BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY

A PRESENTATION ON

CONSTRUCTION OF

COLUMN, BEAM & SLAB

Materials

Reinforcement Bar

Cement

Coarse Aggregate

Fine Aggregate

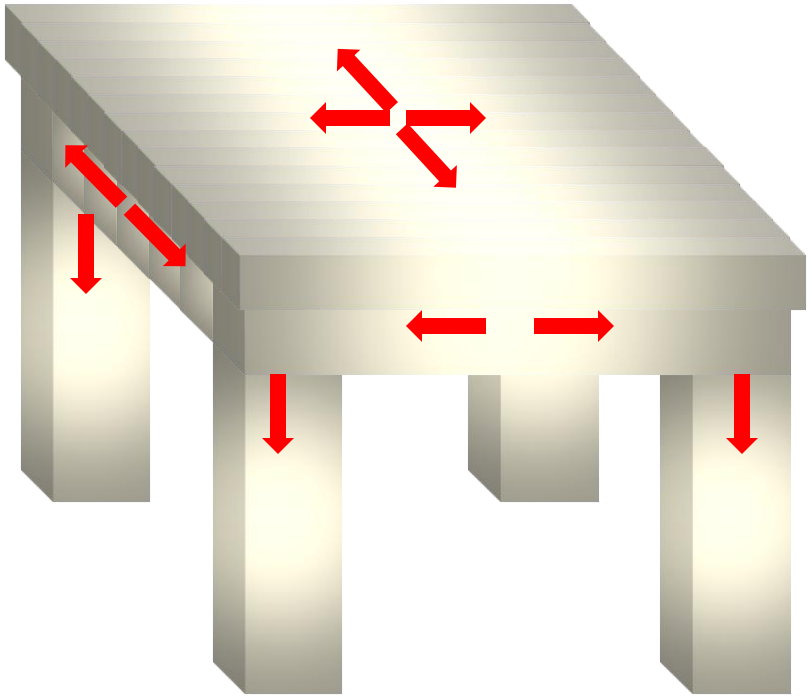
Components of Frame Structure

LOAD
TRANSFORM

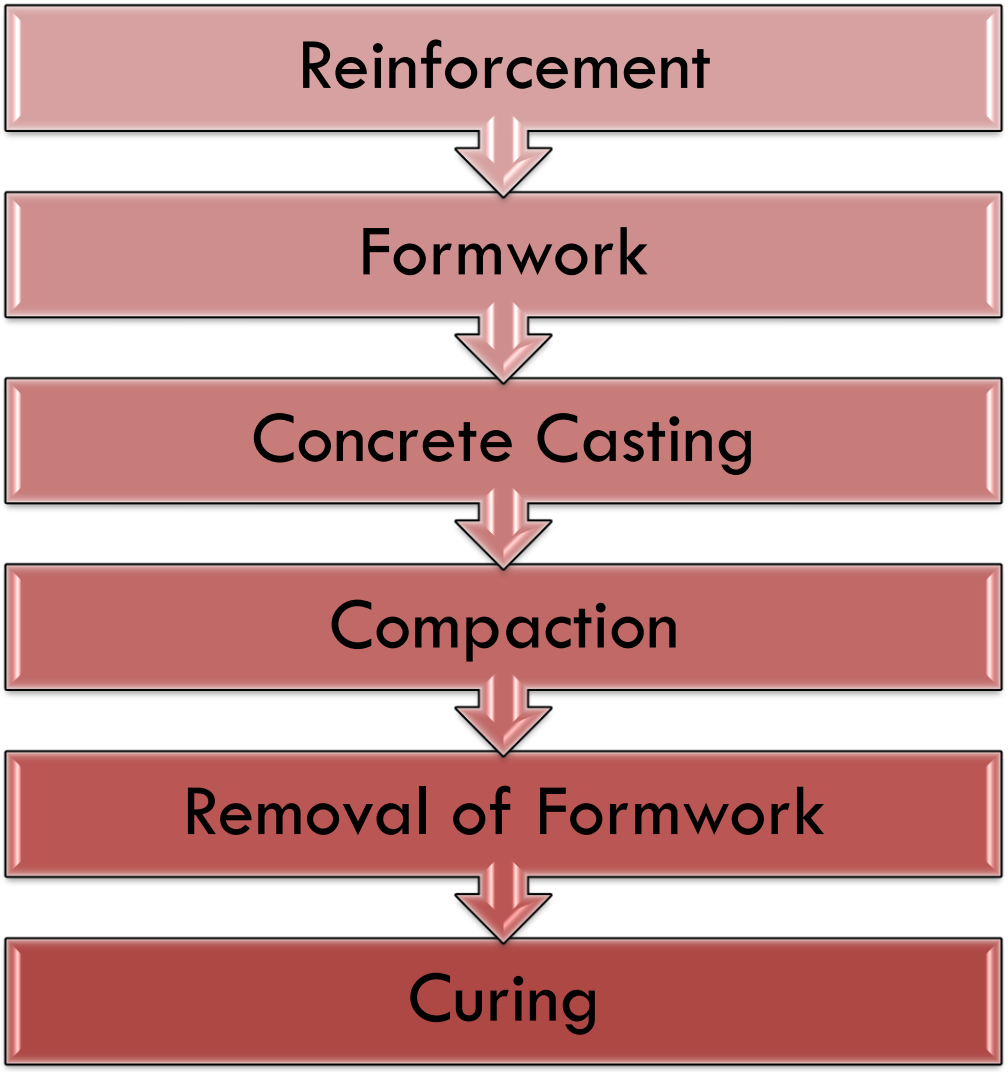
SLAB

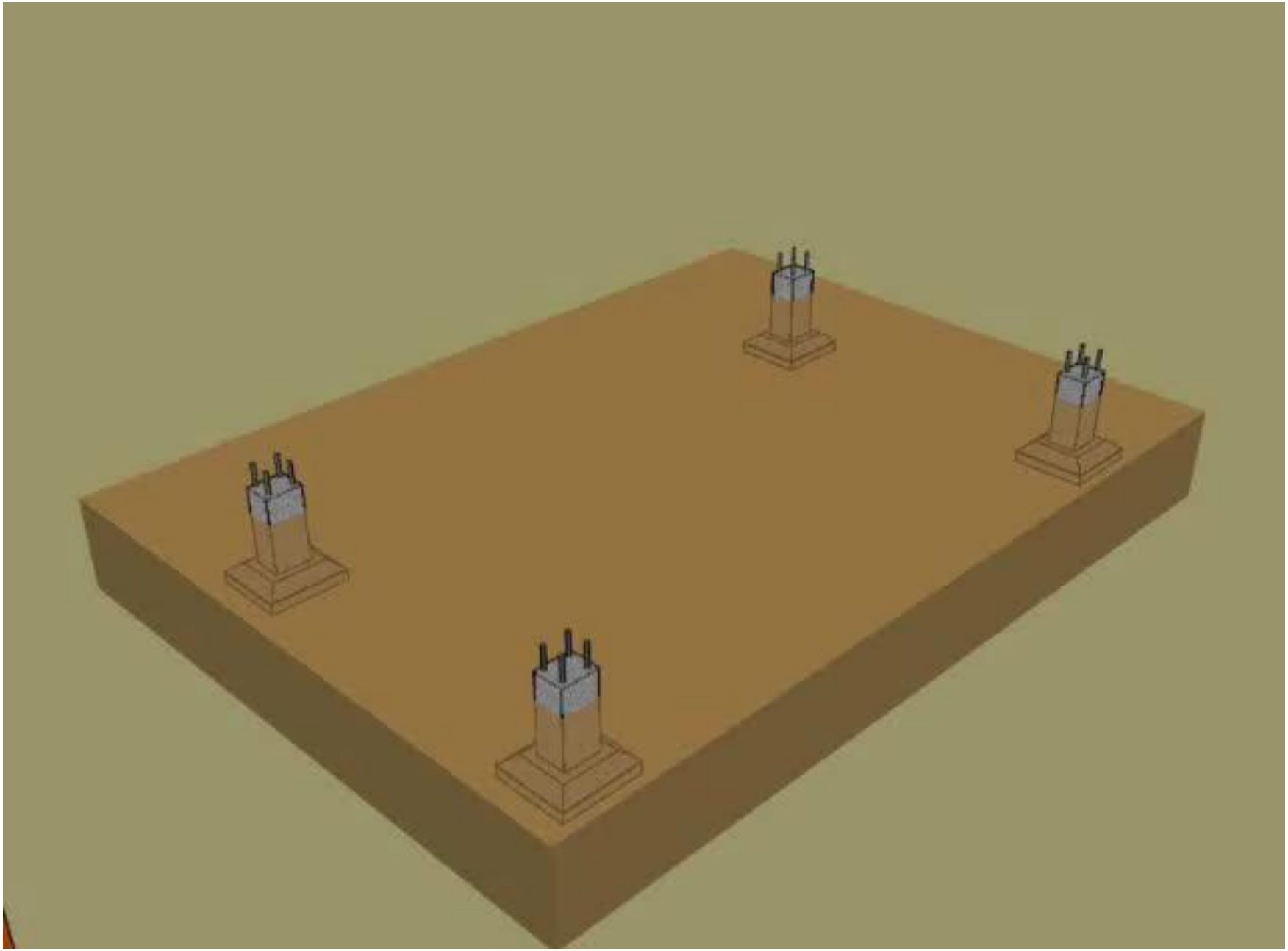
BEAM

COLUMN



Steps of Construction



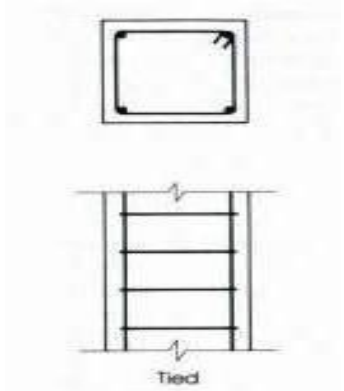


Column Construction

