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TECHNICAL INSPECTION OF BUILDING STRUCTURES OF A FOUR-STORY BUILDING IN CONNECTION WITH RECONSTRUCTION AND RE-PROFILING FOR A HOTEL COMPLEX

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Abstract
This article presents the results of assessing the technical condition of load-bearing structures for the transfer of a 4-story reinforced concrete frame industrial building to another type of building. In addition, the necessary proposals and recommendations were given for converting the industrial building into a hotel complex.

Keywords Frame, reinforced concrete, reconstruction, reinforcement, defect, damage, deformation, method, survey, assessment of technical condition.

INTRODUCTION

Reconstruction of buildings and structures at the present stage, regardless of economic, social and political views, has become one of the main directions in the field of capital construction. Its volumes are steadily increasing. Due to its specificity, the design and implementation of construction and installation works, reconstruction differs significantly from the process of creating new buildings and structures and determines some other approaches and views [1].

Reconstruction of buildings and structures is their reconstruction, technical improvement with the aim of partially or completely changing the functional purpose, installing new effective equipment, improving the development of territories, and bringing them in accordance with modern increased regulatory requirements. It is part of the general reconstruction of the industrial complex, urban areas, residential areas, and a complex of social, cultural and mass institutions. The need to reconstruct any buildings and structures requires solving issues of the operability of existing structures, elements and products, identifying reserves in them for increasing loads or, conversely, defects that reduce the likelihood of their

trouble-free operation. In this process, the issue of operational suitability and seismic resistance should be resolved as a result of analysis and processing of the data obtained, if the object in question is located in a seismic area (score 7 or more).

Reconstruction of buildings and structures of a production enterprise is carried out mainly during technical re-equipment, but in this case the costs of construction and installation work should not exceed 10% of the total capital investment. It must be comprehensive and take into account the long-term development of the area where the facility is located. Incompetence of the approach, satisfaction of interests only of the present time, lack of a long-term plan can lead, after a certain time, to the impossibility of carrying out subsequent reconstruction without demolishing the existing buildings after the reconstruction [2].

Main part. Location object and his brief description.

The building is located in the Tashkent region, city Yangiyul, MSG "Navruz" st. Nizami, house 16. On moment examinations building partially operated.

Characteristic district subject object:

- standard snow load So=0.5 kPa (50 kgf/) (KMK 2.01.07-96 [3]);
- normative express pressure wind Wo =0.38 kPa (38 kgf/m) [KMK 2.01.07-96];
- seismicity district 8 points [map MSR suburbs Tashkent];
- co-factor repeatability earthquakes Kp =1.2 (KMK 2.01.03-96 [4]);
- standard soil freezing depth is 0.7 m [according to geotechnical surveys];
- soils grounds – loams loess-like [on basis opening of foundations and engineering-geological surveys];
- category soil By seismic properties – III (KMK 2.01.03-96 [4]);
- type ground conditions by subsidence – second [by data from engineering and geological surveys];
- groundwater lies at a depth of more than 11.5-11.6 m from the surface land [according to engineering-geological surveys].

Figure 1 - Exterior view of the building

Figure 2 - Interior view of the building

Architectural and planning and constructive description object

Responsibility class of the building – II, reliability coefficient for the intended purpose Up=1.0 (KMK 2.01.07-96, [1, p. 125]), category of responsibility of the building – I, liability coefficient K o =1.0 [2, (Change 1, Table 2.3.)], The degree of fire resistance of buildings is II.

Complex buildings consist of from several buildings on one site.

Subject building - block "B".

Block B - four-story building, sizes B plan 71.2x24.0m. B axes "1-14/A-D."

In axes "7-8" divided by an expansion joint into structurally independent compartments.

Heights floors:

height of the 1st floor – 4.8 mm (from the floor level to the floor level of the next floor); height of the 2nd floor – 4.8 mm (from the floor level to the floor level of the next floor); height of the 3rd floor – 4.8 mm (from the floor level to the floor level of the next floor); height of the 4th floor – 4.8 mm (from the floor level to the floor level of the next floor); height technical floors – 4.2m (those floor located only V axes "1-3/A-B" and "13-14/A-B").

The buildings are made in prefabricated structures for multi-story industrial buildings according to the IIS-20 series.

