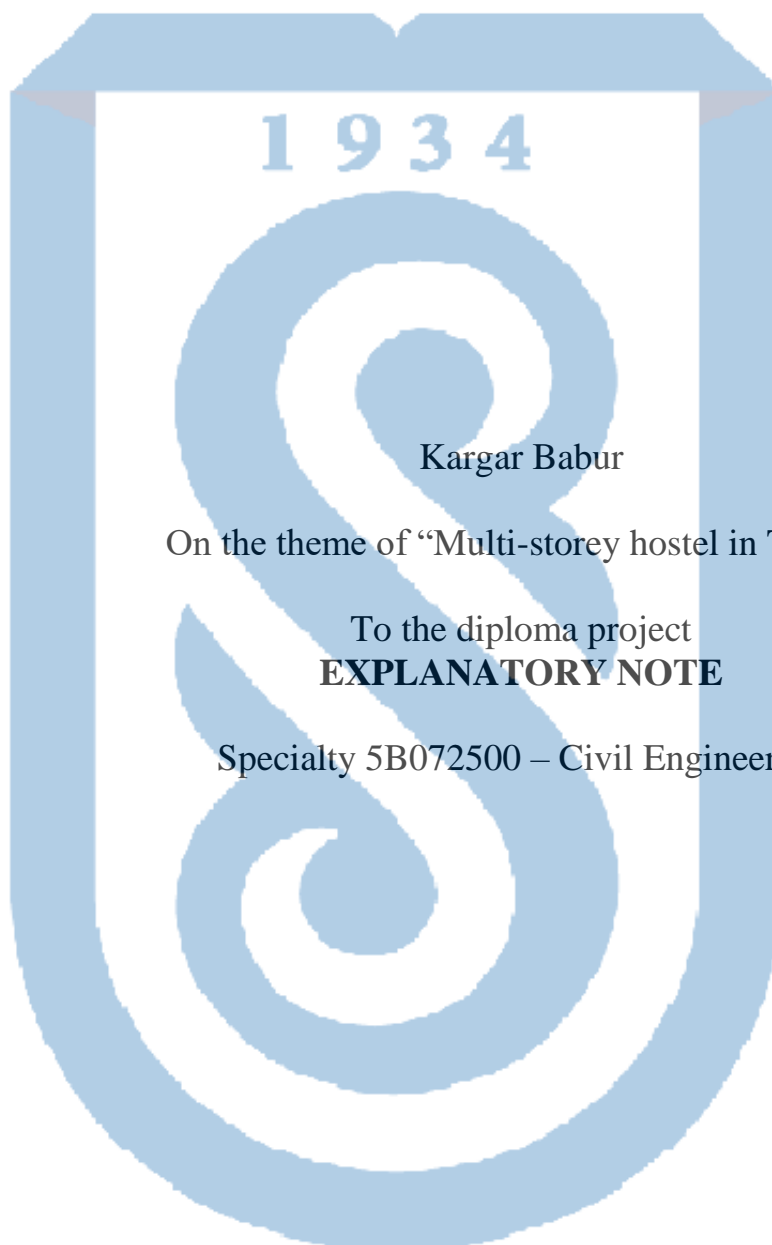MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
Kazakh National Research Technical University named after K.I. Satpayev
Institute of Architecture, Construction and Energy named after T. Basenov
Department of «Construction and Building Materials»

Kargar Babur

On the theme of "Multi-storey hostel in Taraz "

To the diploma project
EXPLANATORY NOTE

Specialty 5B072500 – Civil Engineering

Almaty 2020

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF
KAZAKHSTAN
Kazakh National Research Technical University named after K.I. Satpayev
Institute of Architecture, Construction and Energy named after T. Basenov
Department of «Construction and Building Materials»

ALLOWED TO PROTECT

Head of Department

_____K.Akmalayuli
« 25 » ___05__2020 y.

EXPLANATORY NOTE
To the diploma project

On the theme of " Multi-storey hostel in Taraz"

Specialty 5B072500 – Civil Engineering

Prepared by   B.Kargar

Supervisor   N.V. Kozyukova

« 25 »_   05_2020 y.

Almaty 2020

MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN

Kazakh National Research Technical University named after K.I. Satpayev

Institute of Architecture, Construction and Energy named after T. Basenov

Department of «Construction and Building Materials»

APPROVED

Head of Department

_____K.Akmalayuli

«27»____01____ 2020 y.

ASSIGNMENT
Complete a diploma project

Student __ Kargar Babur _____

Topic " Multi-storey hostel in Taraz"

№ _1222 b - endorsed by the request.

Approved by the Order of the Rector of the University No. 762-b of January 27, 2020.

The deadline for completion is May 18, 2020.

Beginning entries of the certificate venture: construction locale – Petropavlovsk.

Rundown of issues to be considered in the recognition venture:

Architectural and development division: qualities of the development region; three-dimensional arranging choices; structural and plan arrangements; external divider warm designing bookkeeping; building hardware of the structure;

Computational and valuable segment: count of burdens and making of the computation conspire, figuring of the board and its estimation of fortified solid components dependent on the outcomes and their motivation Technology and association of development creation and work security: land assurance of the volume of underground and surface works; assurance of the quantity of solid trucks; surface strengthened cement of the structure development of innovative guide of structures establishment; object plan of development end-all strategy; Schedule. 4. Division of Construction Economics: neighborhood and article planning of assessments, List of drawing materials (compulsory drawings must be indicated):

Facade of the structure, segments, joints, determinations, plans - 4 sheets;

Drawing, detail of the section - 2 sheets; Calendar arrangement of development creation, general development plan, 2 Sheets 11 slides of the presentation of work are provided.

Recommended basic literature: SP RK 2.04-01-2017 Construction Climatology, SN RK 2.04-04-2013 Construction Heat Engineering, SN RK 2.03-30-2017 Construction in Seismic Zones.

SCHEDULE
preparation of thesis (project)

№	Sections	33%	66%	100%	Примечание
1	Predesign analysis Architectural and construction	18.02.2019г.-01.03.2019г.			
2	Settlement constructive		18.03.2019г.-29.03.2019г.		
3	Technology and organization of construction production and labor protection Economic			03.04.2020г.-19.04.2020г.	
4	Anti-plagiarism, norm control, pre-defense	18.05.2020y.-22.05.2020y.			
5	Defence	01.06.2020-05.06.2020y.			

Signatures
consultants and the normative controller for the completed diploma work (project) with an indication of the sections of work (project) related to them

Name of sections	Consultants, I.O.F. (academic degree, rank)	date of signing	Signature
Architectural building	N.V. Kozyukova, master of technical science	25.05.2020	
Settlement and constructive	Zh.T. Nashiraliev, candidate of technical science	25.05.2020	
Technology and organization of construction production	I.Z. Kashkinbaev, doctor of technical science	25.05.2020	
Economic part	N.V. Kozyukova, master of technical science	25.05.2020	
Norm controller	N.V. Kozyukova, master of technical science	25.05.2020	

Supervisor   N.V. Kozyukova

The student accepted

The task   B.Kargar

Date   «_ 25 » 05 _2020

АНДАТПА

Дипломдық жобада Тараз қаласындағы көп қабатты жатақхана жобаланған.

Аймақтың бас жоспары бойынша техникалық көрсеткіштері:

1. Аймақ ауданы - 7500 м^2 ;

2. Құрылыс аймағы – 900 м^2 .

Диплом жобада сәулет – құрылыс, есептік-конструкциялық және өндірістік бөлімдер бойынша инженерлік шешімдер қабылданды. Жобаның толық ТЭК – і анықталып, қауіпсіздігі және еңбекті қорғау бөлімдері бойынша шешімдер қабылданған.

АННОТАЦИЯ

В дипломном проекте спроектирована многоэтажное общежитие в городе Тараз.

Технические показатели участка по генплану:

1. Общая площадь участка – 7500 м^2;

2. Строительный участок – 900 м^2.

В данном проекте в архитектурно-строительных, расчетно-конструкционных и производственных частях приняты инженерные решения. Выявлены общие технико-экономические показатели проекта, а также приняты решения о защите окружающей среды и безопасности жизнедеятельности.

ANNOTATION

In the diploma project a multi-story dormitory located in the city of Taraz.

Technical parameters of the plot according to the general plan:

1. Building square – 7500 м^2;

2. Building volume – 900 м^2.

In this project in architecture and construction, settlement construction and manufacturing parts made engineering decisions. The general technical and economic parameters of the project, as well as decisions on environmental protection and safety.

CONTENT

INTRODUCTION

First of all, architecture in our time should provide a safe living environment for the existence and activity of people in favorable conditions. The level of social and cultural development, scientific and technical achievements has a huge impact. In turn, all this potential is reflected in buildings, complexes of structures and buildings that have internal space and organize the external: squares, streets, cities.

Architecture is inextricably linked with the development of construction equipment. A log hut, a brick house, a metro station dominated by metal, marble, concrete, and an openwork metal bridge look completely different even at first glance. This means that a lot depends on the building materials that the architect uses. No less affect the architecture, the appearance of buildings and structures and building structures used in a particular era.

A multi-storey hostel provides the opportunity for a comfortable and active student stay and has a positive effect on learning. It is designed in such a way that it has the maximum usable area. This can be replaced by the number of rooms and the number of students. Our hostel is located in the city of Taraz. As we know, there are a lot of universities and colleges in the city.

Directly, when it comes to multi-story buildings, the issue of choosing structural forms that should be rationally chosen is raised, reducing the cost of concrete and metal, ensuring quick installation and reducing the complexity of manufacturing. This is achieved by comparing design options in which not only the structural scheme is analyzed and selected, but individual nodes and parts of the building are selected.

The chosen structural and planning solution of the building should provide stability, strength and spatial immutability of buildings and structures, as well as their individual elements during installation, transportation and operation.

Also, the reduction of construction costs is carried out by the correct choice of materials, both construction and finishing, reducing the weight of the structure, using modernized construction methods. The main reserve in the economic plan of urban development is to increase the level of land use efficiency.

1. Architectural part

Basic data on the construction site

The diploma project "Multi-story hostel" is located in the city of Taraz.

Taraz has the following climatic characteristics:

The region belongs IIIv climatic region with a sharply continental climate.

The average maximum temperature of the hottest month: 32,9℃

Absolute maximum temperature: 44,5℃

Absolute minimum temperature: -23℃

Average annual temperature: 12,8℃ Naib. cold days security 0,98=-23℃, 0,92 = −23℃ Naib. cold five-day security 0,98=-20℃, 0,92 = −26℃ By the weight of the snow cover - II district (normal. Snow load 0.7 kPa) High-speed wind pressure - 38 kg / m2 building liability class - II Seismicity. The construction site is seismic hazard; magnitude is 8 points. Humidity Zone – Dry

Table 1 - Air temperature [10]

Weather station	Months												In a year
	1	2	3	4	5	6	7	8	9	10	11	12	
Monthly and average annual air temperature, ˚C													
Taraz	-4,8	-3,2	3,1	8,8	12,2	16,7	19,4	17,3	12,9	6,7	1,8	-0,4	8
Average maximum air temperature, ˚C													
Taraz	-4	-3.8	2.5	16,5	8,7	12,9	15,7	19,8	34.4	12,9	6,2	0,4	14,6
Absolute maximum air temperature, ˚C													
Taraz	17	19	26	33	35	39	43	40	36	31	25	19	43
Average minimum air temperature, ˚C													
Taraz	-11.1	-9,5	-2,4	5,6	10,9	15,2	17,6	16,3	11,0	4,6	-3.3	-5,8	3.8
Absolute minimum air temperature, ˚C													
Taraz	-13	-11	-22	-11	-7	2	7	5	-3	-11	-20	-12	-18

Table 2 - Snow cover [10]

Weather station	months									Highest winter values		
	9	10	11	12	1	2	3	4	5	Avg.	Max.	Min.
e average monthly snow depth, cm												
				4	10	21	9			28	55	7

1.2 Architectural planning solution

The hostel being designed forms a courtyard space on the general plan, where there are playgrounds for adults, playgrounds, tennis courts, flower beds and gazebos.

The vertical facade is emphasized by vertical stained glass glazing along the bay windows, and horizontal by fiber-reinforced concrete decorative belts.

Horizontal communications on floors are provided through elevator halls and corridors, and vertical communications are provided by a staircase and an elevator with a carrying capacity of 630 kg (cabin speed -1.0 m / s) The collection of household waste is carried out in the garbage chambers of garbage chutes with their subsequent removal by special transport to the city landfill for recycling and disposal. Garbage chutes are designed from an asbestos-cement pipe with a diameter of 400 mm

The stairwell is connected to the elevator hall with a wide opening. This opening provides natural light to the elevator hall Elevator doors must be made of non-combustible materials. When developing a graduation project, the task was solved to ensure the maximum comfortable living conditions for students, while creating a memorable harmonious image.

1.3 Constructive solution

For the conditional mark of 0,000, the mark of the clean floor of the 1st floor of the hostel is taken. Building structures are designed for a seismicity of 9 points. The construction site is potentially unsinkable. Groundwater lies at a depth of more than 3.0 m The main building structures: foundations - monolithic reinforced concrete slab 800 mm thick from concrete class B25; the basis of the foundations are pebble soils with sand aggregate; external walls are monolithic reinforced concrete; monolithic reinforced concrete columns with a

section of 500x500 from concrete of class B25; monolithic reinforced concrete crossbars with a section of 500x500 (h) from concrete of class B25;

monolithic reinforced concrete floors 200 mm thick from concrete of class B25; - the roof is flat along the reinforced concrete floor of the staircase, monolithic reinforced concrete of concrete of class B25.

Ant seismic measures:

The supporting structure of the building - a monolithic reinforced concrete frame, combined with a monolithic overlap into a single spatial system - is a reliable structural scheme, calculated and designed for seismic effects with a force of 9 points. foundations are based on reliable non-sagging soils. Anticorrosion measure surfaces of reinforced concrete structures in contact with the ground are covered with hot bitumen for 2 times. When performing work, be guided by the instructions: SNiP 3.02.01-87 "Earthworks, foundations and foundations"; SNiP RK 5.03-37-2006 "Bearing and enclosing structures"; SNIP RK 1.03-05-2001 "Occupational health and safety in construction".The construction of a multi-story dormitory is envisaged in the nine-point zone of the city of Taraz in subzone II-A-1 according to the microseismic zoning map.

The structural design of the building was adopted in full accordance with the requirements of earthquake-resistant construction standards and the calculations made on the LiraSAPR program student version.

1.4 Thermo technical calculation of building envelopes

Initial data for calculating the outer brick wall of the building. The construction area of the complex is Taraz. Estimated winter outdoor temperature tn = -23 ° C. Calc. internal air temperature tv = 18 ° C
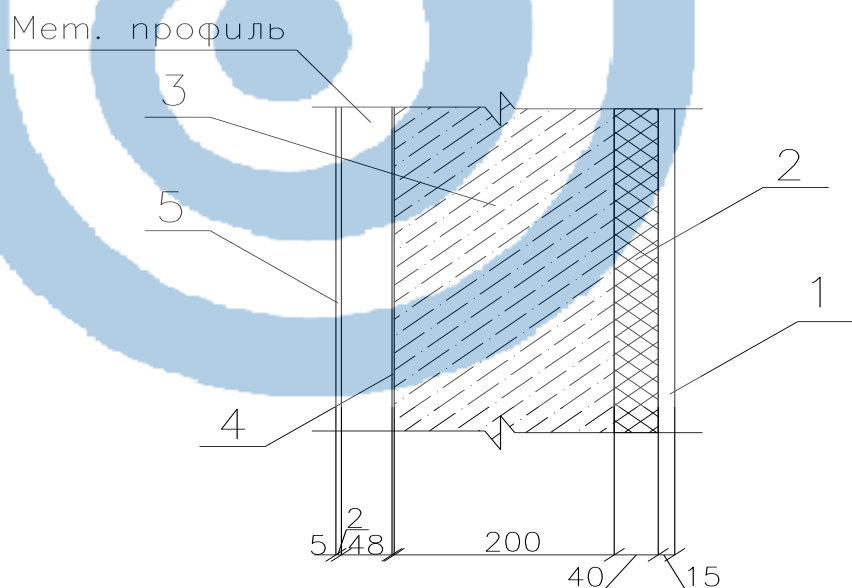
Figure 1.1 - The outer walls of the strata. 310 mm

Table 1.1 - Wall Layers

№	Names	δ (м)	λ, (Вт/м·°C)	S
1	GKL decorative element	0,015	0,19	3,12
2	Mineral wool	0,04	0,07	4
3	Reinforced concrete wall	0,2	1,92	17,98
4	Roofing layer	0,002	0,17	3,53
5	IAF	0,005	0,35	21,53

The heat engineering calculation is performed according to the joint venture of the Republic of Kazakhstan 2.04-01-2017 "Construction Climatology" and SNiP RK 2.04-03-2002 "Construction Heat Engineering"

We determine the value of the degree days of the heating period:

$$ГСОП=(t_в-t_{отпер}) *z_{отпер} \tag{1.1}$$

$$ГСОП = (t_в-t_{ср.от.})·z = (18+0,7)·162 = 3029,4$$

где $t_{ср.от.}$=-1,6°C- the average temperature of the heating season [3, p. 14]; z = 162 days - the duration of the heating period. For GSOP = 3029.4

$R_0^{тр}$=0,38 м²°C/Вт. 1[3,стр15-16,табл.4] The necessary thermal resistance of the fence to ensure comfortable conditions:

$$R_0^{mp} = \frac{(t_в - t_н)}{\alpha_в \cdot \Delta t_н} \quad \text{[3, tcr16, f-le 4]} \tag{1.2}$$

$$R_0^{mp} = \frac{1 \cdot (18 + 23)}{8,7 \cdot 4} = 1,05 \frac{м^2 \cdot °C}{Вт}$$

Heat transfer resistance:

$$R_0 = \frac{1}{\alpha_в} + \frac{\delta_1}{\lambda_1} + \frac{\delta_2}{\lambda_2} + \frac{\delta_3}{\lambda_3} + \frac{\delta_4}{\lambda_4} + \frac{1}{\alpha_н} \quad \text{[15, f-le3, 5]} \tag{1.3}$$

where $\alpha_в$ = 8,7 [3, tcr. 17, scad. 5]

$\alpha_н$ = 23 [3, tcr. 18, scad. 7]

$$R_0 = \frac{1}{8,7} + \frac{0,015}{0,19} + \frac{0,04}{0,07} + \frac{0,005}{0,35} + \frac{0,2}{1,92} + \frac{0,002}{0,17} + \frac{1}{23} = 1,07 \frac{м^2 \cdot °C}{Вт}$$

To check the suitability of the wall, we check:

$$R_0^{mp} \leq R_0 \tag{1.4}$$

$$R_0^{mp} = 1,05 \frac{\text{м}^2 \cdot {}^\circ C}{Bm} < R_0 = 1,07 \frac{\text{м}^2 \cdot {}^\circ C}{Bm}$$

The selected thicknesses of materials satisfy the requirements of thermal engineering calculation. Choose a wall with a thickness of 310 mm.

$$R_0^{mp} = 1,05 \frac{\text{м}^2 \cdot {}^\circ C}{Bm} < R_0 = 1,07 \frac{\text{м}^2 \cdot {}^\circ C}{Bm}$$

2 Structural part

2.1 Calculation of the building in the software package LIRA-SAPR

By calculating the building in the LIRA-SAPR software package, we obtain the data that are then used in the calculation of structures manually — the forces that occur in the elements. The building scheme was built directly in the LIRA program. Loads are set in accordance with the regulations. The loads from the floor, partitions, soil pressure are also set, the snow load is set in accordance with the snow area of construction. A seismic area is also taken into account. Initially, we set the design parameters in accordance with the Architectural part. In the case of large deformations, the cross section can be increased or a different type of structural element can be selected.