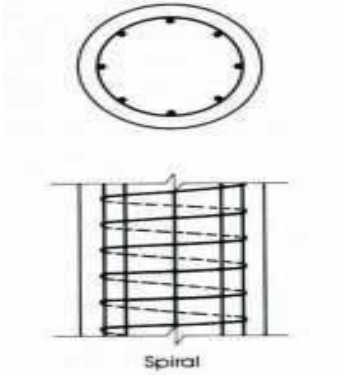
SHORT COLUMNS

- Reinforced concrete columns are generally short columns. Here we will deal with the Short columns only. Short columns can be classified as follows:

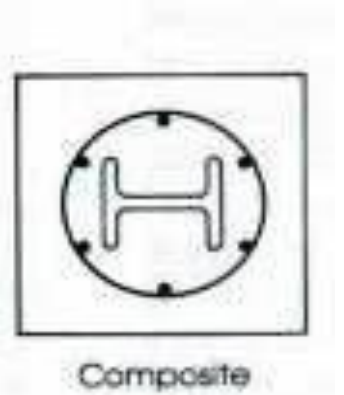
1. Tied column
2. Spiral column
3. Composite column



TIED



SPIRAL

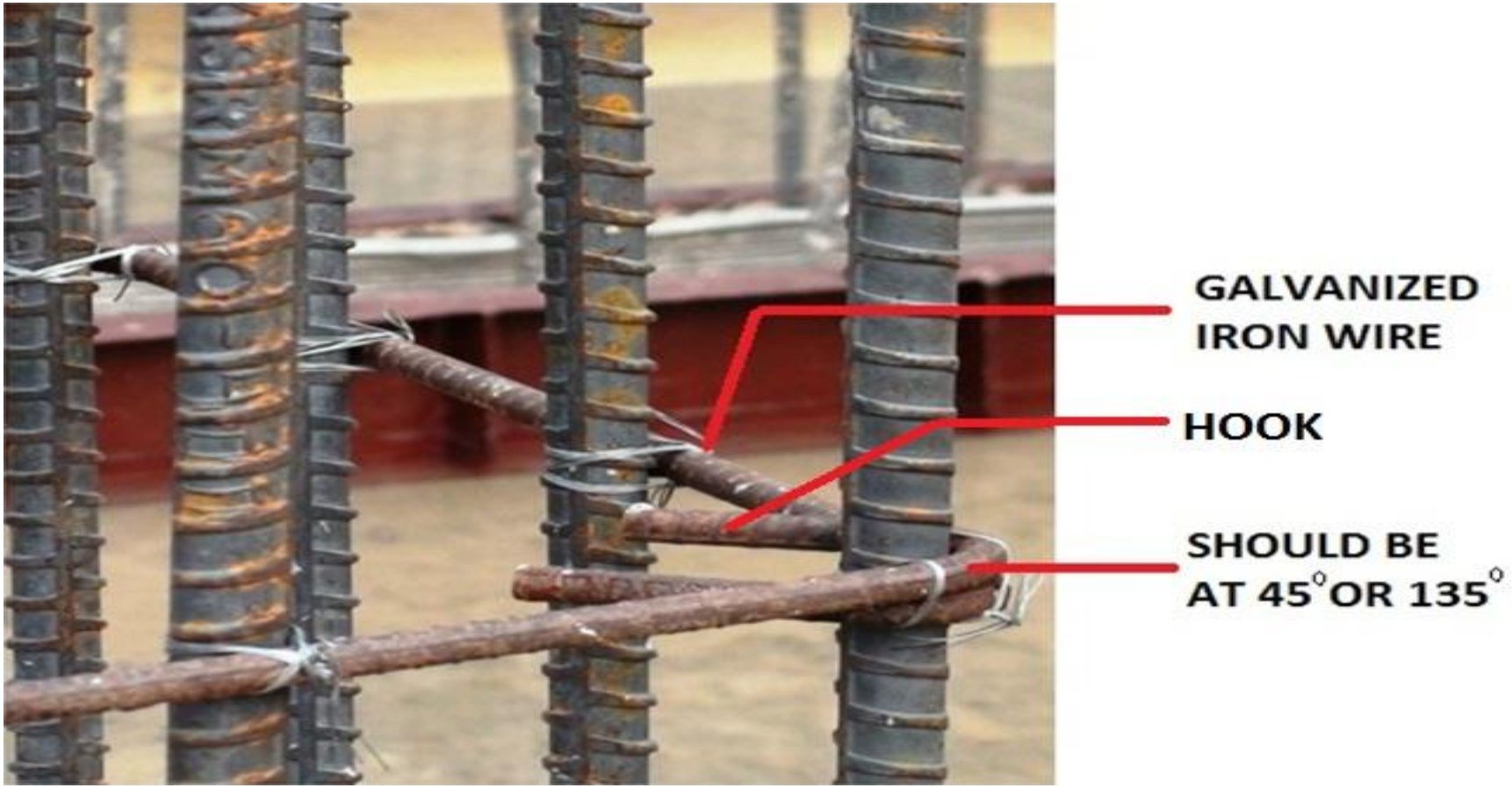


COMPOSITE

Reinforcement Alignment

Column bears normal stress as well as lateral loads.