Columns:

- prefabricated reinforced concrete two-story section cutting 400x600mm (on the 1st and 2nd floor);

- prefabricated reinforced concrete two-story cut with a section of 400x400mm (on the 3rd and 4th floor);

The columns are made according to the IIS 22-2 series. The spacing of the column axes in the longitudinal direction is 6000 mm, the alignment of the axes of the end columns is 500 mm. Axes pitch columns in the transverse direction 6000 mm, axle alignment extreme columns – zero.

Prefabricated reinforced concrete crossbars according to the IIS 23-1 series. The load-bearing crossbars in the transverse direction are of T-section; in the longitudinal direction, the crossbars are made in the form of trough-shaped tie beams. The cross-section of the load-bearing prefabricated reinforced concrete crossbars is 640x800(h)mm. The cross-section of the prefabricated reinforced concrete middle beams is 1550x400(h)mm. The cross-section of the outer tie beams is 800x400mm.

The floors and covering are made of ribbed slabs 400mm high, 1500mm wide according to the IIS 24-2-73 series.

The external wall fencing is made of hinged prefabricated expanded clay concrete wall panels according to the IIS 29-5 series.

The internal walls and partitions are made of ordinary solid brick.

Constructive solutions for pairing frame elements have been completed by series TDSM 22-1, TDSM 24-1, TDSM 25-1, TDSM 24-2, TDSM 25-2.

The structural design is a prefabricated multi-storey spatial reinforced concrete frame with rigid frame units. The spatial rigidity and strength of the building is ensured by structural rigidity disks prefabricated monolithic floors and coatings V horizontal planes and vertical rigid monolithic reinforced concrete frames, in the transverse direction.

In block B available two internal staircases cells that are located in the “12/A-B” and “13-14/A-B” axes.

There is no external metal escape ladder. Roof flat, soft from several layers roofing felt and foil isol.

Description main carrying elements building:

Base - directly in the areas of opening, the base is represented by loess-like loams of brown color, moist, macroporous, with the inclusion of calcareous concretions, of a solid consistency. According to archival materials, soils collapse due to their own weight and under load. The type of soil conditions of the site in terms of subsidence is the second with a possible subsidence value from the soil’s own weight of more than 10 cm.

Foundations - under load-bearing reinforced concrete columns, the foundations are made free-

standing, reinforced concrete, monolithic, columnar. The dimensions of the foundation base are 1600x1600mm. Foundation depth -6.4 m from floor level 1st floor or -6.3m from the ground surface. The pillars are reinforced concrete, monolithic, dimensions 1200x1200x1400(h). Foundation concrete class B 15. Data on foundations are based on this series of frames.

The columns are prefabricated reinforced concrete, adopted according to the IIS-22-2 series, two-story cut. On the 1st and 2nd floors there are prefabricated columns with a cross-section of 400x600mm, grades K-17 (outer single-cantilever) and K-18 (middle double-cantilever), two-story cut. On the 3rd and 4th floors K-19 (extreme single-console) and K-20 (medium two-console) two-story cut, section 400x400 mm.

The pitch of the column axes in the longitudinal and transverse directions is 6.0 m. On basis control autopsies established What All columns (middle and outermost), with a section of 400x600 mm (basement and 1st floor) have longitudinal reinforcement - 4Ø25AIII + 8Ø22AIII. Transverse reinforcement (clamps) Ø10 AI with a pitch of 250-300mm.

The middle and outer columns, with a section of 400x400 mm (3rd and 4th floors) have a longitudinal reinforcement - 4Ø28AIII + 4Ø28AIII. Transverse - Ø10 AI in increments of 250-300mm.

Class concrete columns B25. The junction points between the lower floor column and the upper floor column are located on the 3rd floor at a height of 70 cm from the floor. The columns are attached to each other using reinforcement bars Ø32AIII. Reinforcing bars of linings Ø32AIII with a length of 250 mm are welded to metal plates δ = 12 mm of columns, which are located at the head and base of the columns.

Location Column	Section	Reinforcement	Class concrete	Floor
Middle column	400x600mm	4Ø25AIII + 8Ø22AIII	B25	1- th floor 2- th floor
Outer column	400x600mm	4Ø25AIII + 8Ø22AIII	B25	1- th floor 2- th floor
Middle column	400x400mm	4Ø25AIII +4Ø28AIII	B25	3- th floor 4- th floor
Outer column	400x400mm	4Ø25AIII +4Ø28AIII	B25	3- th floor 4- th floor

Half-timbered posts - made at the ends of the building in axes 1/A-D and 14/A-D. The half-timbered posts are made of 2 corners L=140x10mm, connected by a weld to a box. The heads of the reinforced concrete columns extend 60 cm above the roof for fastening the parapet panels.

