PromStroyGaran

Group of

KUB stroy

KUB-2.5 structural system

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ARCHITECHTURAL AND LAYOUT OPPORTUNITIES

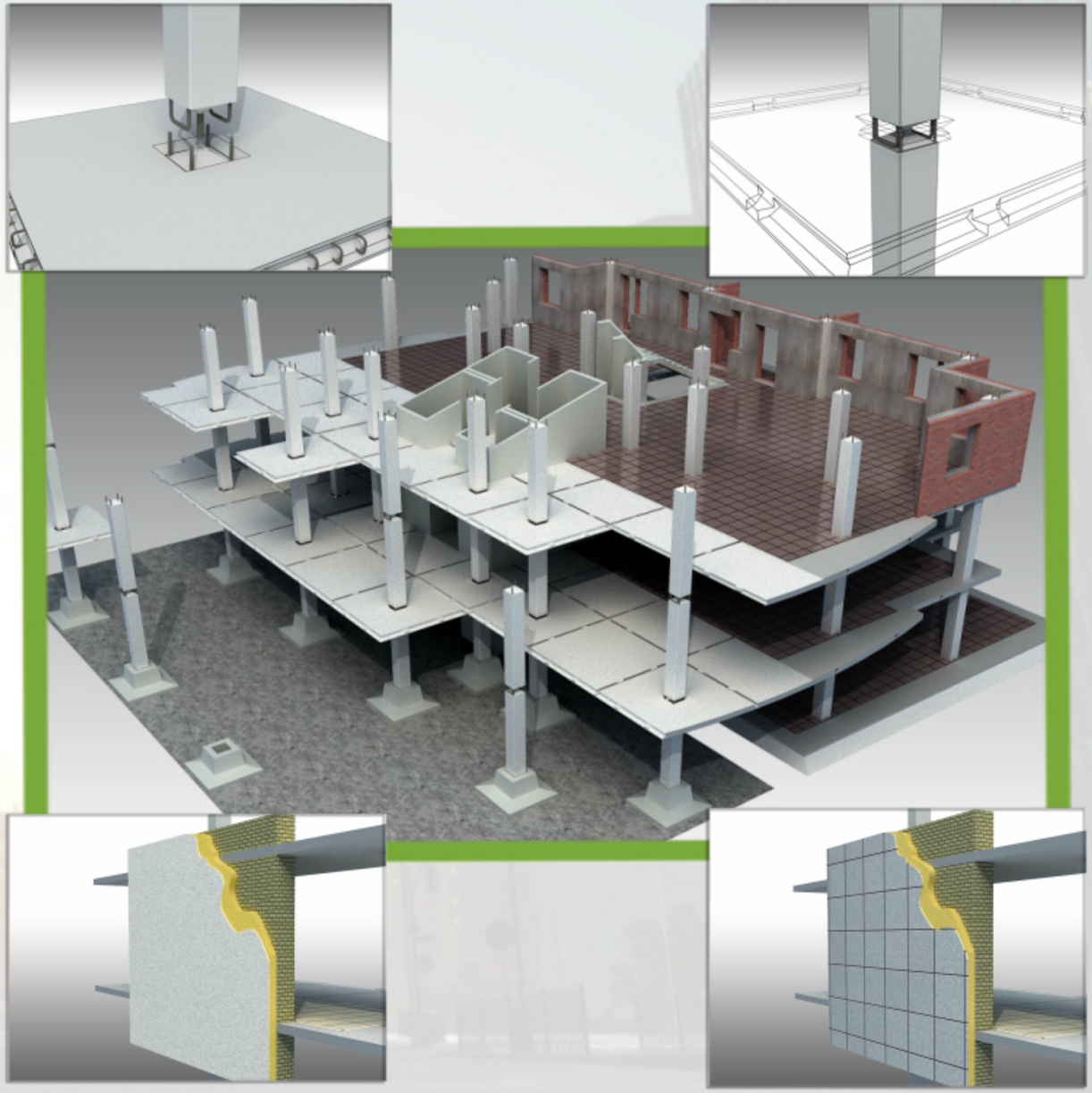
The precast frame without collar beams of KUB-2.5 structural system can be used for construction of all types of urban structures in different climate conditions: residential and administrative buildings, building of social, cultural and household purpose, multistory garages/parkings, warehouses, some industrial buildings (12 m span).

