10. Vertical Load-Bearing Monolithic and Prefabricated Structures

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Monolithic concrete and reinforced concrete walls

- **Concrete wall structural system is** roughly 10 times more bearable compared to brick masonry system.
- **Monolithic concrete load-bearing walls** are used mainly for civil buildings, for buildings of diverse shapes and complicated floor plans, receding and overhanging structures, high-rise buildings and buildings with high architectural demands.
- **Formwork:** partial x tunnel x sliding or drawn x built-in lost formwork
- Surface coating of monolithic walls is made by plastering or facing

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Monolithic reinforced concrete column structure

- **Monolithic reinforced concrete column systems** are solid structures made of columns, beams or heads and ceiling structure.
- Monolithic reinforced concrete skeletons are made as:
  - **Frame skeleton system -** the transverse direction, in the longitudinal direction or in the two-way direction.
  - **Flat slab with column head skeleton system** is used for objects loaded with large payloads**,** complicated formwork.
  - **Flat slab skeleton systém -** are used for objects with lower payloads. Their advantage is a flat view.
  - **Expansion joints** can be made in several ways: **duplication of columns x duplication of supporting beams x** created by an **inserted field.**

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Prefabricated concrete reinforced concrete walls

- **Blocks** are wall element panels, their height is ½ to 1/3 of floor height, thickness 300 to 400 mm.
- **Blocopanels** are wall element of floor height and a width of 1200 to 1500 mm. The thickness of the blockopanels is 250 - 400 mm.
- **Wall panels** typically have an area of 10 to 20 square meters. The height corresponds to the height of the floors. Their usual is 150 mm.
  - **Internal load-bearing panels -** thicknesses of 150 - 200 mm and in a length of multiple 300.
  - **The perimeter wall pane -** the thermal insulation function
  - **The stiffening panels -** provides stability prefabricated buildings. Their thickness varies from 80 to 100 mm

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Prefabricated reinforced concrete column structure

- **Frame assembled skeleton** is made up of supporting beam mounted on columns.
- **Frames** are formed by dividing the monolithic frame off its joints, at the sites of the smallest bending moments
- **Console columns and split beams** are formed by separating the beam from the columns on which the brackets remain.
- **Columns with continuous beams** are formed by dividing monolithic skeletons in the joint.
- During the development, more than 30 systems of prefabricated skeleton systems were built.

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