TIES IN COLUMN



RECTANGULAR TIES

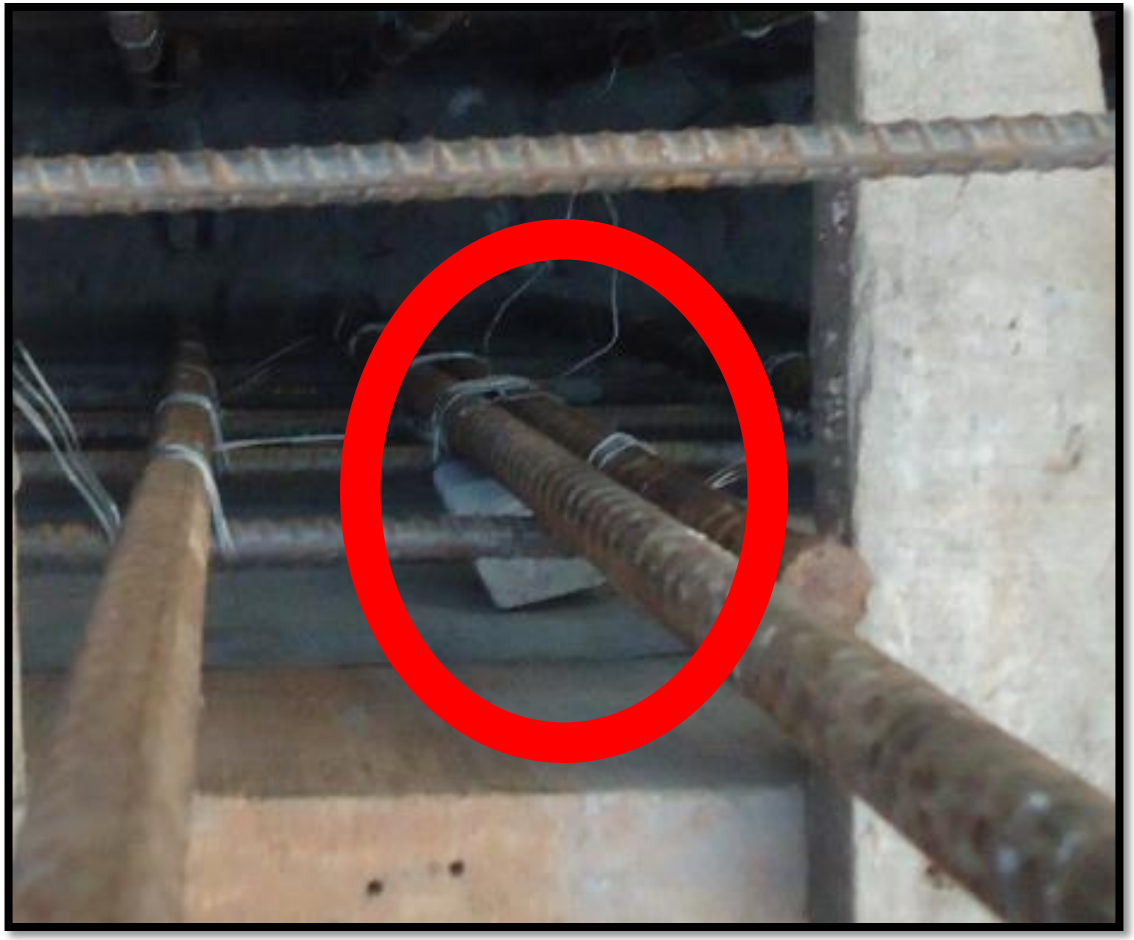
Shuttering

Wood Shuttering

Steel Shuttering

C.C. Blocks

Use of C.C blocks to maintain clear cover



Casting

Casting

Use Of Vibrator

Casting (Cont.)

Column casting is done in at least two lifts because-

- **Difficulties in compaction**
- **Segregation**
- **Heat evolve during hydration**

COMPACTION

COMPACTION BY VIBRATOR

- **Compaction is done by Roding or Poker Vibrator.**
- **It is done to avoid voids inside the concrete.**

SHUTTERING REMOVAL

REMOVAL OF SHUTTERING

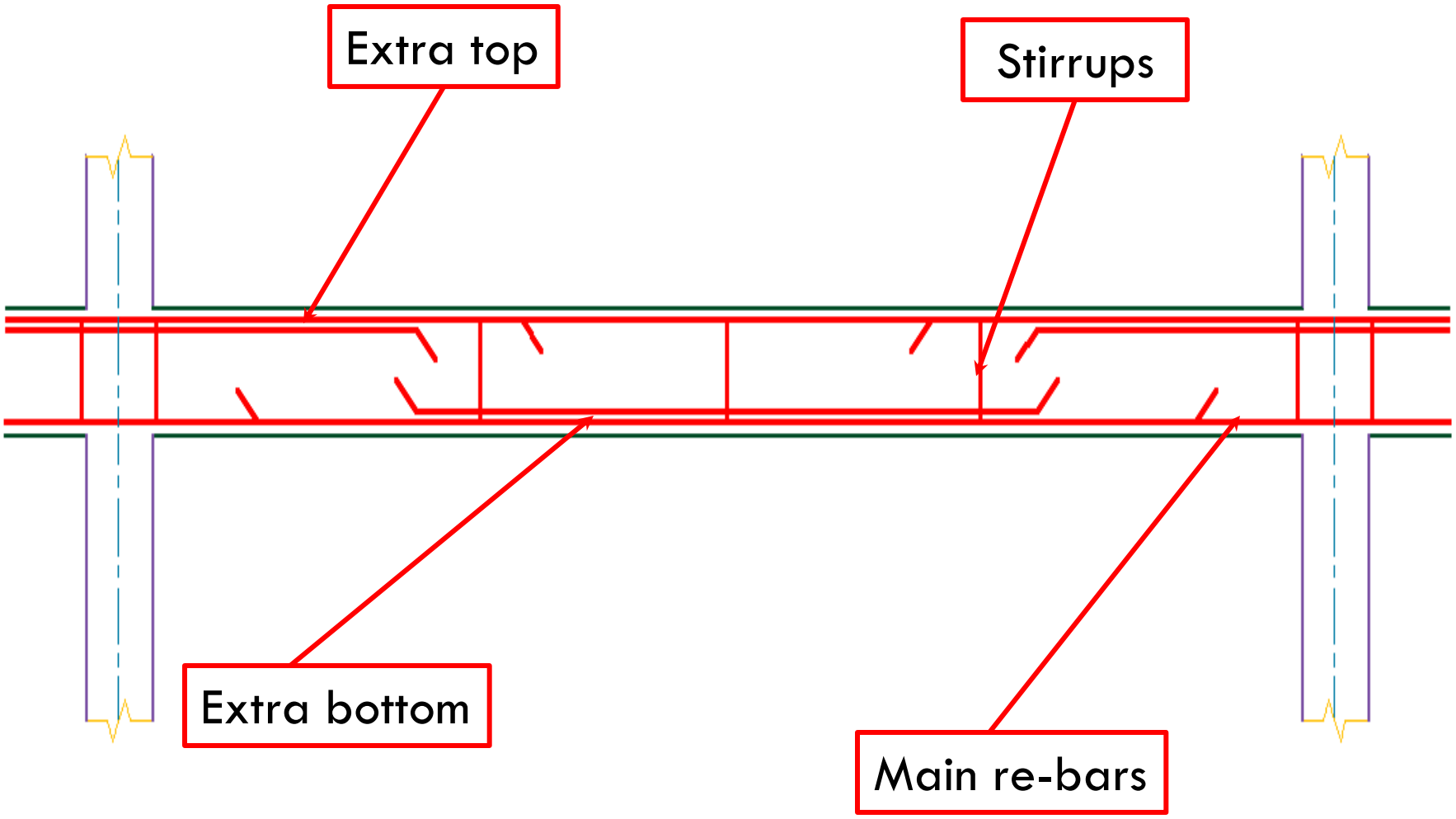
For column the side shutters are removed after 2-3 days.

Curing

Curing is done for 21 days , because water is required for Hydration Reaction of Concrete.

