

① Fundamentals of foundation

② Isolated footings

- Wall footings.

- Asymmetrically loaded pad footing

- " " Slopped "

- Eccentrically loaded footing

- fixing up footing dimension

- Isolated slab & beam footing
- Resistance to horizontal load.
- footing for multi-storey building columns.



③ Combined footing

- Combined footing for 2 axially loaded columns.

- Strap footing

- Strip footing

- Raft foundation.

④ Pile foundation.



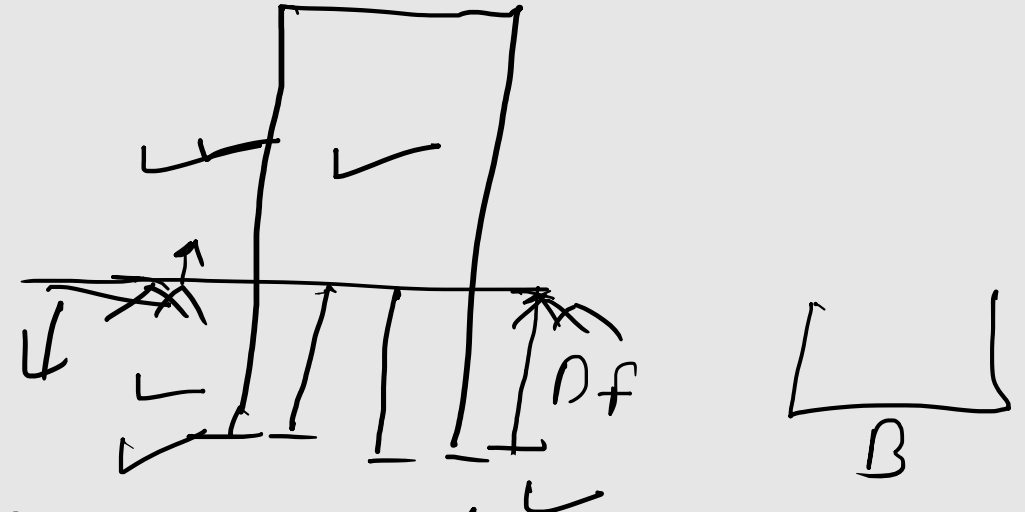
* Foundations ?

-> Super structure

-> Sub-structure



foundation is a part of sub-structure.



① Flexible & Rigid



- Rubber Pad

↓
- R.C.C.

② Shallow & Deep

$$\frac{D_f}{B} \leq 2 \checkmark$$

0.25 to 1

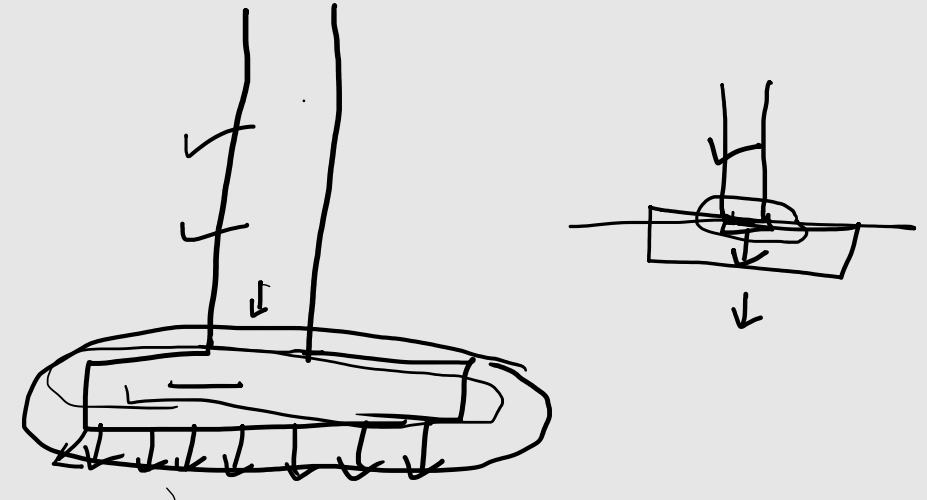
$$\frac{D_f}{B} > 2$$

5 to 20



* Footing :-

- ① Continuous wall footing ✓
- ② Isolated footing ✓
- ③ Combined footing ✓
- ④ Strap footing ✓
- ⑤ Strip footing ✓
- ⑥ Raft foundation ✓
- ⑦ Pile foundation ✓



