

**GUIDELINES  
FOR  
EARTHQUAKE RESISTANT DESIGN  
AND  
DETAILING**



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Gachibowli, Hyderabad – 500 032  
INDIA**

# 1. Essentials of Earthquake Resistant Design

**Configuration**

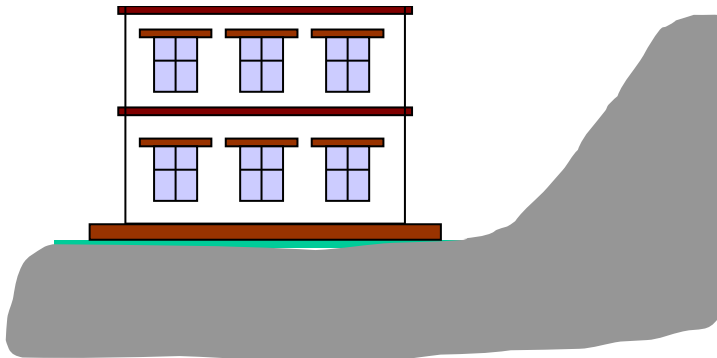
**Strength**

**Stiffness**

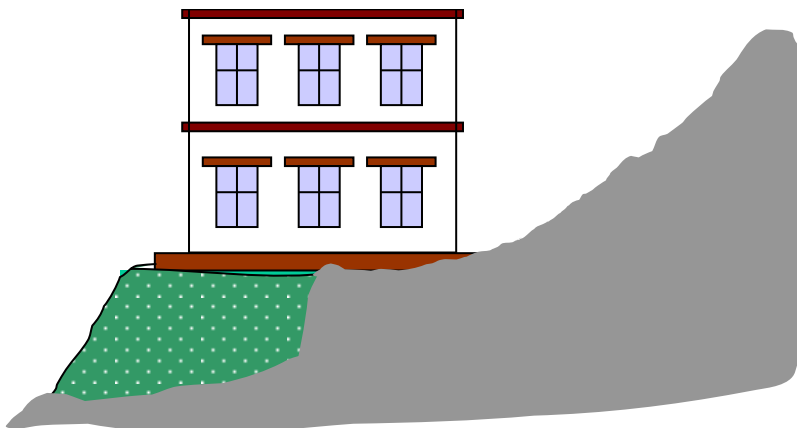
**Ductility**

## 2. General Guidelines

### 2.1 SITE SELECTION



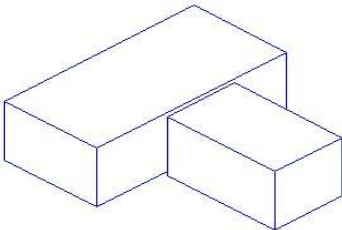
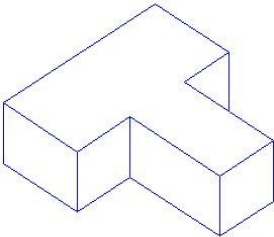
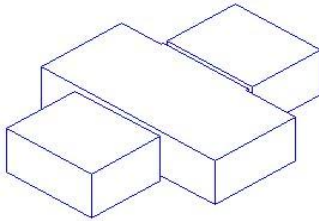
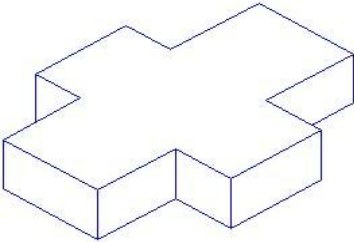
**Building should be sufficiently away from steep slopes**



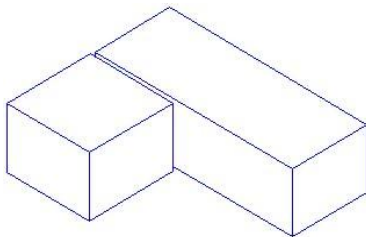
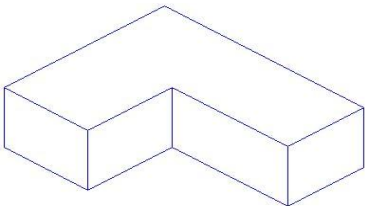
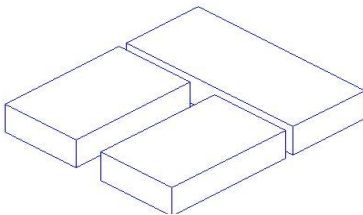
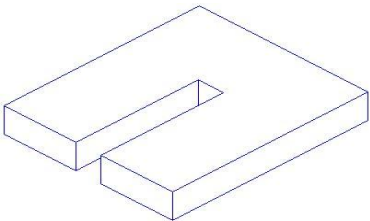
**Building should not be built on filled-up soil**

**If unavoidable, use raft on pile**

## 2.2 PLAN OF BUILDING



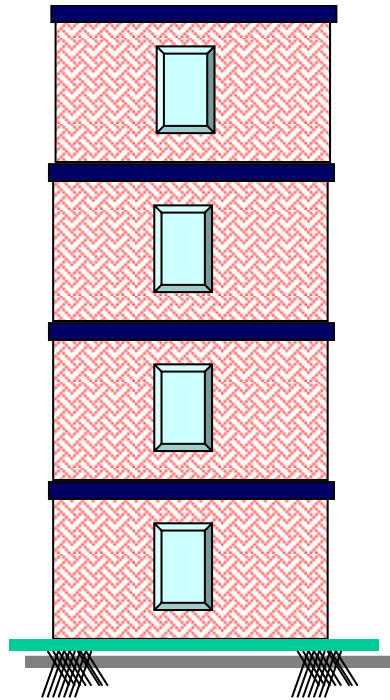
**Asymmetry should be avoided**



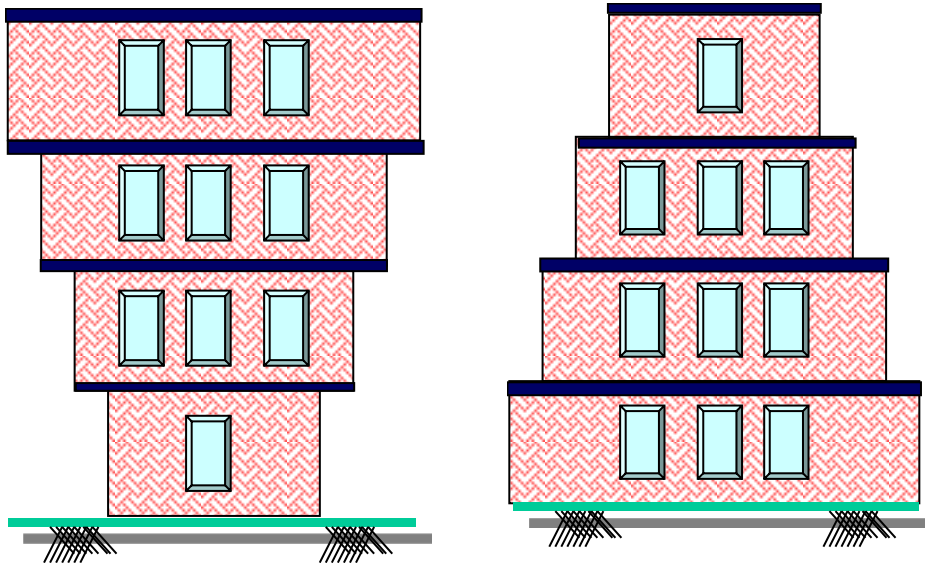
**Asymmetric buildings undergo torsion and extreme corners are subjected to very large earthquake forces.**