Bearing crossbars - prefabricated, reinforced concrete, T-section, with shelves for support slabs on 6-meter span. Dimensions sections 640x800mm, with two support consoles. Crossbar's series IIS-23-1. length 5500mm. The load-bearing crossbars are located in the direction cross (digital) axes. Based on the control opening, the reinforcement of the crossbars was installed - 3Ø32AIII in the upper zone and 3Ø22AIII in the lower zone of the cross-section of the crossbars. Transverse reinforcement of crossbars - Ø 12 AIII with pitch 80-250 mm. Class concrete crossbars B25. Crossbars are installed on the console columns and connected at the supporting part. The crossbars are connected to the columns by rigid frame units. Column pairing and crossbars were solved according to the series by welding in the upper zone with subsequent monolithic joint zone. Concrete class monolithic zones B15.

The tie beams are monolithic reinforced concrete. The cross-section of the tie middle crossbars is trough-shaped with dimensions of 1550x400(h)mm. The cross-section of the outer tie beams is rectangular with dimensions of 800x400mm. Tie length crossbars 5550 mm. Reinforcement communications crossbars V ribs 2Ø28AIII in the upper zone and 2Ø25AIII in the lower zone. Class concrete crossbars IN 20.

Floors - prefabricated reinforced concrete ribbed slabs according to the IIS-24-1 series, 1500 mm wide and 400 mm high, according to grade P1-6, 5550 mm long. The reinforcement of the load-bearing ribs of the slabs is made of flat frames with longitudinal reinforcement - 2Ø22AIII. Concrete class of floor slabs B-20.

In the floor slabs, local broken technological openings enclosed with concrete were identified.

The partitions are brick, 120 mm thick, with cement-sand mortar. The partitions have vertical reinforcement elements made of metal profiles. The masonry of the partitions has horizontal reinforcement from Ø6A1 through 5-7 rows of masonry. Ordinary burnt brick M75, mortar M25. Vertical reinforcement elements are completed from bent corners №50x3 – 63x3 by GOST 19771-93 And corners 50x50 according to GOST 8509-93 welded together with reinforcing bars Ø8AI into a channel or from bent channels 120x50x3 according to GOST 8278-83.

The enclosing external walls are mounted with one strip glazing along the “A/1-14” and “D/1-14” axes from wall panels according to the CT-02-3I series with a thickness of 180 mm for unheated buildings. The wall panels are installed on steel support tables, welded to the embedded parts in the columns and to the steel frame posts at the ends of the building. The top of the panels is attached to the main columns of the frame through a corner lock, i.e. In fact, the hinged fastening is made in accordance with the requirements of seismic standards, which ensure free movement of the wall panels relative to the frame. (See drawing "Facades" sheet 10,11,12).

It should be noted that all metal support pedestals and connecting plates do not have an anti-corrosion coating. They received damage in the form of corrosion. When reconstructing a building, it is necessary to clean the surfaces of metal elements from corrosion and paint them with paint and varnish material.

Stairs - located in axes “1-2/A-B” and “13-14/A-B”, prefabricated, Z-shaped with half-platforms. There are four flights of stairs within the 1st floor (flight of stairs - landing; flight of stairs). The platforms are built on reinforced concrete posts and beams (see drawing, sheet 8).

Flights of stairs rest on reinforced concrete beams of the landing, on the one hand, and on the other, they rest on reinforced concrete crossbars.

The roof is flat roll. Roofing pie at the opening site - c/p screed 2 cm, 3-layer roofing felt, bedding from expanded clay with ramp 5-20 cm, c/p screed 1-2 cm, 4 layers of roofing material.

The water drainage from the roof is internal and organized; however, the water drainage system is inoperative.

The design solution of the soft roof does not meet the requirements of KMK 2.03.10-95 “Roofs and Roofs” [5], in particular:

- on the top of the waterproofing carpet it is necessary to provide a protective layer of gravel on antiseptic bitumen mastic.

At the time of inspection, no traces of leaks were observed. The technical condition of the soft roof is partially unsatisfactory.