① Continuous wall footing

② Isolated footing

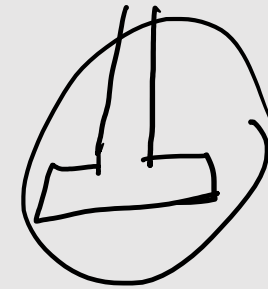
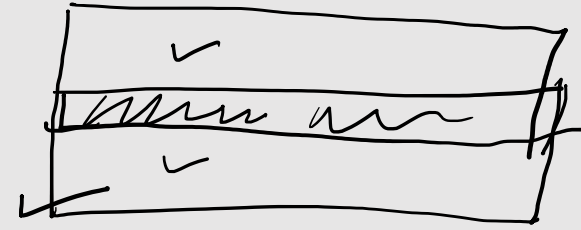
- Individual footing for single column

- Most commonly used footing

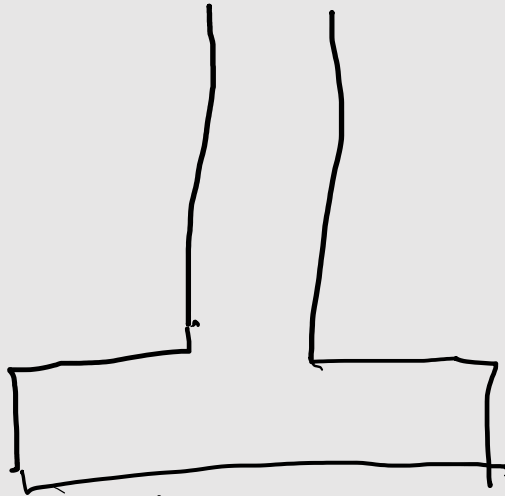
- Used where good soil is available

- Used where enough area available.

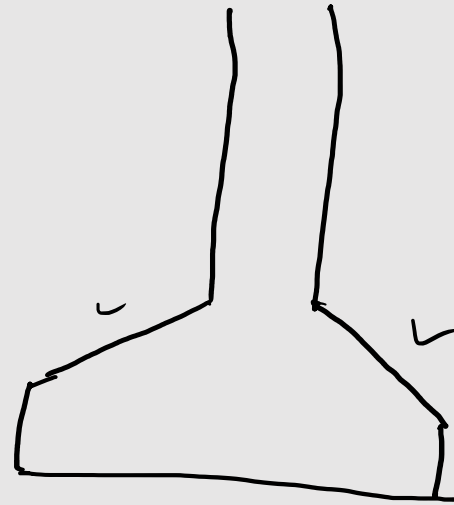
- Pad footing, slopped footing, stepped footing, isolated beam & slab.



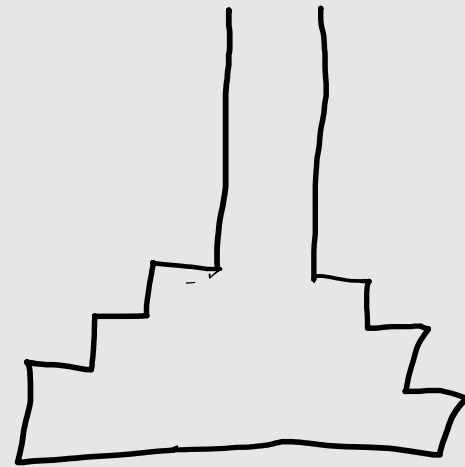
Design of R.C.C. Foundations



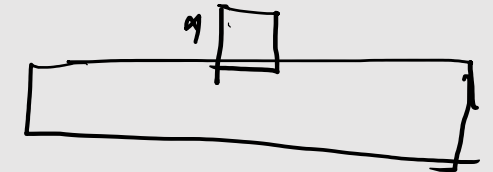
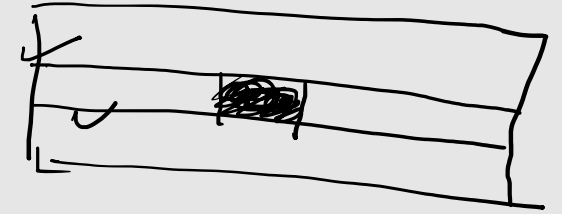
Pad footing