## 2.3 SHAPE OF BUILDING

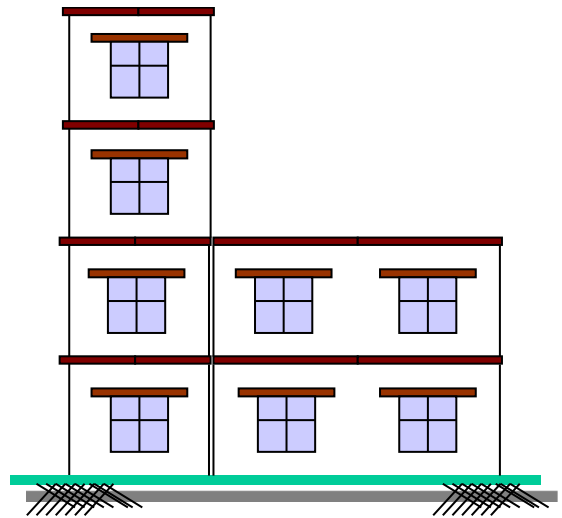
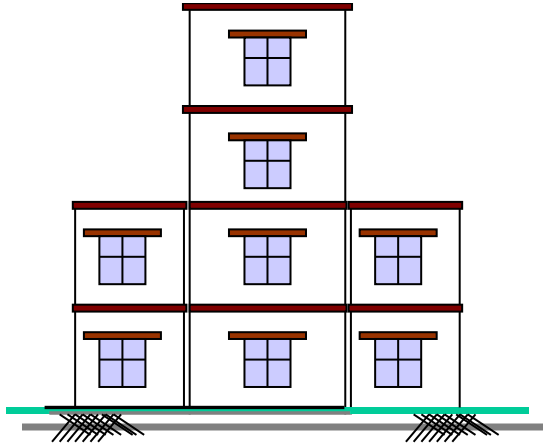
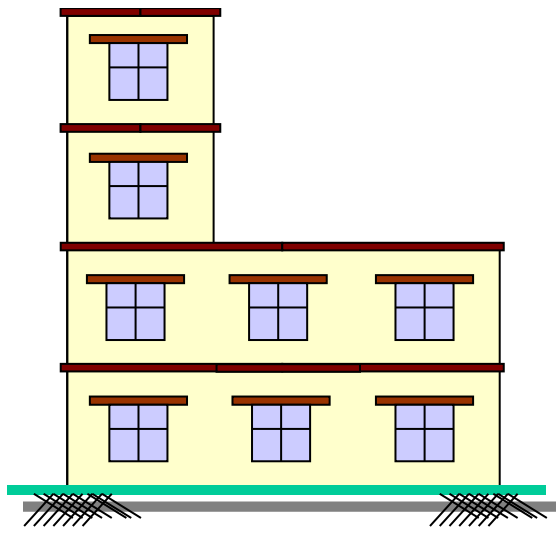
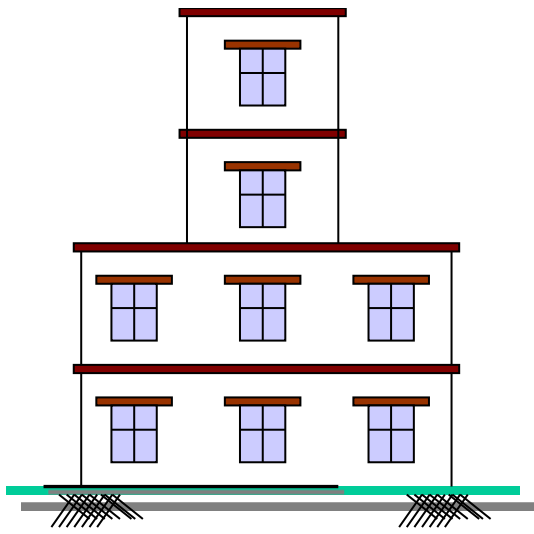
$$H/b < 4$$



Very slender buildings should be avoided.