So way, technical state designs roofs and roofs not allows to provide reliable protection buildings from precipitation. In this regard, the roof of the inspected building must be replaced with more rational and modern types of roofing.

Blind area - along the perimeter of the subject the building is severely destroyed, in some places it is completely missing.

Correspondence parameters building requirements KMK 2.01.03-96.

Table -1

No.	Indicators	Data	KMK 2.01.03.96	
			number tab and p.p.	Compliance (Yes/Partially/No)
1	Geometric shape	Building It has V plan correct rectangular shape. **Required conditions:** The building must have geometrically correct form.	paragraph 3.1.1	Yes
2	Type building on load-bearing structures	Prefabricated multi-storey spatial reinforced concrete frame with rigid frame units and developed grouting areas.	claus e 3.1.1. table 3.1-1.2 b gr. 2	Yes
3	Height building	Building 4-storey partially with a basement, general height buildings respectively 19.4m. **Required conditions:** for seismicity: 8 points, 38 m is allowed.	paragraph 3.1.1. Table 3.1-1.2 b gr. 5 Note 2.3.	Yes
4	Span	Largest 6 meters. **Mandatory conditions:** at seismicity 8 points accepted up to 9.0 meters.	paragraph 3.1.1 Table 3.1-1.2 b gr. 10	Yes
5	Step transverse and longitudinal walls, columns, frames.	IN transverse direction – 6 meters. **Mandatory conditions:** at seismicity: 8 points allowed up to 7.5 meters.	paragraph 3.1.1. Table 3.1-1.2 b gr. 12	Yes
6	Length building (compartment)	Maximum length compartment building – 41.0m **Mandatory conditions:** at	claus e 3.1.1. Table	Yes.
7	Overlap	Prefabricated ribbed slabs filling joints between slabs done concrete M250 (B20). **Mandatory conditions:** The seams between the slabs are filled with cement and polymer cement mortars or fine-grained concrete class not lower than B7.5.	claus e 3.1.11 .	Partially.

8.	Stairs	In block B available two staircases cells	clause 3.1.5. clause 3.2.9.	Yes.
	Conclusion on the seismic resistance of the building	Structurally, the building practically meets the requirements of KMK 2.01.03.-96. "Construction V seismic areas" (see P. P. of this table) when eliminating identified defects. Available violations requirements KMK V planning decision.		

Results examinations construction designs.

In result technical examinations object, done conclusions on the technical condition of the main load-bearing structures of buildings:

- Foundations - according to the results of visual and technical inspection, the condition of the foundations is satisfactory. At the time of the inspection, no sedimentary-subsidence deformations, chips, damage to the protective layer of concrete, or defects affecting the bearing capacity of foundation structures were identified.
- Columns - according to the results of visual and technical inspection, the technical condition is satisfactory. There are minor deviations from the axial dimensions both vertically and horizontally not exceeding the normatively permissible values. The technical condition is assessed as satisfactory.
- Half-timbered posts - according to the results of a visual inspection, the technical condition is satisfactory. Over a long period of operation, the anti-corrosion and fire-retardant coating has been damaged. Local traces of corrosion. It is necessary to clean the corroded areas to a metallic shine, and paint all half-timbered posts with fire-retardant and anti-corrosion paint compounds.
- Bearing crossbars - according to the results of a visual inspection, the technical condition is satisfactory. Defects affecting the load-bearing capacity of structures no crossbars found. Deformations in form deflections and reinforced concrete cracks no crossbars were identified. There are no cracks and deformations in the frame nodes revealed. No areas of unconcreted junctions between crossbars and columns were identified. There are local areas of exposure and corrosion of reinforcement in the basement. It is necessary to clean the corroded elements to a metallic shine and restore the protective layer.
- Tie crossbars - according to the results of a visual inspection, the technical condition is satisfactory. Local areas of damage to the protective layer, unconcreted areas, or partial corrosion of the reinforcement in the load-bearing ribs of the tie beams were identified. Deformations V form deflections no crossbars were identified. There are no cracks and deformations in the frame nodes revealed.
- Floors - based on the results of a visual inspection, technical condition – conditionally satisfactory. Areas have been identified where instead of typical ribbed slabs monolithic ceilings were used concrete on metal ribs. In these areas, load no more than 200 kg/m2 or replace it with monolithic reinforced concrete with its own ribs and ensure joint work with adjacent slabs (see drawing sheets 14-17).
- Partitions - based on the results of a visual examination, technical state – satisfactory. Dismantling partitions all floors (according to new architectural solutions), will not have a negative impact on the load-bearing capacity of the building as a whole. When remodeling premises, to reduce

the load on the building, it is recommended to make partitions from lightweight materials (plasterboard).

