



SNS COLLEGE OF TECHNOLOGY



AN AUTONOMOUS INSTITUTION

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COIMBATORE

DEPARTMENT OF CIVIL ENGINEERING

19GET102 – BASIC CIVIL AND MECHANICAL ENGINEERING

I YEAR / I SEMESTER

Unit 1 : Civil Engineering Materials and Surveying

Topic : SUB STRUCTURE-TYPES OF FOUNDATION



Sub structure-Foundation

A foundation is the lowest part of any structure. It is the part of a building or home that binds the structure to the soil underneath by safely transferring the load of the structure to the soil.

While choosing the right foundation is a highly technical decision that is to be made by your architect, engineer & building professionals, it is always helpful to understand the process it takes to build your dream home.





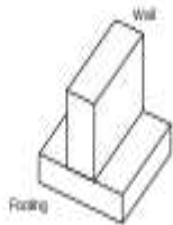
TYPES OF FOUNDATION

Shallow Foundation

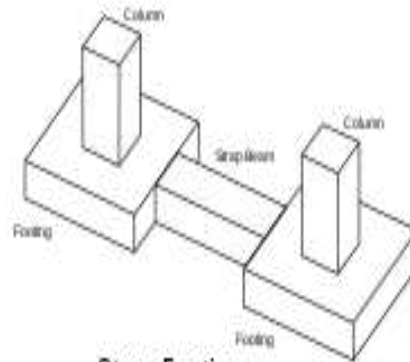
- Isolated footing
- Combined footing
- Strap footing
- Mat foundation

Deep Foundation

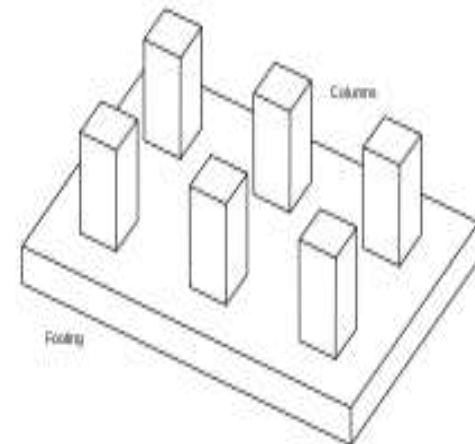
- Basements
- Buoyancy rafts (hollow box foundations)
- Caissons
- Cylinders
- Shaft foundations
- Pile foundations



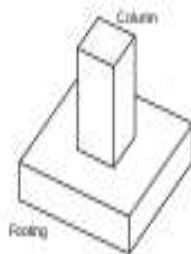
Wall Footing



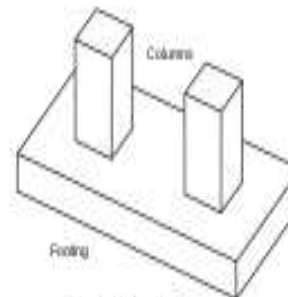
Strap Footing



Mat Foundation



Isolated Footing



Combined Footing



SHALLOW FOUNDATION

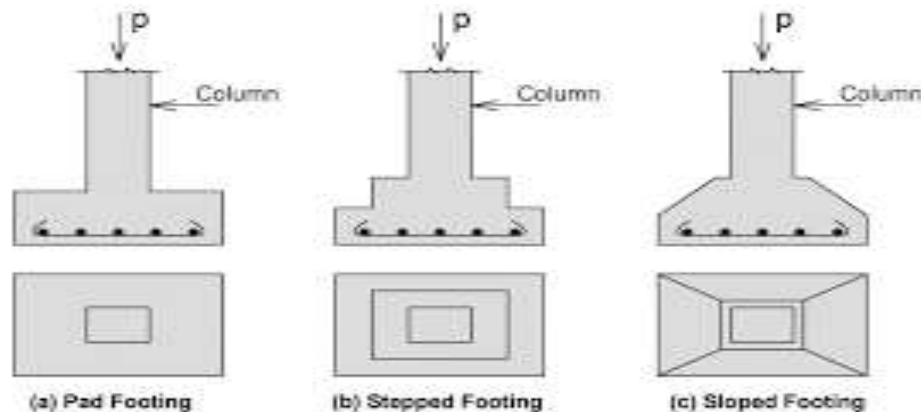
A shallow foundation can be constructed in as little as a one-foot depth, whereas a deep foundations is formed at a depth of 10-300 feet.