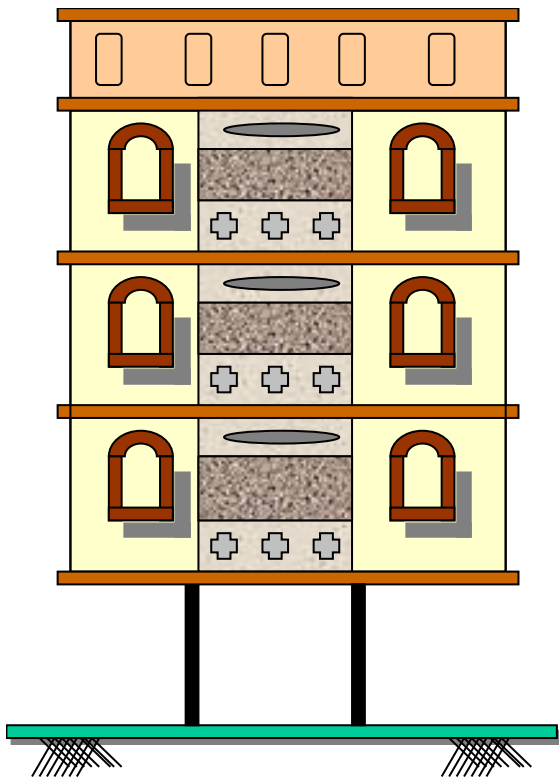


Inverted pendulum type buildings are unstable

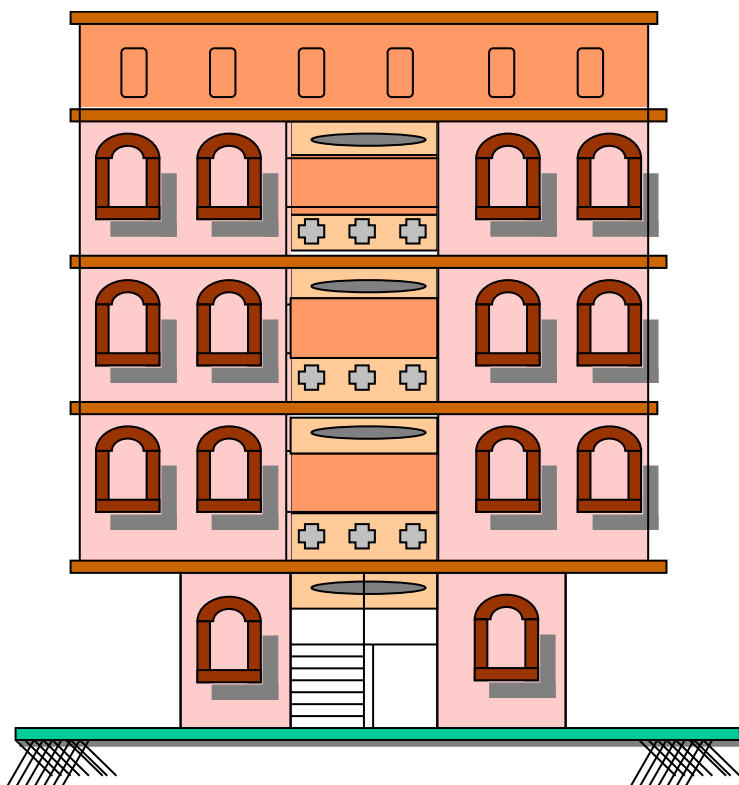


**Sudden change of lateral stiffness should be avoided**

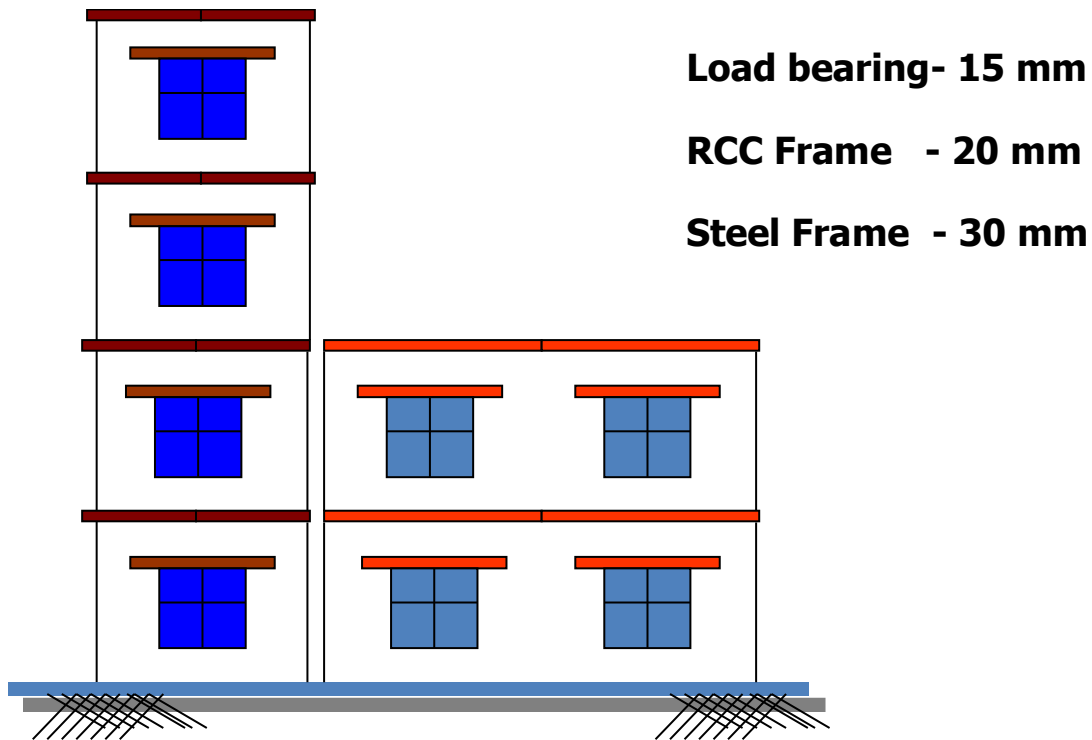
## 2.4 PROJECTIONS AND OVERHANGS



Large overhangs and projects attract large earthquake forces

