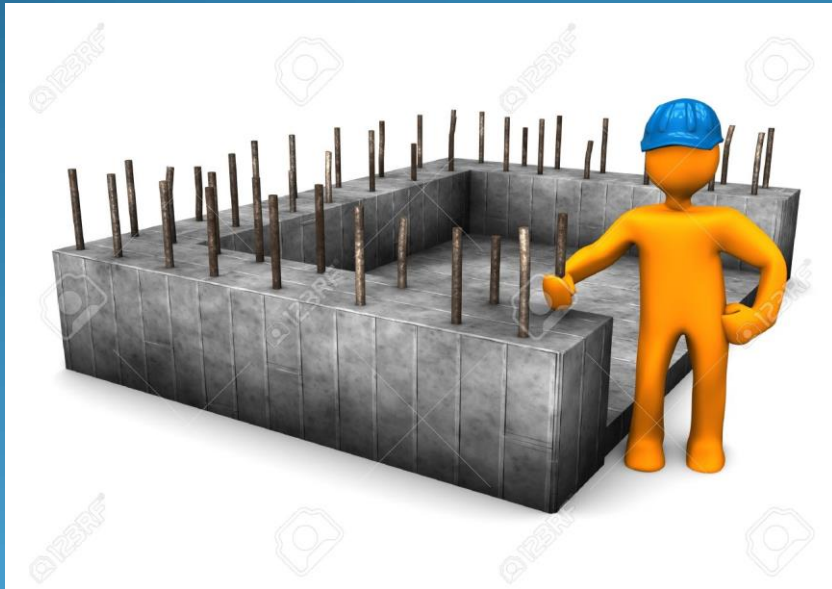


Building Construction & Materials

CV0312

SHALLOW FOUNDATION



Presented by:
Prof. Nirali Padhiyar

- **Foundation:**

- Foundation is the lowest part of a structure which provides a base for the super-structure and transmit the loads (live load, wind load) on the structure including the dead weight of the structure itself to the soil below.

Types of Foundation:

Foundation can be broadly classified into two types–

1. Deep Foundations
2. Shallow Foundations

Shallow foundations:

Foundation is placed immediately lowest part of the super structure, is termed as **Shallow foundation**.

Why we use shallow foundation?

- To distribute the structural loads over a wide horizontal area at a shallow depth below the ground level.

The various types of **shallow foundations** are :

- (a) Spread footing**
- (b) Combined footing**
- (c) Strap footing**
- (d) Mat or Raft foundation.**

Spread footings

Spread footings are structural members used to support columns and walls and to transmit and distribute their loads to the soil.

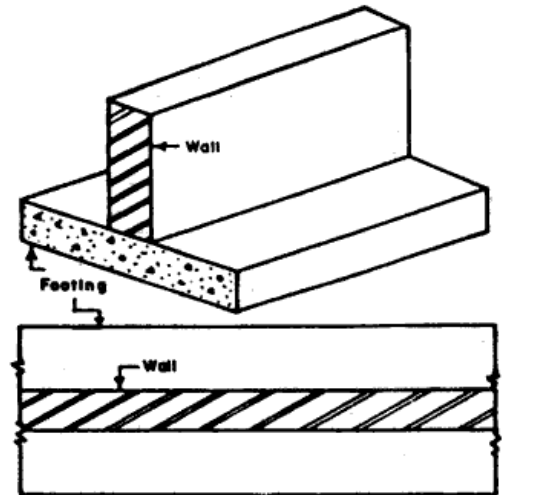
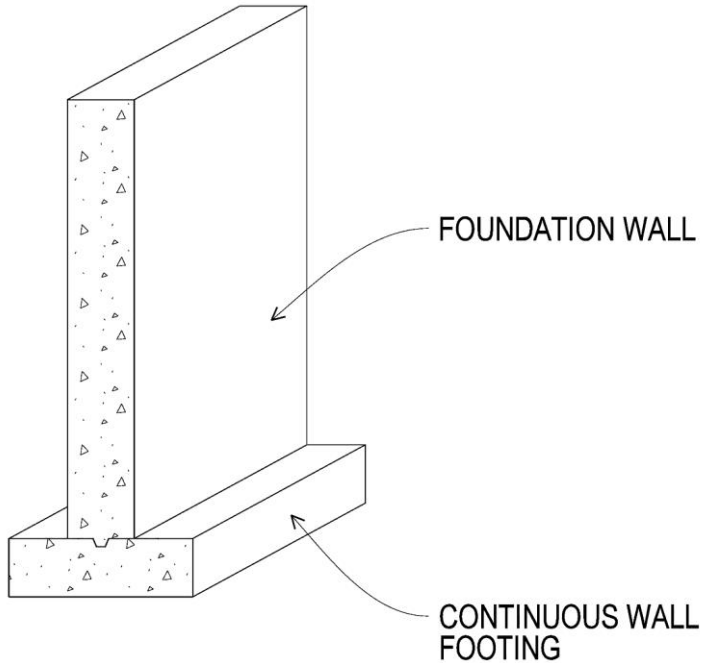


Types of spread footing

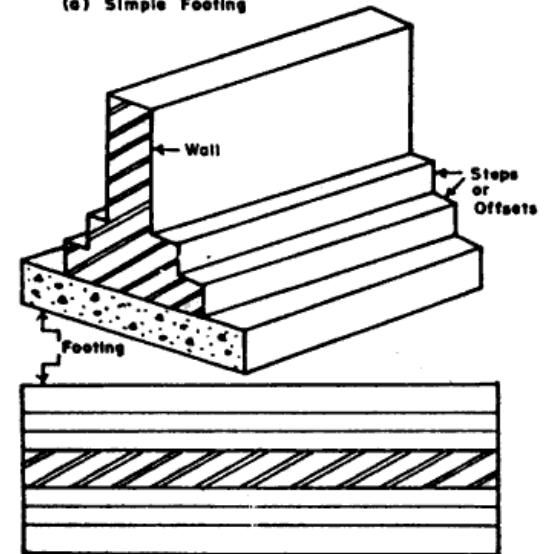
- Single footing
- Stepped footing
- Sloped footing
- Wall footing without step
- Stepped footing for wall
- Grillage foundation