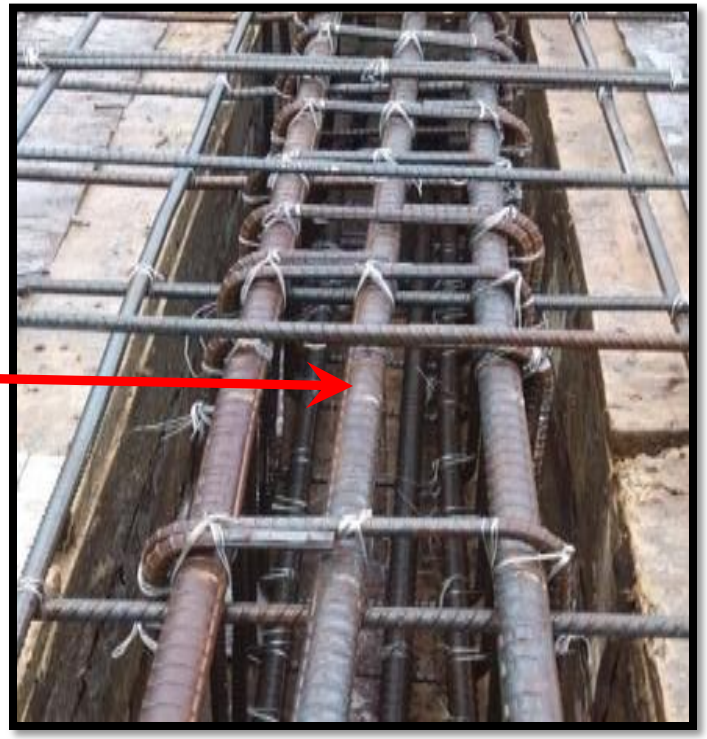
Beam Construction

Reinforcement of beam



Reinforcement

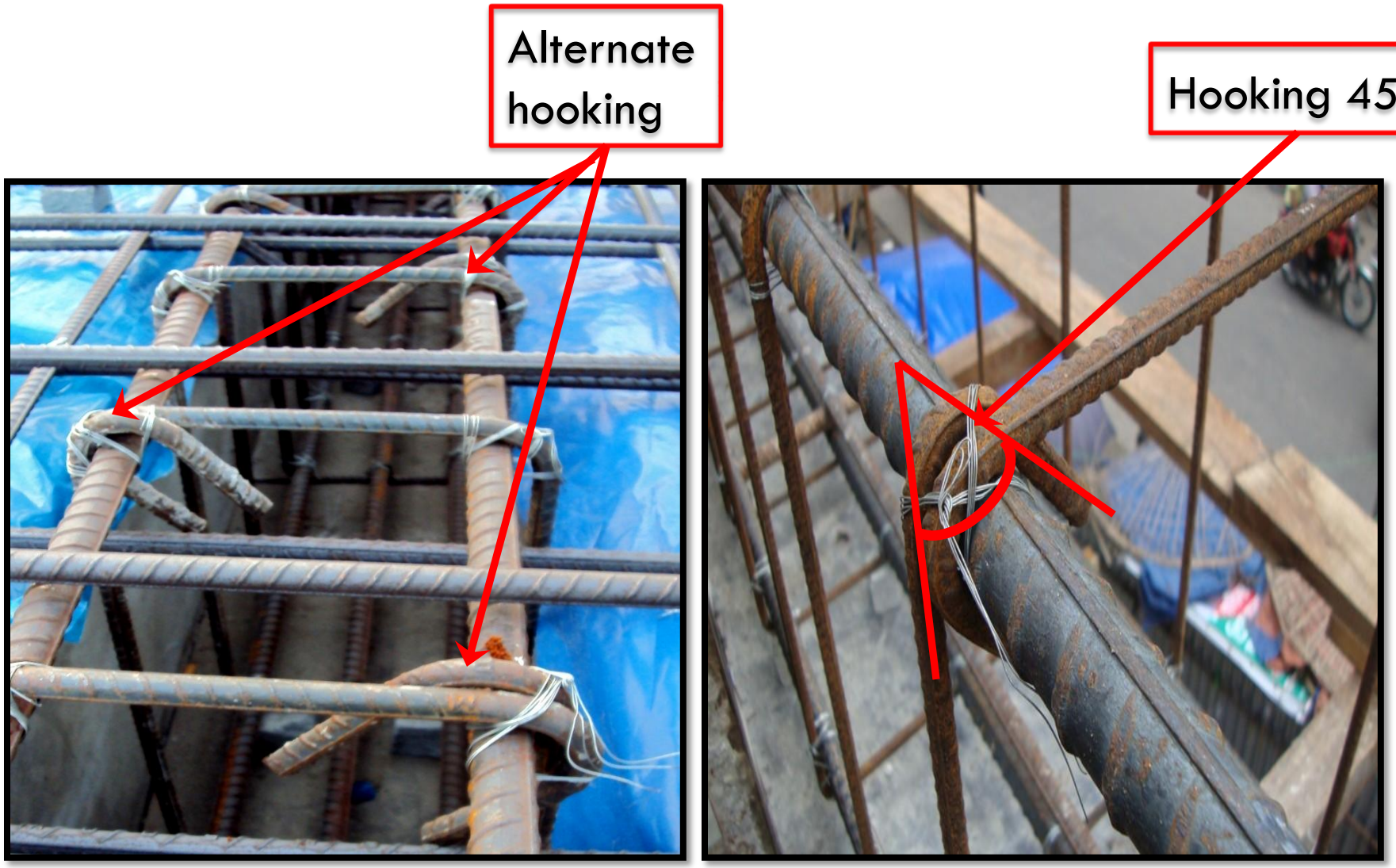
- Minimum 4 rod is used to construct a beam
- Extra (top and bottom) rod is used if required