The bearing frame of a building consists of internal elements only (columns, floor slabs and, if required, ties and shear walls). Almost any façade solution can be used as a building envelope: light heat-saving stone (including brickwork), various hinged panels, ventilated façades, stained glass structures, etc. The system allows to replan premises layout in accordance with current requirements which might appear during exploitation of the building. And this does not violate structural stability of the building (offices, shops, sport, health and household complexes can be set up in the first floors of the building).

STRUCTURAL PECULIARITIES OF THE SYSTEM

Ths basis of KUB-2.5 structural system is the original joint of two main elements – a floor slab and a column. The column is connected with reinforcement frame of the floor slab via an insert – a steel manacle ring of a special structure.

The building's/structure's frame erected in the system of the structural frame without collar beams is a tridimensional precast structure. Columns perform as frame stands and floor slabs function as collar beams; ties or shear walls are used as rigidity elements. Any stair cases, ventilation units, lift shafts which are put into production at local fabrication plants can be used.



Extrernal walls do not bear any loads thus it is not required to set up foundations for them, they should not be designed as strong as they are designed in the buildings of unframed type. Load on the frame's bottom is 25% less than in the cast-in-situ buildings. Despite ground condidtions foundation area which is required for forces distribution in the bottom of the superstructure, which has been erected in KUB-2.5 structural system, alsways remains minimal as frame's dead load is minimal because all sections are optimised.

Structures of the frame without collar beams are meant for exploitation in different regions including regions where seismicity reaches 7-9 points.

Strength of KUB-2.5 frame structures was proved with technical calculations and numerous tests:
- KUB structures were considered by Scinetific and Technical Council of the State Committee of Architecture of Gosstroy of USSR and were recommended for application via letter No. ИП-7-3691 dated 19 September 1986;
- KUB frame was recommended for application by Kucherenko's Central Scientific and Research Institute of Construction Structures of Gosstroy of USSR (conclusion dated 15 March1990);
- Laboratory of dynamic tests of the Central Scientific, Reseacrh and Design Institute of Residential and Public Buildings headed by GN Ashkinadze.

More than thousand of KUB-system projects have been constructed in Russia and worldwide in the recent years.

Moscow


Solnechnogorsk


Ust-Luga


Moscow

PECULIARITIES OF CONSTRUCTION

KUB-2.5 structural system is highly industrialised due to high readiness of its prefabricated elements. All elments are manufactured at precast factories. Prefabrication system applied in KUB-2.5 system allows to transfer the labour work to the shop condidtions thus reducing risks for enviroment and human factors significantly.

There are only ready elements installed at the site by means of mechanised equipment (cranes) thus providing high speed of construction.

Besides the frame assembly can be conducted all year round, and small number of workers reduces chances of unqualified labour force involved in the assembly process.

ECONOMIC ASESSMENT

KUB-2.5 reinforced concrete structures are very ratioanl and optimal due to structural solutions. Rationality is caused with well-thought structural solutions which envisage minimal quantity of construction materials (steel and concrete) and labour force.

KUB-2.5 universal structural system of precast frame without collar beams has been designed based on developed and prooved methods which reduces construction period significantly.

	Cast-in-situ	KUB-2.5
Steel consumption per 1 sq.m.	27 kg/sq.m.	18 kg/sq.m.
Concrete consumption per 1 sq.m.	0.28 cu.m./sq.m.	0.2 cu.m./sq.m.
Floor thickness	20 cm	16 cm
Column spacing	6.3x6.3 m	6x6 m
Layout	Free layout	Free layout
Labour	21 ppl/hour	0.7 ppl/hour
Speed of construction of 12-story building	6 months	3 months
Equipment	Assembly equipment and tooling, batching plant, concrete pump	Assembly equipment and tooling

Mechanisation of construction process reaches 90% at all levels of fabrication of precast elements and frame assembly process.

Frame assembly is universal and all seasonal. Preliminary design works allow to plan construction schedule.

Speed of construction reduces exploitation period of tower cranes thus rent fees for their exploitation are also lower.

Precast frame of KUB-2.5 system reduces period of construction and its cost.

St. Petersburg

Kupavna

Korolev

Vologda

Vladimir

Balashikha

Golitsyno

Schelkovo

Gummolosary

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