- External walls - according to the results of a visual inspection, the technical condition is conditionally serviceable. The gaps between wall panels and frame elements are filled with foreign inclusions such as concrete mortar, brickwork, and construction waste. The stained-glass structures are fastened along the a axis directly to the curtain wall panels, which prevents their normal operation under dynamic influences. It is recommended to clear the gaps between wall panels and columns from foreign elements and ensure a gap between structures of at least 20 mm. Perform thermal insulation. Unfasten the stained-glass structures from the wall panels and attach them to the load-bearing elements of the frame.

According to the detailed reconstruction project being developed, façade building materials are to be anchored exclusively to the load-bearing frame structures.

- Stairs – state satisfactory. At redevelopment of premises, these stairs can be dismantled; this measure will not have a negative impact on the seismic resistance of the building.

- The roof is in partially satisfactory condition. Drainage paths are not cleared. There are traces of corrosion on the elements of metal structures of the technical floor. It is recommended to clean the surfaces of all steel structures from traces of corrosion and coat them with anti-corrosion and fire-retardant compounds.

- The blind area is in unsatisfactory condition. It is recommended to restore the blind area around the perimeter of the building in accordance with the requirements for the 2nd type of subsidence.

Results strength concrete, certain devices "ONIX-2.6" and "Pulsar - 1.2"

Determination and assessment of the actual strength of concrete of load-bearing structures of buildings carried out in accordance with the "Guidelines for determining and assessing the strength of concrete in the structures of buildings and structures". M., Stroyizdat, 1970

To assess the actual strength of concrete foundations, floor slabs and other monolithic reinforced concrete structures instrumental research was carried out using a non-destructive method according with requirements PCT Uz 872-98 "Concrete. Determination of strength by mechanical methods non-destructive control" And GOST 18105 – 86 "Concrete. Rules control strength", a also KMK 2.03.01 – 96 "Concrete And reinforced concrete designs".

Results, strength materials reinforced concrete structures determined by ONICS-2.6 devices.

Table-2

Item no	Material	Number of hits	Strength of concrete V MPa	Average value kg/cm ^{2}	Class (brand) of concrete	Project Meaning Class (brand) of concrete.	Deviation of concrete strength indicators from the standard
1	5	6	7	8	9	10	eleven
3	Plates ceilings 1st Axis floor V-B/ 2-3	5	39.2 39.3 39.4 38.7 38.9	391.0	B-27.5 M350	V-25 M350	Meets standard values

4	Plates ceilings 1st Axis floor G-D/ 3-4	5	33.2 33.1 32.4 32.8 33.2	329.4	V-25 M300	V-25 M300	Meets standard values
5	Plates ceilings 2nd Axis floor A-B/ 9-10	5	33.0 33.0 33.2 33.8 33.0	332.0	V-25 M300	V-25 M300	Meets standard values
6	Plates ceilings 2nd Axis floor V-G/ 13-14	5	39.8 38.8 38.4 38.6 38.6	388.4	B-27.5 M350	V-25 M300	Meets standard values
7	Plates ceilings 3rd Axis floor B-V/6- 7	5	33.8 33.8 36.6 32.8 34.6	343,	V-25 M300	V-25 M300	Meets standard values
8	Plates ceilings 3rd Axis floor G-D/ 10-11	5	33.8 33.8 36.6 32.8 34.6	343.2	V-25 M300	V-25 M300	Meets standard values
9	Covering slabs 4th floor Axes B-V/8- 10	5	37.1 37.5 37.2 37.6 37.8	374.4	B-27.5 M350	V-25 M300	Meets standard values
10	Covering slabs 4th floor Axes A-B/ 9-10	5	38.4 38.5 38.2 38.1 38.2	382.8	B-27.5 M350	V-25 M300	Meets standard values
eleven	Columns of the 1st Axis floors A/1	5	38.3 38.6 38.1 38.3 38.1	382.8	B-27.5 M350	V-25 M300	Meets standard values
12	Columns of the 1st Axis floors B/6	5	32.6 30.4 32.2 32.5 32.0	319.4	V-25 M300	V-25 M300	Meets standard values

