Foundation Construction Meeting Kit

What’s At Stake

Generally, the foundation can be classified into two, namely shallow foundation and deep foundation. A shallow foundation transfers the load to a stratum present in a shallow depth. The deep foundation transfers the load to a deeper depth below the ground surface. A tall building like a skyscraper or a building constructed on very weak soil requires deep foundation. If the constructed building has the plan to extend vertically in future, then a deep foundation must be suggested.

What’s the Danger

CONSTRUCTION LAID BARE

To construct a foundation, trenches are dig deeper into the soil till a hard stratum is reached. To get stronger base foundation concrete is poured into this trench. These trenches are incorporated with reinforcement cage to increase the strength of the foundation. The projected steel rods that are projected outwards act as the bones and must be connected with the substructure above. Once the foundation has been packed correctly the construction of the building can be started. The construction of the foundation can be done with concrete, steel, stones, bricks etc. The material and the type of foundation selected for the desired structure depends on the design loads and the type of underlying soil. The design of the foundation must incorporate different effects of construction on the environment.

HOW TO PROTECT YOURSELF

THE PURPOSE OF FOUNDATION

- Foundation are the main reason behind the stability of any structure. The stronger is the foundation, more stable is the structure.
- The proper design and construction of foundations provide a proper surface for the development of the substructure in a proper level and over a firm bed.
- Specially designed foundation helps in avoiding the lateral movements of the supporting material.
- A proper foundation distributes load on to the surface of the bed uniformly. This uniform transfer helps in avoiding unequal settlement of the building. Differential settlement is an undesirable building effect.
- The foundation serves the purpose of completely distributing the load from the structure over a large base area and then to the soil underneath. This load transferred to the soil should be within the allowable bearing capacity of the soil.

MAIN FUNCTIONS OF FOUNDATION IN CONSTRUCTION

1. Provide overall lateral stability for the structure
2. Foundation serve the function of providing a level surface for the construction of substructure
3. Load Distribution is carried out evenly
4. The load intensity is reduced to be within the safe bearing capacity of the soil
5. The soil movement effect is resisted and prevented
6. Scouring and the undermining issues are solved by the construction of foundation

TYPES/USES OF FOUNDATIONS: SHALLOW AND DEEP

Shallow Foundations

1. **Individual Footing or Isolated Footing**

Individual footing or an isolated footing is the most common type of foundation used for building construction. This foundation is constructed for a single column and also called a pad foundation.

The shape of individual footing is square or rectangle and is used when loads from the structure is carried by the columns. Size is calculated based on the load on the column and the safe bearing capacity of soil.

1. **Combined Footing**

Combined footing is constructed when two or more columns are close enough and their isolated footings overlap each other. It is a combination of isolated footings, but their structural design differs.

1. **Spread footings or Strip footings and Wall footings**

Spread footings are those whose base is wider than a typical load-bearing wall foundations. The wider base of this footing type spreads the weight from the building structure over more area and provides better stability.

1. **Raft or Mat Foundations**

Raft or mat foundations are the types of foundation which are spread across the entire area of the building to support heavy structural loads from columns and walls.

Types of Deep Foundation

1. **Pile Foundations**

Pile foundations are used to transfer heavy loads of structures through columns to hard soil strata which is much below ground level where shallow foundations such as spread footings and mat footings cannot be used. This is also used to prevent uplift of the structure due to lateral loads such as earthquake and wind forces.

1. **Drilled Shafts or Caisson Foundation**

Drilled shafts, also called as caissons, is a type of deep foundation and has an action similar to pile foundations discussed above, but are high capacity cast-in-situ foundations. It resists loads from structure through shaft resistance, toe resistance and/or combination of both of these. The construction of drilled shafts or caissons are done using an auger.

ANAYSIS – WRAP UP

Soil type and load bearing are critical factors to consider when choosing a suitable type of foundation. Whether it’s a big or small building, an engineer must be fully

aware of the surroundings to erect a very durable structure. Here are essential steps to follow to choose the appropriate structure.

First, you must inspect the soil you want to build on. Second, calculate the live and dead load that the foundation needs to carry. This will help you to decide which footing to use. Then, design the structural specifications like size, weight, and depth.

FINAL WORD

Construction must be done correctly in terms of the type of construction being formed, avoiding problems with settlement, and properly preparing the subgrade through final curing stages. Each phase of foundation construction has necessary requirements and components upon which a structure depends.