Wall Footing

Stepped footing for wall

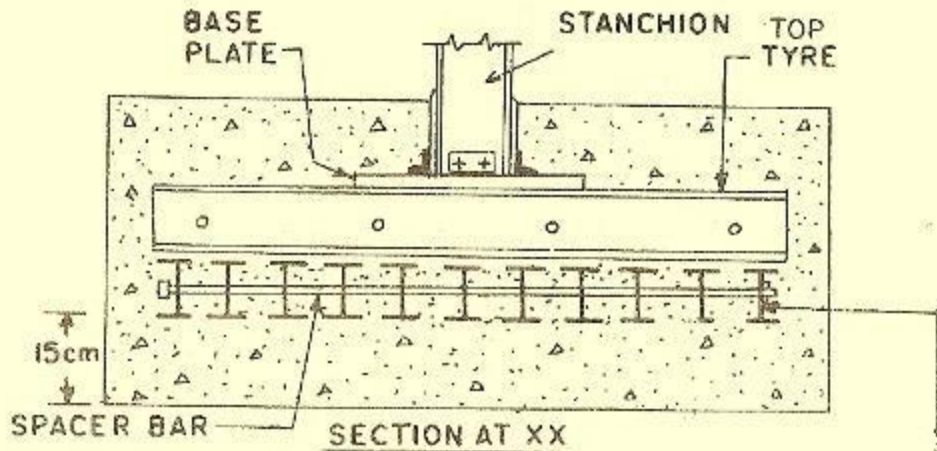


(a) Simple Footing



(b) Stepped Footing

Grillage Foundation



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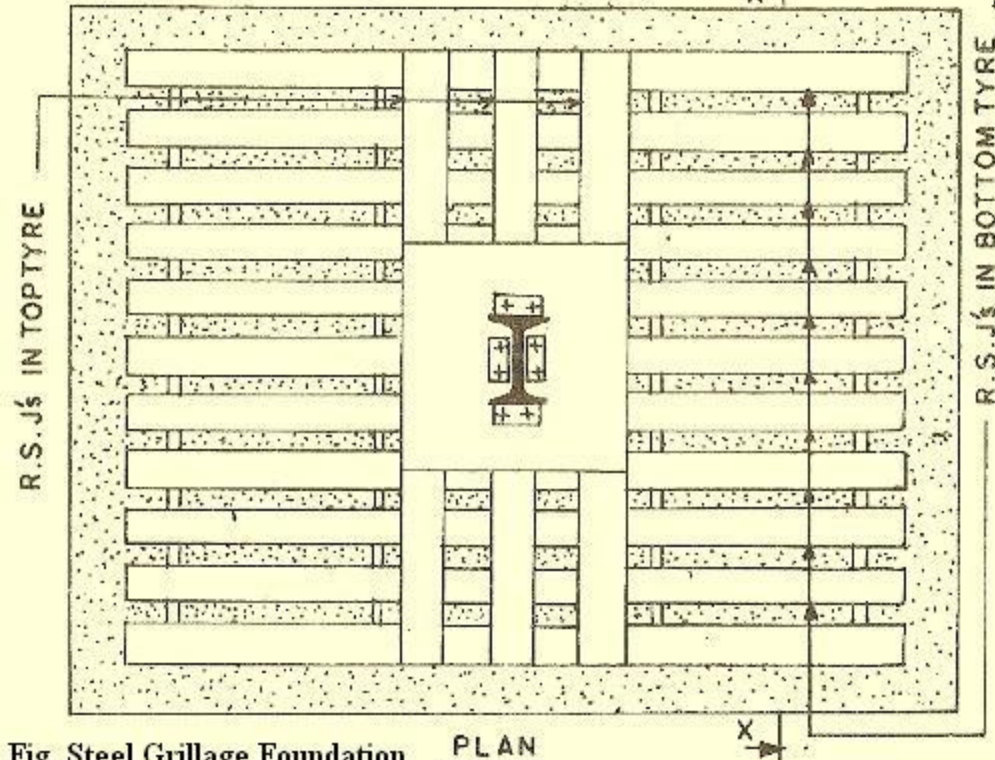
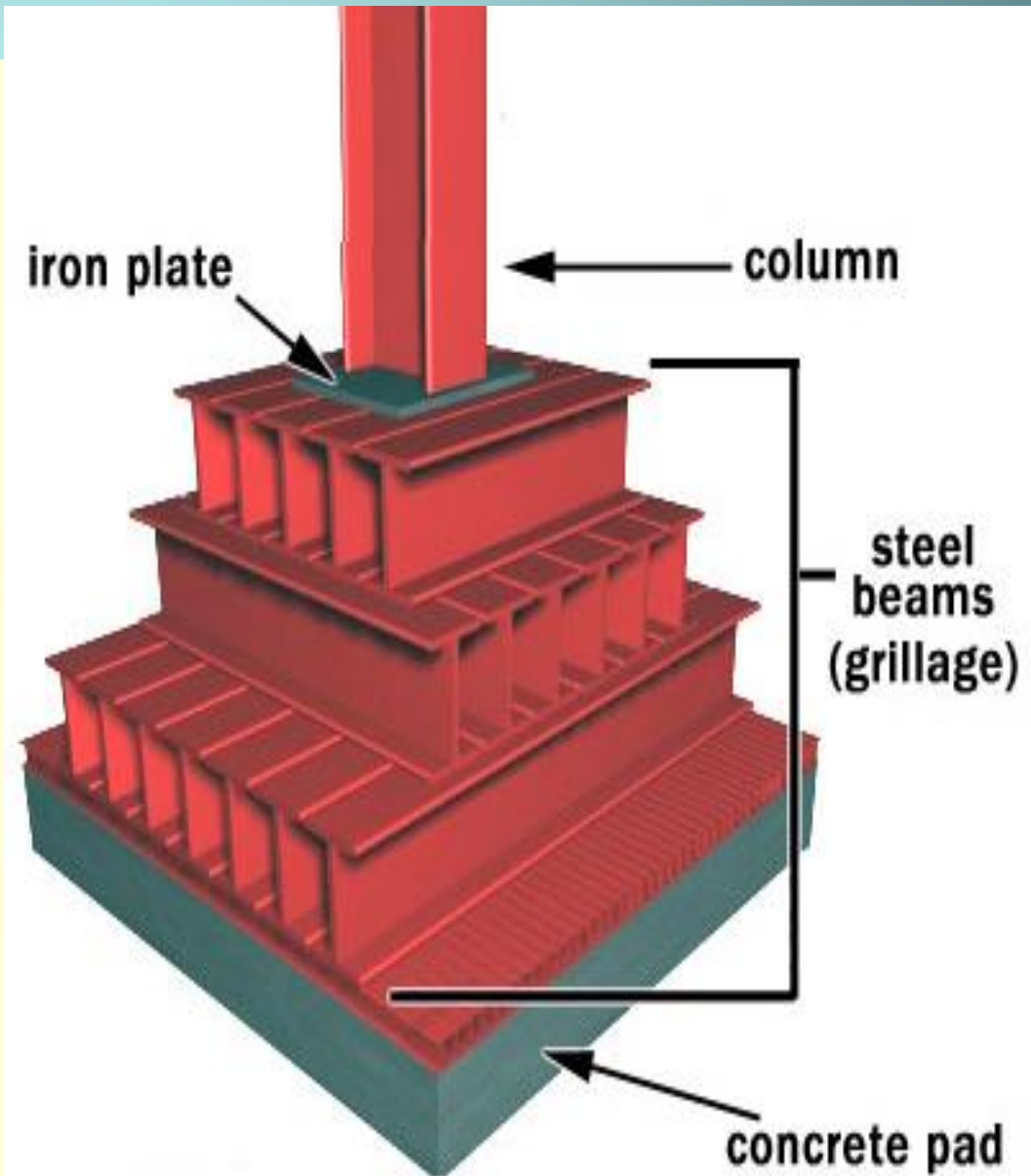