13	Columns of the 1st Axis floors AT 9	5	30.8 31.2 31.2 30.9 32.0	312.2	V-25 M30 0	V-25 M30 0	Meets standard values
14	Columns of the 2nd Axis floors A/3	5	31.5 31.5 31.7 31.1 32.2	316	V-25 M30 0	V-25 M30 0	Meets standard values
15	Columns of the 2nd Axis floors B/12	5	34.4 34.5 34.2 35.1 33.2	342.8	V-25 M30 0	V-25 M30 0	Meets standard values
16	Columns of the 2nd Axis floors AT 10	5	30.6 31.9 30.8 31.4 32.7	314.8	V-25 M30 0	V-25 M30 0	Meets standard values
17	Columns of the 3rd Axis floors A/4	5	32.6 32.1 34.3 32.2 32.2	326.8	V-25 M30 0	V-25 M30 0	Meets standard values
18	Columns of the 3rd Axis floors B/7	5	30.3 31.6 32.2 31.1 33.5	317.4	V-25 M30 0	V-25 M30 0	Meets standard values
19	Columns of the 3rd Axis floors AT 8	5	36.6 35.2 36.3 36.1 37.4	363.2	B-27.5 M350	V-25 M30 0	Meets standard values
20	Columns of the 4th Axis floors G/3	5	32.8 33.1 33.2 32.9 33.1	330.2	V-25 M30 0	V-25 M30 0	Meets standard values
21	Columns of the 4th Axis floors AT 11	5	34.4 34.1 34.1 33.9 33.9	340.8	V-25 M30 0	V-25 M30 0	Meets standard values

22	Columns of the 4th Axis floors D/5	5	33.8 33.1 32.6 33.9 33.1	333.0	V-25 M300	V-25 M300	Meets standard values
23	Crossbars of the 2nd floors Axes A-B/11	5	33.8 33.1 32.6 33.9 33.1	333.0	V-25 M300	V-25 M300	Meets standard values
24	Crossbars of the 2nd floors Axes B-V/12	5	34.2 33.8 33.3 36.1 32.4	339.6	V-25 M300	V-25 M300	Meets standard values
25	Crossbars of the 2nd floors Axes V-G/7	5	37.1 38.3 38.4 37.3 37.1	376.4	B-27.5 M350	V-25 M300	Meets standard values
26	Crossbars of the 2nd floors Axes D-G/5	5	39.1 38.3 38.5 37.1 37.4	381.2	B-27.5 M350	V-25 M300	Meets standard values
27	Crossbars of the 3rd floors Axes A-B/2	5	33.7 33.7 32.5 33.6 33.0	333.0	V-25 M300	V-25 M300	Meets standard values
28	Crossbars of the 3rd floors Axes B-V/11	5	30.2 33.8 33.3 32.1 32.4	323.6	V-25 M300	V-25 M300	Meets standard values
29	Crossbars of the 3rd floors Axes A-B/9	5	38.4 38.5 38.2 38.1 38.2	382.8	B-27.5 M350	V-25 M300	Meets standard values
30	Crossbars of the 3rd floors Axes G-D/14	5	38.5 38.7 38.3 38.2 38.8	385.0	B-27.5 M350	V-25 M300	Meets standard values

31	Crossbars of the 4th floors Axes B-V/3	5	34.4 33.8 33.6 34.6 34.2	341.2	V-25 M300	V-25 M300	Meets standard values
32	Crossbars of the 4th floors Axes A-B/4	5	32.6 33.6 33.4 33.3 32.8	331.1	V-25 M300	V-25 M300	Meets standard values
33	Crossbars of the 4th floors Axes A-B/8	5	39.9 40.5 40.1 39.6 41.2	402.6	V-30 M400	V-25 M300	Meets standard values
34	Crossbars of the 4th floors Axles G-D/13	5	39.6 38.8 38.9 38.4 39.2	389.8	B-27.5 M350	V-25 M300	Meets standard values

CONCLUSIONS

- regulatory and settlement characteristics concrete given KMK 2.03.01-96 [6] (see clause 2.11. Table 11, 12)
- the average value of the strength characteristics of foundations is B20 (M250), What corresponds normative values;
- average strength characteristics of reinforced concrete columns amounts to B25 (M300) What corresponds normative values;
- average meaning strength characteristics reinforced concrete crossbars are: load-bearing - B27.5 (M350), tie - B25 (M300) which corresponds to standard values;
- average meaning strength characteristics reinforced concrete floor slabs and coatings is B25.5 (M300) which corresponds to standard values;
- average meaning strength characteristics reinforced concrete stairs is B27.5 (M350), which corresponds to standard values.