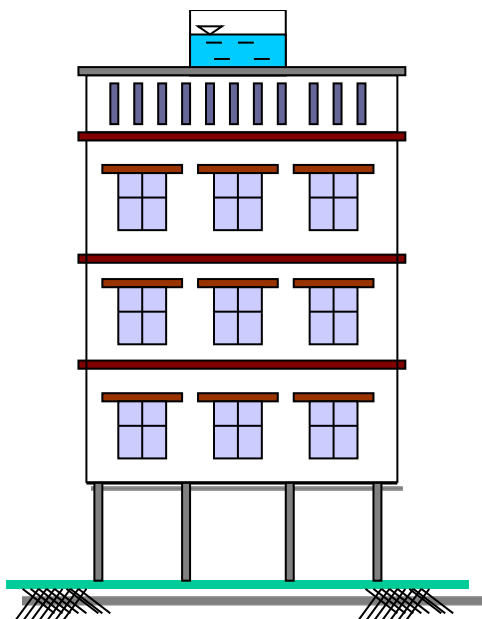


## 2.5 SEPARATION OF DISSIMILAR BUILDINGS



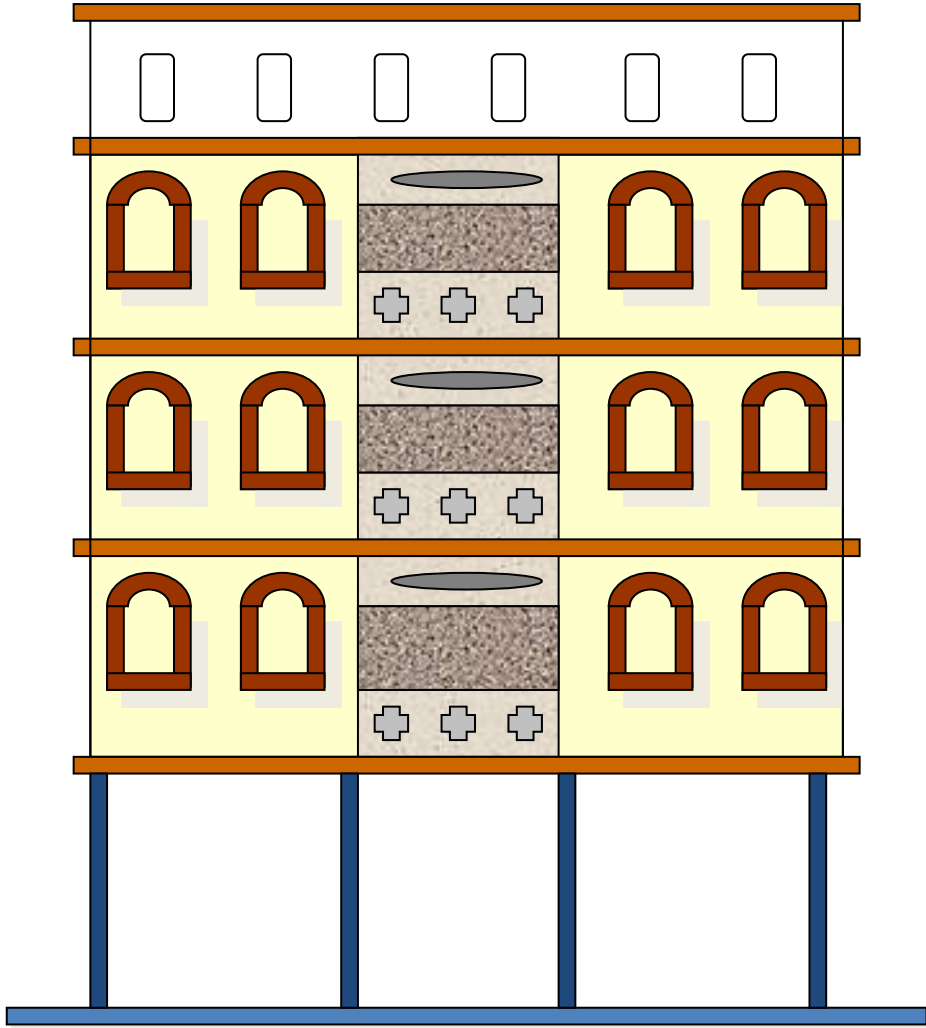
To avoid collision Adjacent dissimilar buildings should be separated by a minimum gap

## 2.6 AVOID HEAVY MASS AT TOP



Large water tanks should be avoided Small tanks, if provided, should be properly connected with the framing system