Extra top

Extra bottom

Hooks

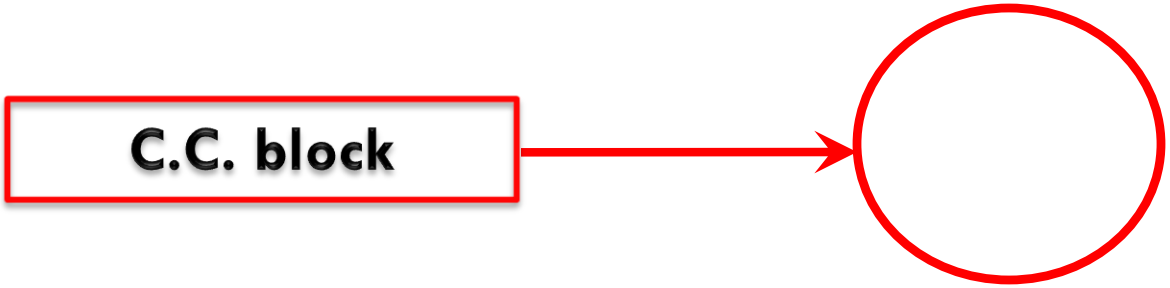


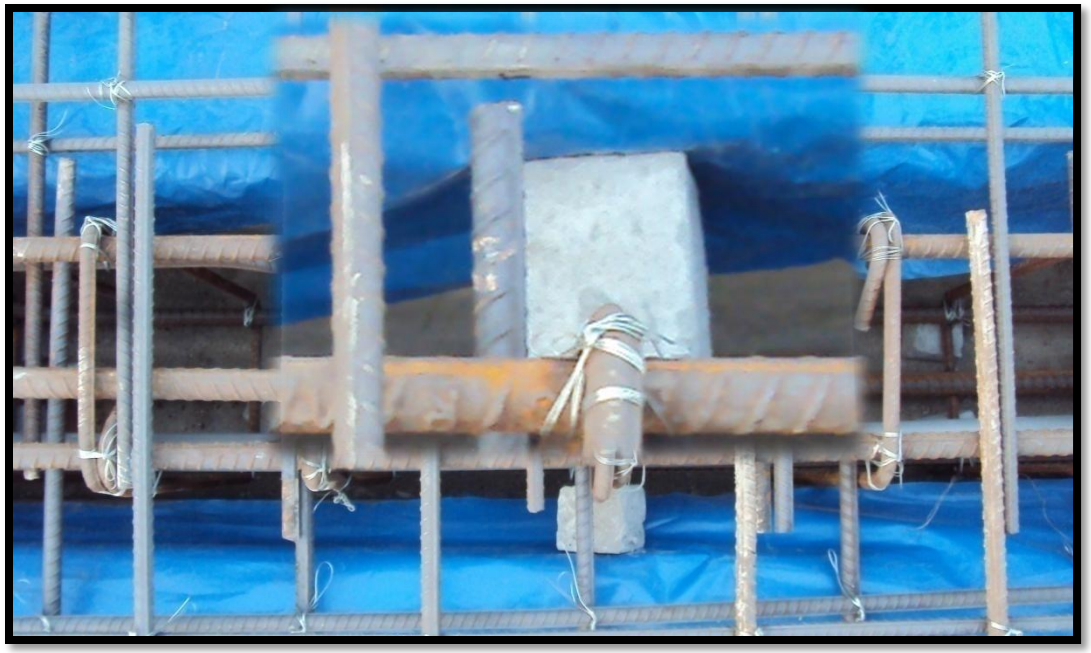
TYPES OF BEAMS

Simply Supported Beam

Cantilever Beam

Clear coverage





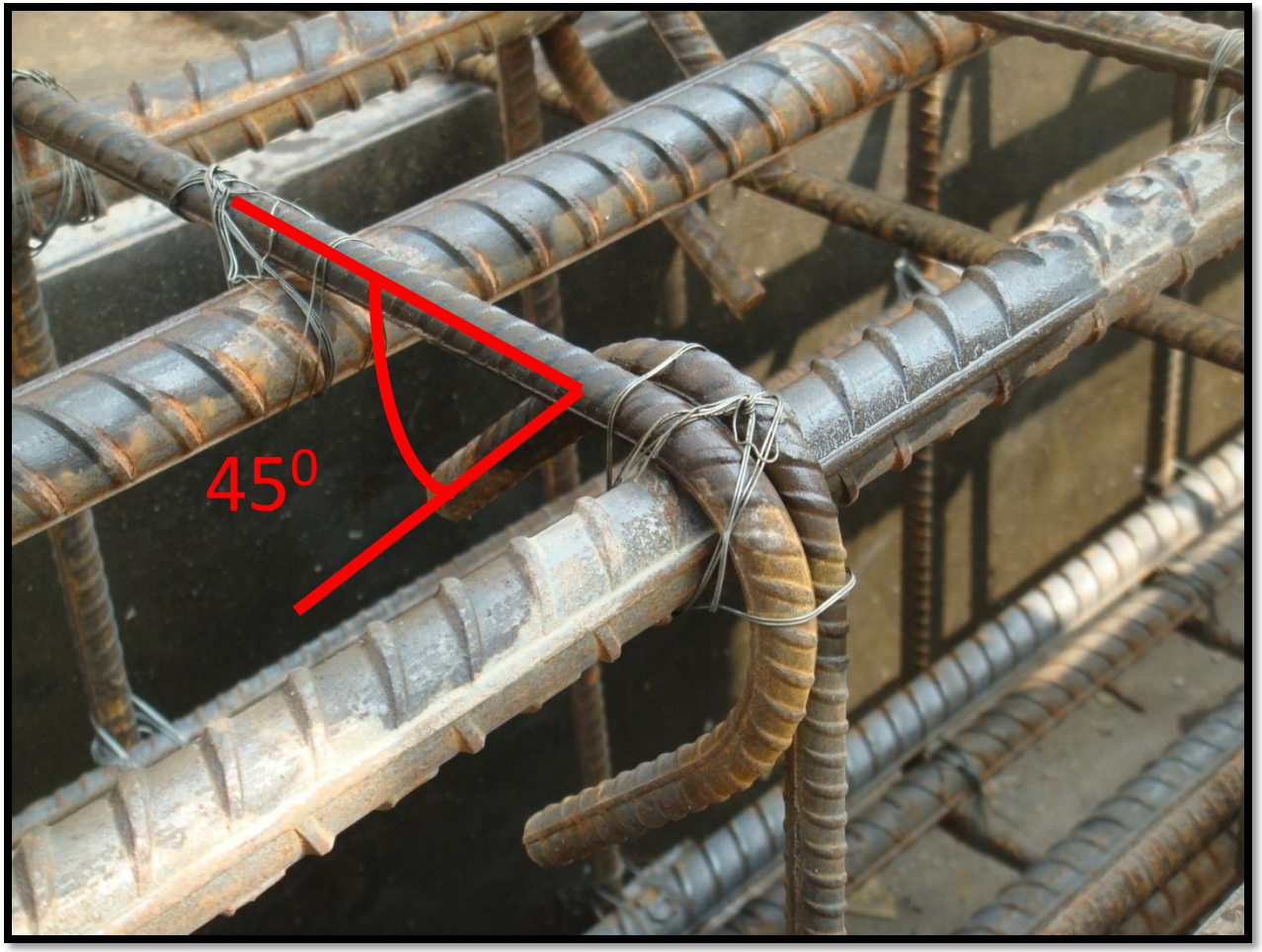
Reinforcement Alignment (Cont.)

Stirrups

Long Distanced Stirrups

Close Stirrups

Stirrups (Cont.)