The collection of loads specified on the Lira CAD Total nodal loads on the main circuit: Load

1 PX = 0 PY = 0PZ = 9096.81 PUX = 2.79932e-014 PUY = -9.53196e-014 PUZ = 0

Load 2 PX = 0 PY = 0 PZ = 8167 PUX = 2.65517e-014 PUY = -1.06207e-013 PUZ = 0

Load 3 PX = 0 PY = 0 PZ = 2624 PUX = 0 PUY = 0 PUZ = 0

Load 4 PX = 0 PY = 0 PZ = 1530.6 PUX = 1.77011e-014 PUY = -4.42528e-014 PUZ = 0

Load 5 PX = 0 PY = 0 PZ = 2040.8 PUX = 4.42528e-014 PUY = -7.9655e-014 PUZ = 0

Load 6 PX = 0 PY = 0 PZ = 612 PUX = 0 PUY = 0 PUZ = 0 The calculation results

in LIRA-CAD are given in Appendix A

Figure 2.1 - Design combinations of efforts

13

Figure 2.2 - Estimated combination of loads

This building model is designed in accordance with the design features of the designed building. The stiffness and overlap diaphragms were modeled by finite elements of a flat shell. The design model of the building is adopted in the form of a spatial multi-mass discrete system with masses concentrated in nodes. Each node has 6 degrees of freedom.
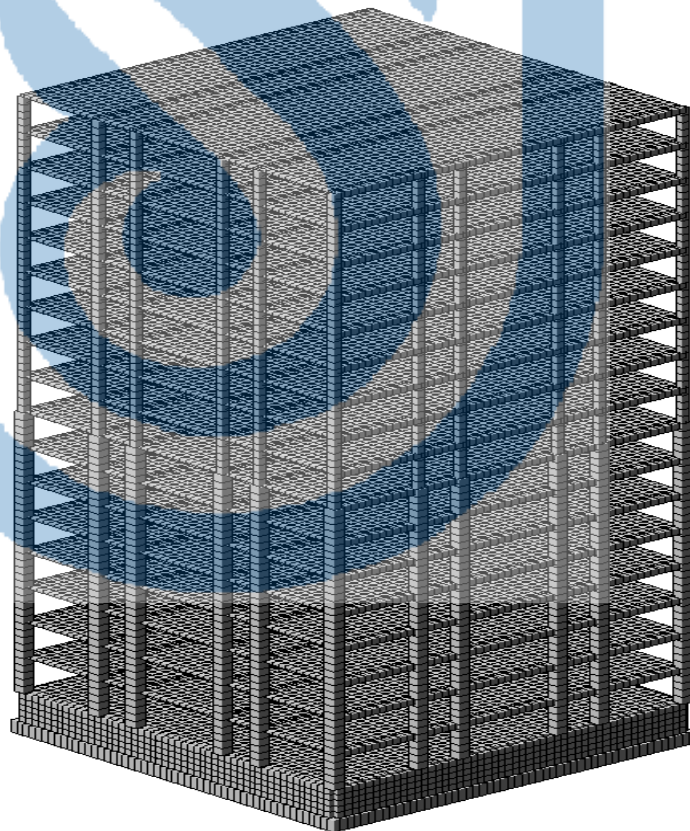
Figure 2.3 - The initial spatial model of the building

Various calculation files are created to meet the norms of SNiP and the design features of the designed building.

2.3 The calculation of the slab

For the calculation, a structural element was chosen - a plate at the mark of +3,000 along the axis 3-4 / V-G.
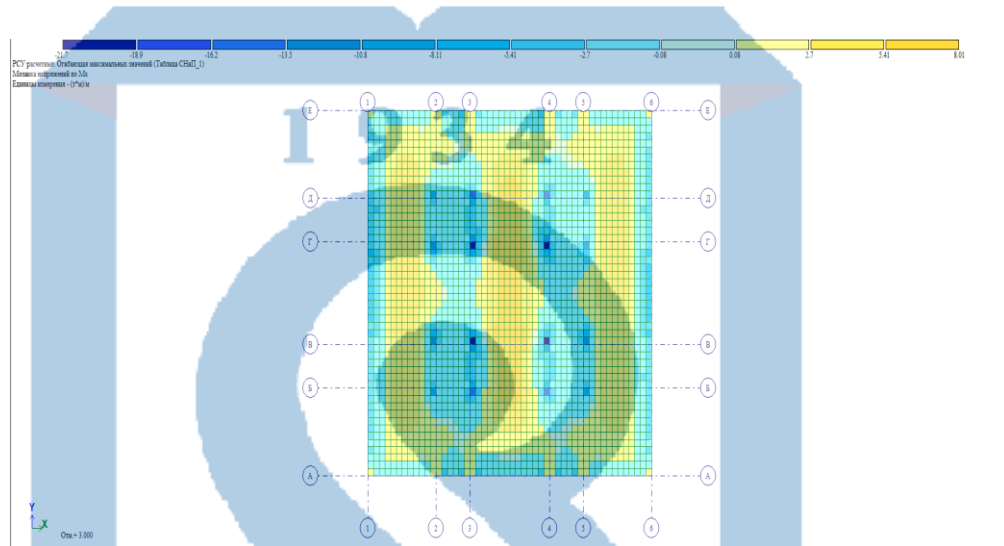
Figure 2.4 - Moment (MX) in the floor slab at elev. +3.00
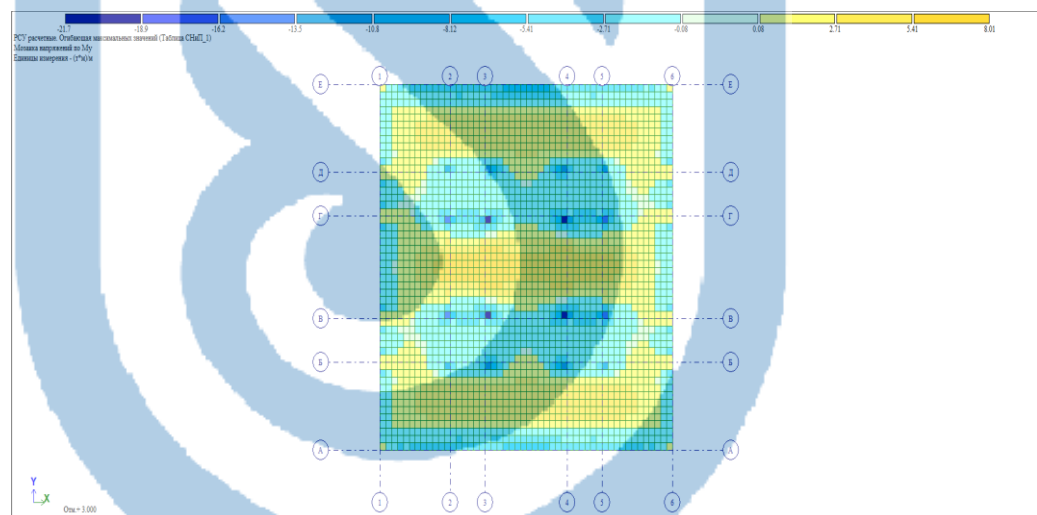
Figure 2.5 - Moment (Mu) in the slab at elev. +3.00
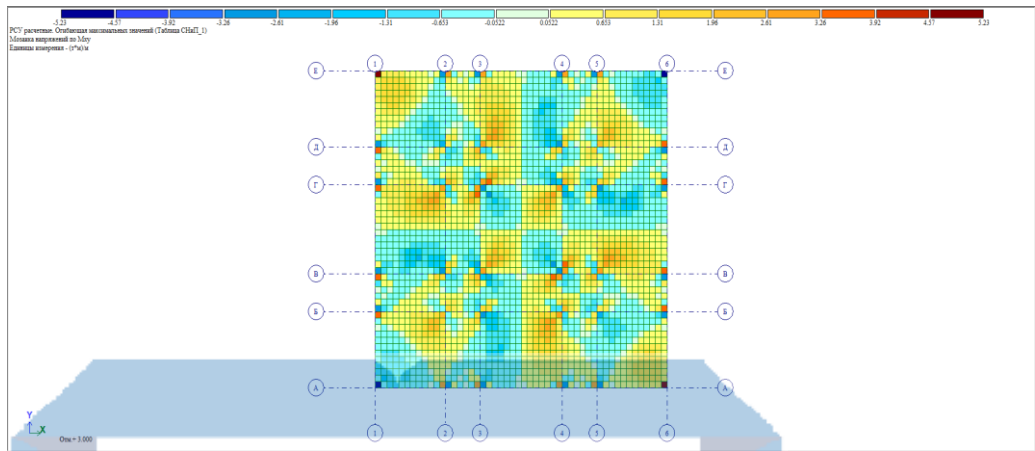
Figure 2.6 - Moment (Mz) in the floor slab at elev. +3.00
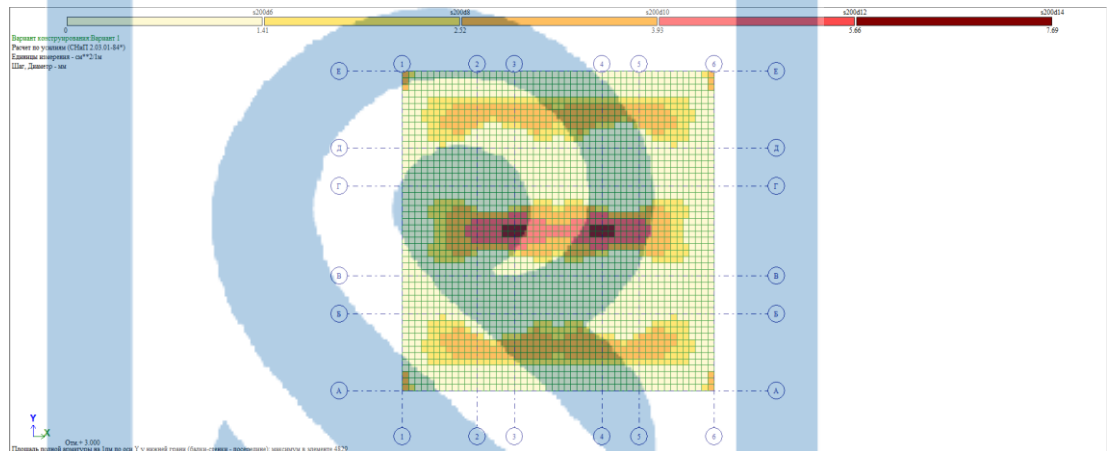
Figure 2.7 - Construction of the floor slab on the bottom
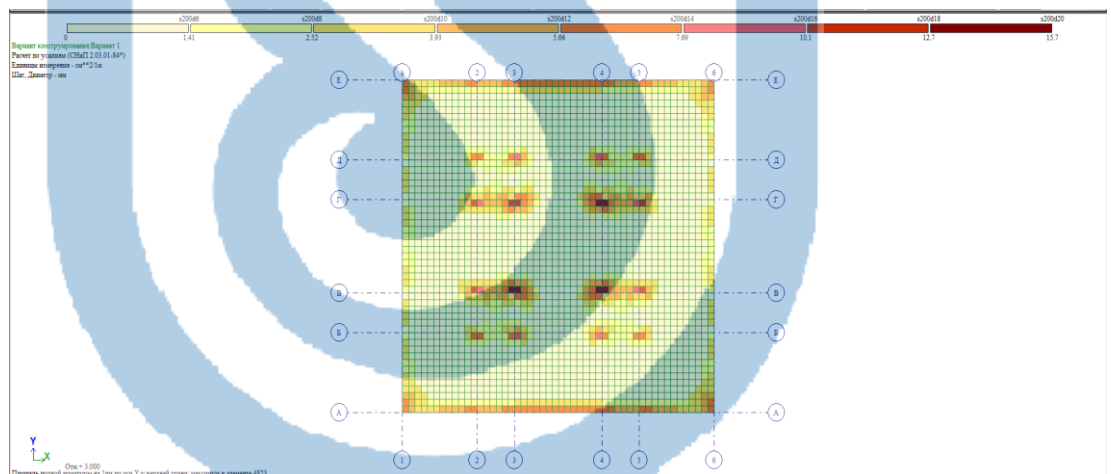
Figure 2.8 - Construction of the floor slab on the upper face Initial data:

Plate of cube cross section with bottom reinforcement with dimensions b = 1000 mm, h = 200 mm; ; Concrete has a normal class C25 / 30

$$(f_{ck} = 25 \text{ МПа}, \gamma_c = 1{,}5 , f_{cd} = 14{,}2 \text{ МПа}, \alpha_{cc} = 0{,}85) . \tag{2.1}$$

Reinforcement class S500

$$(f_{yк} = 500 \text{ МПа}, f_{yd} = 435 \text{ МПа}, E_s = 20 * 10^4 \text{ МПа}, \alpha_{cc} = 0,85)$$

According to the calculation on the Lira Sapr maximum torque is $= 21.7$ kN $*$ m.

A) Determination of the cross-sectional area of the reinforcement

Bending moment acting in section:

$$21.7 \text{ kN} * \text{m. } (= 0), d = h\text{-} = 200 \text{ - } 20 = 180 \text{ mm.}$$

The required area of longitudinal reinforcement is determined according to:

$$k_d = \frac{d}{\sqrt{M_{ed}/b}} \tag{2.2}$$

$$k_d = 3,0$$

Determine according to table B.3 for normal concrete $\leq$C 25/30 $\rightarrow$ = 2,4

$$A_{s1} = k_{s1} * \frac{M_{eds}}{d} + \frac{N_{ed}}{\sigma_{s1d}} = 2,4 * 21,7/18 + 0/435 = 2,9 \text{ см}^2$$

Accept: 5Ø 12 ($A_{s1} = 5,65 \text{ см}^2$)

b) The selection of longitudinal reinforcement (see example 3) is carried out according to table B.1 of Appendix B to determine the bearing capacity of bent rectangular elements with a single reinforcement using dimensionless coefficients We determine the value of the coefficient

$$\alpha_{eds} = \frac{M_{eds}}{f_{cd} * b * d^2} \tag{2.4}$$

$$\alpha_{eds} = 0,047$$
$$\alpha_{eds} \leq \alpha_{eds,lim} = 0.372$$
$$0.047 \leq 0.372$$

Compressed fittings are required by design. We put it constructively. 5Ø 10 ($A_{s2} = 3,93 \text{ см}^2$)

C) Calculation of checking the width of the opening of cracks normal to the longitudinal axis of the element Working section height

$$d = h - ccov - dsw - Ø12/2 = 200 - 20 - 12/2 = 174 \text{ мм.}$$
$$\rho = As1/bd = 565/ 1000 \cdot 174 = 0,0032 \ (0,32\%).$$

Check the width of the crack opening by a simplified method, using the data in table. 8.3 for rectangular sections reinforced with reinforcement of class St500 with ρ $\leq 0.5\%$ the shoulder of an internal force pair is determined:

$$z = 0,85d = 0,85 \cdot 174 = 147,9 \text{ мм}$$

Stresses in tensile reinforcement are determined by the formula;

$$\sigma s = Med/As1 \cdot z \tag{2.5}$$

$$\sigma s = 259,7 \text{ Н/мм2}$$

According to the table 8.4 $dmax = 20$ mm at $\sigma s = 259.7$ MPa and $wk, lim = 0.4$ mm. The accepted diameter $Ø = 12$ mm $\leq Ømax = 20$ mm, i.e. it is not necessary to check the crack opening width by calculation.

3 Technological part

3.1 Preparation of construction site areas

Preparatory work includes: cleaning of areas, areas, groundwater management, creation of a geodetic distribution base.

When clearing the areas, for the first time the lands to be developed will be planted with greenery, the areas will be cleared of weeds, unnecessary structures will be demolished, and the soil will be covered with grains. The lawn, which cannot be uprooted or moved, is surrounded by a common fence.

Destroys non-collapsible wood, stone and concrete structures due to falls. Wood can be burned on the spot in coordination with the fire and sanitary control of the building. Assembles monolithic reinforced concrete and metal structures.

The grain layer of the soils to be removed from the construction areas will be cut for re-use and relocated to a special disposal site.

The construction area must be fenced or marked with identical signs and inscriptions.

When designing a construction grid, the divider should be as flexible as possible to create axes.

The creation of a geodetic dividing base is the action of the customer. Ten days before the start of construction, the lessee must provide technical documentation on a geodetic basis.

3.2 Earthworks

The excavator driver should try to make the most of the structural capabilities of the machine and the power of the engine when creating the soil. The duration of work with the excavator is reduced due to turning, lowering and lifting joints. When making a pit, it is recommended to place the carriers on the side.

This reduces the working time and creates favorable conditions for the operation of the mechanisms.

Control over the correctness of the work is carried out in accordance with the requirements of SNiP 3-5-76 "Control over the correctness of earthworks" and the correctness of the work is checked monthly by the manufacturer and foreman.

Acceptance of completed earthworks in a separate area is carried out by the foreman of the excavator team on the size and size of the building, produced by a craftsman or a manufacturer. Object or building acceptance, subject to verification: compliance of geodetic dimensions in the section, as well as in the plan project.

3.3 Installation of crossbars

When preparing the crossbars for installation, they clean and smooth the inserted parts, apply the protrusions of the reinforcing springs and strengthen them with springs. No special crossbars are required before installation.

It does the job well. Welding of crossbars with poles allows them to be installed quickly when they are installed. Crossbars with poles 29 During welding and installation, installers and welders are located on the ground of group conductors.

3.4 Installation of wall panels

Inventory molding of large shields is used for wall construction. Assembles in the form of panels across the entire wall width. First of all, install the inner panel. Its position is fixed by means of a sloping support and tension. After removing the project condition with the help of a jack jack, install the outer molding panel. The design dimensions of the wall for the city of Almaty connect the upper strips of the inner and outer panels with the help of tensioners.

The shields are delivered by crane. When building a slightly elongated wall, use several panels of the formwork. Normal installation begins with corner shields that serve as beacons. They are installed in strict accordance with the separation axes and fastened with temporary supports and diagonal supports. Install shields in vertical planes with the help of screw jacks. The lighthouse shields are installed one after the other along the length of the wall. The shields are fastened to each other with bolts. The rigid edges of the frame are designed for mounting anchors and crowns with a pitch of 1200 mm. Anchors and crowns are made of periodic or flat profile d16mm rods.

The stability of the panel form is ensured by inventory ramps and ropes. During the installation of the crowns, the adjusting screws of the jacks push the inventory inclined supports up to 20-30 mm from the vertical to the horizontal.

After installing the anchor, remove the normal adjuster relative to the vertical axis with the help of jack-sloping supports.

After installation and removal of all panels, on one side of the formwork on the inventory brackets are installed working linings that provide support for the railings. When building a wall with a height of more than 3.69 m, the formwork is installed in several tiers. Depending on the degree of concreting of the structure under construction, the 2nd and tier forms are supported on the bottom, or fastened to the wall with special anchors, or supported on special brackets or beams.