As such, a shallow foundation is used for projects that are small or lighter-weight buildings, and deep foundations for larger or hillside developments, or those on poor soil.



ISOLATED FOOTING

Also called single-column footing, it is a square, rectangular, or circular slab that supports the structural members individually. Generally, each of its columns gets its footing to transmit and distribute the load of the structure towards the soil underneath. Sometimes, an isolated footing can be sloped or stepped at the base to spread greater loads. This type of footing is used when the structural load is relatively low, columns are widely spaced, and the soil's bearing capacity is adequate at a shallow depth.





COMBINED FOOTING

When more than one column shares the same footing, these are called combined footing. Utilized when the spacing of the columns is too restricted, that if isolated footing were used, they would overlap one another. Also, when property lines make isolated footings eccentrically loaded, combined footings are preferred.

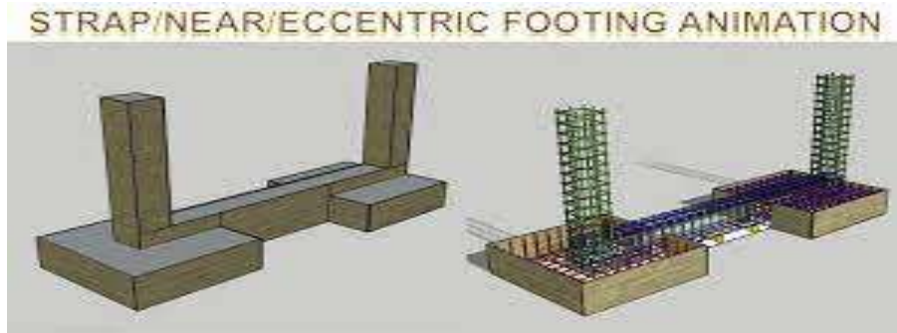
When the load among the columns is equal, the combined footing may be rectangular. Conversely, when the load among the columns is unequal, the combined footing should be trapezoidal.





STRAP FOOTING

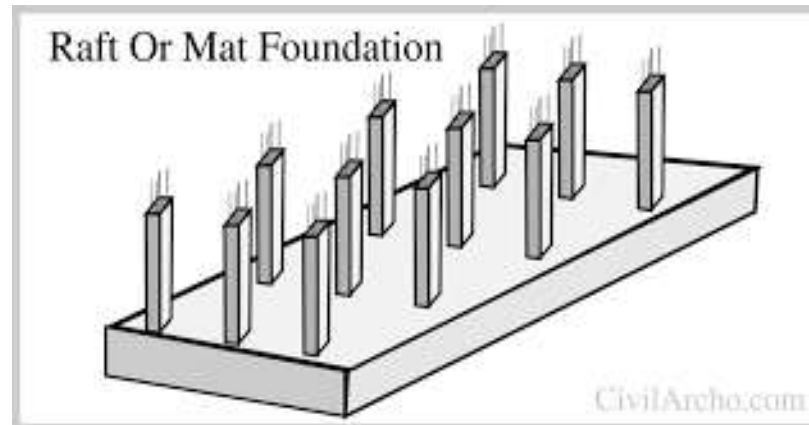
A *strap footing* is when individual columns are connected to one another with the use of a strap beam. The general purpose of a strap footing is alike to those of a combined footing, where the spacing is possibly limited and/or the columns are adjacent to the property lines.





MAT FOUNDATION

Also called raft foundation, it is a single continuous slab that covers the entirety of the base of a building. Mat foundations support all the loads of the structure and transmit them to the ground evenly. Soil conditions may prevent other footings from being used. Since this type of foundation distributes the load coming from the building uniformly over a considerably large area, it is favored when individual footings are unfeasible due to the low bearing capacity of the soil.





Thank You!!