Beam Shuttering

Beam Casting

Vibrator is used to minimize the amount of voids

Slab Construction

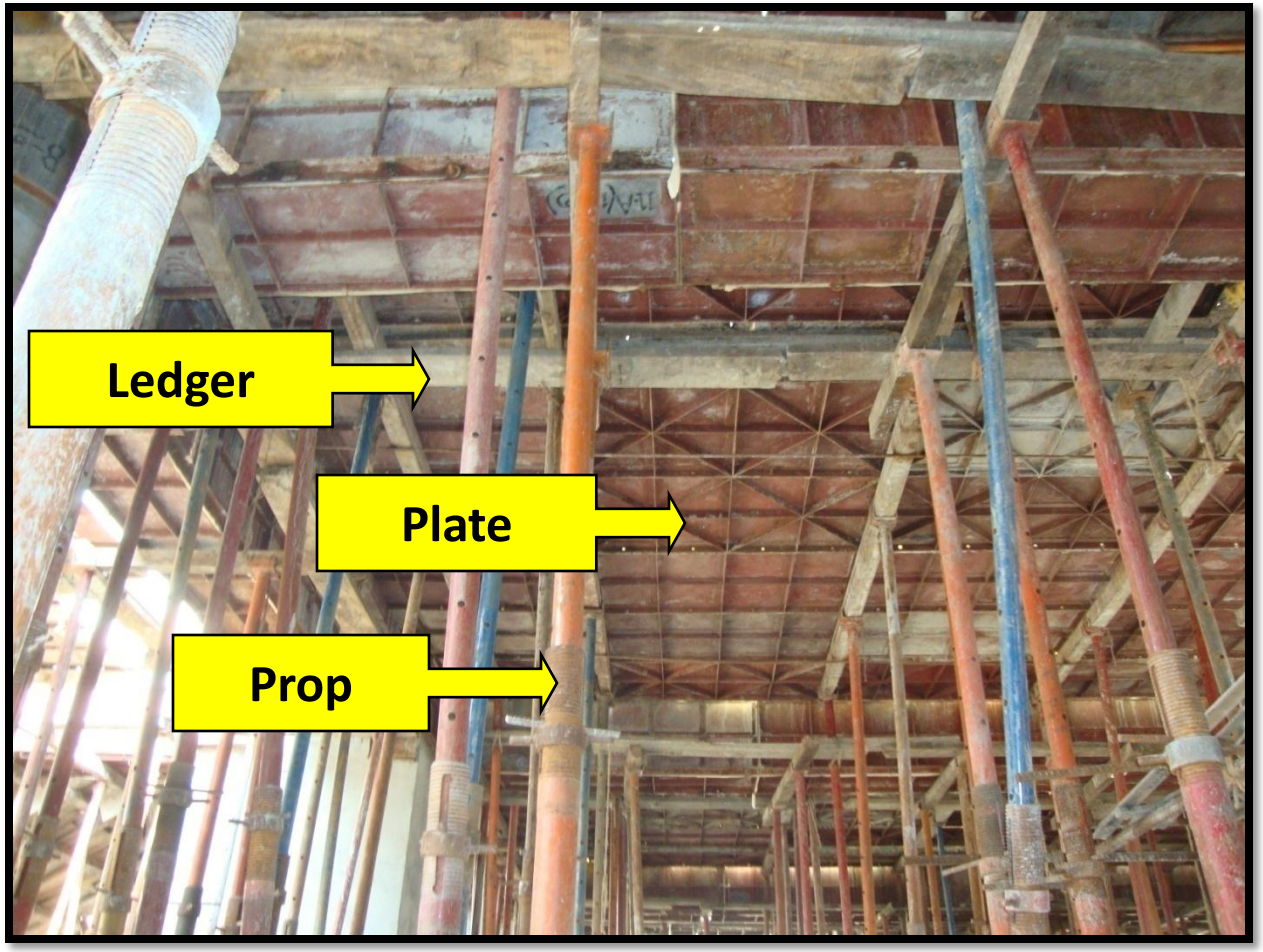
Formwork or Shuttering

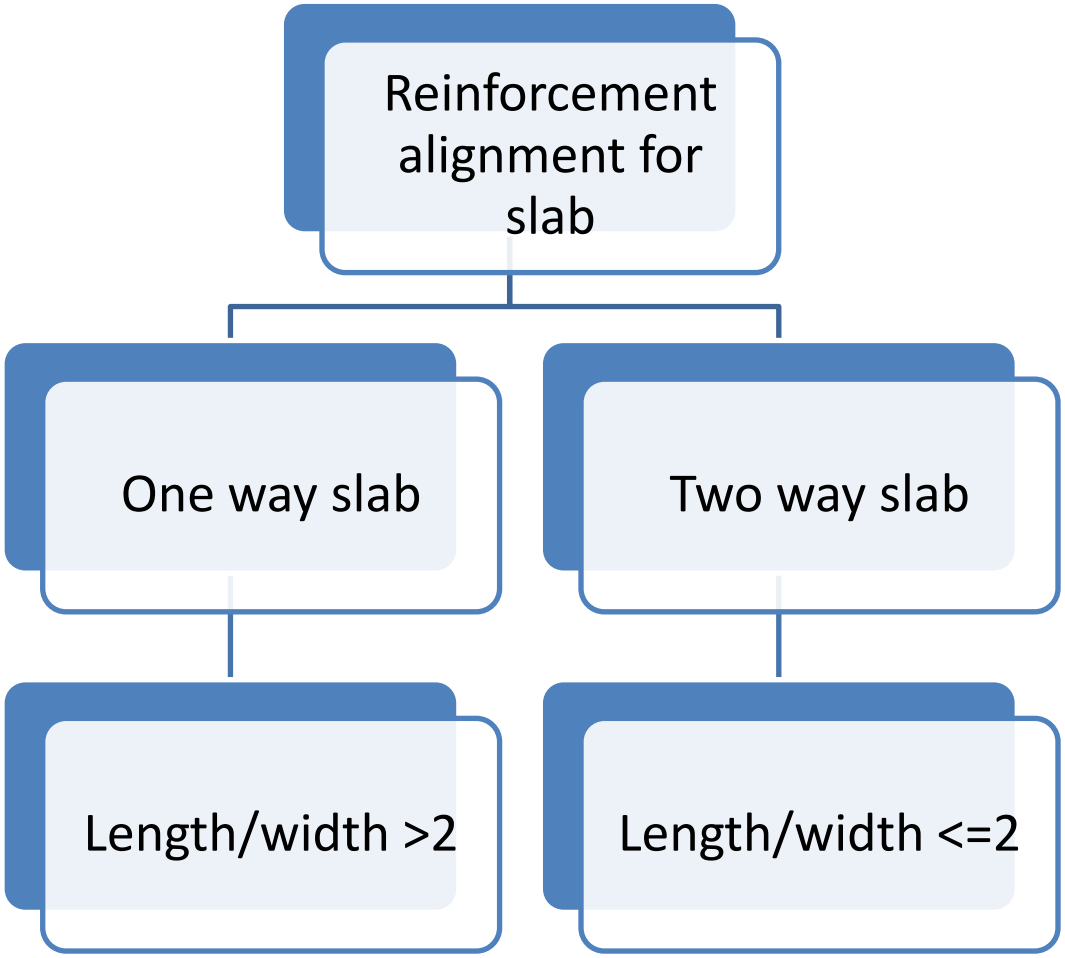
TYPES OF FORMWORK

Steel Formwork

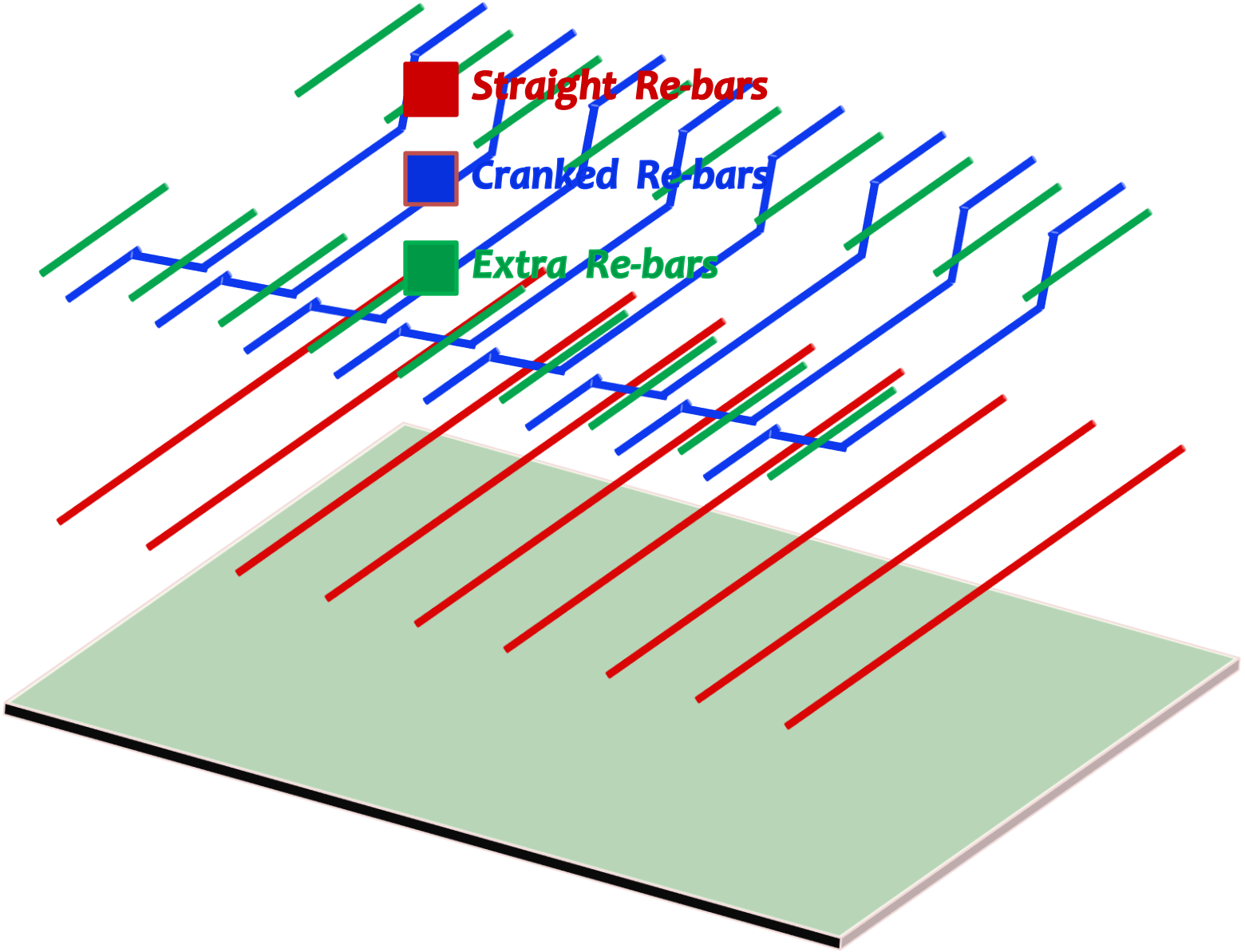
Timber Formwork

Shuttering of Slab



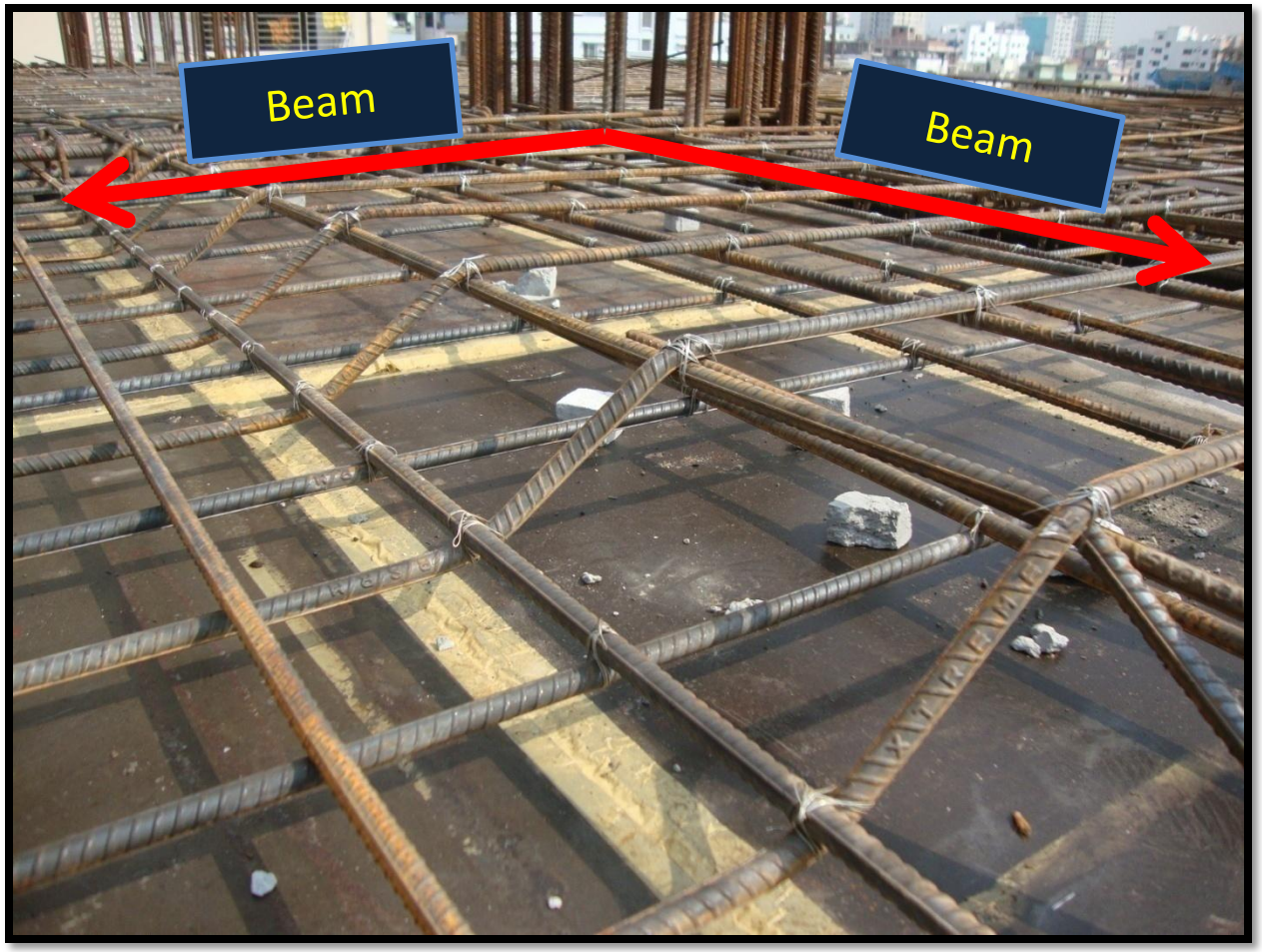

Reinforcement alignment for slab
One way slab
Two way slab
Length/width >2
Length/width <=2

REINFORCEMENT PLACING



Crank Rods