3.4 Installation of ceilings and roof slabs

The sequence of operations on the formation of the ceiling and the organization of work in Almaty depends on the structural scheme of the building or structure and

the type of ceiling. Flat ceilings are concreted in a form that rests on load-bearing walls and beams, the load-bearing elements of which are movable crossbars. Without intermediate supports 30 Distances of up to 6 m can be covered using sliding supports. At 12 m intervals, intermediate supports - steel or wooden beams - should be installed on telescopic supports.

Normal assembly begins with the removal of marks on the wall or beam support slots. If necessary, the molds are poured with cement-sand mortar or leveled with hard pavements. Then install the movable crossbars with the calculated step. When using shield forming, movable crossbars can be installed in 300, 400, 450, 600, 900 steps. A prerequisite for the production of work is the support of the shields on at least three crossbars. These conditions are required by safety regulations. When using a board of wood, plywood, or chipboard as a board, the pitch of the crossbars may be different and is calculated.

3.6 Installation of marching areas

Before installing the IIS-04 frame ladder, it is necessary to install a fencing panel on the ceiling of the crossbar, which must be closed in accordance with the design.

The prefabricated stair treads are placed on the design site and installed in a cement-sand layer with a thickness of 1 cm with the help of a fork joint connected with the semi-sections. In addition, first the lower half of the area is shot, and then the upper half. Then he starts welding the parts to be built in the area. During the installation of the stair treads of the semi-areas of the upper floors, the parts of the prefabricated iron enclosure are pre-welded to the latter, with the help of which the routes meet the crossbars and the intermediate roofing panel. Then iron fences are welded to the marches. Determination of technical parameters of self-propelled crane

1) Determination of load capacity:

$$Q=Q1+Q2 \tag{3.1}$$

$$Q1=4,2$$
$$Q2=0.45$$
$$Q=4,2+0,45=4,65$$

where Q1 – mass (weight) is the weight of the heaviest mounting element.

Q 2 – mass of sling equipment.

Determine the output of the arrow

$$l_{cmp}^{mp} \quad \frac{(e+c+d)(H_{cmp}^{mp}-h_w)}{h_c+h_n} + a \tag{3.2}$$

Where e=0.5
    c=1
    d=1.5

$h_w = 1.5$
$a = 1.5$

$$l_{cmp}^{mp} \quad \frac{(0,5+1+1,5)(11,25-1,5)}{1,6} + 1,5 = 19,78$$

Determine the length of the arrow

$$L_{cmp}^{mp} = \sqrt{(l_{cmp}^{mp} - 2)^2 + (H_{cmp}^{mp} - h_w)^2} \qquad (3.3)$$

L_{cmp}^{mp} (19, 78-1,5)²+(11,25-1,5)²=20,8

Based on the following parameters, we choose two self-propelled cranes LPG-40A
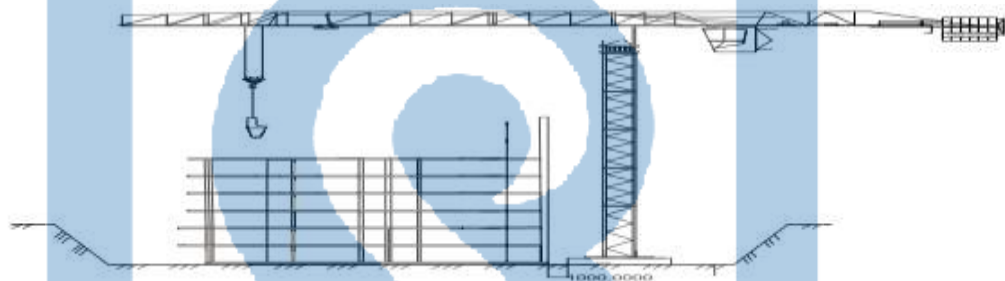
Figure 3.1 - Scheme for determining the required parameters of the crane
h0 -is the height from the parking level to the longest enclosure
Hz- is the height reserve
hc- is the height of the strap
he- is the height of the element in the mounting position
hsh- is the distance from the parking level of the crane to the axis of rotation of the arrow
hp- is the height of the pulley
a -is the distance from the axis of rotation of the crane to the axis of rotation of the narrow
l_{cmp}^{mp} - *Arrow release*
H_{cmp}^{mp} -Arrow lifting height p
L_{cmp}^{mp} -Arrow length

3.8 Determination of variable operating capacity of the crane

Table 3.1-Determination of variable operational capacity of the crane

Data names and calculation formulas		Brands of truck cranes LPG-40A
2	3	4

1

The lifting height of the hook, H_{cmp}^{mp}	11.25	11,25
The average angle of rotation of the arrow, a	120	105
Average load displacement interval in arrow output change, S2	6	6
Approximate crane travel distance, S1	4,8	55,4
Crane lowering and lifting hook speed, v1	14,2	17,6
Determination of crane speed, n	0.6	0,6
Crane speed, v2	17,7	17,9
Travel speed The speed of the truck with the change of the output of the arrow, v3	24,6	28,6
Additional time for braking and activation of crane components, tdop Crane cycle machine time	3	3
Time of manual work, Trust = Toast + Trust	5,89	5,49
Full cycle time, Тц = Тмаш + Труч	24,09	30,2
Variable capacity of the crane,:	73,30	67,41

3.9 Determine the cost of a machine watch

Table 3.2- Determine the cost of the machine clock

Data names and calculation formula	cranes LPG-40A	Brands of truck КС8167
2	3	4
Data names and calculation formulas	62,3	123,5
Depreciation, A	10,8	10,8

2

Quantitative number of working hours per crane per year, Dm	420	420
Installation and dismantling cost of the crane, MD	1650	1950
The cost of transporting the crane from object to object, p	79,2	123,5
Number of crane working hours at a given facility, Do.	1104	1104
Maintenance and repair costs, R	3,43	3,79
Costs for replacement auxiliary devices and load-bearing units, B	0,25	0,3
Energy costs, E.	1,09	0,89
Costs of combustible materials, C	0,22	0,18

Table 3.3-Determining the scope of work in units of volume

Data names and calculation formulas	Brands of truck cranes	
	LPG-40A	КС8167
2	3	4
Installation of labor volumes of construction structures, T mash	5,89	5,49
	18,2	24,8

Labor costs of manual labor, Truch		
Labor costs for equipment for maintenance and repair of crane tracks, Tput	-	-
Labor costs for crane maintenance and replacement, Tex	4,6	7,2
Labor costs for delivery of the crane to the object, T per	29	43
Scope of work, V	1284,65	1284,67
Labor costs of construction structures measurement of work volume in units, T	0,82	0,91

Technical and economic performance of self-propelled cranes.

Table 3.4 - Technical and economic performance of self-propelled cranes.

Variants of assembly cranes	Variable crane displacement capacity	The cost of a car watch	The volume of work in units of work
1	2	3	4
LPG-40A	73,30	1251	0,62
KC8167	67,40	2405	0,91

Selecting the TEC of cranes, we choose the crane LPG-40A, which shows very good performance.

3.10 Design of the general construction plan

Table 3.5 - Calculation table of open storage areas.

Names of structures and	Measure.	The need for materials	Excess materials			The amount	Sheep	Yes aud

4

materials	unit	General	Daily	The amount per day	The amount is manual. co	Coefficient of incidence	Stock calculation	of the fund	access to grain.	
2	3	4	5	6	7	8	9	10	11	12
Foundations	pice	35	31,81	2	1,3	1,1	90,97	1,2	0,6	126,34
Pillars	pice	82	16,73	2	1,3	1,1	47,84	1,8	0,6	44,2
Crossbars	pice	55	13,41	2	1,3	1,1	38,35	0,45	0,6	142,04
Staircases and marches	pice	12	2,79	2	1,3	1,1	797,94	0,6	0,6	221,6
Slab joints intersect openings for columns	pice	111	34,68	2	1,3	1,1	99,18	0,45	0,6	367,35
Wall panels	pice	39	15,6	2	1,3	1,1	44,61	1,6	0,6	40,47
Partition walls	pice	34	26,15	2	1,3	1,1	74,78	2	0,6	62,34
Stained glass windows	pice	9	7,5	2	1,3	1,1	214,5	0,3	0,6	1191,6
Bricks	pice	1,02	0,51	2	1,3	1,1	1,45	0,7	0,6	3,45
Gravel	pice			2	1,3	1,1		1,5	0,6	
Underground	pice	72	40	2	1,3	1,1	114,4	1,2	0,6	158,8

panels							.		.

Table 3.6 - Table for calculating the area of temporary buildings

Names of buildings and structures	The number of tuts	Number of jobs	Аудан, м2		Measure the temperature in the pair.		The project typical number of	Type of building
			For 1 week	General				
2	3	4	5	6	7	8	9	10
Place of leadership	100%	1	4	4	6x 2	2	420-04	Containerized
Contact point	100%	4	7	28	6 x 6,9	2	420-04-11	Containerized
Walking area		46	18	18	6x 3	2	420-04-30	Containerized
Clothes storage	100%	46	0,7	32,2	2,7 x 18	2	420-01-8	Containerized
Bathroom	50%	23	0,5	11,5	2,7x 18	1	420-01-8	Containerized
Take a shower	50%	2	0,54	1,08	2,7 x 18	1	420-01-8	Containerized
Drying room	40%	18	0,2	3,6	4x 3	1	ГПД-9	Containerized
Heating place	50%	23	0,1	2,3	2,7 x 6	1	420-04-9	Containerized
Place to eat	50%	23	1	23	6,9 x 18	1	420-04-34	Containerized

| Toilet | 100 % | 46 | 0,1 | 4,6 | 2,7 x 6 | 1 | 420-04-23 | Containerized |
| Women's personal hygiene | 30% | 13 | 0,18 | 2,34 | 6x 2 | 1 | 420-04 | Containerized |

Table 3.7-Calculation table of buildings and structures intended for production

Names of buildings and structures	The size of the building in the plan	Керекті аудан	Үймереттің түрі
2	3	4	5
Dense-forge-workshop	9,97x7,23	57,6	Scattered
Electrical installation workshop	4,1x2,2	8	Scattered
Sanitary and technical workshop	6,6x9	8	Scattered
Equipment workshop	6,6x9	41,4	Scattered
Closed storage	6x6	34	Scattered
Malari station	4,5x2,5	22,4	Scattered
Plastering station	4,5x2,5	11,25	Scattered
Reinforcement workshop	4,1x2,2	8	Scattered

Table 3.8 - Calculation of water demand

Usernames	Mea sure. unit	Everythi ng	Allocat ed water consu mption	The amount Of water used is z coeffici et	Number of hours of water use	Water consu mptio n
2	3	4	5	6	7	8
I. Production needs Plastering Works Painting Preparation of	м2 м2 м3	205 238 66	7 0,5 200	1,5 1,5 1,5	16 16 16	0,03 0,004 0,35

mortar for wall cladding					
II. Domestic-drinking water Consumption of water for domestic needs	адам адам	46 23	15 30	3 1	16 0,75	0,017
Consumption of water for bathing						
III. Fire safety accessories	га	-	-	-	-	10

Water consumption for production needs is determined by the following formula:

$$W_{end} = B_{part1} \cdot V \cdot K_1 / t_1 \cdot 36$$

Part 1 is the allocated water consumption

V-size

K_1- excess water consumption factor t_1 is the number of hours of water consumption Household water consumption is given by the following formula determined by:

$$V_{turm} = B_{part2} \cdot N_{total} \cdot K_2 / t_2 \cdot 3600$$

1) Publication of construction should begin only with the permission of the manufacturer.

2) Before cutting it is necessary to obtain the conclusion of the construction laboratory on the actual strength of concrete.

3) Vibrating handles must have testers, and power cords must have reliable rubber insulation.

4) Regular medical examination of concrete workers working with vibrators.

5) Workers welding fittings must have personal protective equipment.
6) Each employee undergoes an introductory instruction at the workplace before the start of work.

7) Measures shall be taken to prevent spontaneous opening of bunker fasteners when feeding concrete mix in bunkers.

8) Inspects all forklifts, mechanisms and devices used on the construction site in accordance with the rules of state technical supervision before use.

9) Works on crane supports during installation of fittings.

10) It is strictly forbidden for people to be in the work area during the operation of the crane.

11) It is prohibited to unpack or leave the suspended cargo unattended, as well as to carry out installation in winds of more than 6 points.

12) It is strictly forbidden to operate the tower crane directly under the wires of any high-voltage power lines during operation.

13) It is allowed to connect welding transformers and lighting devices only to the electrician on duty.

14) Welding transformers are connected to the mains only with the help of closed circuit breakers.

15) Welded products are welded to the bodies of welding transformers.

16) Welding transformers are connected to the network only with the help of circuit breakers.

17) Welding transformers installed in the open field are covered with a canopy or tarpaulin from atmospheric precipitation, as well as protected from mechanical damage.

18) Electric welding in the open air during thunderstorms and rain is prohibited.

19) The voltage at the terminals of welding transformers should not exceed 70 V when igniting the arc.

20) Repair, adjustment, adjustment and cleaning of the transformer under voltage are prohibited.

21) It is allowed to hold another welding transformer only when it is disconnected from the power supply.

22) Workers may be lowered into the pit or trench only by stairs.

23) If cracks appear in the pits or trenches, it is necessary to fix the walls or reduce the slope before starting work.

3.11 Safety equipment and labor protection

3.11.1 Safety events

Production work must be carried out with the obligatory observance of the rules of technical safety, fire safety, labor protection in accordance with the requirements of SNiP RK 1.03-05-2001 "Labor protection and safety regulations and equipment safety" documents in construction. Responsibility for the implementation of safety measures, labor protection, fire and environmental safety is assigned to the managers of the work, assigned by the order. Security Tools (special clothing, shoes, etc.), sanitary and household security along the individual protection (fencing, lighting, ventilation, protective and protective devices and equipment, etc.), sanitary and household premises and facilities in accordance with applicable norms and the nature of the work performed. Workers must create the necessary conditions for work, nutrition and rest.

Responsibility for the performance of safety measures, labor protection, fire and environmental safety is assigned to the managers of the work, assigned by the order.

sanitary-safe premises and facilities in accordance with applicable norms and the nature of the work performed. Workers must create the necessary conditions for work, nutrition and rest Duration of the preparation of Their continuity   The need for labor resources is established by taking into account the safety of work and the timing of activities, ensuring safe production of work that any of the operations performed was not a source of production hazards for simultaneously performed or subsequent work.

In the development of methods and the sequence of work, it is necessary to take into account the hazardous areas that arise in the process of work. In case of necessity of performance of works in dangerous zones, it is necessary to provide measures for protection of employees. All persons located on the construction site are obliged to wear protective helmets, workers and engineering and technical workers without protective helmets and other necessary means of individual protection. Employees of individual means of protection must correspond to their floor, growth and size, character and conditions of the work performed and to ensure the reduction of the impact of harmful and dangerous factors of production.

The employer must organize the appropriate care for the means of individual protection and their storage, timely perform dry cleaning, washing, repair, decontamination and dusting of special clothing, special footwear and other means of individual protection., as well as dryers and chambers for providing special clothing and footwear.

Drying and dusting of special clothes are carried out after each shift, washing or dry cleaning - according to the need, but not less than twice a month.

The construction site is enclosed by a temporary panel-and-fence enclosure with a height of 2.0 m in accordance with GOST 23407-78. The width of the passages for one-way traffic should be no less than 3.5 m, for two-way traffic - not less than 6.0 m, and for a load-lifting crane - not less than 5.0 m.

For the proper organization of traffic on the territory of construction sites are installed indicators of travel, road signs with the designation of the maximum speed, parking places in accordance with GOST 10807-78. The pits and trenches along the upper edge of the trench should be fenced off. For the passage through the dug trenches and trenches are installed pedestrian bridges with a width of not less than 0.8m with double railings with a height of 1.0m. Artificial lighting of workplaces, passages and passages is carried out in accordance with the "Standards of electrical lighting of construction and installation work." During the dark hours of the day, the construction site is illuminated by floodlights PKN-1000-2, installed on the reconstructed building and temporary supports.Safety and technical inspection activities are carried out by the safety engineer in compliance with the production project. During the production of work to fulfill the requirements of PPB 01-03 "Fire safety rules", on the safety of work with power tools, equipment, small machinery and   construction   equipment.

Submit the PPR to all participants of the production process at the time of registration.

3.11.2 Fire safety

For heating inventory of temporary buildings, as a rule, steam or water heaters should be used, as well as electric heaters of factory production. Dry clothes and shoes should be produced specifically adapted for these purposes in the premises with central water heating or with the use of water heaters. The device for drying in tambours and other premises located at the exits of the building is not allowed.

At the beginning of the main construction work on the construction site should be provided fire-fighting water supply from fire hydrants to the existing water supply network.

Internal fire-fighting water supply and automatic fire-fighting systems, provided by the project, it is necessary to install at the same time with the installation of the object. Fire-fighting water supply system should be in effect at the beginning of departmental work, and automatic fire extinguishing and signaling systems - at the moment of start-up work. At entrances to the construction site must be installed (hung) plans of fire protection in accordance with GOST 12.1.114-82 with applied constructions and auxiliary buildings, subdivisions, constructions, assemblies. Completion of the fire shield by primary means of fire extinguishing is given in

Table 3.9 - Completion of the fire shield by primary means of fire extinguishing

№ n/n	Name of primary fire extinguishers, non-mechanized tools and inventory	Completion norms (according to PPB 01-03)
1	Fire extinguishers: - foamy and watery place, 1 / mass of fire extinguishing composition, kg 10/9 -powder (OP) fit, 1 / mass of fire extinguishing composition, kg 10/9	2 1
2	Scrap	1
3	Bagor	1
4	Bucket	2
5	Shovel bayonet	1
6	Shovel sovkovaya	1
7	Capacity for water storage is 0.2mz	1

The object must be defined face, responsible for the acquisition, repair, safety and readiness to act as a first aid in case of fire. Each fire extinguisher, installed on the object, must have a serial number, applied to the case with white paint. They will make a passport in the prescribed form. Fire extinguishers should always be in good condition, periodically inspected, checked and recharged in a timely manner.

Water storage tanks installed next to the fire shield should have a volume of not less than 0.2 m3.

The use of primary means of firefighting, unmechanized firefighting equipment and equipment for household and other needs not related to the fire is prohibited.

4 Economic part

Estimated cost - the amount of all monetary costs necessary for the implementation of construction materials on the project. Estimated cost is the basis for determining the size of capital investments, financing the construction process, the creation of contract prices for the production of construction, calculations for the contract work performed (construction). The following types of estimate documentation are presented in the diploma work:

- Local estimate - the primary document in the estimate, which is based on the volume and cost of the projected building. Local estimate

application 3.

 - Sheet volume of work

The estimate was made using the resource method of determining the cost.

Table 4.1 - Construction cost

Сметный расчет стоимости строительства

Многоэтажное общежитие

(наименование стройки)

Составлен в текущих ценах по состоянию на 2020г.

№ п/п	№ смет и расчетов, иные документы	Наименование глав, объектов, работ и затрат	Сметная стоимость, тысячи тенге			Всего, тысячи тенге
			строительно-монтажных работ	оборудования, мебели и инвентаря	прочих затрат	
1	2	3	4	5	6	7
		Глава 2. Основные объекты строительства				
1	02-001	Многоэтажное общежитие	638 407,553			638 407,553
		Итого по главе 2	638 407,553			638 407,553
		Итого по главам 1 - 7	638 407,553			638 407,553
		Итого по главам 1 - 9	638 407,553			638 407,553
2	Кодекс РК от 10.12.2008 № 99-IV, ст.268	Итого сметная стоимость	638 407,553			638 407,553
		Налог на добавленную стоимость (НДС) - 12 %			76 608,906	76 608,906
		Всего по сметному расчёту	638 407,553		76 608,906	715 016,459

4.1 Calculation of investment costs for construction

Investment costs for construction include all costs of the customer for the project and are included in the summary estimate of the cost of construction.