Fig. Steel Grillage Foundation



PROCEDURE OF COLUMN FOOTINGS

EARTHWORK



LEVELING





3" BRICK FLAT SOLING

Support

Brick flat soling

9'X9' Wooded Frame

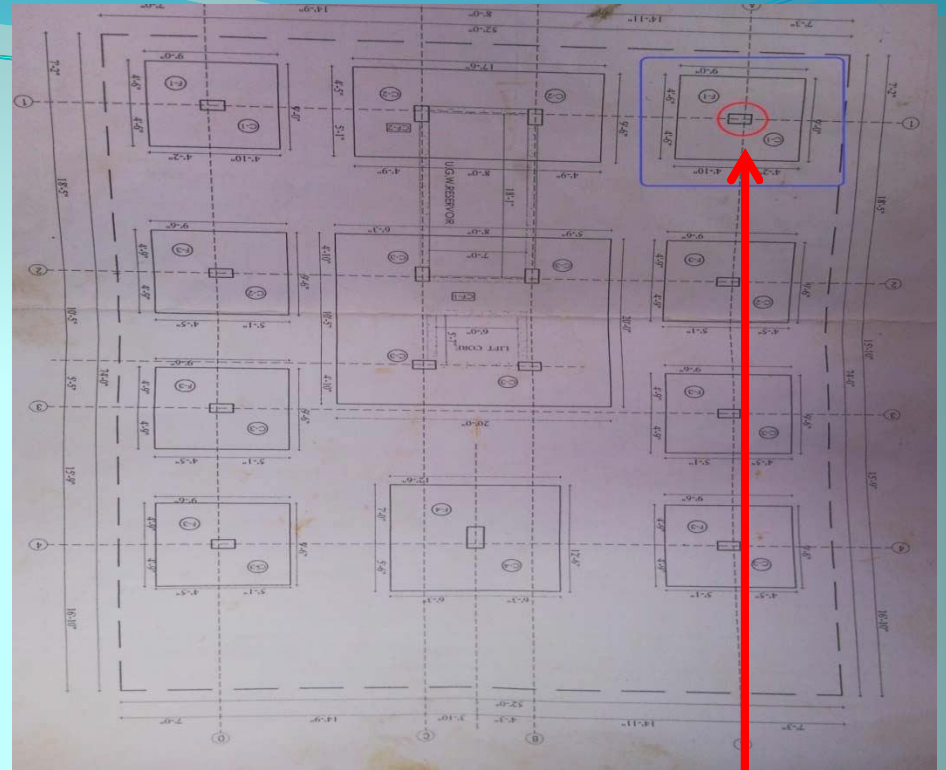
BINDING THE RODS

Joint of rod

Wires



POSITION OF RODS



PLAN

Upper rod

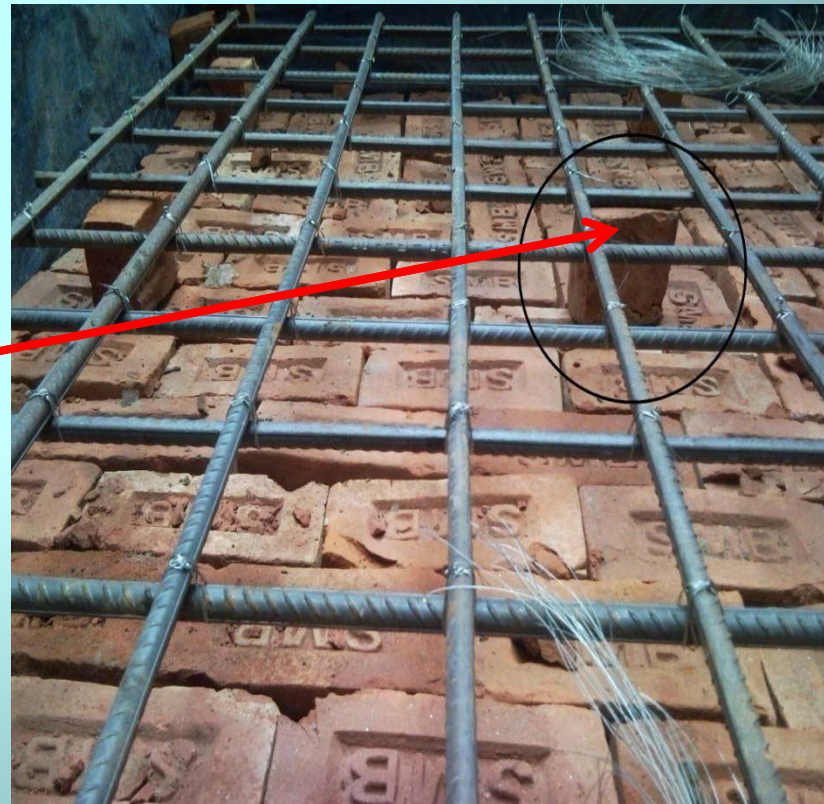
Inner rod

6" interval



CLEAR COVERS
& BLOCKS

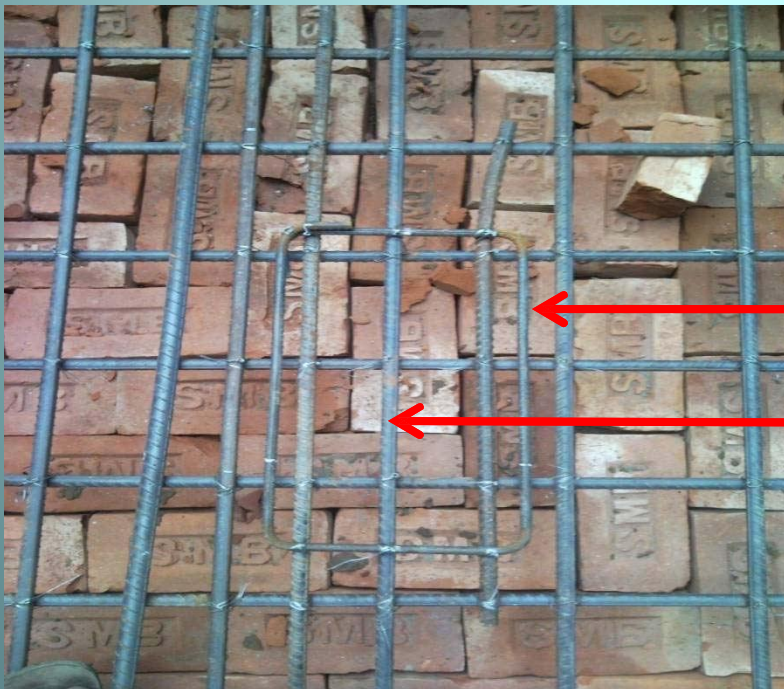
3" Clear cover



6" Block

CENTERING THE COLUMN

Centering with plumb bob



Ring

Centre point of column



PREPARED COLUMN REINFORCEMENT

6" Interval ring

LENGTH & WIDTH OF RING

Length 17"



Width 9"