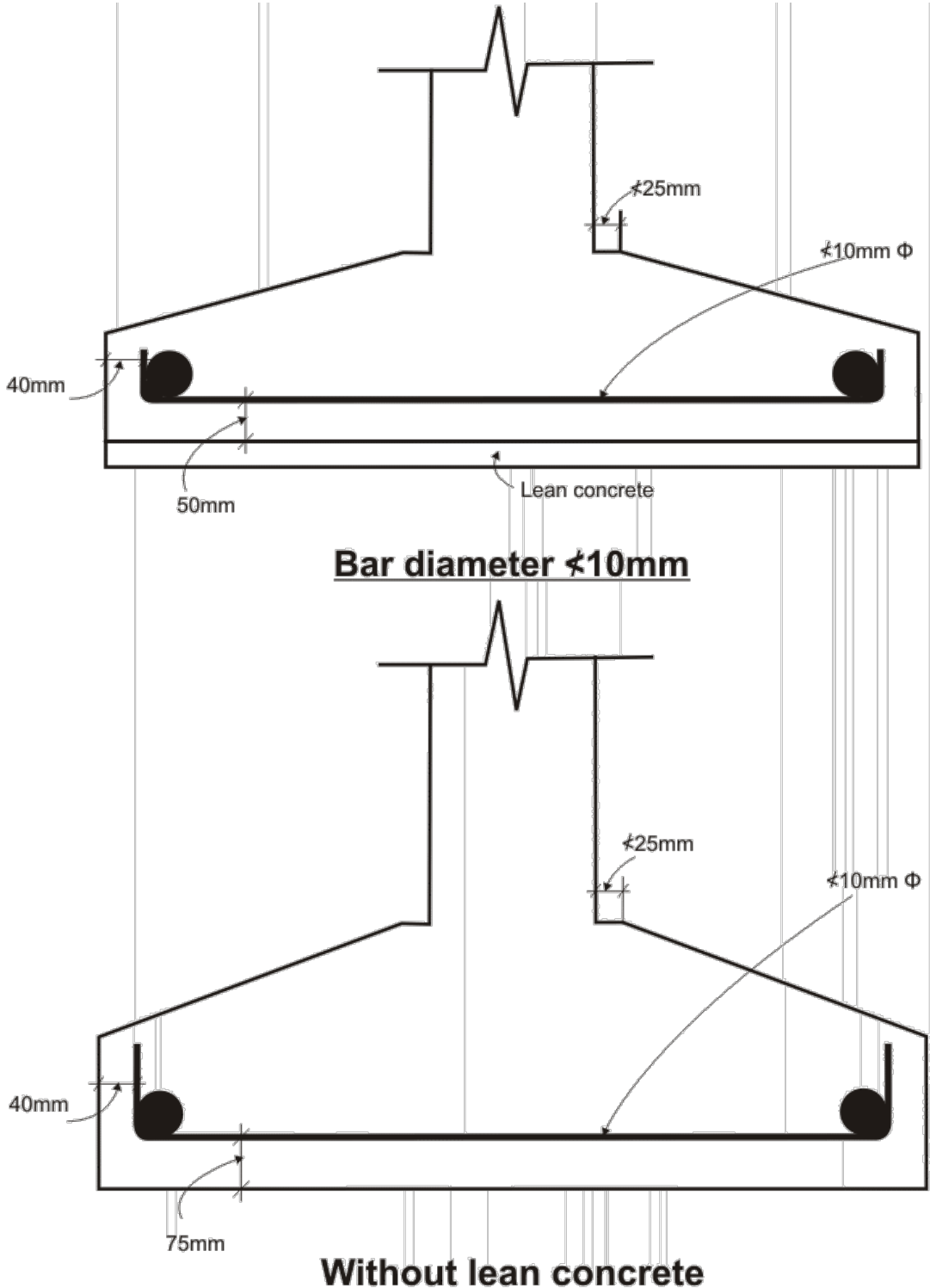
## 2.7 OPEN GROUND STOREY



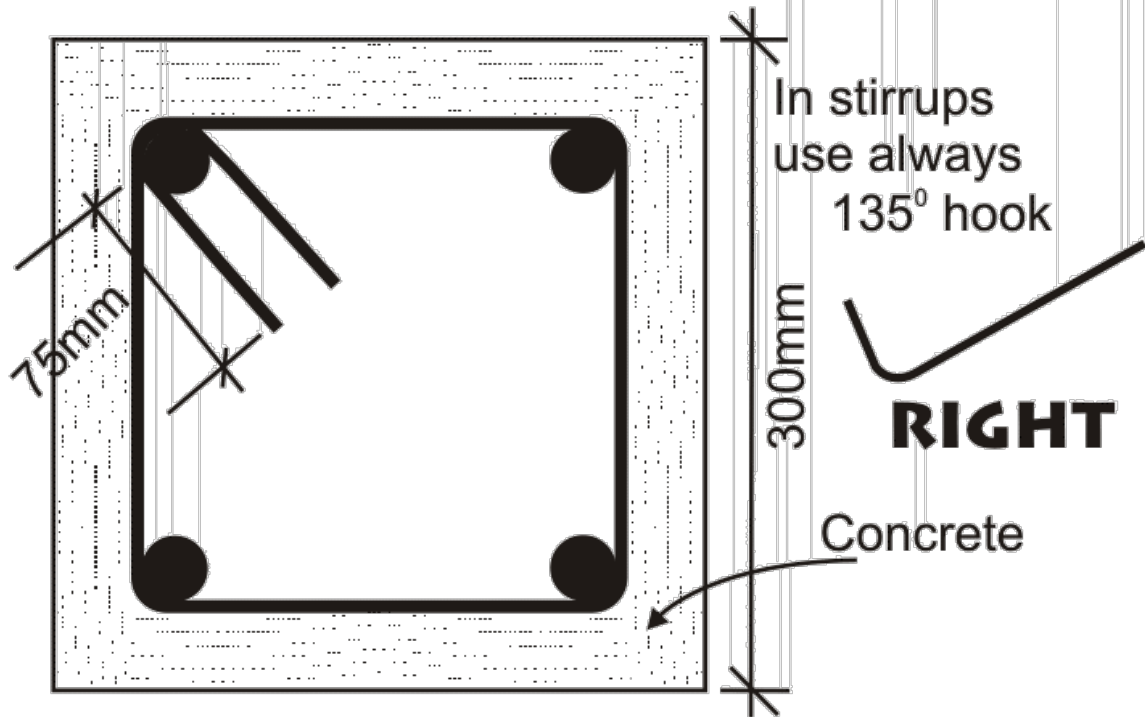
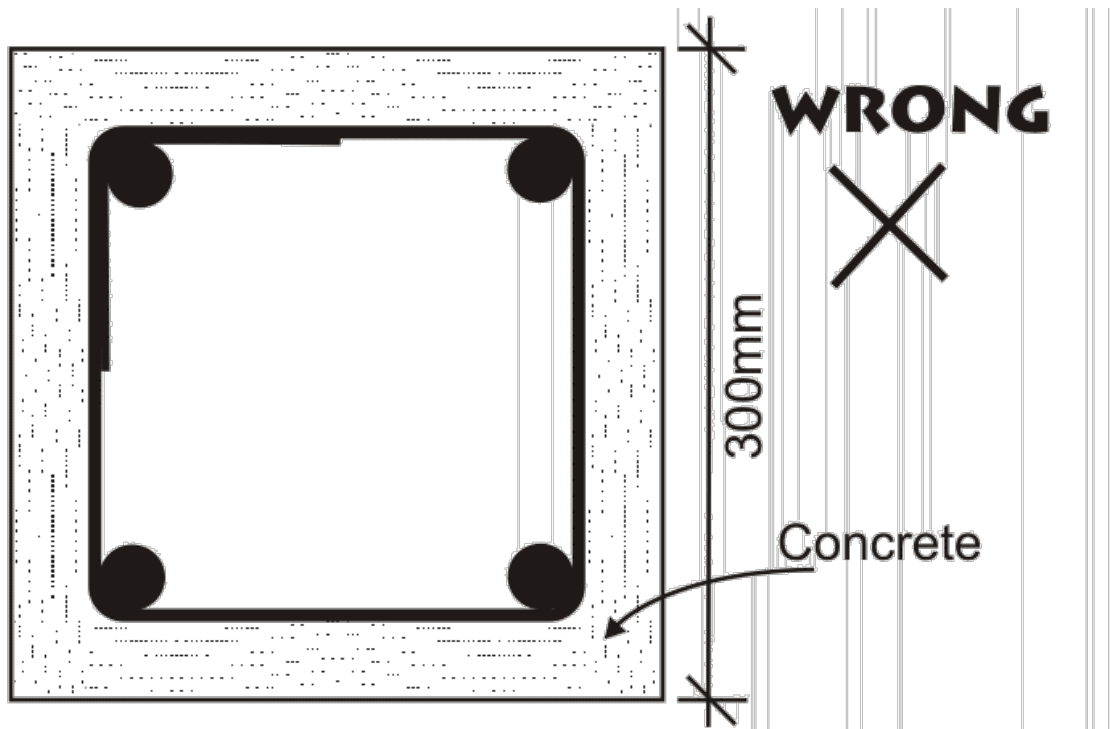