The following estimates of the cost of construction include the following items:
- cost of engineering services;
- preparation of operational personnel;
- cost of design and development work;
 - cost of expertise of design and estimate documentation;
- costs for the implementation of the author's supervision of SNiP RK 1.03-03-2002. The cost of design and development work is determined in accordance with the

general provisions on the definition of the cost of design work for construction in the Republic of Kazakhstan (RDS RK 08.02-03-2002 with changes from 02.7.2004)

CONCLUSION

On the basis of the assignment was a diploma project on the theme Multi-storey dormitory in Taraz. In the architectural-constructive part of the diploma were considered volumetric-planning, as well as constructive decisions, issued and reviewed geological and climatic conditions, clarified the composition and methods of production, workmanship, production, workmanship.

The heat calculation was made in accordance with the applicable standards and conditions of the construction site. In the calculation-constructive section was performed work in the program "Lyra".

The calculation and design of the floor slabs with the use of the results of the calculations of the fittings, calculated as the required amount. In the division of technology and organization of construction production were calculated works relating to the underground part of the building - earthworks and concrete, selected corresponding and economically calibrated machinery. The economic indicators of the building were calculated with the help of the software package Smeta Trial, which significantly simplifies this process.

The economic side of construction was shown in local, resource and summary estimates.In the section on life safety and labor protection, the necessary conditions and rules for the management of construction work are considered, as well as the ways to reduce the negative impact of work on the environment.

In this project in architecture and construction, settlement construction and manufacturing parts made engineering decisions.

The general technical and economic parameters of the project, as well as decisions on environmental protection and safety.

LIST OF REFERENCES

1. SNiP 2.0107-85. Loads and effects.

2.SNiP 2.0107-85. Loads and effects.

3.SNiPRK 2.04-01-2001 "Construction climatology".

4. SNiP KP 2.04-03-2002 "Construction and heating equipment".

5. SNiP RK 5.03-33-2005 "Concrete and reinforced concrete structures".

6.SNiP 2.0107-85. Loads and effects.

7. SNiP 2.02.05-2002 "Fire safety of buildings and structures", Almaty, 2001

8. SNiP 2.0107-85. Loads and effects.

9. ENiR E4-1 "Installation of prefabricated and monolithic reinforced concrete structures".

10. ENiR E2-1 "Earthworks".

11. ENiR Collection E11. Construction, installation and repair work.

12. PPE 2.01.02-85 Fire-fighting doses. Gosstroy USSR CITP, M, 2002 16 s.

13. PPE 2.01.02-85 Fire-fighting doses. Gosstroy USSR CITP, M, 2002 16 s.

14. SP RK 5.01-102-2013Based on buildings and structures. Astana, 2013.

15. SN RK 5.01-01-2013Earth constructions, foundations and foundations. Astana, 2013.

16. Baikov VN, Sigalov EE Reinforced concrete structures: General course:

17. MES RK 2.03.30-2006 "Construction in the seismic zone".

18. Ministry of Finance of the Republic of Kazakhstan 8.02-02-2002 "Procedure for determining the estimated cost of construction in the Republic of Kazakhstan", Almaty, 2002

19. NTP RK 01-01-3.1 (4.1) -2012 "Loads and effects on the building. Snow loads. Wind reactions. "

Applications A

The calculation is performed by the software complex "LIRA-CAD 2016 R5 (non-commercial)". The basis of the calculation is the method of finite elements

    X linear axis X
    Y linear axis Y
    Z linear axis Z
   UX angle around axis X
   UY corner circle axis Y
   UZ corner axis Z

On the PC "LIRA-CAD 2016 R5 (non-commercial)"
following normative and regulatory documents:

SP 14.13330 2011. Construction in seismic areas. Updated edition of SNiP II-7-81 *.
SP 16.13330 2011. Steel constructions. Updated edition of SNiP II-23-81 *.
SP 20.13330 2011. Loads and effects. Updated edition of SNiP 2.01.07-85 *.
SP 22.13330 2011. Foundations of buildings and structures. Updated edition of SNiP 2.02.01-83 *.
SP 24.13330 2011. Pile foundations. Updated edition of SNiP 2.02.03-85. SP 35.13330 2011. Bridges and pipes. Updated edition of SNiP 2.05.03-84.
SP 63.13330.2012. Concrete and reinforced concrete structures. Basic provisions. Updated edition of SNiP 52-01-2003.
SNiP 2.03.01-84 *. Concrete and reinforced concrete structures.
SNiP II – 7-81 *. Construction in seismic areas.
SNiP II – 23-81 *. Steel constructions.
SNiP 2.02.01-83 *. Foundations of buildings and structures.
SNiP II – 21-75. Concrete and reinforced concrete structures.
SNiP 2.05.03-84 *. Bridges and pipes.
SP 50-101-2004. Summary of rules for design and construction. Design and the structure of the foundations and foundations of buildings and structures.
SNiP 52-01-2003. Concrete and reinforced concrete structures. NP-031-01. Standards for the design of seismic nuclear power plants. Gosatomnadzor of Russia.
DBN B.2.3-14: 2006. Transportation facilities. Bridges and pipes. Design norms.
DBN B.1.2-2: 2006. Loads and effects. Design norms.
DBN B.1.1-12: 2006. Construction in seismic regions of Kazakhstan.
DBN B.2.2-24: 2009. Design of high-rise residential and civil installations.
DBN B.2.1-10: 2009. Foundations and foundations of constructions.
DBN B.2.6-98: 2009. Concrete and reinforced concrete structures.
DBN B.2.3-14: 2006. Transportation facilities. Bridges and pipes. Design norms.
DBN B.1.2-2: 2006. Loads and effects. Design norms.
DBN B.1.1-12: 2006. Construction in seismic regions of Ukraine.
DBN B.2.2-24: 2009. Design of high-rise residential and civil installations.
DBN B.2.1-10: 2009. Foundations and foundations of constructions.
DBN B.2.6-98: 2009. Concrete and reinforced concrete structures.
DSTU BV.2.6-156: 2010. Concrete and reinforced concrete structures made of heavy concrete.
DSTU 3760: 2006. Rolling reinforcement for reinforced concrete structures.
SNRA II-2.02-94. Seismic construction. Armenia.
KMC 2.01.03-96 *. Construction in seismic areas. Uzbekistan.
SNT 2.01.08-99 *. Construction in seismic areas. Turkmenistan.
Mon 01.0.1-09. Construction in seismic areas. Georgia.
AzDTN 2.3-1-2010. Construction in seismic areas. Azerbaijan.

SNiP RK 2.03-30-2006. Construction in seismic areas. Kazakhstan.
MKS CHT 22-07-2007. Seismic construction.
Tajikistan.
The types of end elements used are specified in document 1. In this document, in addition to the number of nodes relating to the corresponding- to the existing element, as well as the number of types of hardness.

Type 10. Universal spatial rod KE.

Type 41. Universal rectangular KE shell.

Type 44. Universal quadrilateral KE shell.

Coordinates of nodes and loads assigned in the inverted documents 4,6,7, described in the right Cartesian system coordinates.

The calculation is performed on the following downloads:

loading   1 - static loading
loading   2 - static loading
loading   3 - static loading
loading   4 - static loading
loading   5 - static loading
loading   6 - static loading

Calculated combinations of forces are selected for the rod on the criterion of extreme normal and propulsive stresses in the peripheral zones of the cut.
Calculation of stresses for lamellar stresses
elements are selected according to the criterion of extreme stresses
taking into account the direction of the main areas.
When choosing the calculated combinations of forces were considered
following characteristics of downloads:
loading 1 - static loading

        This load is considered as a constant load.

  loading 2 - static loading

        This load is considered as a constant load.

  loading 3 - static loading

        This load is considered as a constant load.

  loading 4 - static loading

        This loading is considered to be long-lasting
        load.

  loading 5 - static loading

This loading is considered as short-term
        load.   loading 6 - static loading
        This loading is considered as short-term

        load. Ч Т Е Н И Е Р Е З У Ль Т А Т О В С Ч Е Т А

Section 1. Processor operation protocol.
Section 2. Original data.
Section 3. Diagnostic messages.
Section 5. Moving nodes.
Section 6. Strength (tension) in the elements.

Section 7. Reactions in uzlah.
Section 8. Computational combinations of methods (RSU).

Section 5 is printed in tabular form nodes of the calculated task.
    The size of the displacement is specified in the cap table.
    The first column contains the download number and indexing number relocations.
In the remaining columns - the number of nodes in the order of age and great relocations that correspond to them. Linear shifts are considered positive if they are directed along the axis coordinates. Positive angular movements correspond to the rotation against the clockwise arrow, if you look with the end of the corresponding axis. Moves have the following indexing:

    X linear axis X
    Y linear axis Y
    Z linear axis Z
    UX angle around axis X
    UY corner circle axis Y
    UZ corner axis Z

    Section 6 is printed in tabular form elements of the calculated task. The size of the force is specified in the cap table. The first column indicates the type of KE from the library of the end elements, the number of downloads and the indexing of the usils. The following graphs indicate: in the first line of the cap - the number of the element and the number of the cut in this element, for which the seal is printed; in the second line - the number of the first two nodes.
    In section 8 in the tabular form are calculated calculations combinations of force (RSU) in elements for each section and additional information on combinations usiliy.
Group B1 - includes all independent downloads due to the duration of the action
    except seismic and other special.
Group C1 - includes group B1 plus seismic loading.
Group D1 - includes group B1 plus special (not seismic) loading.
Group A2 - includes only continuous and long-term downloads;
    types of downloads - 0, 1.
Group B2 - includes constant, long and short-term downloads (except
instantaneous); types of downloads - 0, 1, 2.
Group C2 - includes all independent downloads due to the duration of the action
    except seismic and other special.
Group D2 - includes group C2 plus seismic loading.

Application B

The calculated combinations form 4 tables of results: Table 1 - RSU calculated, calculated by calculated values of force. Table 2 - RSU calculation lengths received to help multiplication calculations   strengths corresponding to the coefficients of longevity. Table 3 - RSU normative, received with the help of calculation methods on   corresponding load-bearing coefficients. Table 4 - RSU normative lengths received to help multiply   normative factors on the corresponding   coefficients   of   longevity.

The headings of the RSU table contain the following indexes: ELM - element number in the scheme;

NS - the number of the calculated section in the element (all KE have a rod)   one calculation); CRT is a criterion number by which this combination of methods is composed,

in accordance with the type of

KE; ST - column number of coefficients of combinations from the table of outgoing data of the RSU;

KS - an indication of cash in the combination of crane (K) and / or seismic (C)   downloads;

G - index of internal groups - A1, B1, C1, D1, A2, B2, C2, D2.

Further, the identifiers of force / stress in relation to the type of CE,

and then a list of download numbers that made up the current combination. Znakoperemennoe loading, entered in the RSU with the opposite sign marked with a sign '-'.

Table of results for the unified RSU is formed for each design option by specifying the option number.

The titles of the unified RSU table contain the following indexes:

PE is a sign of elemental affiliation;

ELM is the order number of the element in the circuit or in the supplement;

NS - the number of the calculated section in the element (all KE have a rod)   one calculation);

KRT - criterion number in accordance with the type of KE;

ST - column number of coefficients of combinations from the tables of the original data of the RSU;

KS - an indication of cash in the combination of crane (K) and / or seismic (C)   downloads;

G - index of internal groups - A1, B1, C1, D1, A2, B2, C2, D2.

U S I L I Y V K O N E CH N Y H E L E M E N T A H

Type 10. Universal spatial rod KE.

The final element perceives the following types of amplification:

N axial force; positive sign

becomes a stretch.

MK torque relative to axis X1;

a positive sign corresponds to the action of the moment against the clockwise arrow, if viewed from the end of the axis

X1, at the intersection, belonging to the end of the rod.   MY bending moment relative to the axis Y1

a positive sign corresponds to an action   moment against the clock arrow, if watch with   end of axis Y1, at the intersection, belonging to the end of stir-   жня.

MZ bending moment relative to the Z1 axis;

a positive sign corresponds to the action of mo-   cop against the clock arrow, if you watch with con-   tsar axis Z1, at the intersection, belonging to the end of the rod.

QY crossing force along the axis Y1;

put-   the body sign corresponds to the coincidence of directions   forces with axis Y1

rod.
QZ cutting force along the Z1 axis;
 put-   the   body   sign   corresponds   to   the   coincidence   of
directions   forces   with   axis   Z1   for   cutting,   belonging   to   the
end
rod.

Type 41. Universal rectangular KE shell.

Application C

The final element perceives the following species of amphibians, stresses and reactions:

    NX normal voltage along the axis X1;
       a positive sign corresponds to a stretch.
    NY normal voltage along the axis Y1;
       a positive sign corresponds to a stretch.
    NZ normal voltage along the Z1 axis (for the case
         flat deformation); positive sign
         becomes a stretch.

TXY driving tension, parallel axis X1 and lying flat, parallel X10Z1; for a positive take direction coinciding with the direction of the X1 axis, if NY coincides with the axis Y1.

MX moment, acting at the intersection, the orthogonal axis X1; positive sign corresponds to the stretching of the lower fiber (ratio-body axis Z1).
MY moment, acting at the intersection, the orthogonal axis Y1; positive sign corresponds to the stretching of the lower fiber (ratio-body axis Z1).

MXY torque; a positive sign corresponds to a curved diagonal-whether 1-4, directed protrusion below (relatively axis Z1). QX crossing force in the section, orthogonal axis X1; a positive sign corresponds to a coincidence the direction of the force with the direction of the axis Z1 on that part element, in which there is a node 1.

QY intersecting force at the intersection, orthogonal axis Y1; a positive sign corresponds to a coincidence of direction forces with the direction of the Z1 axis on that part of the element, in which the node is missing 1.
RZ jet ground support (when calculating the shell on the basis of elasticity); positive force acts in the direction of the Z1 axis (soil is stretched).

Type 44. Universal quadrilateral KE shell. The final element perceives the following species of amphibians, stresses and reactions: NX normal voltage along the axis X1; a positive sign corresponds to a stretch. NY normal voltage along the axis Y1; a positive sign corresponds to a stretch. NZ normal voltage along the Z1 axis (for the case flat deformation); positive sign becomes a stretch.

TXY driving tension, parallel axis X1 and lying flat, parallel X10Z1; for a positive take direction coinciding with the direction of the X1 axis, if NY coincides with the axis Y1.

MX moment acting on the intersection, orthogonal axis X1; a positive sign corresponds to a stretch lower fiber (relative to the Z1 axis). MY moment acting on the intersection, orthogonal axis Y1; a positive sign corresponds to a stretch lower fiber (relative to the Z1 axis). MXY torque; a positive sign corresponds to a curved diagonal-whether 1-4, directed protrusion below (relatively axis Z1).

QX crossing force in the section, orthogonal axis X1; a positive sign corresponds to a coincidence the direction of the force with the direction of the axis Z1 on that part element, in which there is a

node 1.   QY intersecting force at the intersection, orthogonal axis
Y1;   a positive sign corresponds to a coincidence   the
direction