PUTTING THE COLUMN INTO THE FOOTING





CAVING TENDENCY

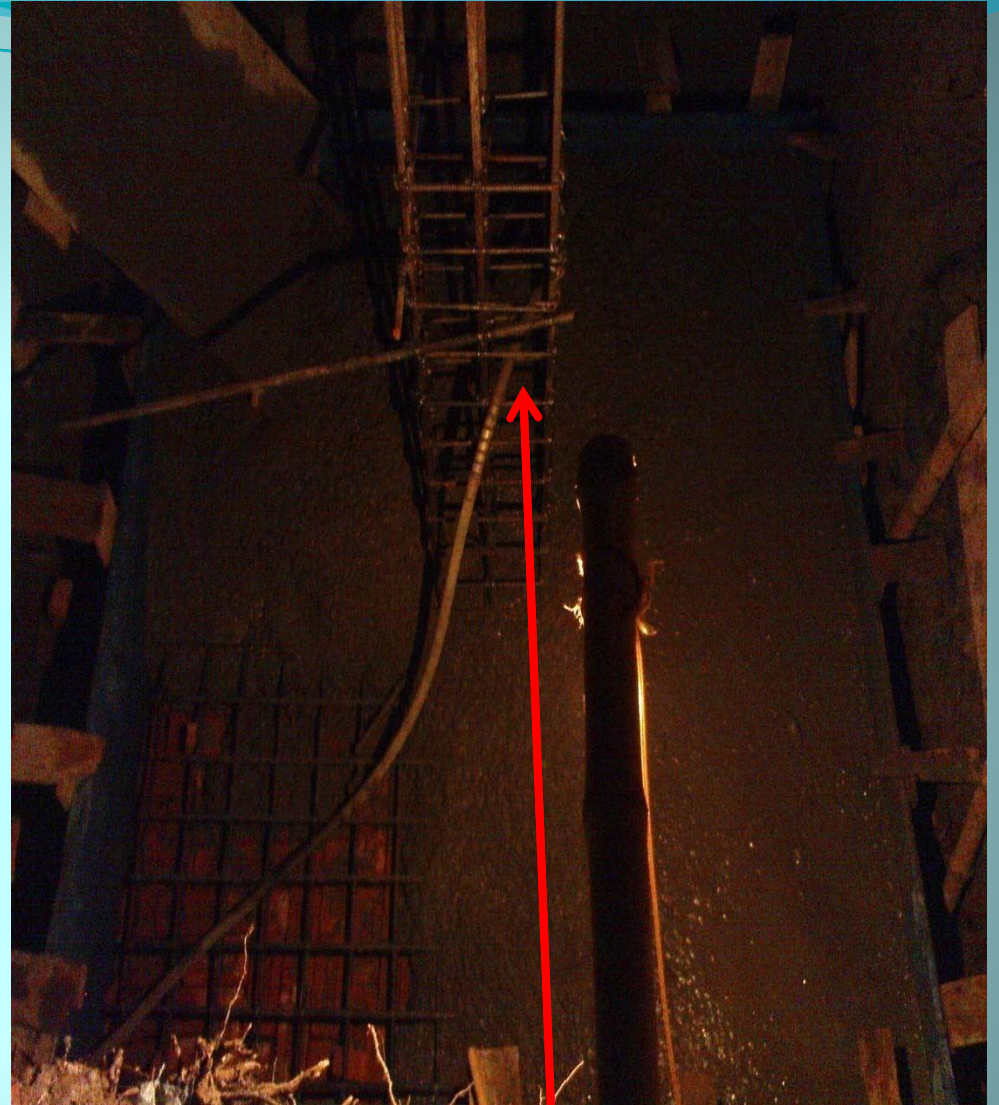
→ Load bearing support

SUPPORTING THE COLUMN



LEVELLING THE COLUMN

PORING CEMENT CONCRETE



Vibrating



A
COMPLETE
COLUMN
FOOTING

Combined footings

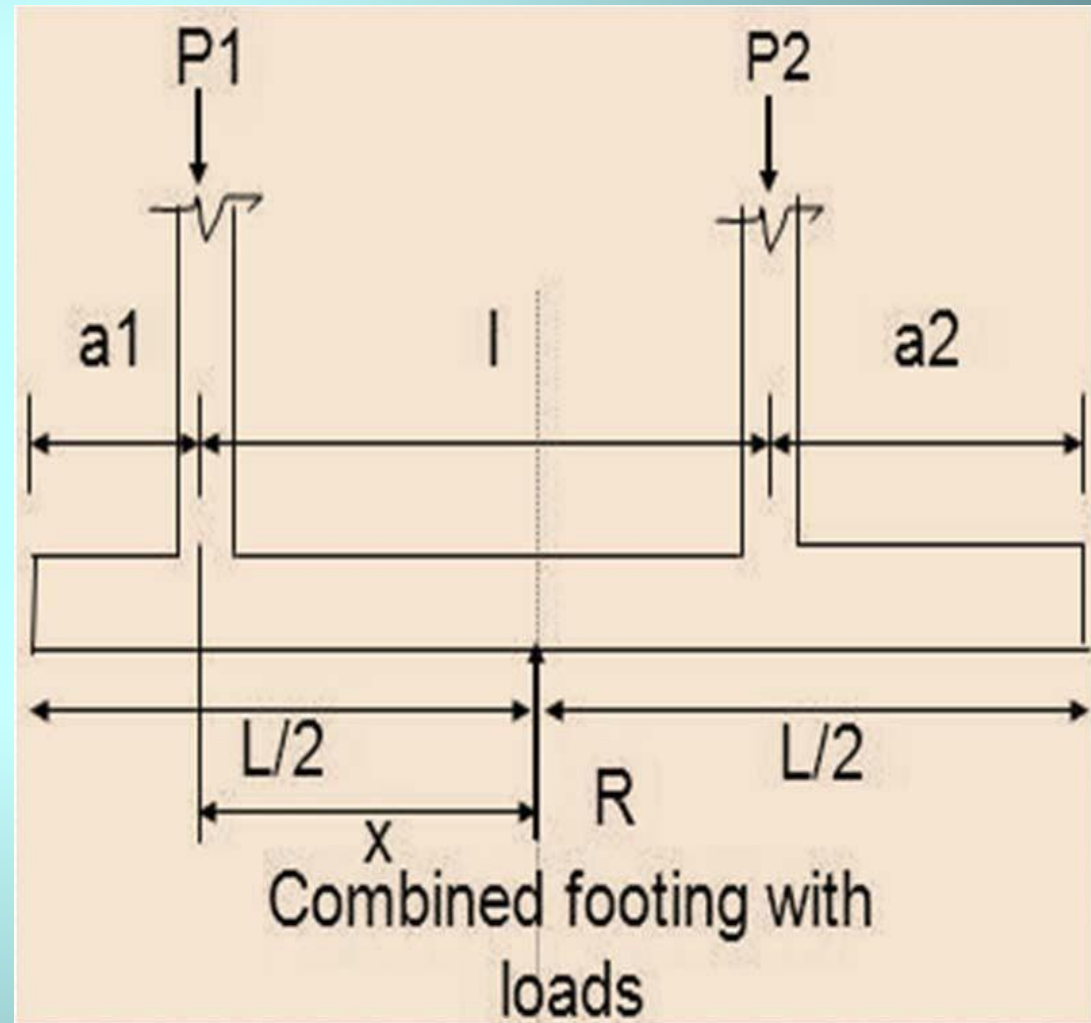
Combined footings usually support two columns, or three columns not in a row.

Combined footings are used when two columns are so close that single footings cannot be used or when one column is located at or near a property line.



WHY COMBINED FOOTINGS?

- When two columns are close together, causing overlap of adjacent isolated footings.
- When soil bearing capacity is low, causing overlap of adjacent isolated footings.