RECOMMENDATIONS

1. The foundation of the building is based on loess-like loams of the 1st IGE (engineering geological element), with physical and mechanical properties shown in the table of the corresponding section.
2. The foundation soils under the base of the foundations are compacted. The type of soil conditions of the site in terms of subsidence is the second.
3. Ground water on site during the peak period lie on depth of more than 11 m from the surface of the earth and have no practical effect on the foundations of the building.
4. Backfilling of foundation sinuses, made from local loams with elements construction garbage. Reverse compacted backfill. Sedimentation-subsidence deformations are stabilized while maintaining the stress-strain state.
5. Foundations building presented V form columnar foundations.
6. The text and graphical annex provide a

description of the design and dimensions of the foundations.

7. The condition of the foundations is satisfactory. Concrete class B 15 (M200-250).
8. Seismicity plot By according to KMK 2.01.03-96 – 8 points.
9. Category soils By seismic properties - second.
10. Frame elements have defects and damage described in section 3.2.2. It is recommended to eliminate defects according to the proposed recommendations.
11. When developing a reconstruction project, attaching facade materials to existing wall panels is not recommended.
12. In accordance with clause 3.5.12 of KMK 2.01.03-96 “Construction in seismic areas”, the use of anti-seismic, anti-subsidence measures for the second type of subsidence is recommended as engineering measures when designing aquifer systems .
13. Conduct an audit of all water-carrying communications based on operational reliability parameters (period of estimated effective operation, physical wear, etc. according to ShNK 1.04.03.0) (see clause 8).
14. When installing lawns, do not allow them to be laid closer than 2 m to buildings. When watering and operating buildings, do not allow moisture to enter the sub-foundation and near-foundation space.
15. Clean all exposed reinforcing bars of reinforced concrete structures to a metallic shine and seal them with a rigid cement composite mortar of at least M150 grade or SRG mortar according to the instructions.
16. Paint all metal structures of the technical floor with an anti-corrosion and fire-resistant coating.
17. Ensure the possibility of inspecting all water-carrying communications during reconstruction and during operation.
18. During the reconstruction process, provide all the necessary fire and explosion protection measures required for this type of building, coordinate them with the relevant structures.
19. If additional defects or deviations from the survey materials are discovered during the work process, it is necessary to coordinate the types of work with the design organization and the authors of the technical survey.
20. During operation, carry out mandatory monitoring of the building every five years.
21. During the implementation of the project, the design organization is allowed to make its own informed decisions to strengthen the elements of the building frame.
22. Based on the results of calculations to determine the possibility of installing an escalator on load-bearing cross beams without reinforcement, it is assessed as possible, since the load from dismantling existing ribbed slabs (in the amount of 3 pieces), replaces load of the installed escalator.
23. Dismantled sections of typical ribbed floor slabs were identified (see drawing sheet 14-17). In these areas, perform monolithic reinforced concrete slabs with their own ribs and ensure joint work with adjacent slabs.

Conclusions. Based on the results of a technical inspection and instrumental study of the building structures of a four-story building, in connection with the reconstruction and repurposing for a TBK and a hotel complex, located in the Tashkent region, Yangiyul, MSG “Navruz” st. Nizami, house 16, the following conclusions can be drawn:

The main load-bearing building structures of the four-story building are in satisfactory condition. The space-planning scheme and design solution of this building comply with the requirements of the standards in force in the Republic of Uzbekistan.

Destructions and deformations in load-bearing structures block buildings "B" not discovered. State carrying designs and buildings in general -

satisfactory.

Based on the findings of the survey, it can be concluded that installation and reconstruction of partitions (redevelopment) inside the building of block “B” for repurposing as a hotel and shopping complex is quite possible without any significant reinforcements of the frame. These measures are of a local nature and will not have a negative impact on the overall seismic resistance and operational reliability of the entire building.

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