Calculation protocol

Date: 16.04.2020
 Genuin eIntel Intel (R) Core (TM) i5-8250U CPU @ 1.60GHz 8 threads
Microsoft Windows 10 RUS 64-bit. Build 17763
Size of available physical memory = 4358876672
22:44 Reading the source data from the file C: \ Users \ Public \ Documents \ LIRA SAPR \ LIRA SAPR 2016 Noncommercial \ Data \ Babur calculation · .txt
22:44 Control of source data source schemes Number of nodes = 11964 (of them the number of failed nodes = 11964)
Number of elements = 12444 (of them the number of failed = 12444)
 BASIC SCHEME 22:44 Optimization of unknown order Number of unknowns = 52809 CALCULATION OF STATISTICAL DOWNLOADS 22:44 Forming a stiffness matrix 22:44 Formation of load vectors 22:44 Exposition of the stiffness matrix
22:44 Calculation of unknowns 22:44 Solution control Formulation of results 22:44 Formation   of   topology
22:44 Optimization of unknown order Number of unknowns = 52809
CALCULATION OF STATIC LOADING 22:44 Forming a stiffness matrix
22:44 Formation of load vectors
22:44 Exposition of the stiffness matrix
22:44 Calculation of unknowns
22:44 Solution control Formulation of results
22:44Formationtopology
22:44 Formation of movements
22:44 Calculation and formation of forces in elements
22:44 Calculation and formation of reactions in elements
22:44 Calculation and formation of epyur usiliy in rods
22:44 Calculation and formation of curves of curves in rods Total node loads on the main   scheme:
Loading 1 PX = 0 PY = 0 PZ = 9096.81 PUX = 2.79932e-014 PUY = -9.53196e-014 PUZ = 0
Loading 2 PX = 0 PY = 0 PZ = 8167 PUX = 2.65517e-014 PUY = -1.06207e-013 PUZ = 0
Loading 3 PX = 0 PY = 0 PZ = 2624 PUX = 0 PUY = 0 PUZ = 0
Load 4 PX = 0 PY = 0 PZ = 1530.6 PUX = 1.77011e-014 PUY = -4.42528e-014 PUZ = 0
Loading 5 PX = 0 PY = 0 PZ = 2040.8 PUX = 4.42528e-014 PUY = -7.9655e-014 PUZ = 0 Loading 6 PX = 0 PY = 0 PZ = 612 PUX = 0 PUY = 0 PUZ = 0 The calculation is successfully completed Lost time = 0 min
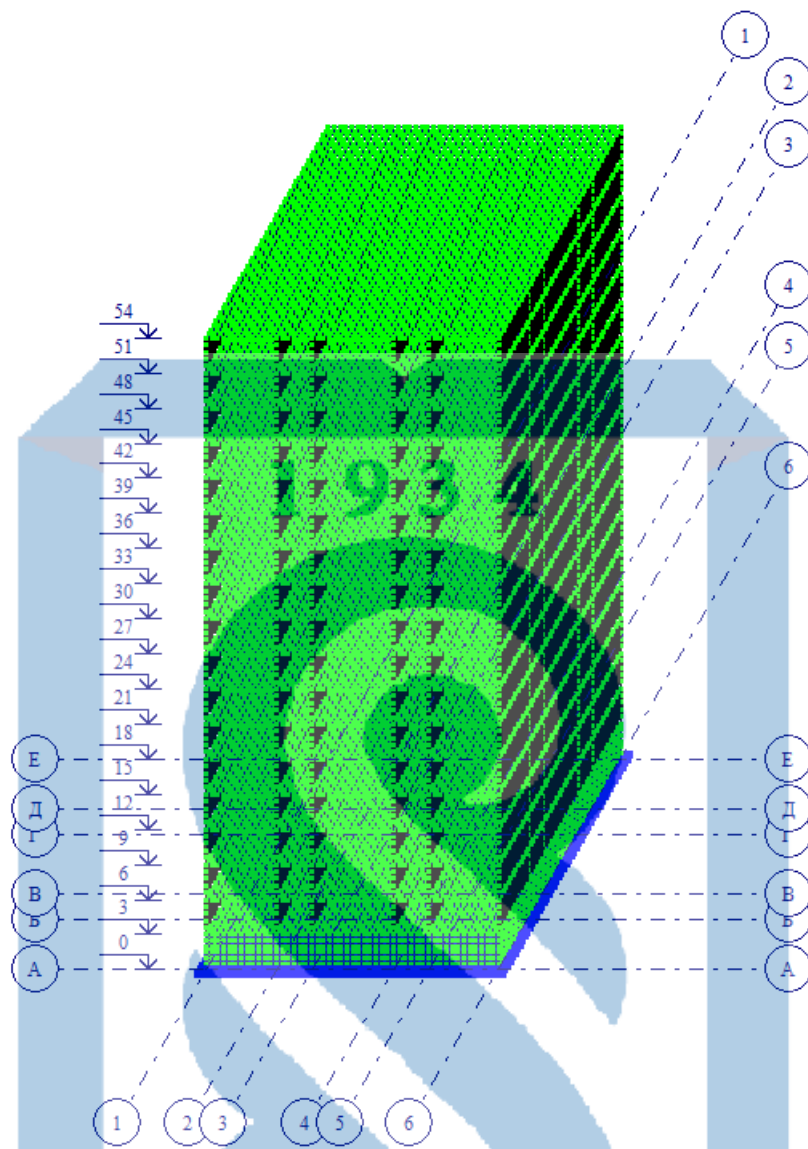
Figure C.1 - Calculation scheme
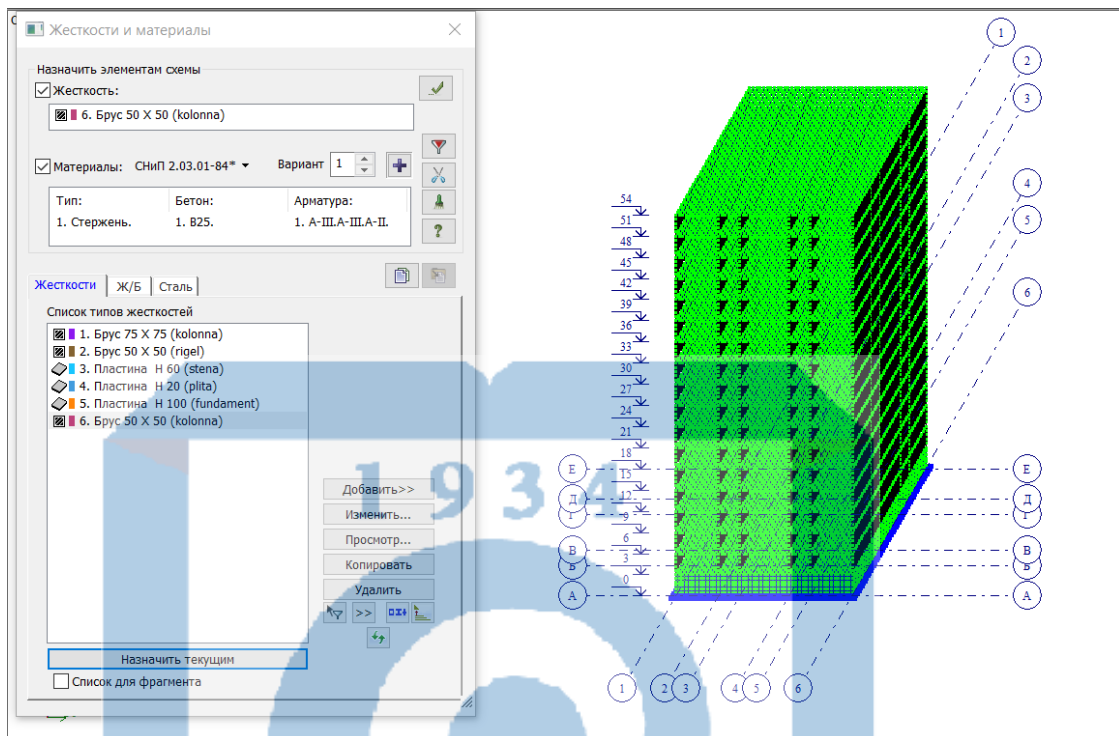
Figure C.2 – Hardness
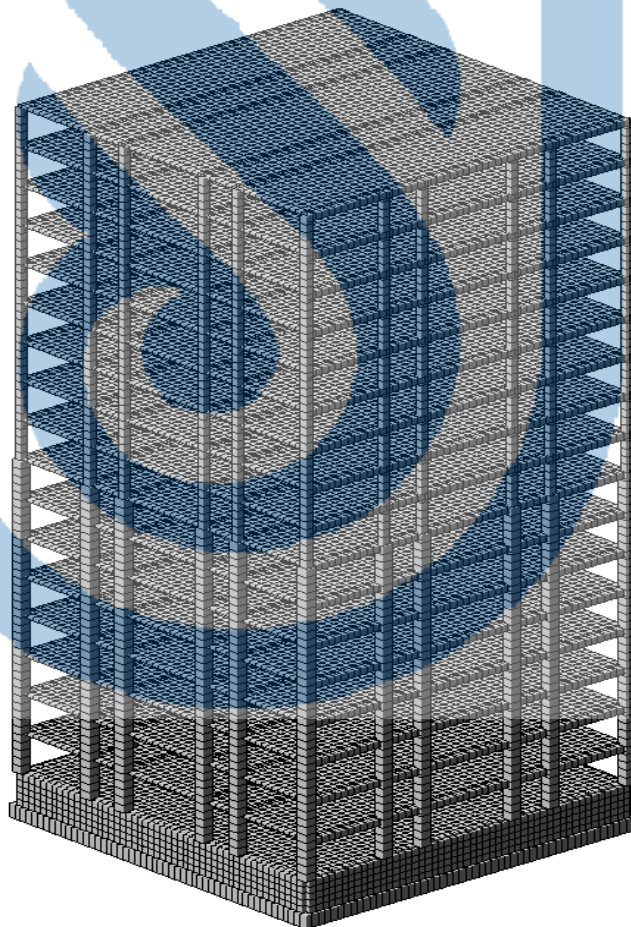
Figure C.3 - Spatial model
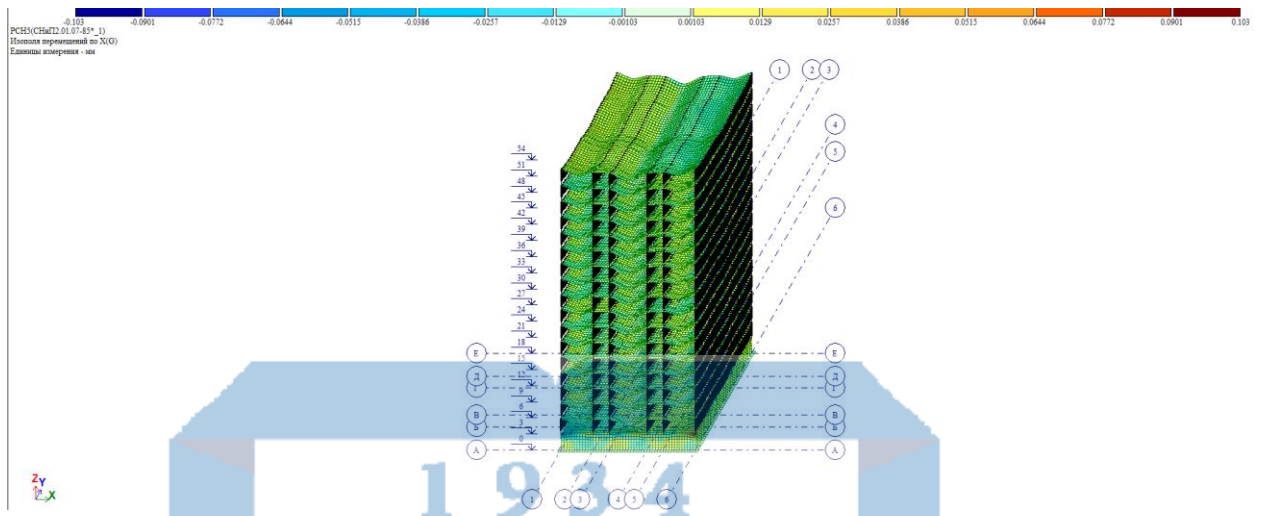
Figure C.4 - Mosaic movement from the RSN on the X axis
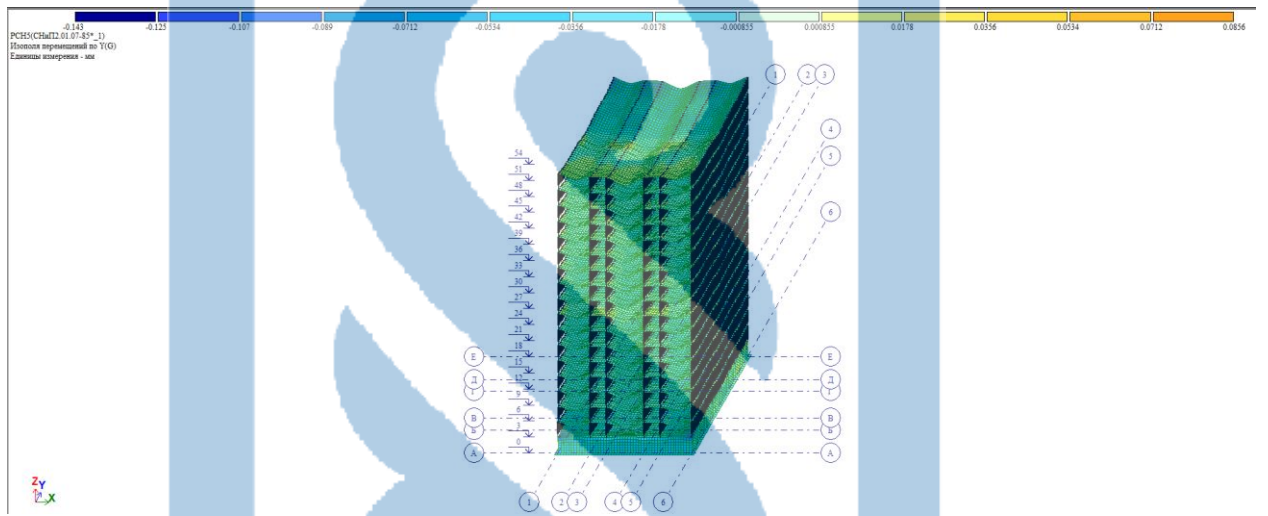
Figure C.5 - Mosaic of moving from RSN on axis Y.
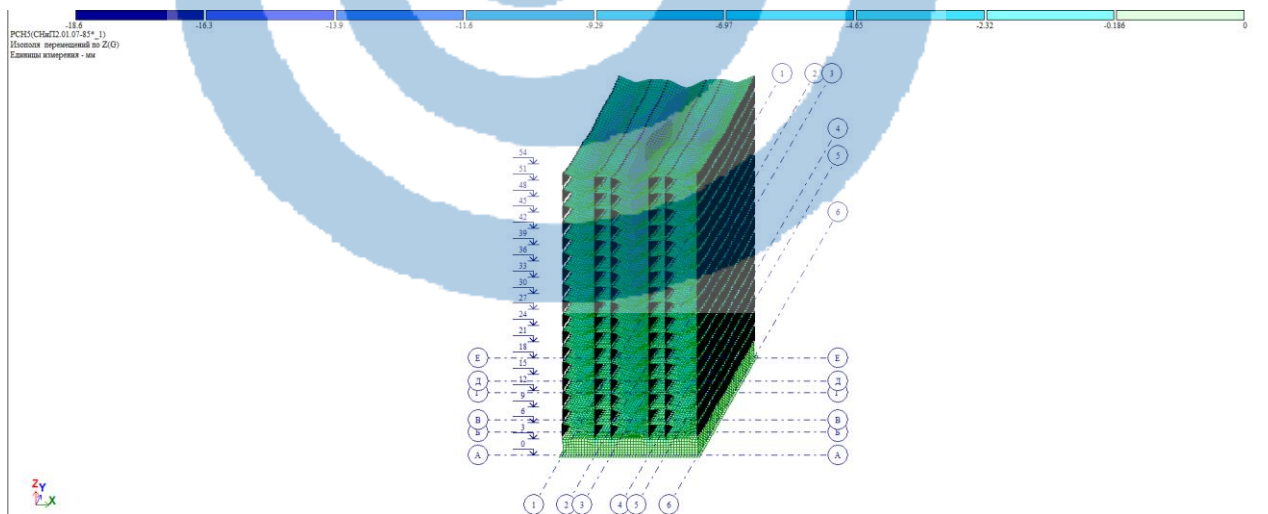
Figure C.6 - Mosaic movement from RSN on axis Z
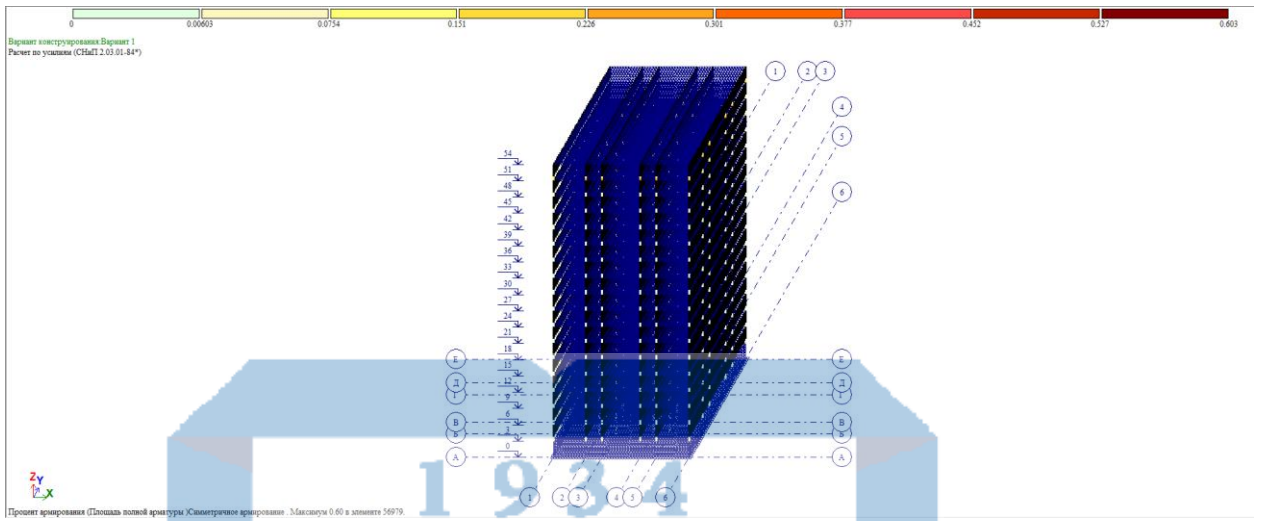
Figure C.7 - Construction. Percentage reinforcement of the column
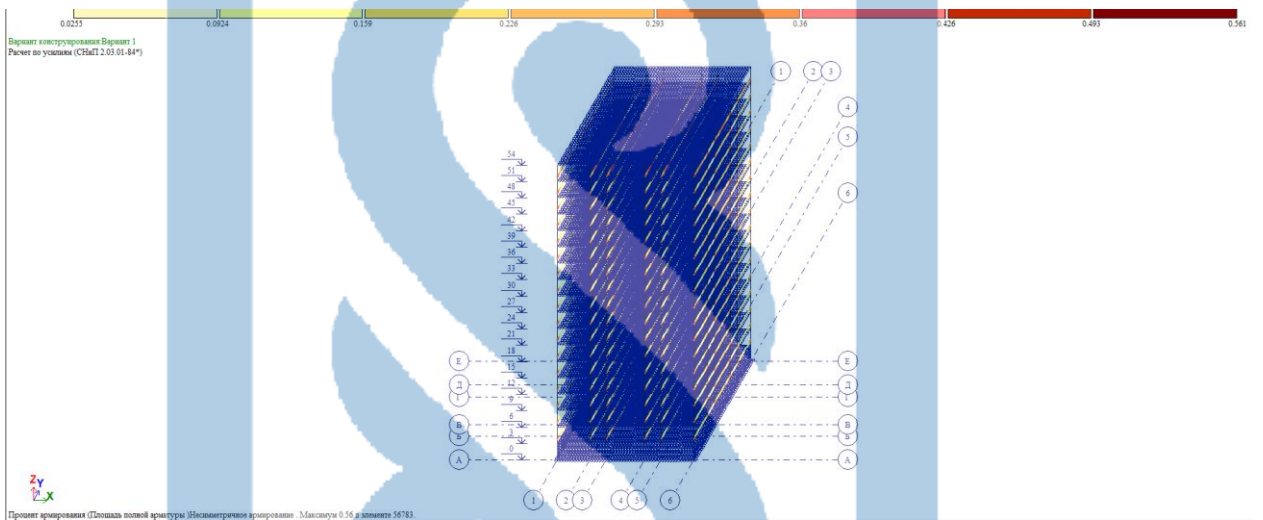
Figure C.8 - Construction. Percentage reinforcement of crossbars
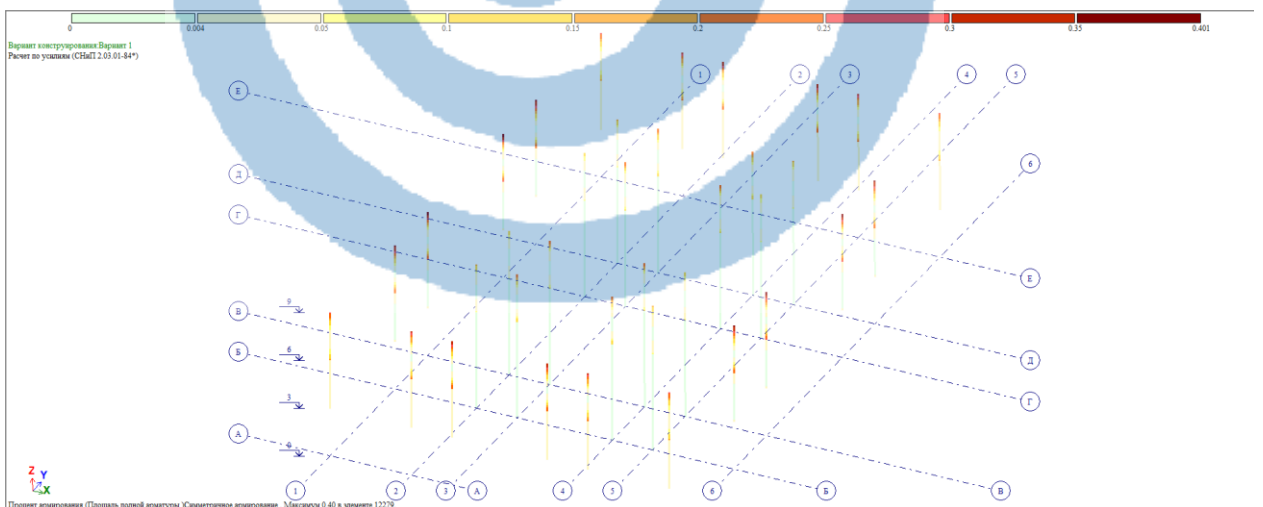
Figure C.9 - Construction. Percentage reinforcement of the column
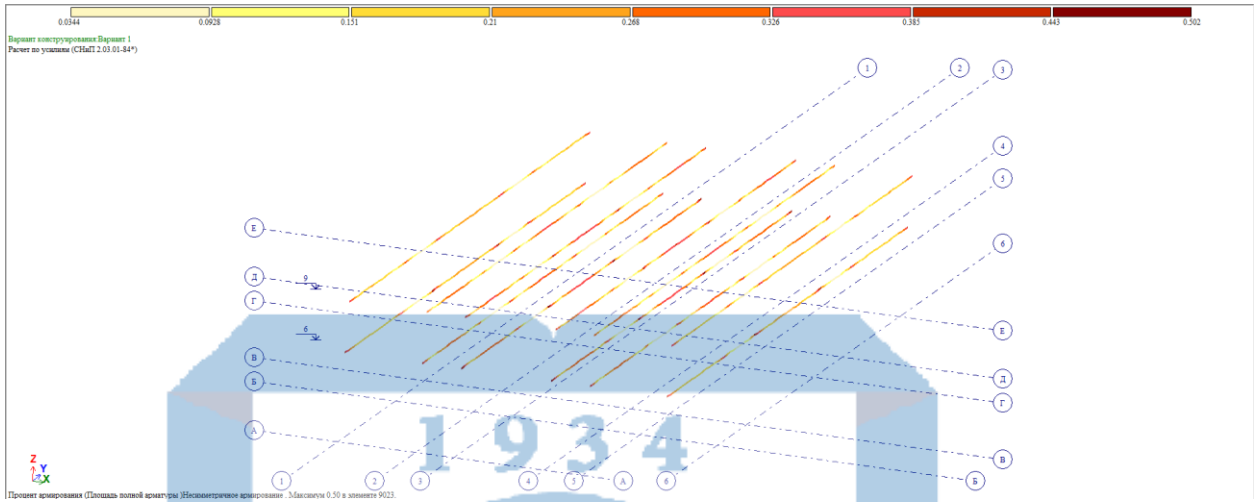
Figure C.10- Construction. Percentage reinforcement of crossbars
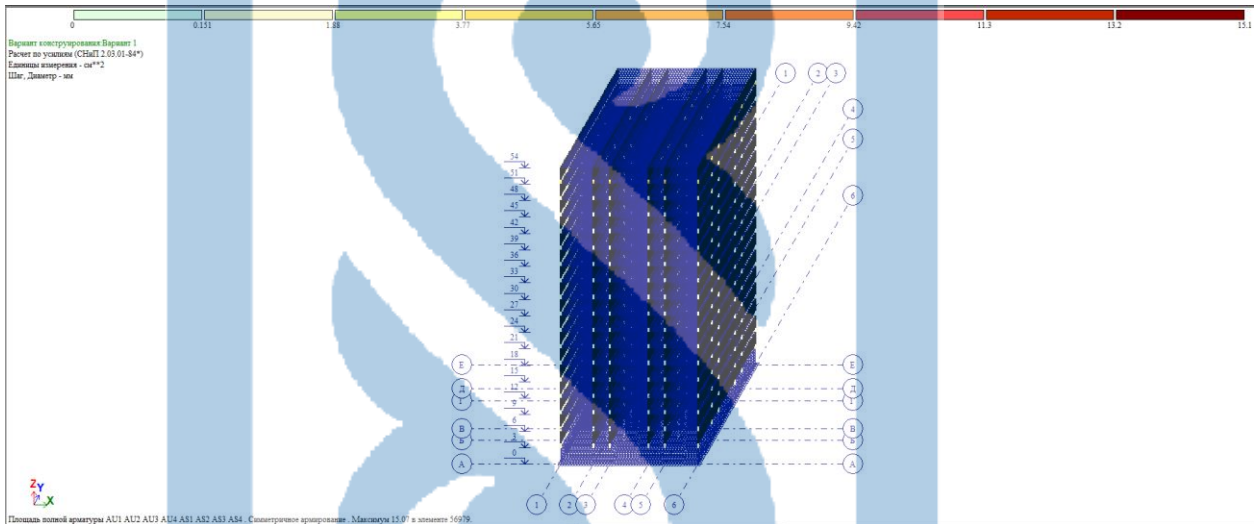
Figure C.11- Construction. Column
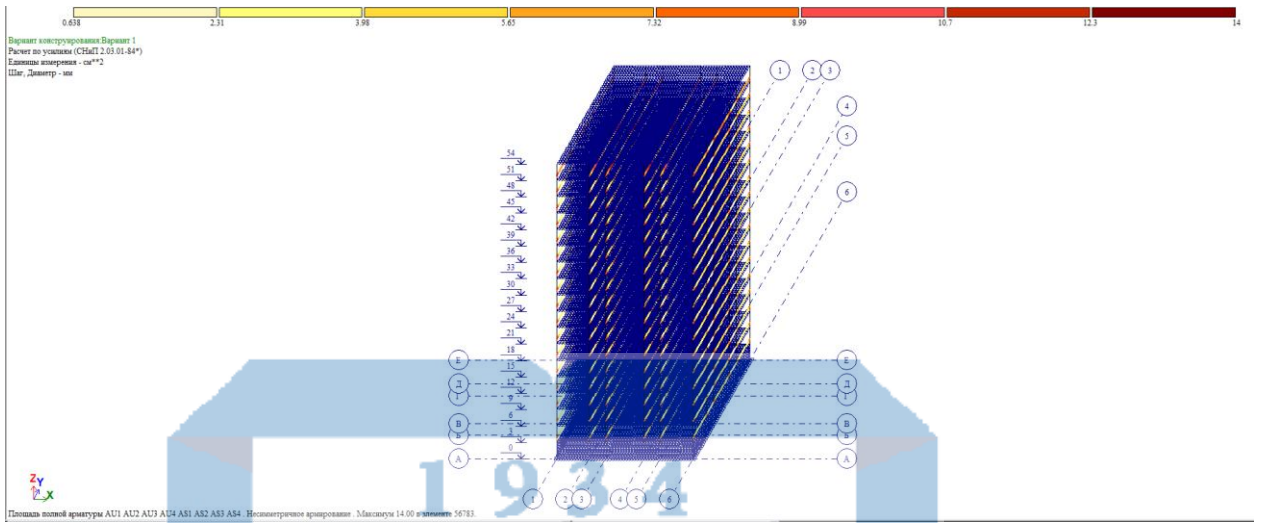
Figure C.12 - Construction. Riegel