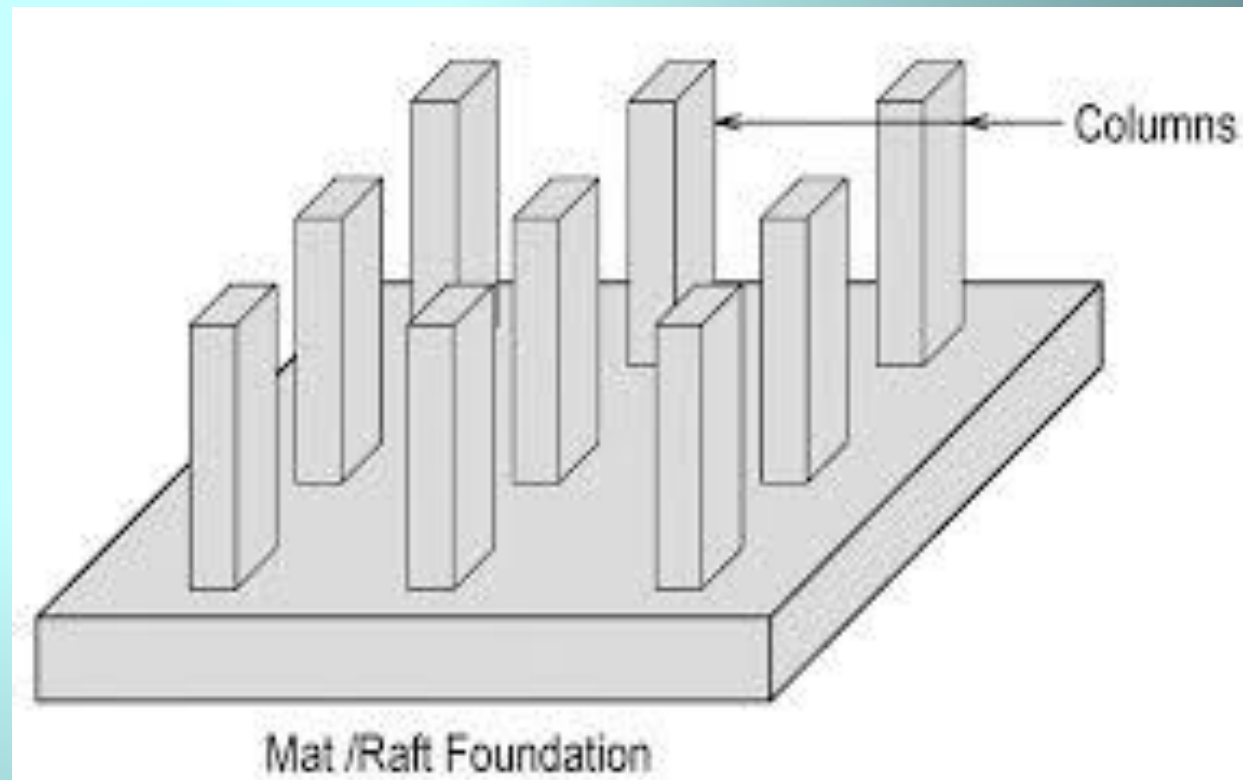


A COMPLETE COMBINED FOOTING

Raft / Mat Foundation

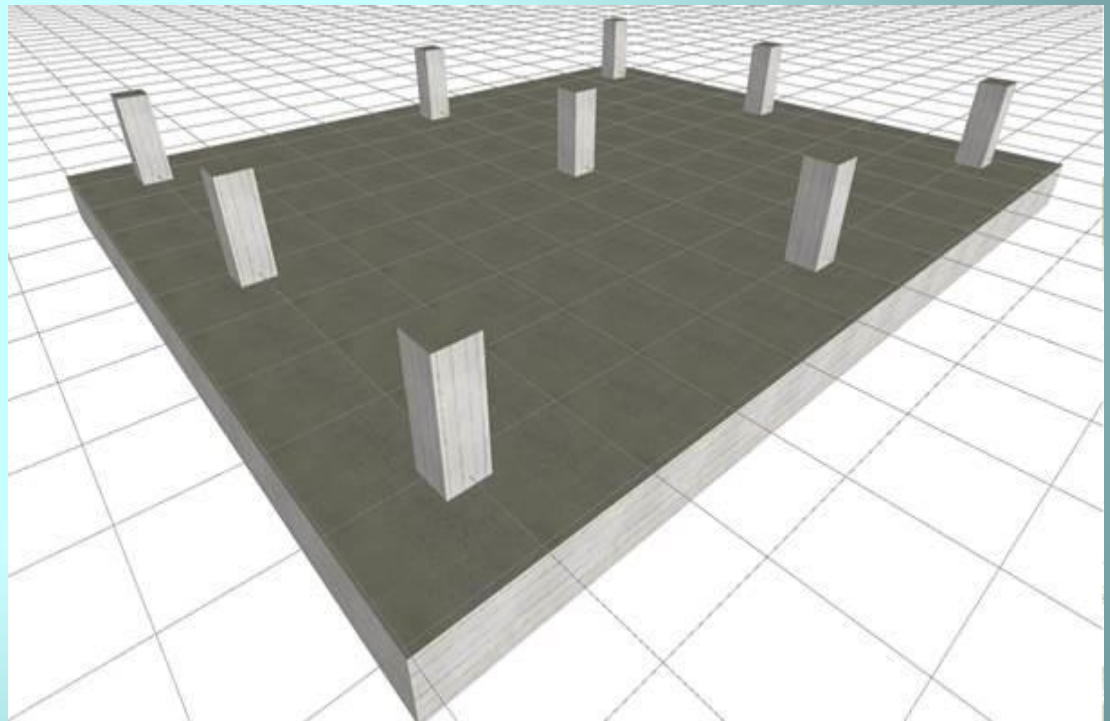
Foundation which consists of thick reinforced concrete slab covering the entire area of the bottom of the structure like a floor.

This foundation was invented by John Root at Chicago in 19th century.