# 3.0 Reinforcement Detailing Guidelines

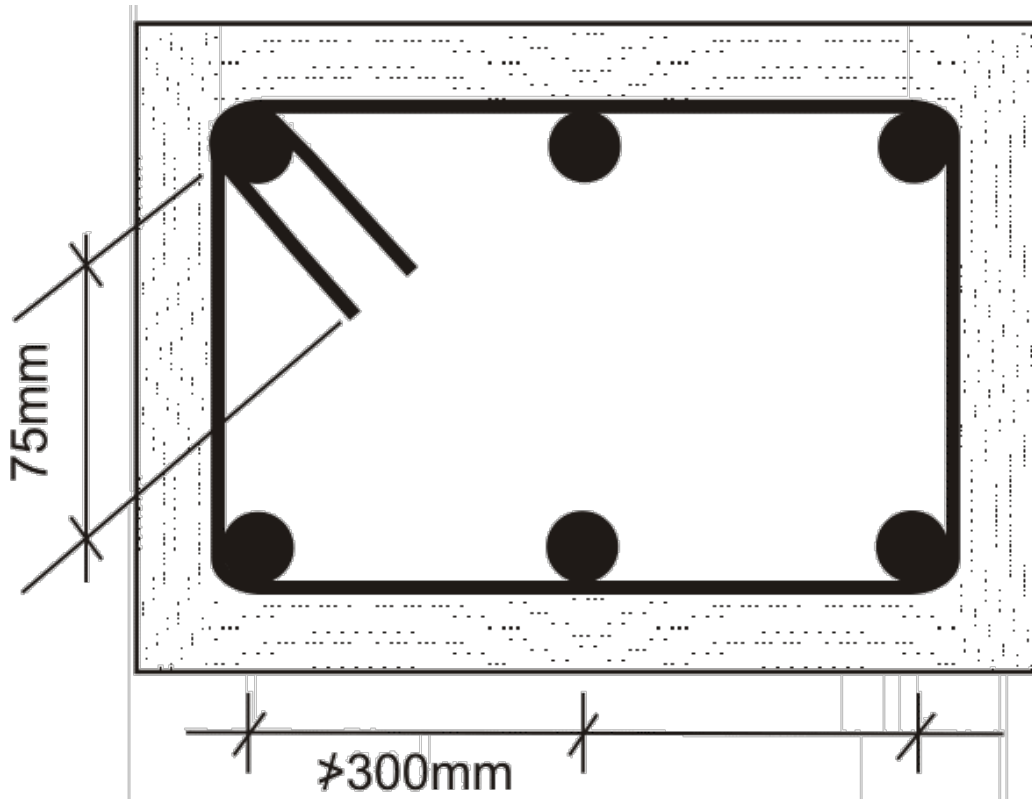
## Do's and Don't



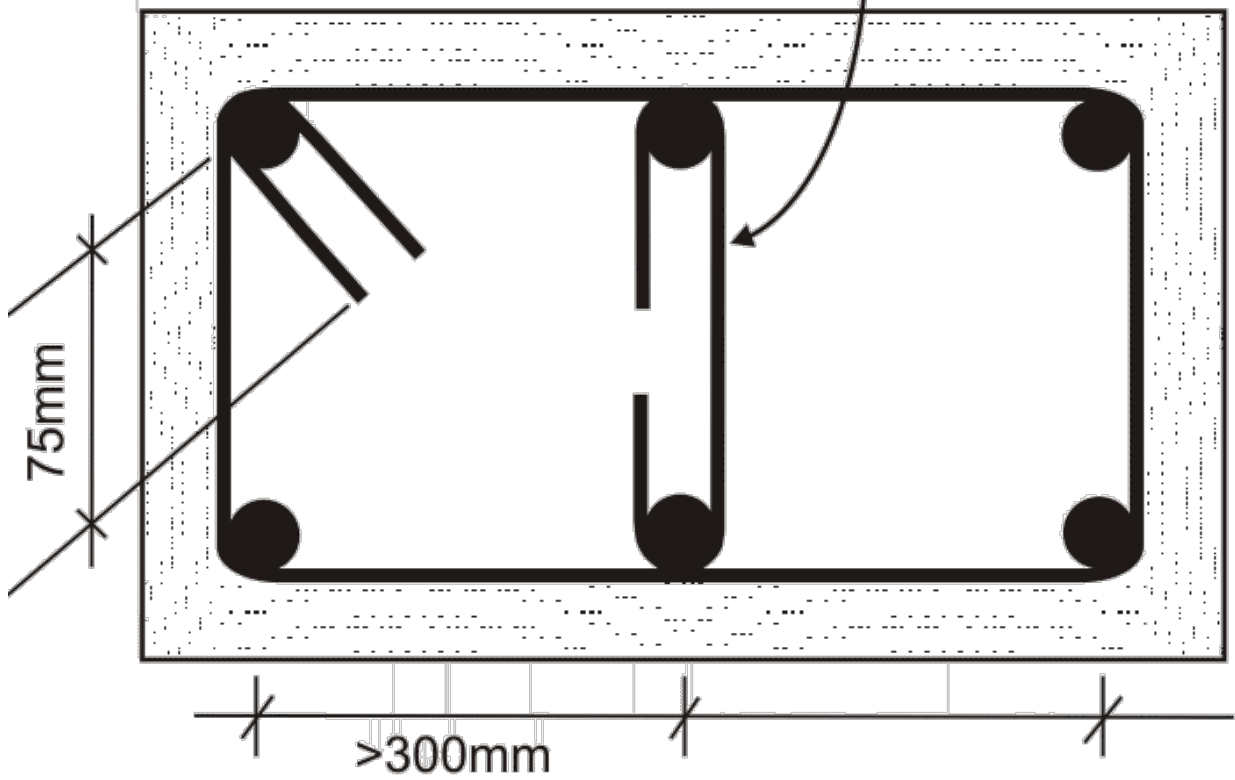
### 3.1 Footing