Application D

Name of
Construction   Multi-storey dormitory. In . Taraz City

Name of the Object   Multi-story Hostel

Summary resource sheet № 02-001-001 on the building, construction, object, construction

Social work

(naming of buildings, constructions, objects, constructions)

Basis:

Local resource sheets

№ п/п	Resource codes	Name of resources	Unit measuring	amount	Cost, thousand tenge	
					per unit measuring	common
1	2	3	4	5	6	7
		Labor costs				
1	0101-0101-0140	Labor costs of construction workers (average rank 4)	person-h	31848.6474	1.24800	39747.112
2	0101-0101-0131	Labor costs of construction workers (average grade 3.1)	person-h	37144.908	1.06500	39559.327
3	0101-0101-0135	Labor costs of construction workers (average grade 3.5)	person-h	15635.9023	1.14700	17934.380
4	0101-0101-0132	Labor costs of construction workers (average grade 3.2)	person-h	6384.8736	1.08100	6902.048
5	0101-0101-0133	Labor costs of construction workers (average grade 3.3)	person-h	1446.7	1.33600	1932.791
6	0101-0101-0130	Labor costs of construction workers (average rank 3)	person-h	878.7736	1.04500	918.318
7	0101-0101-0139	Labor costs of construction workers (average grade 3.9)	person-h	380.9375	1.22900	468.172
8	0101-0101-0128	Labor costs of construction workers (average grade 2.8)	person-h	234.4027	1.00900	236.512
9	0101-0101-0138	Labor costs of construction workers (average grade 3.8)	person-h	189.0313	1.20900	228.539
10	0101-0101-0120	Затраты труда рабочих-строителей (средний разряд 2)	person-h	113.2215	0.87400	98.956
11	0101-0101-0114	Labor costs of construction workers (average grade 1.4)	person-h	0.1509	0.79000	0.119
12	0101-0102-0100	Labor costs of drivers	person-h	5277.9919	-	-

50

		Weighted average job category 3.5				
		Total PHOT:				108026.274

Machines and mechanisms by type

		Bulldozers				
1	3101-0101-0103	Bulldozers, 79 kW (108 h.p.)	Car-h	14.137652	4.70700	66.546
		Scrapers				
2	3101-0102-0104	Trailed scrapers with caterpillar tractor, 8 m3	Car-h	1.643166	8.62400	14.171

16 CPB 02-001-001

QUESTION PK 2018 Trial

1	2	3	4	5	6	7
		Crawler Excavators				
3	3101-0201-0906	Imported crawler excavators of the type " HITACHI ", 1 m3	Car-h	26.387325	14.65600	386.733
		Mortar Pumps				
4	3103-0205-0201	Mortar pumps, 1 m3 / h	Car-h	826.965	1.21300	1003.109
		Vibrators				
5	3104-0101-0201	Surface vibrator	Car-h	1276.8588	0.01500	19.153
6	3104-0101-0101	Deep vibrator	Car-h	55.450643	0.03900	2.163
		Mobile and stationary tower cranes				
7	3105-0101-0102	Tower cranes, 8 t	Car-h	3985.900736	5.93900	23672.264
8	3105-0101-0401	Concrete laying tower cranes when working on hydropower construction, 10-25 t	Car-h	29.052864	6.96900	202.469
9	3105-0101-0401	Concrete laying tower cranes when working on hydropower construction, 10-25 t	Car-h	10.87578	6.95500	75.641
		Jib cranes on the road				
10	3105-0102-0102	Truck-mounted cranes, 10 t	Car-h	56.171014	4.83700	271.699
11	3105-0102-0102	Truck-mounted cranes, 10 t	Car-h	39.7417	5.20700	206.935
12	3105-0102-0202	Cranes on the road while working on hydropower construction, 10 t	Car-h	5.06736	4.83100	24.480
13	3105-0102-0202	Cranes on the road while working on hydropower construction, 10 t	Car-h	0.71484	4.82800	3.451
		Forklift trucks				
14	3105-0501-0101	Forklift trucks, 5 t	Car-h	9.246149	4.43000	40.960
		Lifts, towers, cradles, scaffolds, etc.				
15	3105-0602-0401	Mast hoists, lifting height 50 m	Car-h	109.089	2.06800	225.596
		Other electrical equipment				
16	3106-0103-0301	Welding transformers with a rated welding current of 315-500 A	Car-h	2432.3328	0.13600	330.797

51

1	2	3	4	5	6	7
17	3106-0103-0301		Car-h	36.45684	0.12500	4.557
18	3106-0103-0501	Welding transformers with a rated welding current of 315-500 A	Car-h	21.110205	0.17600	3.715
		Direct current installations for manual arc welding				

Other equipment for welding and cutting

19	3106-0202-0501		Car-h	57.43008	0.02600	1.493
		Apparatus for gas welding and cutting				

Self-propelled road rollers

20	3201-0101-0102		Car-h	2.171326	3.75200	8.147
		Rollers road self-propelled smooth, 8 t				

Trailed road rollers

21	3201-0102-0301	Trailed road rollers on pneumatic wheels, 25 t	Car-h	0.4485	0.73600	0.330
22	3201-0102-0201	Trailed cam rollers, 8 t	Car-h	2.171326	0.11500	0.250

Bitumen boilers

23	3201-0201-0101	Mobile bitumen boiler 400l	Car-h	108.998437	0.75300	82.076
24	3201-0201-0101		Car-h	8.3398	0.72300	6.030
		Mobile bitumen boilers, 400 l				

Road marking, marking, water-washing machines

25	3201-0211-0201		Car-h	0.009222	5.58700	0.052
		Water-jetting machines, 6000 l				

1	2	3	4	5	6	7

Machines for planting plants and other

26	3206-0102-0701	Mounted brush cutters on a tractor, 79 kW (108 h.p.) with hydraulic control	Car-h	0.39123	5.62600	2.201

Dump trucks

27	3301-0101-0101		Car-h	16.8912	3.26500	55.150
		Dump trucks, 7 t				
28	3301-0101-0101	Dump trucks, 7 t	Car-h	3.21678	3.26700	10.509

On-board cars

29	3301-0201-0101		Car-h	83.286609	2.63200	219.210
		Onboard vehicles, up to 5 t				
30	3301-0201-0101		Car-h	19.593792	2.62700	51.473
		Onboard vehicles, up to 5 t				
31	3301-0201-0101		Car-h	8.3398	2.89100	24.110
		Onboard vehicles, up to 5 t				

Crawler tractors

32	3304-0101-0102		Car-h	2.619826	4.45000	11.658
		Tracked tractors, 79 kW (108 h.p.)				
33	3304-0101-0101		Car-h	0.092219	3.92200	0.362
		Crawler tractors, 59 kW (80 h.p.)				

Cutting tool

34	3403-0102-0102		Car-h	104.6178	0.04000	4.185
		Electric submersible saw, 1.4 kW				
35	3403-0102-0201	Electric chain saws	Car-h	7.2335	0.07500	0.543

Planers

36	3403-0201-0101	Electric Planers	Car-h	13.616	0.12200	1.661

		Hammers, drills, screwdrivers, wrenches, construction guns				
37	3403-0302-0101	Electric rotary hammer	Car-h	1175.7048	0.01800	21.163
38	3403-0302-0301	Electric drills	Car-h	547.998	0.01300	7.124
39	3403-0302-0701	Electric wrench	Car-h	159.4176	0.03600	5.739
40	3403-0302-0501	Construction screwdrivers	Car-h	338.7624	0.01600	5.420
41	3403-0302-0301	Electric drills	Car-h	71.6542	0.01200	0.860
		Молотки				
42	3403-0401-0101	Riveting hammers	Car-h	1135.8504	0.06000	68.151
		Total for construction machines and mechanisms: including pay for drivers				27142.336
			тenge			6480.144
		Contractor Supply Materials				
		Dense rock crushed stone for construction work				
1	2101-0201-0604	Crushed stone from dense rocks for construction works M1000, fraction 40-70 mm ST RK 1284-2004	м3	0.225	2.31200	0.520
		Dense rock gravel for construction work				
2	2101-0301-0101	Gravel for construction work M1000, fraction of 5-10 mm ST RK 1284-2004	м3	6.5625	3.84200	25.213
		General purpose concrete				
3	2102-0101-0601		м3	3015.2199	16.89700	50948.171
4	2102-0101-0101	Heavy concrete B3,5 GOST 7473-2010	м3	66.3255	11.43400	758.366
		Mortar solutions				
5	2102-0401-2808	The solution is ready masonry heavy cement-lime grade M25 GOST 28013-98	м3	336.6	13.43700	4522.894
		Finishing solutions				

1	2	3	4	5	6	7
6	2102-0402-0206	The solution is finished finishing heavy, cement-lime 1: 1: 6 GOST 28013-98	м3	231.03	17.52300	4048.339
		Ceramic brick				
7	2103-0101-0103	Brick ceramic unary ordinary corpulent brand M100, dimensions 250 mm x 120 mm x 65 mm GOST 530-2012	1000 шт.	0.37	25.99600	9.619
		Stones and blocks made of natural stone				
8	2103-0499-9903	Straight stone facing	м2	4332.0	-	-
		Fittings				
9	2105-0301-3202	Hot-rolled reinforcing steel of a periodic profile of class A-III (A400) with a diameter of 14 to 32 mm ST RK 2591-2014	т	379.4	210.42900	79836.763
10	2105-0301-3002	Hot-rolled smooth reinforcing steel, class AI (A240) with a diameter of 14 to 25 mm ST RK 2591-2014	т	45.23904	219.31500	9921.600
		Wire				

11	2105-0307-1007	Wire of low carbon light steel, general purpose, superior quality, heat treated, diameter 1.1 mm GOST 3282-74	кг	1380.672	0.11200	154.635
12	2105-0307-1007	Wire of low carbon light steel, general purpose, superior quality, heat treated, diameter 1.1 mm GOST 3282-74	Kg	349.128	0.11200	39.102
13	2105-0307-1013	Hot-rolled wire of ordinary accuracy in coils of steel SV-08A with a diameter of 6.3 mm to 6.5 mm GOST 10543-98	Kg	43.5438	0.07000	3.048
		Mesh steel wicker, woven, twisted				
14	2105-0308-1202	Woven grid with square cells of group 2 without coating of low-carbon wire GOST 3826-82	м2	3231.36	1.34800	4355.873
15	2105-0308-0360	Woven wire mesh with square cells 5 mm x 5 mm, of carbon steel of ordinary quality, uncoated, 1.6 mm in diameter GOST 3826-82	м2	423.81	-	-
		Other constructions, materials, products and details				
16	2106-0510-5501	Steel Scaffolding Parts	Т	1.887	435.70900	822.183
17	2106-0510-2602	Rods and Anchors	Т	2.0424	-	-
		Separate structural elements of buildings and structures (columns, beams, trusses, communications, crossbars, racks, etc.)				
18	2106-0801-0101	Seperate structural elements of buildings and structures with a predominance of hot-rolled profiles	Т	11.25	463.20300	5211.034
		Лесоматериалы круглые (бревна)				
19	2107-0101-9901	Round soft wood construction from 140mm to 240 mm thick from 3m to 6m from GOST	м3	13.098	31.57200	413.530
		Edged bars and bars				

1	2	3	4	5	6	7
20	2107-0201-0301	Coniferous edged beams from 4 m to 6.5 m long, from 75 mm to 150 mm wide, from 40 mm to 75 mm thick, 3 grades GOST 8486-86	м3	144.39	25.44300	3673.715
21	2107-0201-0203	Coniferous edged boards from 4 m to 6.5 m long, from 75 mm to 150 mm wide, 150 mm and more thick, 2 grades GOST 8486-86	м3	22.275	56.99700	1269.608
22	2107-0201-0201	Coniferous edged bars with a length of 4 m to 6.5 m, a width of 75 mm to 150 mm, a thickness of 40 mm to 75 mm, 2 grades GOST 8486-86	м3	7.474	47.24500	353.109
23	2107-0201-0401	Coniferous edged bars from 4 m to 6.5 m long, from 75 mm to 150 mm wide, from 40 mm to 75 mm thick, 4 grades GOST 8486-86	м3	1.53	18.35800	28.088
		Доски обрезные				

54

1	2	3	4	5	6	7
24	2107-0203-0305		м3	71.54976	47.43400	3393.891
		Coniferous edged boards up to 6.5 m long, from 75 mm to 150 mm wide, 44 mm thick or more, 3 grades GOST 8486-86				
25	2107-0203-0302		м3	19.166	47.48400	910.078
		Coniferous edged boards up to 6.5 m long, from 75 mm to 150 wide, mm from 19 mm to 22 mm thick, 3 grades GOST 8486-86				
26	2107-0203-0303		м3	11.925	47.43400	565.650
		Coniferous edged boards up to 6.5 m long, from 75 mm to 150 mm wide, 25 mm thick, 3 grades GOST 8486-86				
27	2107-0203-0204		м3	5.8752	52.85300	310.522
		Coniferous edged boards up to 6.5 m long, from 75 mm to 150 mm wide, from 32 mm to 40 mm thick, 2 grades GOST 8486-86				
28	2107-0203-0304		м3	5.92	47.48400	281.105
		Coniferous edged boards up to 6.5 m long, from 75 mm to 150 mm wide, from 32 mm to 40 mm thick, 3 grades GOST 8486-86				
		Other products				
29	2107-0510-1003		м2	11250.0	15.70700	176703.750
		The formwork is collapsible and permutable panel board, ShchD brand 1,5x0,4, size 1500x400x417 mm GOST 23477-79				
30	2107-0510-0701	Inventory racks wood-metal sliding	шт.	63.0	20.70200	1304.226
31	2107-0510-0201	Wooden scaffolding parts GOST 8242-88	м3	0.306	31.41500	9.613
		Ruberoid, glassruberoid, roofing, glassine				
32	2110-0401-0101		м2	2875.0	0.24100	692.875
		Roofing roofing material with coarse-grained powdering RKK-350B GOST				
		Waterproofing mastics				
33	2110-0501-0701		Kg	7875.0	0.13200	1039.500
		Roofing mastic for hot application MBK-G GOST 2889-80				
34	2110-0501-1404		Kg	3750.0	0.22400	840.000
		Mastic frost-resistant bituminous and oil MB-50 GOST 30693-2000				
		Lime				