Why Raft Foundation?

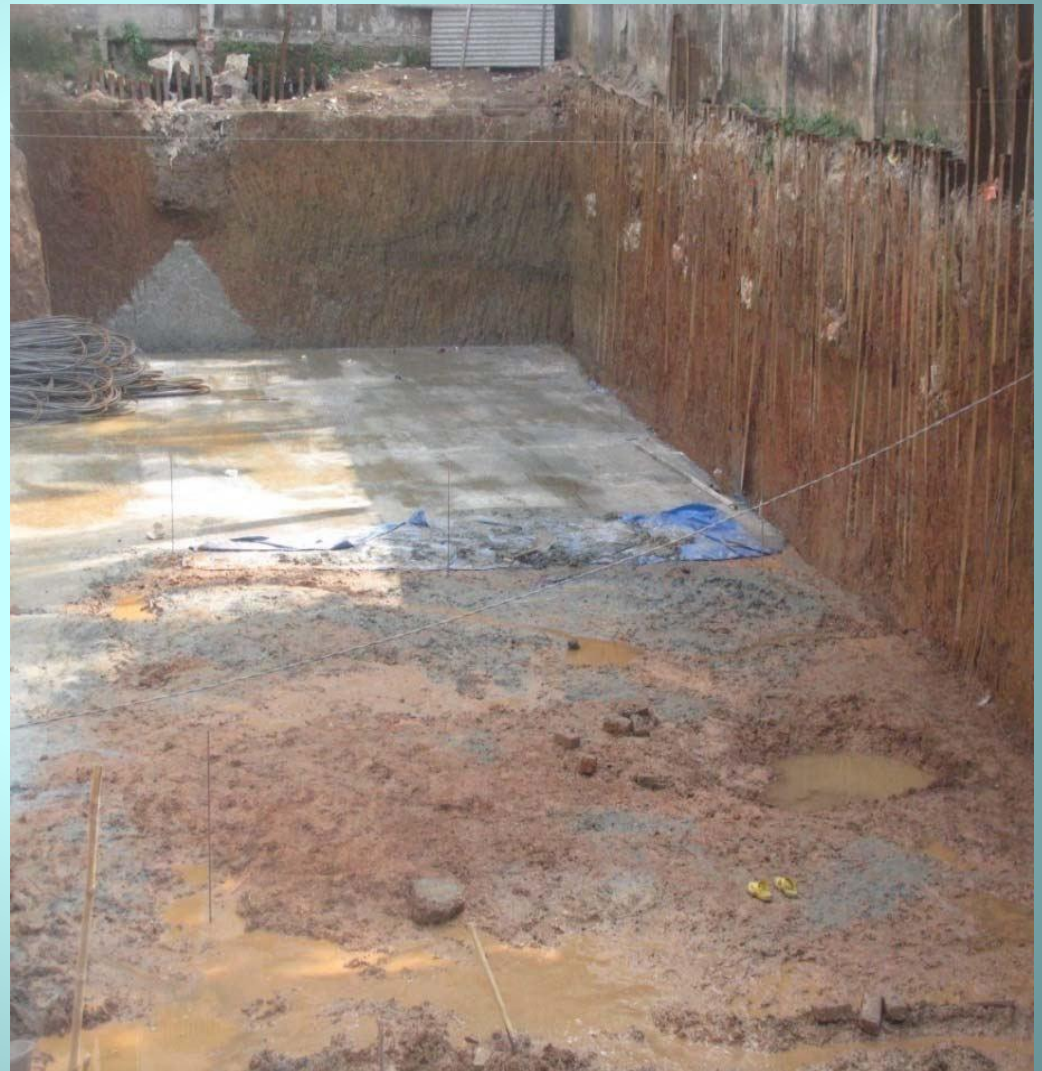
- Base soil has low bearing capacity or the column loads are so large that more than 50% of the area is covered by conventional spread footings.
- Resist unequal settlement due to earthquake.
- Quickness of the construction work.