To Resist Negative Moment At The Slab-Beam Joint, Crank Rod is Used




Chair

C.C. Blocks

C.C. blocks (¾”x ¾”) are used to maintain Clear Cover. It could be cubic or cylindrical

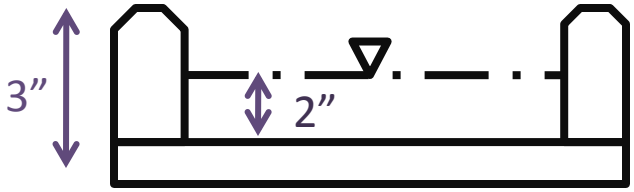
Slab Casting (Cont.)

Use Of Vibrator

Leveling

Leveling

Slab Curing



Curing is done for 21 days

Ponding Method

Removal of Formwork

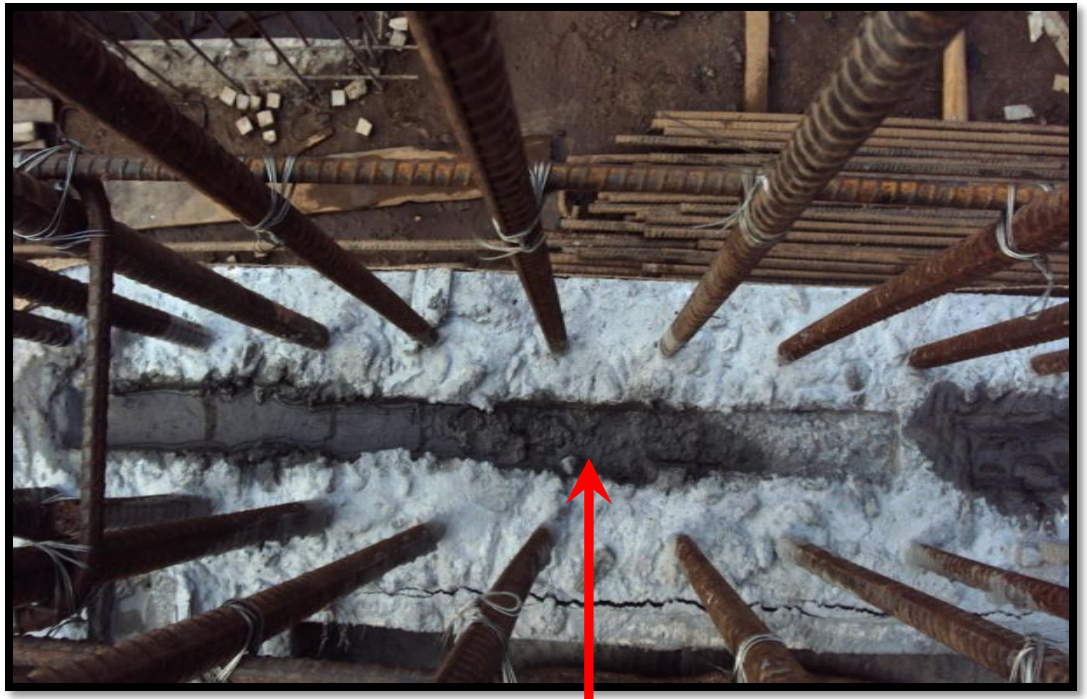
- After 21 days of curing, the formwork of slab is removed
- Bottom formwork of beam is also removed with this