1	2	3	4	5	6	7
35	2113-0102-0801		т	1.97769	31.76800	62.827
		Building quicklime lump, grade 1, GOST 9179-77				
		Gypsum				
36	2113-0103-0102	Plaster binders GOST 125-79 brand G-3	т	0.918	22.19400	20.374
		Bitumen				
37	2113-0104-0103	Bitumen oil construction GOST 6617-76 brand BN 90/10	т	0.25	140.31300	35.078
		Bolts				
38	2113-0201-0902	Болты строительные с гайками с шестигранной головкой ГОСТ 1759.0-87	т	0.05402	456.85200	24.679
		Nails				
39	2113-0209-0104		Kg	1967.4648	0.37200	731.897
		Construction nails GOST 283-75				
40	2113-0209-0104	Construction nails GOST 283-75	кг	94.72	0.27800	26.332
		Technical gases				

41	2113-0701-0401	Technical gaseous oxygen GOST 5583-78	м3	45.5328	0.26600	12.112
42	2113-0701-1002	Propane-butane, mixture technical GOST R 52087-2003	кг	14.688	0.14400	2.115

Oils

43	2113-0702-0201	Diesel engine oil M-10DM GOST 12337-84	т	0.09324	408.08400	38.050
44	2113-0702-0101	Anthracene oil GOST 11126-88	т	0.646272	44.84000	28.979

Technical fluids

45	2113-0703-0201	Kerosene for technical purposes of the grades KT-1, KT-2	т	0.375	53.70000	20.138
46	2113-0703-1405	Technical water	м3	88.88052	0.08600	7.644

Fabrics

47	2113-0803-1101	Ткань мешочная ГОСТ 30090-93	10 м2	38.71575	6.93100	268.339

Components, consumables for tools

48	2113-0812-1035	Electrodes, d = 4 mm, E42 GOST 9466-75	т	0.58752	211.19100	124.079
49	2113-0812-1035	Electrodes, d = 4 mm, E42 GOST 9466-75	т	0.052425	211.19200	11.072

Other materials

50	2113-0816-2808	Polypropylene plate holder for thermal insulation with a plastic core made of polyamide 10x200 mm	реci.	36172.2	0.02100	759.616
51	2113-0816-2806	Polypropylene plate-shaped holder of thermal insulation with a plastic core made of polyamide 10x160 mm	реci.	14468.88	0.01700	245.971
52	2113-0816-9902	Antiseptic paste	т	0.07881	605.54700	47.723
53	2113-0816-2701	Coal tar	т	0.19684	80.24400	15.795
54	2113-0816-3526	Simazin 50% wettable powder GOST 15123-78	т	0.00625	1152.69600	7.204

Paronite gaskets

55	2302-1101-1401	Gaskets paronite GOST 481-80	кг	95.304	1.42100	135.427

Petrol

56	2601-0101-0102	AI-92 gasoline	Kg	8.8128	0.19200	1.692

Shields of formwork, flooring

57	2701-0101-0104	Boards from boards, thickness 25 mm	м2	1937.25	0.89100	1726.090
58	2701-0101-0102	Flooring shields	м2	95.76576	3.30300	316.314

1	2	3	4	5	6	7
59	2701-0101-0102	Flooring shields	м2	72.8328	3.30300	240.567
60	2701-0101-0105	Boards from boards, thickness 40 mm	м2	15.3684	1.25500	19.287
		Total contractor supply materials:				357376.021
		Total				492544.631

Compiled

_____

position signature (initials, last name)

Checked

_____

position, signature (initials, surname)

57

Appendix 2
to the normative document for the determination of the
estimated cost of construction in the Republic of
Kazakhstan

Форма 4

Construction Name   Multi-storey dormitory

Object name   Multi-storey HOstel

Local budget number 02-001-001 (Local cost estimate)

on   General construction work

(name of work and costs)

Base:

Estimated cost	638407553	Tenge
Estimated salary	114506416	Tenge
Normative labor input	99535.53	person-hours / 164 = 606.92 hours / month
Machines and mechanisms	27142336	Tenge
Materials and equipment	357376020	Tenge
Customer Materials		Tenge
Customer equipment		Tenge

Compiled at current prices as of 2020.

№ п/п	Code number resource code	Name work and costs	Unit measuring	amount	Unit cost, tenge		Total cost, tenge			Overhead, tenge	Total cost with NR and SP, tenge	Labor costs of construction workers, total
					Total	exploitation of cars	Total	эксплуатация машин	материалы			
					the salary	including	the salary	including	equipment,	Estimated		

					working builders	the salary drivers	working builders	the salary drivers	furniture, inventory	profit, tenge		Labor costs of drivers, total
1	2	3	4	5	6	7	8	9	10	11	12	13
		Coif. to take into account the influence of the conditions of construction and special construction works: 1.15 - Construction of engineering networks and structures, as well as housing and civil facilities in the cramped conditions of the built-up part of cities										
1	1110-0113-0101	Section No. 1 Earthwork Fences are deaf. Poal Mounting Devices	м2 the fence	740.0	5749.87	324.51	4254900	240139	2081970	1827831	6569349	1446.70
					2611.88	132.61	1932791	98132	-	486618		48.08

1	2	3	4	5	6	7	8	9	10	11	12	13
2	1101-0207-1301	Shrubs and dense forests are dense. Cutting in soil of natural occurrence by brush cutters on a tractor 79 kW (108 l s)	га	0.09	24456.22	24456.22	2201	2201	-	508	2926	-
					-	7828.95	-	705	-	217		0.39
3	1101-0102-0320	Soils of 2 groups. Development with loading on dump trucks by HITACHI excavators with a bucket with a capacity of 1 m3	м3 soil	1875.0	204.32	199.04	383108	373203	520	45704	463117	10.74
					5.01	28.85	9385	54093	-	34305		53.50
4	1101-0101-0320	Soils of 2 groups. Development into a dump with HITACHI excavators with a bucket with a capacity of 1 m3	м3 soil	312.0	155.98	151.69	48666	47327	-	5110	58078	1.53
					4.29	18.45	1339	5758	-	4302		6.46
5	1101-		м3 soil	72.9	3244.34	-	236512		-	170289	439345	234.40

1	2	3	4	5	6	7	8	9	10	11	12	13
	0205-0202т.11.п.3.179К=1.2	Soils of 2 groups. Manual development with fastenings in trenches more than 2 m wide and pits with a cross-sectional area of up to 5 m2, depth up to 2 m [Manual refinement, cleaning of the bottom and walls with soil dumping in pits and trenches, developed by a mechanized method]			3244.34	-	236512	-	-	32544		-
6	1101-0201-1001	Ground pillows on subsiding soils. The device by layered rolling	м3soil	72.9	515.79	513.81	37602	37458	25	8266	49537	0.15
					1.64	155.82	119	11361	-	3669		7.11
7	1101-0104-0405	Trenches and pits. Filling with bulldozers with a capacity of 79 kW (108 l s) when moving soil up to 5 m.	м3 soil	312.0	20.57	20.57	6418	6418	-	1750	8821	-
					-	7.79	-	2431	-	653		1.36
8	1101-0201-0102	Priming. Sealing with trailed rollers on pneumatic wheels 25 tons. First pass along one track with a layer	м3 soil	312.0	76.42	76.42	23842	23842	-	6350	32607	-
					-	28.27	-	8819	-	2415		5.02
		Section total № 1					4993249	730588	2082515	2065808	7623780	1693.52
							2180146	181299	-	564723		121.92

СМЕТА РК 2018 Trail — - 3 - — 16_лс 02-001-001

1	2	3	4	5	6	7	8	9	10	11	12	13
9	1108-0101-0307	Section No. 2 Foundations Walls, foundations. Waterproofing lateral coating bitumen in 2 layers on the leveled surface of rubble	м2 surface	1562.5	895.51	22.94	1399231	35843	895216	439571	1985906	380.94
					299.63	2.87	468172	4485	-	147104		3.59
10	2105-	Hot-rolled reinforcing steel of a	т	68.3	210429.00	-	14372301		14372301	-	15522085	

1	2	3	4	5	6	7	8	9	10	11	12	13
	0301-3202	periodic profile of class A-III (A400) with a diameter of 14 to 32 mm ST RK 2591-2014			-	-		-	-	1149784		
												-
11	1137-0104-0204	Stationary wooden stationary simple massive blocks. Installation and disassembly when 10-25 t concrete tower cranes are supplied.	м2 sealed surface	444.0	3648.10	249.90	1619758	110957	812751	663114	2465502	653.57
					1567.68	73.53	696050	32647	-	182630		21.19
12	1106-0101-0115	Reinforced concrete foundation slabs flat. Device	м3	426.9	21508.74	1906.13	9182081	813726	7450037	998472	10994997	878.77
					2151.13	419.08	918318	178904	-	814444		141.29
13	1106-0101-0101	Concrete preparation. Device	м3	65.025	15994.07	1241.59	1040014	80734	871049	95686	1226556	100.95
					1356.88	260.20	88231	16919	-	90856		13.56
		Total section number 2					27613385	1041260	24401354	2196843	32195046	2014.23
							2170771	232955	-	2384818		179.63
		Section No. 3 Frame										
14	1106-0501-0201	Columns of civil buildings in metal formwork. Device	м3	293.76	66542.93	31647.41	19547651	9296744	5434479	6172352	27777603	4199.15
					16395.79	6693.82	4816428	1966376	-	2057600		1571.42
15	2105-0301-3202	Hot-rolled reinforcing steel of periodic profile of class A-III	т	41.1	210429.00	-	8648632		8648632		9340523	
					-	-		-		691891		-
16	1137-0104-0601	Metal mesh formwork. Installation and disassembly when 10-25 t concrete tower cranes are supplied	м2 sealed surface	2937.6	7644.45	226.67	22456330	665862	14888420	6377277	31140296	6384.87
					2349.55	36.07	6902048	105949	-	2306689		70.61

1	2	3	4	5	6	7	8	9	10	11	12	13
		Total for section No. 3					50652613	9962606	28971531	12549629	68258422	10584.02
							11718476	2072325	-	5056180		1642.03
		Section No. 4 Overlap										

61

1	2	3	4	5	6	7	8	9	10	11	12	13
17	1106-0801-0101	Bezel-less overlappings up to 200 mm thick. The device at a height of from the reference area to 6 m	м3	2250.0	36752.46	2067.30	82693031	4651417	55830773	21139660	112139306	20855.25
					9871.48	453.14	22210841	1019555	-	8306615		806.52
18	2107-0510-1003	The formwork is collapsible and permutable panel board, ShchD brand 1,5x0,4, size 1500x400x417 mm GOST 23477-79	м2	11250.0	15707.00	-	176703750		176703750	-	190840050	
					-	-		-	-	14136300		-
19	2105-0301-3202	Hot-rolled reinforcing steel of a periodic profile of class A-III (A400) with a diameter of 14 to 32 mm ST RK 2591-2014	т	270.0	210429.00	-	56815830		56815830	-	61361096	
					-	-		-	-	4545266		-
		Total section number 4					316212611	4651417	289350353	21139660	364340452	20855.25
							22210841	1019555	-	26988181		806.52
		Section No. 5 Walls										
20	1108-0701-0101	Outdoor inventory woods up to 16 m high tubular for masonry and cladding. Installation and disassembly	м2 вертикальной проекции	5100.0	736.39	2.12	3755608	10806	1033940	2525867	6783993	2545.41
					531.54	1.00	2710862	5124	-	502518		4.11
21	1108-0301-0101	Walls made of light concrete stones. Masonry without cladding with a floor height of up to 4 m	м3 кладки	3060.0	9050.69	3005.13	27695108	9195710	4557824	14762752	45854489	13090.68
					4556.07	631.49	13941574	1932353	-	3396629		1548.36
		Total section number 5					31450716	9206516	5591764	17288619	52638482	15636.09
							16652436	1937477	-	3899147		1552.47
		Section No. 6 Roofing										
22	1112-0101-0201	Four-layer flat roofs from rolled roofing materials on bitumen mastic with a protective layer of gravel on antiseptic bitumen mastic. Device	м2 кровли	625.0	3339.91	150.58	2087444	94113	1764792	220878	2492988	189.03
					365.66	18.47	228539	11546	-	184666		8.48

1	2	3	4	5	6	7	8	9	10	11	12	13
		Total for section No. 6					2087444	94113	1764792	220878	2492988	189.03

№	Code	Name	Unit	Quantity	6	7	8	9	10	11	12	13
							228539	11546	-	184666		8.48

Section No. 7 Exterior Finishing

№	Code	Name	Unit	Quantity	6	7	8	9	10	11	12	13
23	1115-0109-0101	Facades ventilated on a metal frame. Fiber cement cladding device with cradles	м2 cladding surfaces	4332.0	9491.06	52.43	41115257	227131	1141014	31835138	78786427	31848.65
					9175.23	10.81	39747112	46810	-	5836032		30.89
24	2103-0499-9903	Straight stone facing	м2	4332.0	-	-	-		-	-		-
		Total section number 7					41115257	227131	1141014	31835138	78786427	31848.65
							39747112	46810	-	5836032		30.89

Section No. 8 Interior Finishing

№	Code	Name	Unit	Quantity	6	7	8	9	10	11	12	13
25	1115-0203-0201	Walls inside buildings. Plastering with cement-lime or cement mortar on stone and concrete is simple.	м2 plastered surface	15300.0	1203.88	80.31	18419354	1228705	4072697	11276902	32071956	11436.75
					857.38	63.93	13117952	978176		-		936.05
		Total section number 8					18419354	1228705	4072697	11276902	32071956	11436.75
							13117952	978176	-	2375700		936.05
		Total estimate					492544629	27142336	357376020	98573477	638407553	94257.54
							108026273	6480143		47289447		5277.99

			Unit									
		Total estimate:	Tenge				638407553					
		including:	Tenge									
			Tenge									
		- salary of construction workers	Tenge				108026273					
		- the cost of operating the machines	Tenge				27142336					
		- including the salary of drivers	Tenge				6480143					
		- materials, products and designs	Tenge				357376020					
		- overhead	Tenge				98573477					

1	2	3	4	5	6	7	8	9	10	11	12	13
		- estimated profit	Tenge				47289447					

Compiled

_____
Position ,signature (initials ,surname)

Checked

_____

position, signature (initials,

Kargar Construction group of compaany ™

Customer

(name of company)

\

Approved / Approved

Estimated construction cost in the amount of

715016.459 thousand tenge

including: value added tax

76608.906 thousand tenge

(reference to the document on approval / approval)

"____"_____20____г.

Estimated cost of construction

Multi-storey Hpstel

(name of construction site)

Compiled at current prices as of 2020. No. of estimates and calculations other documents

№ п/п	No. of estimates and calculations other documents	Name of chapters objects, work and costs	Estimated cost, thousand tenge			Total, thousand tenge
			construction assembly works	equipment furniture and inventory	other cost	
1	2	3	4	5	6	7

		Chapter 2. The main objects of construction			
1	02-001	Многоэтажное общежитие	638407.553		638407.553
		Total Chapter 2	638407.553		638407.553
		Total chapters 1 - 7	638407.553		638407.553
		Total chapters 1 - 9	638407.553		638407.553
		Total estimated cost	638407.553		638407.553
2		Value Added Tax (VAT) - 12%		76608.906	76608.906
	Code of the republic of Kazakhstan				
	99-IV Artil268	**Total estimated**	638407.553	76608.906	715016.459

Project Manager

Elevation 1

Elevation 2

1934

Level 19 54000
Level 18 51000
Level 17 48000
Level 16 45000
Level 15 42000
Level 14 39000
Level 13 36000
Level 12 33000
Level 11 30000
Level 10 27000
Level 9 24000
Level 8 21000
Level 7 18000
Level 6 15000
Level 5 12000
Level 4 9000
Level 3 6000
Level 2 3000
Level 1 0
Level 0 -3000

-27479.2298

F*1 F E D C B A A*1

1*1 1 2 3 4 5 5* 5*1

ChanNum.par.List	№doc	Sign	date	KAZNITU-5B072900-Civil Engineering-29-05-2020-DP			
				Multi-story Hostel in Taraz			
Dean of kaf K.A. Akmalayu							
N. controller Kozyukova N.V.				Archetecture Part	stage	List	Lists
Supervisor Kozyukova N.V.					CW	1	8
Consultant Kozyukova N.V.							
Created Babur Kargar				Elevation1 and 2	department of construction and construction materials		

First floor plan
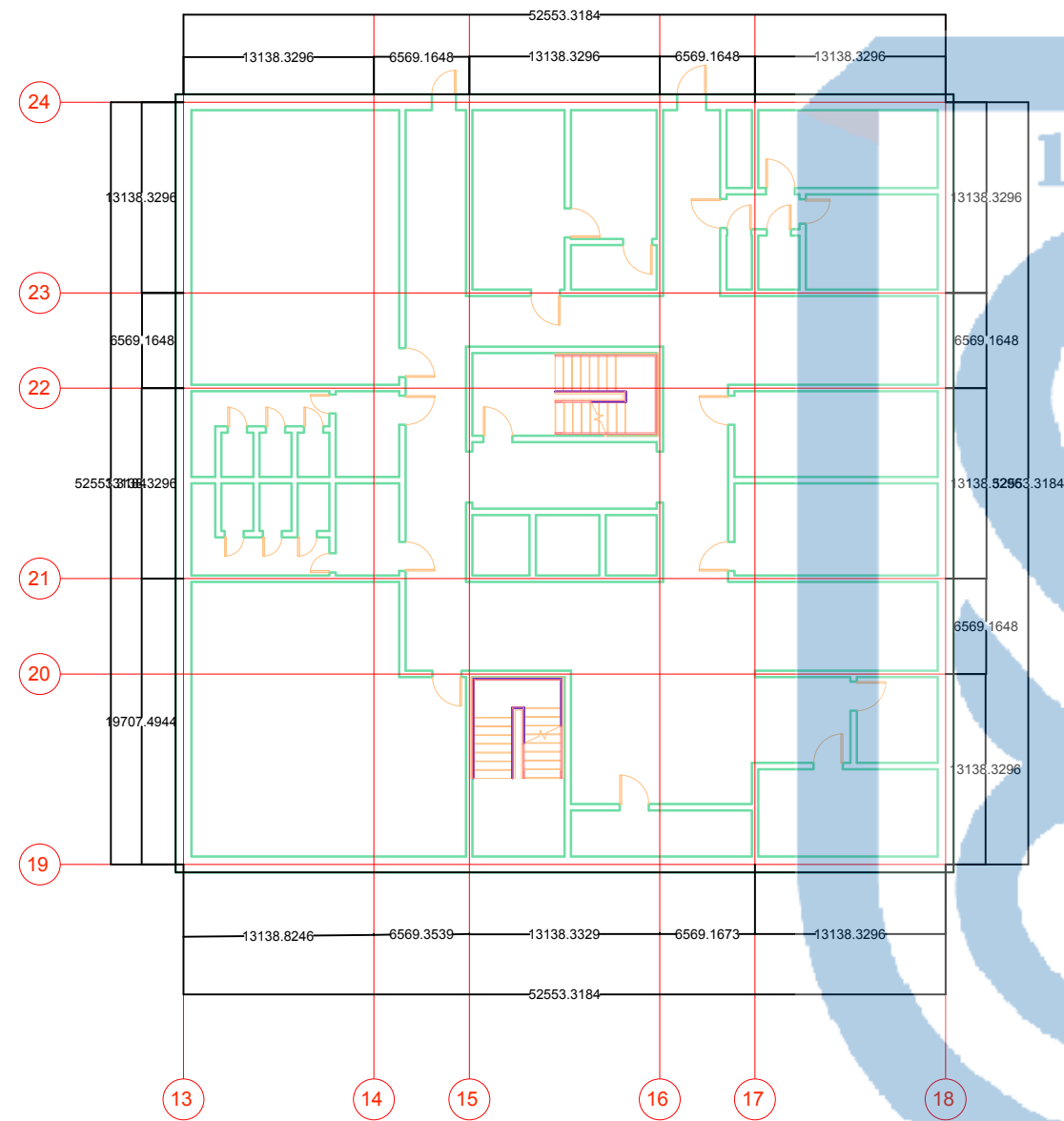
Second floor plan

					KAZNITU-5B072900-Civil Engineering-29-05-2020-DP			
					Multi—story hostel in Taraz			
Chan	Num.par.List	№doc	Sign	date				
Dean of kaf	K.A. Akmalayul.				Archetecture Part	stage	List	Lists
N. controller	Kozyukova N.V.					CW	2	8
Supervisor	Kozyukova N.V.							
Consultant	Kozyukova N.V.				First and Second floor plans	*department of construction and construction materials*		
Created	Babur Kargar							