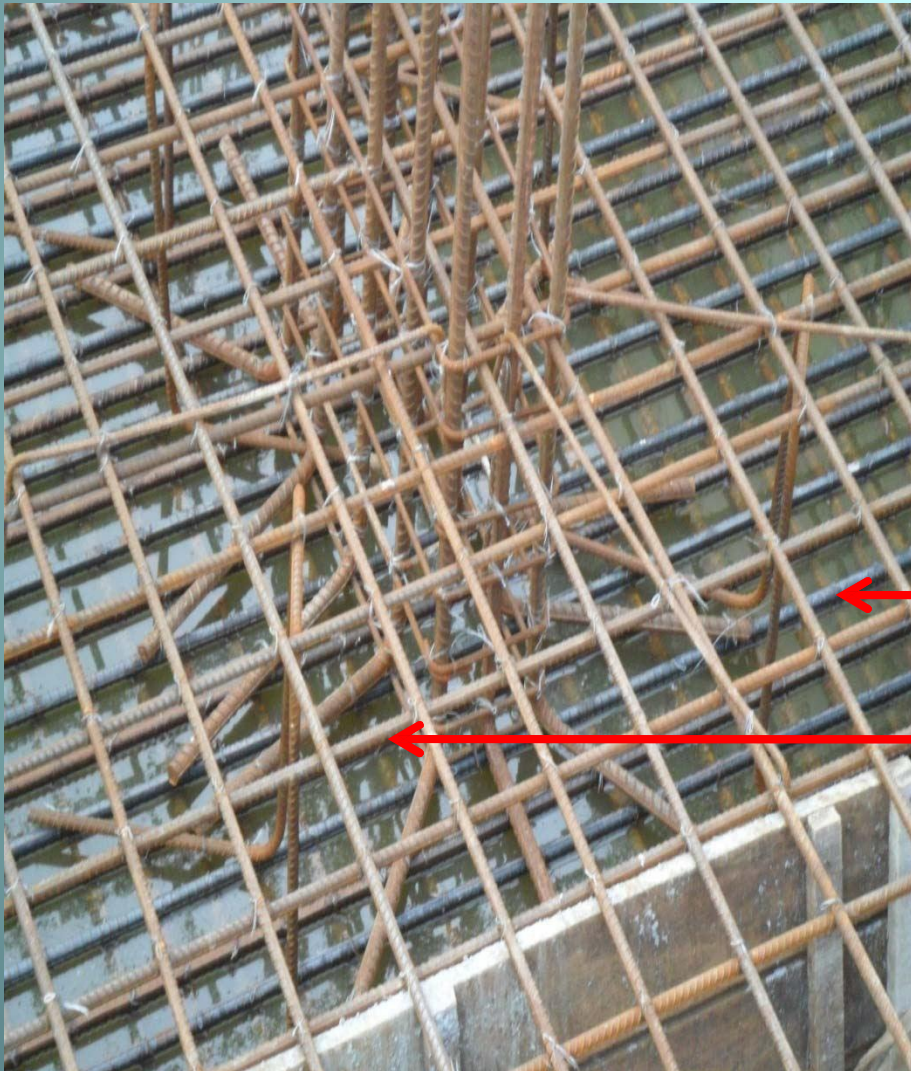
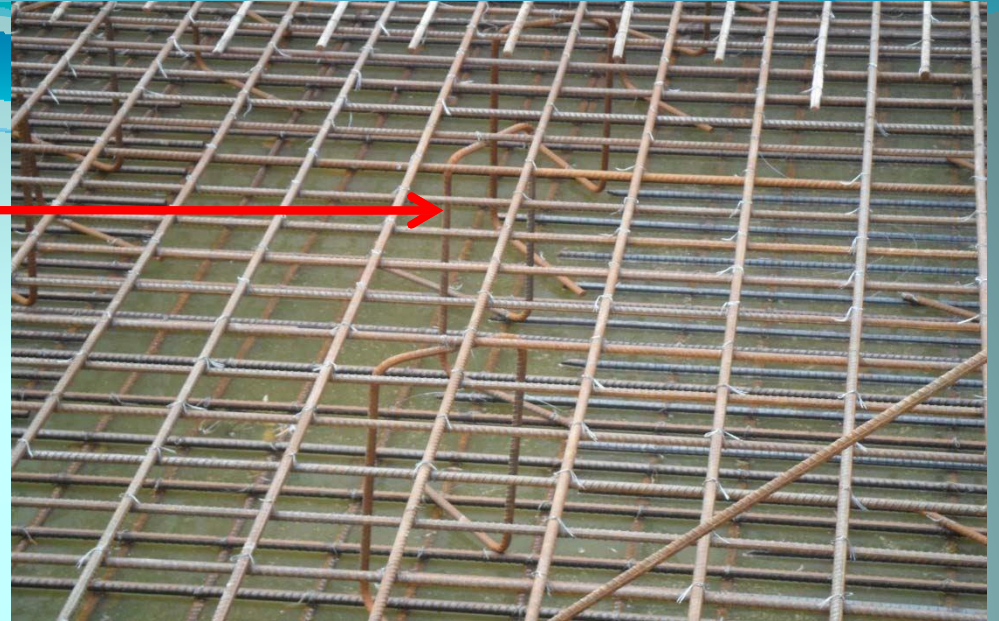
Before earth can be excavated to make the foundation certain precaution has to be taken to stop the outside soil from caving in the excavated area. These precautions are called shoring , the purpose of which is to anyhow retain the surrounding soil.