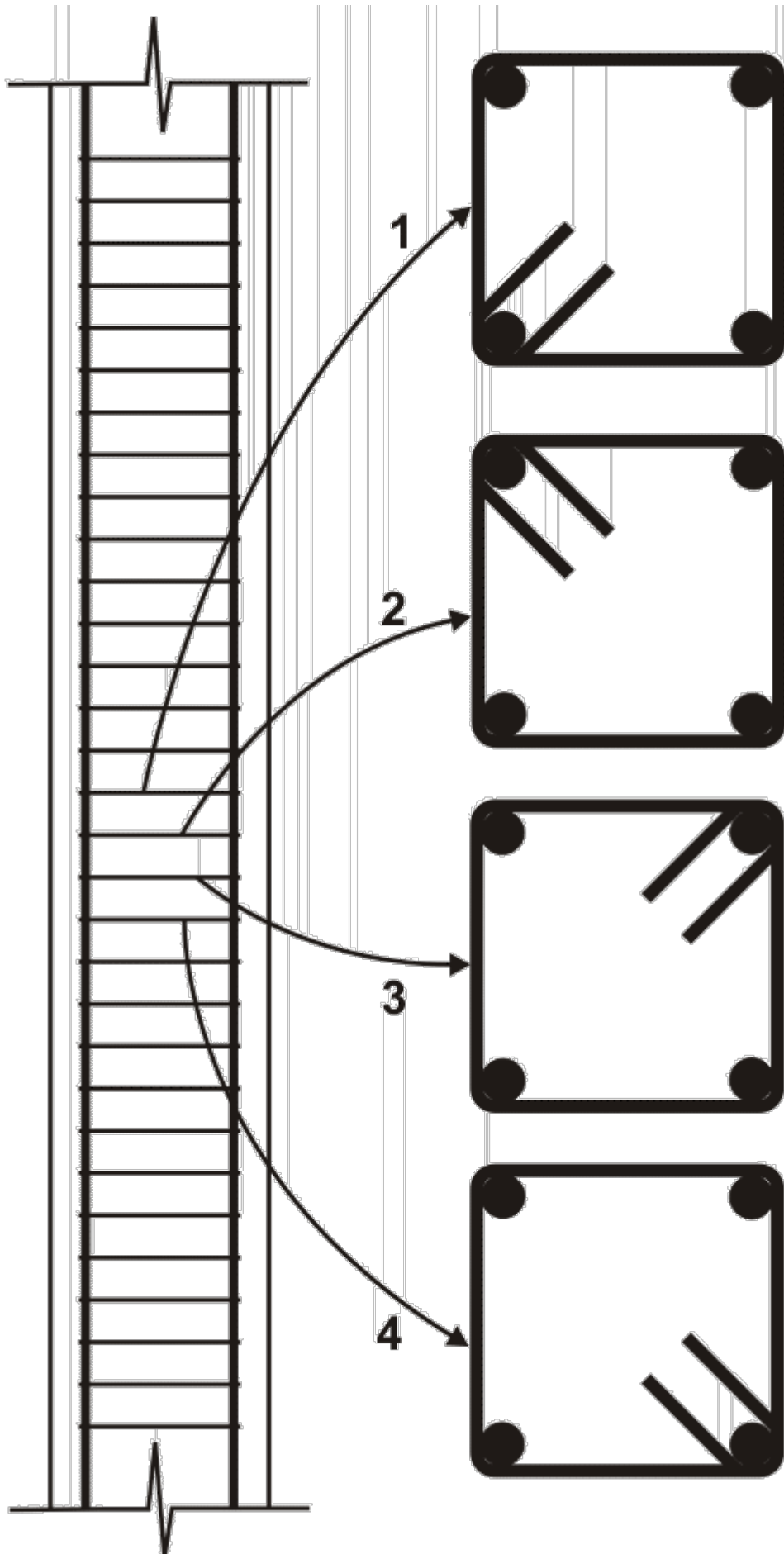
3.2 Stirrup detail



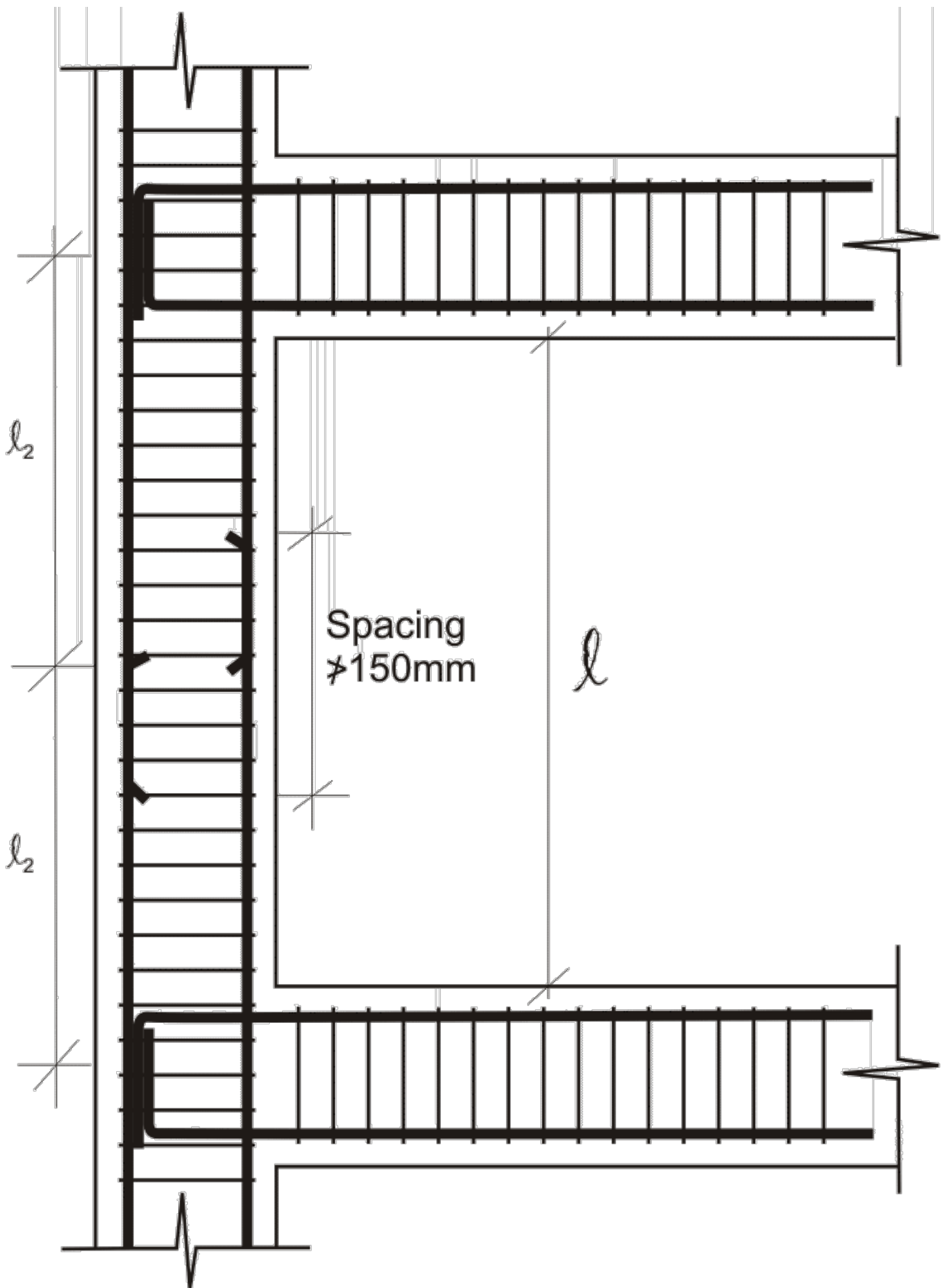
If spacing > 300mm then use links



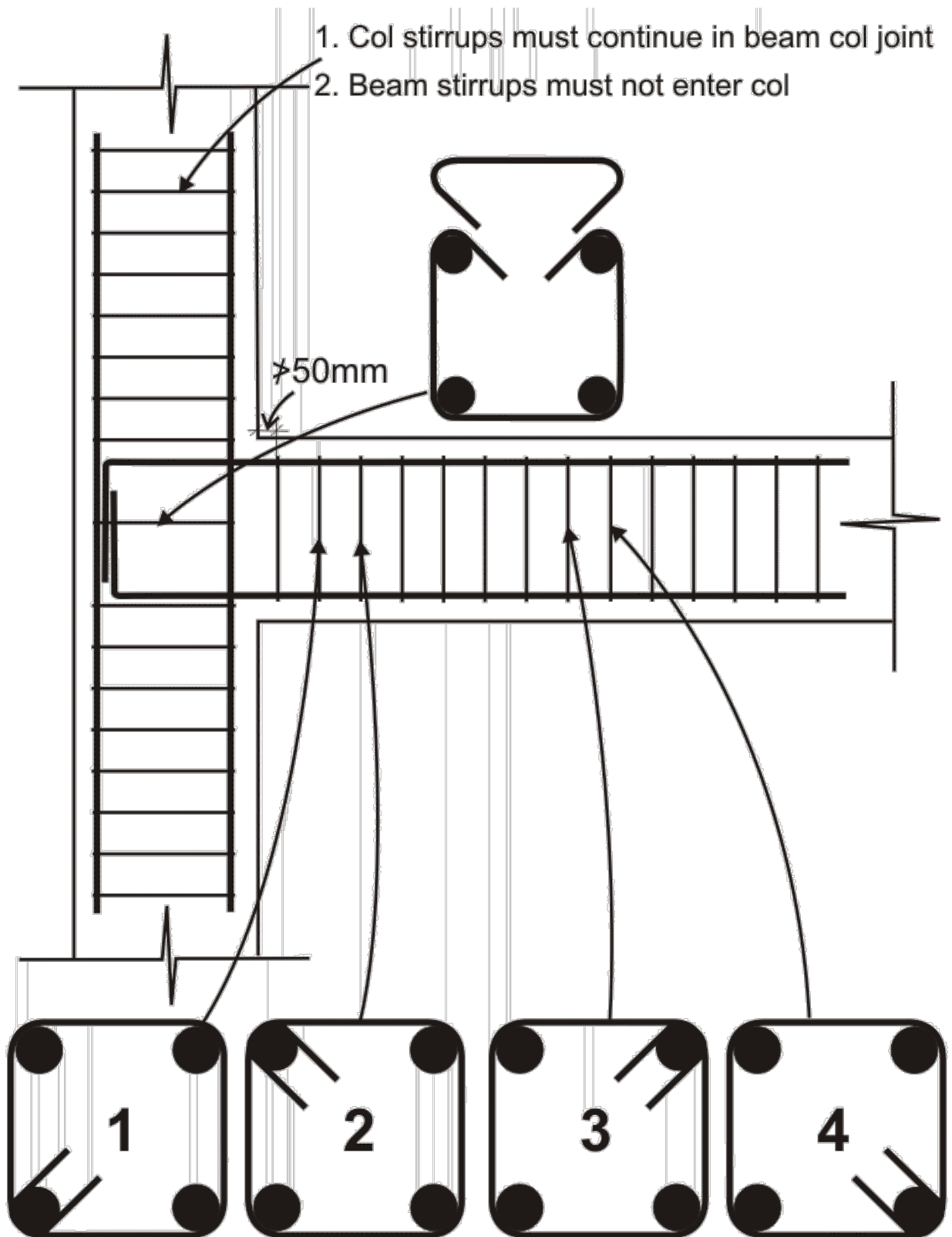
