

7. Shallow Foundations

SHALLOW FOUNDATIONS, PAD FOOTING

- **Shallow foundations** are the most widely used type of foundation structures.
- The foundation structures include **pad footing, strip footing, footing grid** and **foundation slab**.
- The minimum depth of foundation is 800 - 1200 mm below the surface so that the footing bottom is in a non-frosty depth.
- **Pad footing** are the foundation structures that are mostly made for the foundation of the column construction system. Pad footings transmit point loads from the columns into the ground.

PAD FOOTING

- Classification of pad footings according to the technology implementation:
- **Monolithic pad footings**
 - Pad footings made of plain concrete - only for small layout plan dimensions (up to 2 m of side size)
 - Pad footings made of reinforced concrete - for larger layout plan dimensions
 - Pad footings interspersed with stones
- **Prefabricated pad footings**
 - Hollow (calyx) pad footings - a prefabricated column is mounted on a cement mortar bed
 - Full pad footings - are manufactured as one-stage or multi-stage.

STRIP FOOTING

- Lightweight continuous structures can be based on a **foundation lintel**
- **Strip footings** are used to support both load-bearing and non-load-bearing walls from 6 N/m^2 . The minimum size of the strip footing is $300 \times 300 \text{ mm}$.
- **Strip footing made of quarry stone** - are used only rarely.
- **Strip footing made of plain concrete** - are used for wall constructions.
- **Strip footing made of reinforced concrete** - for heavy loads transmitted to the foundations with less bearing and non-homogeneous subsoil.
- **Prefabricated strip footing** - Prefabricated strip footings are used when loading the foundation soil is from 0.2 MPa to 0.35 MPa

Grid Footing

- **Grid footings** are formed by strip footings, generally perpendicular to each other. Footing grids are used for heavily loaded skeletal structures designed in non-homogeneous subsoil in soils with high compressibility, undermining or seismically unstable areas.

Foundation Slab

- **The foundation slabs** distribute the load on the entire surface of the ground plan of the building. Foundation slabs are used in inhomogeneous, low-load-bearing and extensively compressible base soil. The foundation slabs are made of reinforced concrete as **straight, ribbed, grate, headed, shell or gable**.