Excavate earth
according to design
specification



Reinforced chair



POSITION OF REBARS

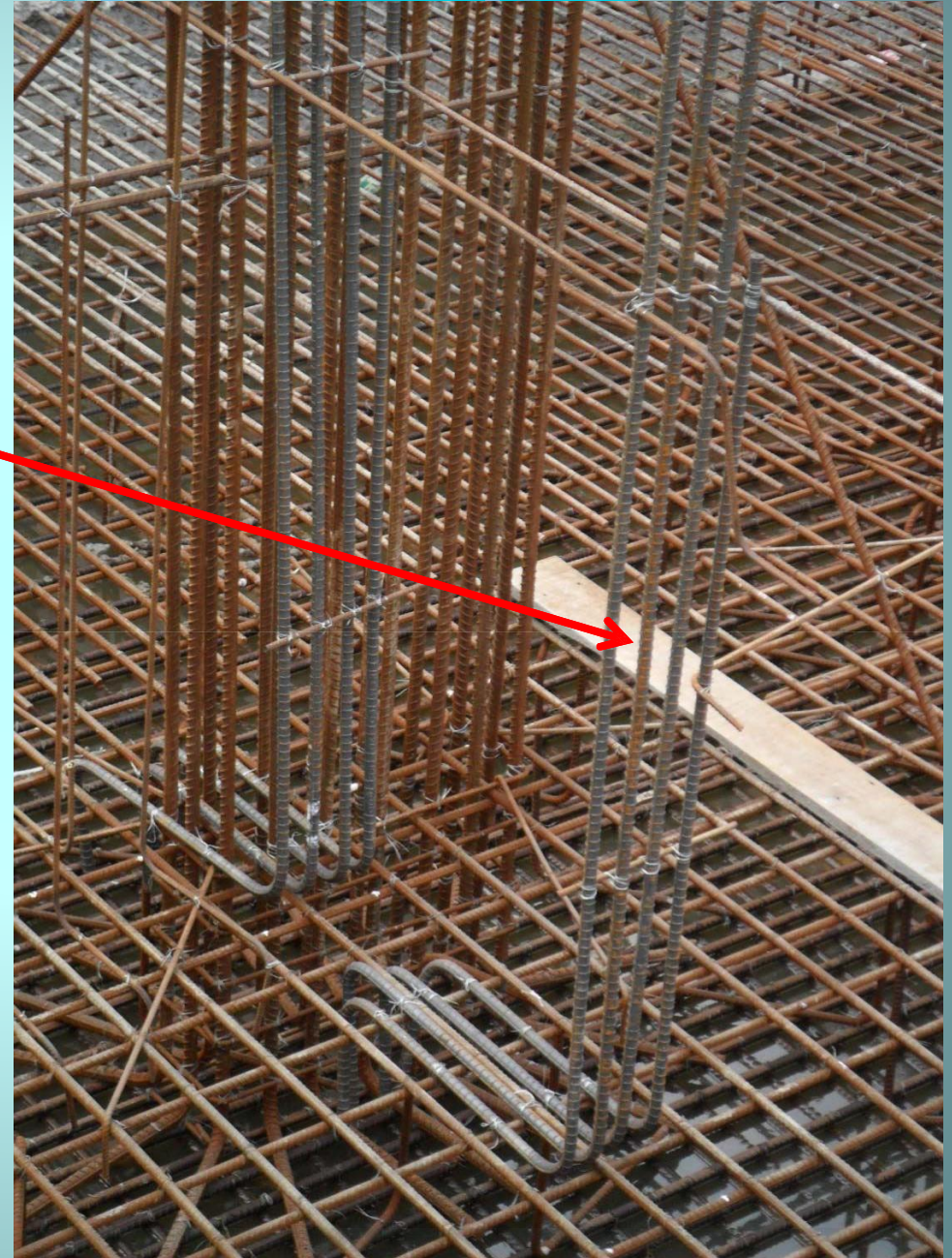
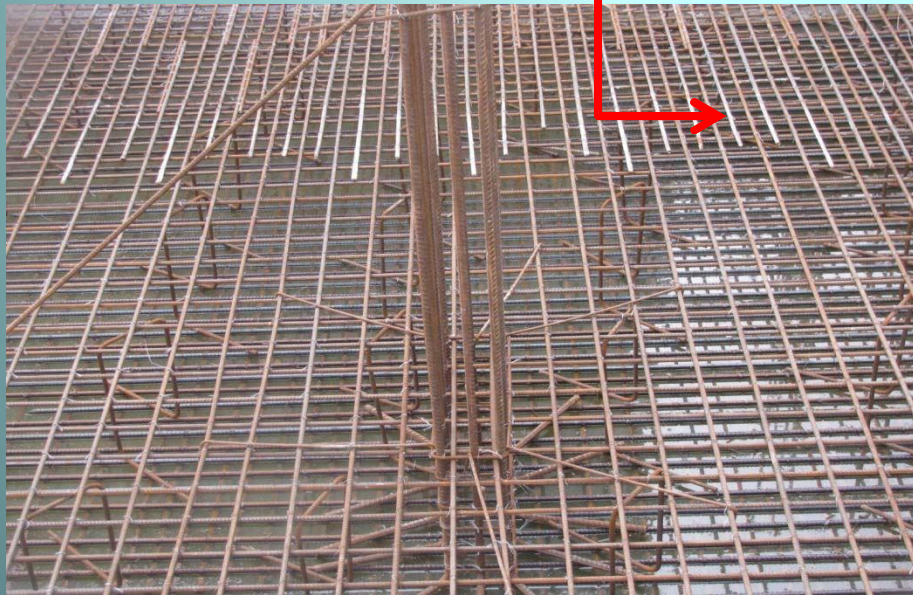
Bottom rebar

Top rebar

PREPARED COLUMN REINFORCEMENT

SUPPORTING THE COLUMN

Extra top
rebar



Pouring cement
concrete &
compacting



**THANK YOU
FOR YOUR CO-OPERATION**

Questions ? ?