Special Observations

Binding of old and new concrete

Groove

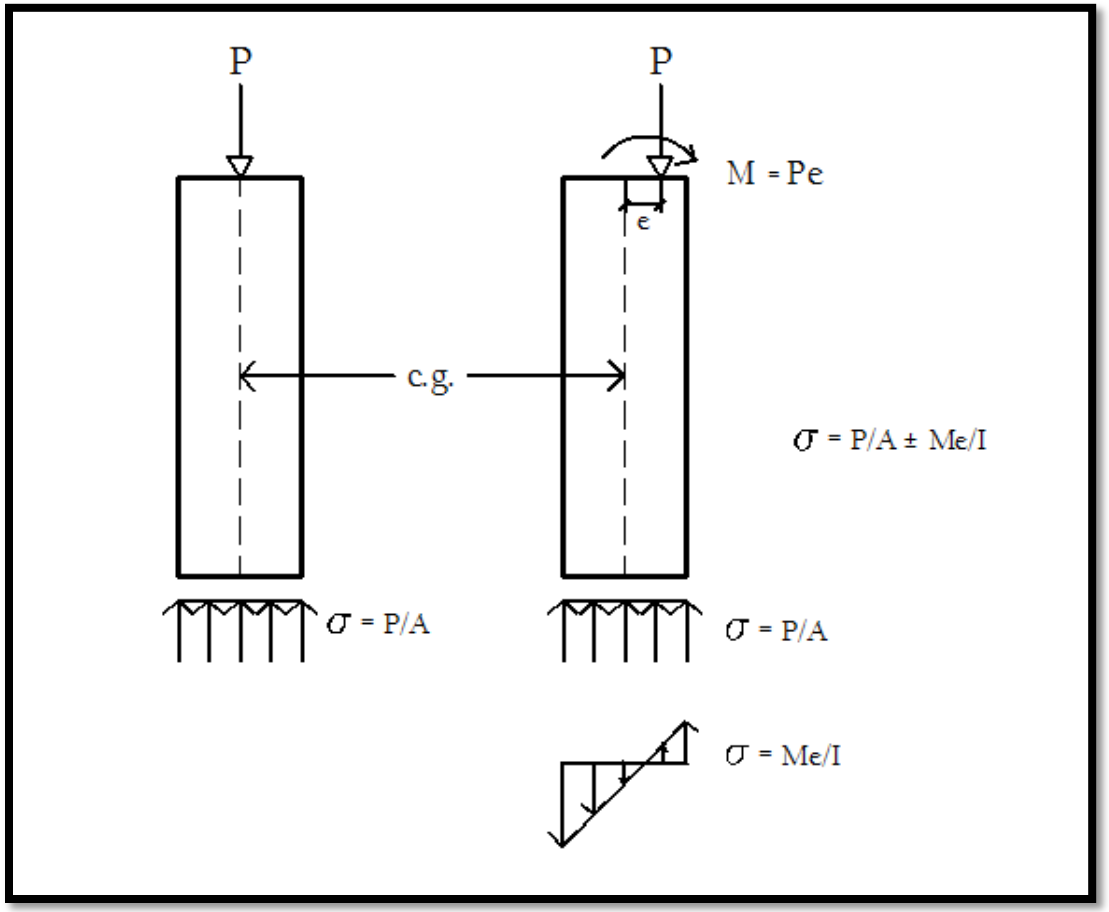
- A piece of wood or brick is used as groove
- It is used to bind new and old concrete



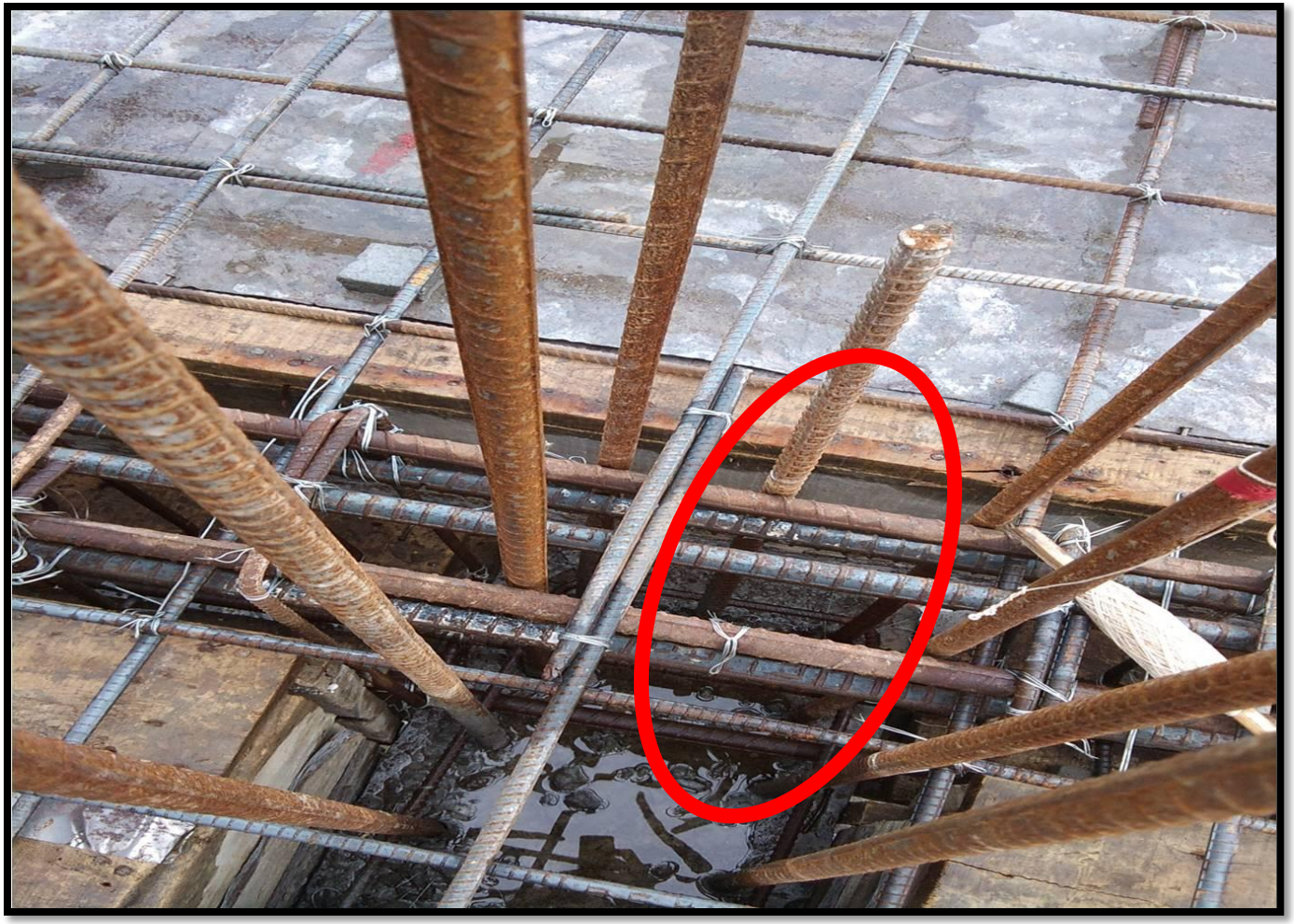
Vertical alignment of column

REASONS

- Shifted load causes internal moment
- Stress becomes higher than calculated



Overlapping at the beam column joint makes the structure weak




THANK
YOU