3.3 Stirrup detail



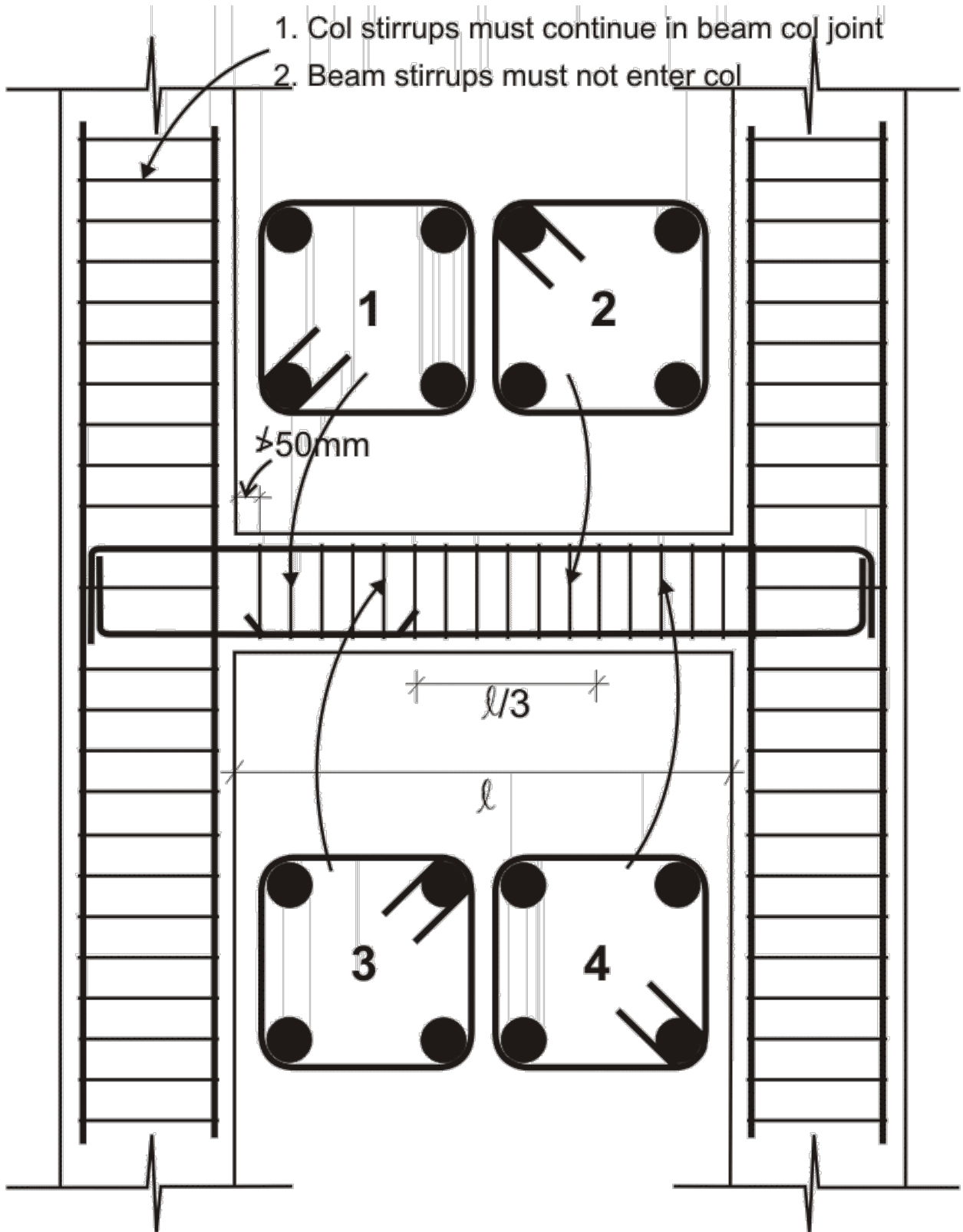
3.4 Arranging stirrups in column



3.5 Lapping reinforcement in column



3.6 Stirrups in beam



3.7 Stirrups in beam

