDATION BEAM

- © 2004 Proposal Housing Code

For a one story house the foundation beam should be continuous with a transversal section of reinforced concrete with a minimum width of 30 cm and a minimum height of 20 cm. The reinforcement shall be at least 3 longitudinal bars № 3 (diameter of 3/8 inch) and stirrup bar of No. 3 (diameter of 3/8 inch) with maximum spacing of 20 cm.

The proposal codes gives example of the arrangement that should be use



*Thank you
Muchas Gracias*



Metropolitan Cathedral