Slopped

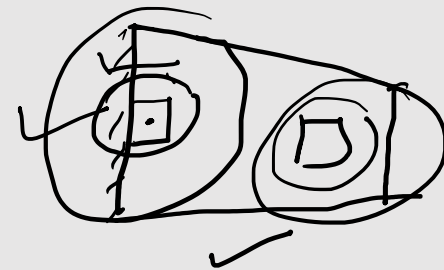
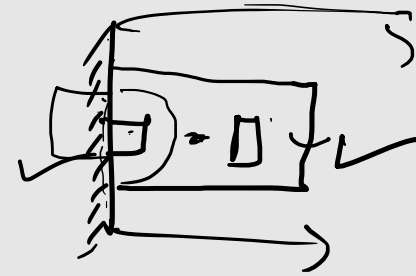
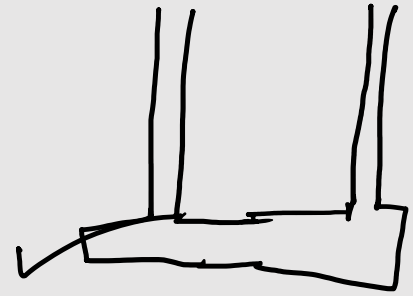


Stepped.

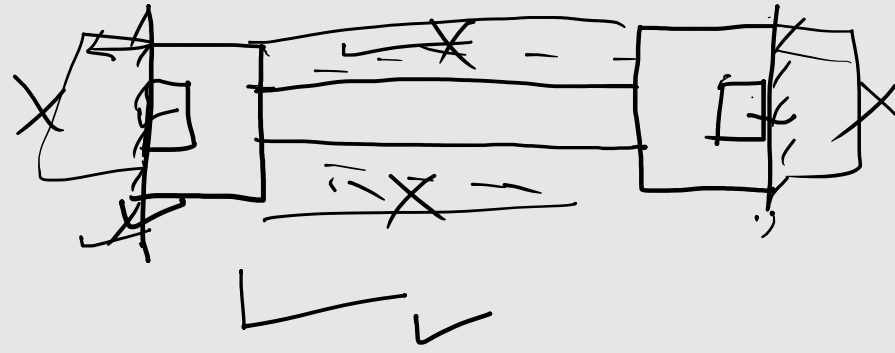


③ Combined footing

- Supports a group of columns
- Dist. b/w 2 columns is small
- Column is on property line
- Rectangular / Trapezoidal

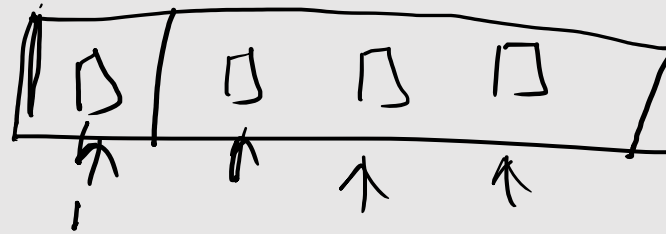


④ Strap footing

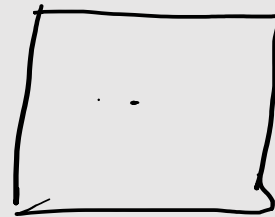


⑤ Strip footing

⑥ Raft foundation.

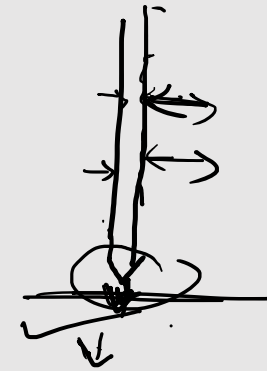
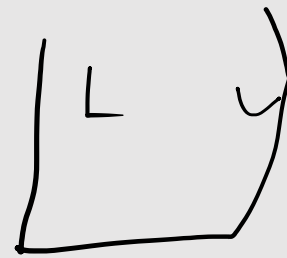


- Poor soil condition / SBC.
- WT ↑
- Heavily loaded columns
- Differential settlement Decreased.



⑦ Pile foundation:

- Hard soil strata available at depth more than 3m.
- Higher depth
→ Economical



- * Shallow:
- Isolated
- Combined
- Mat
- Raft
- Strip

Deep → Pile.

Reinforced Concrete
by H. J. Shah

(Vol-1, Vol-2)

* Choice of footings depends on:

- Type of soil
- Area of land available
- SBC
- Permissible settlement
- ABP

ETAB / STAAD.Pro



Foundations