Section 1

Section 2
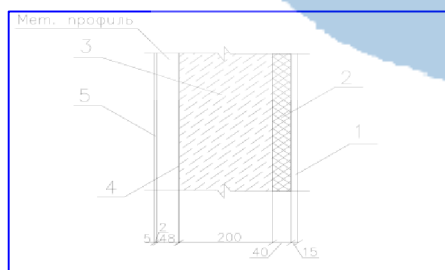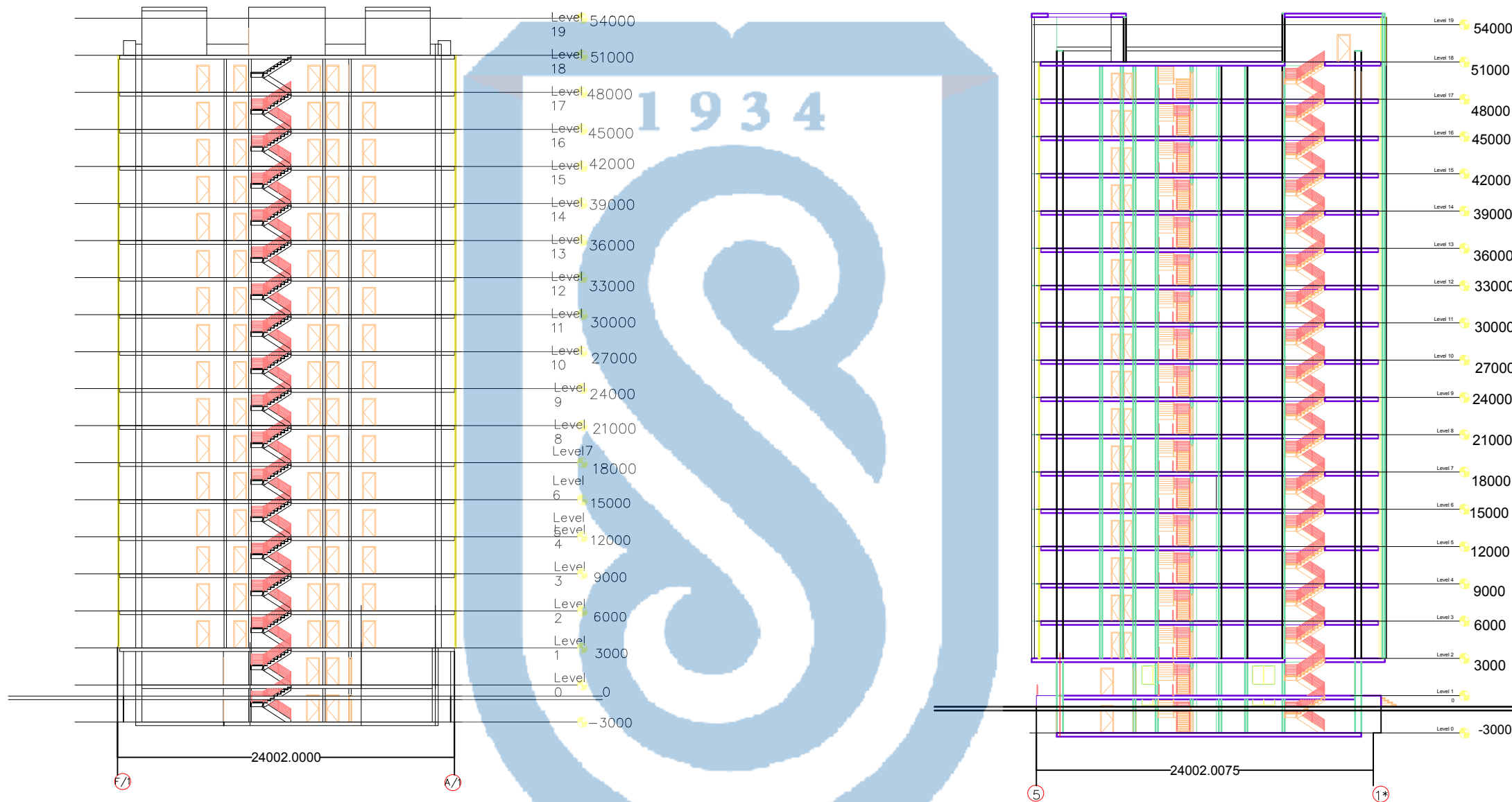
Level 19	54000
Level 18	51000
Level 17	48000
Level 16	45000
Level 15	42000
Level 14	39000
Level 13	36000
Level 12	33000
Level 11	30000
Level 10	27000
Level 9	24000
Level 8	21000
Level 7	18000
Level 6	15000
Level 5	12000
Level 4	9000
Level 3	6000
Level 2	3000
Level 1	0
Level 0	-3000

24002.0000

24002.0075

Мет. профиль

200 40 10

| Chan	Num.par. List	№ doc	Sign	date			
					Archetecture Part		
Dean of kaf	K.A. Akmalayu					stage	List	Lists
N. controller	Kozyukova N.V.					CW	3	8
Supervisor	Kozyukova N.V.							
Consultant	Kozyukova N.V.							
Created	Babur Kargar				Section of the Building	department of construction and construction materials	

Slab contraction joints should intersect at the openings for columns. +3,000
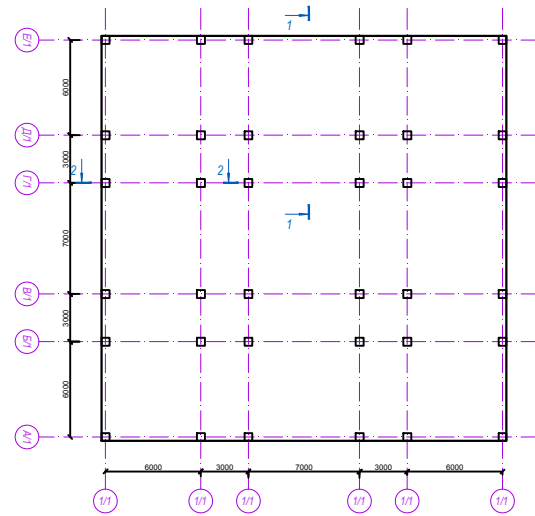
Scheme of reinforcement of slabs on the floor at otm. +3,000 below the threshold
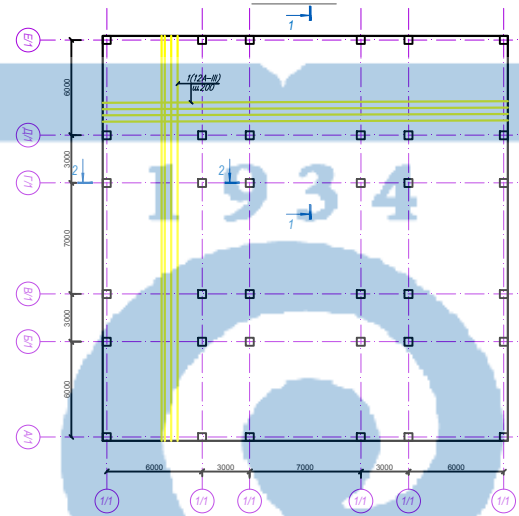
Scheme of reinforcement of slabs on the floor at otm. +3,000 on the upper edge
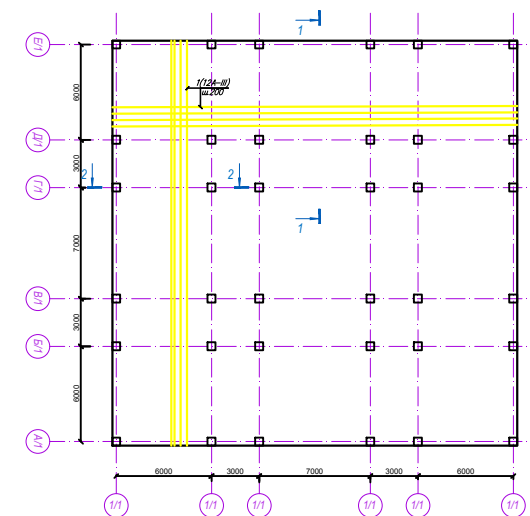
Additional reinforcement of the floor slabs on the otm. +3,000 on the lower and upper limits

2-2

3
Mounting element

+3.000

1
ш. 200

Slab contraction joints should intersect at the openings for columns
Ø12A-III (поз. 1) с разм. яч. 200x200 мм

1 - 1

Монтажный элемент

1
ш. 200

Slab contraction joints should intersect at the openings for columns
Ø12A-III с разм. яч. 200x200 мм

+3,000

1
ш. 200

Slab contraction joints should intersect at the openings for columns
Ø12A-III с разм. яч. 200x200 мм
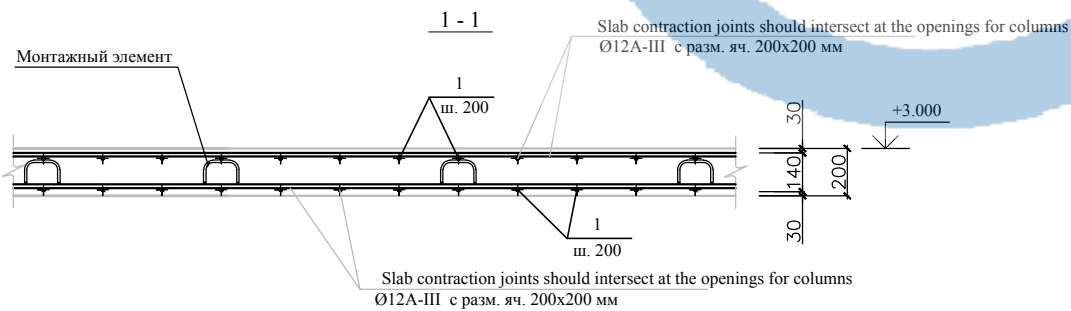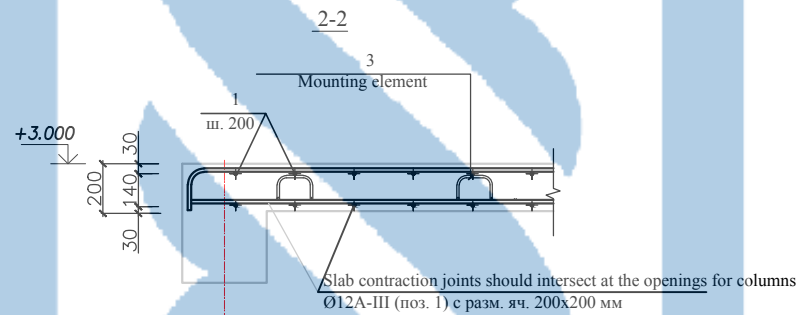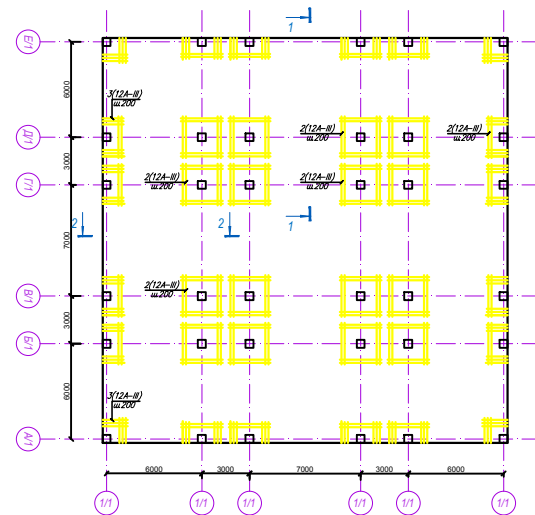
Slab contraction joints should intersect at +12.100

Pose..	Meaning	Name			Col.	Mass ед,кг	Note
		Plate on otm +12.100				1634.4	кг
1	GOST P 5781-82*	ø 12	A-III	L=6875	пм	0.888	6105 кг
2	GOST P 5781-82*	ø 12	A-III	2400	480	2.131	1022.88 кг
3	GOST P 5781-82*	ø 12	A-III	1200	240	1.065	255.6 кг
4	GOST P 5781-82*	ø 8	A-I	600	4375	0.237	1036.875 кг
		Бетон B25			132	м3	

Expenditure statement became steel, kg

Марка элемента	Rebar products											
	Armature class											
	A-I				A-III							
	GOST 5781-82*				GOST5781-82*							
	Ø6	Ø8	Ø10	Итого	Ø12	Ø14	Ø16	Ø20	Ø22	Ø25	Ø32	THIS	Total
stove per. on otm. +12.100	0	1036.875	0	1036.8	7383	0	0	0	0	0	0	7383	8420.35

KAZNITU-5B072900-Civil Engineering-29-05-2020-DP							
					Multi-story hostel in Taraz		
Chan,Num	par.List doc	Sigh	date				
Dean of kaf	A.Akmalayul			Design Section		stage	list	lists
N.controller	Kozyukova N.\					cw	4	8
Supervisor	Kozyukova N.\							
Consultant	Kozyukova N.\			Slab Plan		Department of construction and construction materials		
Created	Babur Kargar							

The scheme of the pit M 1:200

Exit from the pit

Excavator EO-3323A

Dump truck
Kamaz 5510

The scheme of digging a pit with an excavator

1 - 1 section
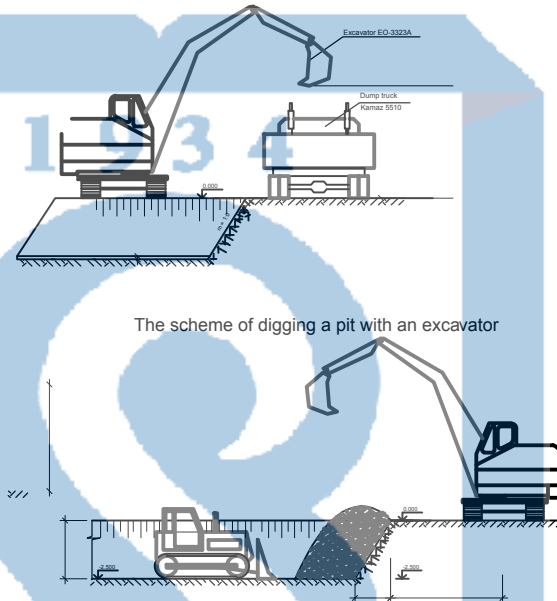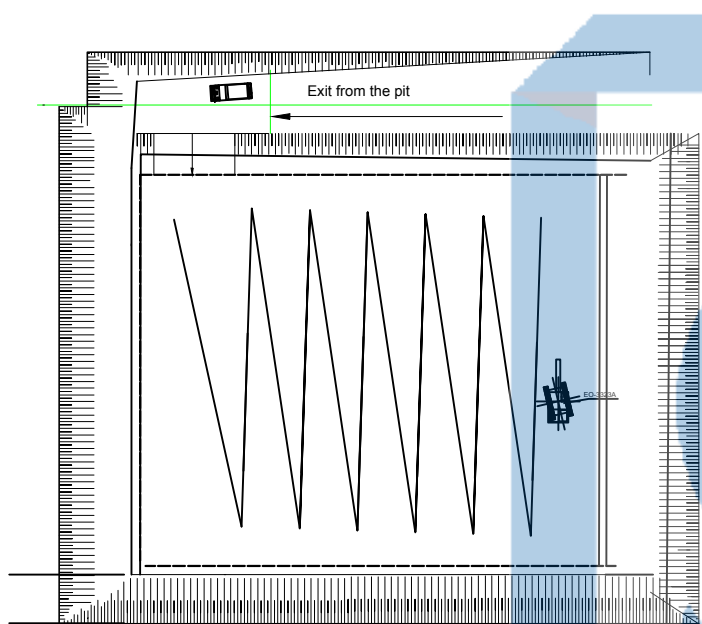
General transport and mechanism sheet

N	Name	тип,марка	Саны
1	Stationary tower crane, boom 50 m	QTZ125	1
2	Mine lift	ПиГЛ-Т300	1
3	Bending device	ZTX-K500	1
4	Rebar cutting machine	KQW-SI	1
5	Deep vibrator	DV-900	2
6	Heating transformer	TC-200	2
7	Welding transformer	TC - 500	2
8	Surface vibrator	B-0.16	3
9	Electrocompressorr	EI-125M	1
10	Generator	T3-500	1
11	Cable box for 8 compartments		1
12	Truck crane	СКГ63/100	1
13	The concrete pump is stationary	ISUZI-KQ	1
14	Electrocompressor	BOSH	1
15	Onboard transport 14 tons..	КАМАЗ – 514	2
16	Dump truck 15t.т.	КАМАЗ – 65115	3
17	Auto concrete mixer, KAMAZ - 53213	СБ –126	2
18	Pneumatic smoothing	К - 701	1
19	Excavator-back shovel, shovel capacity 0.65 m3	Э - 505	1
20	Bulldozer	Д - 170	1

Schedule

KAZNITU-5B072900-Civil Engineering-29-05-2020-DP					
Multi-story hostel in Taraz					
Chan,Num	par.List doc	Sigh	date		
Dean of kaf	A.Akmalayul			The Technological Part of the construction	stage
N.controller	Kozyukova N.				cw
Supervisor	Kozyukova N.				list
Consultant	Kozyukova N.				5
Created	Babur Kargar			The scheme of the pit M	lists
					8

Department of construction and construction materials

Master Plan

Terex-Comedil

1000.0000

Reinforcement looping scheme

L/4 L/2 L/4

Hinging scheme of a rotary hopper

90° кем емем

Scheme of installation on the top

1 6

4

1934
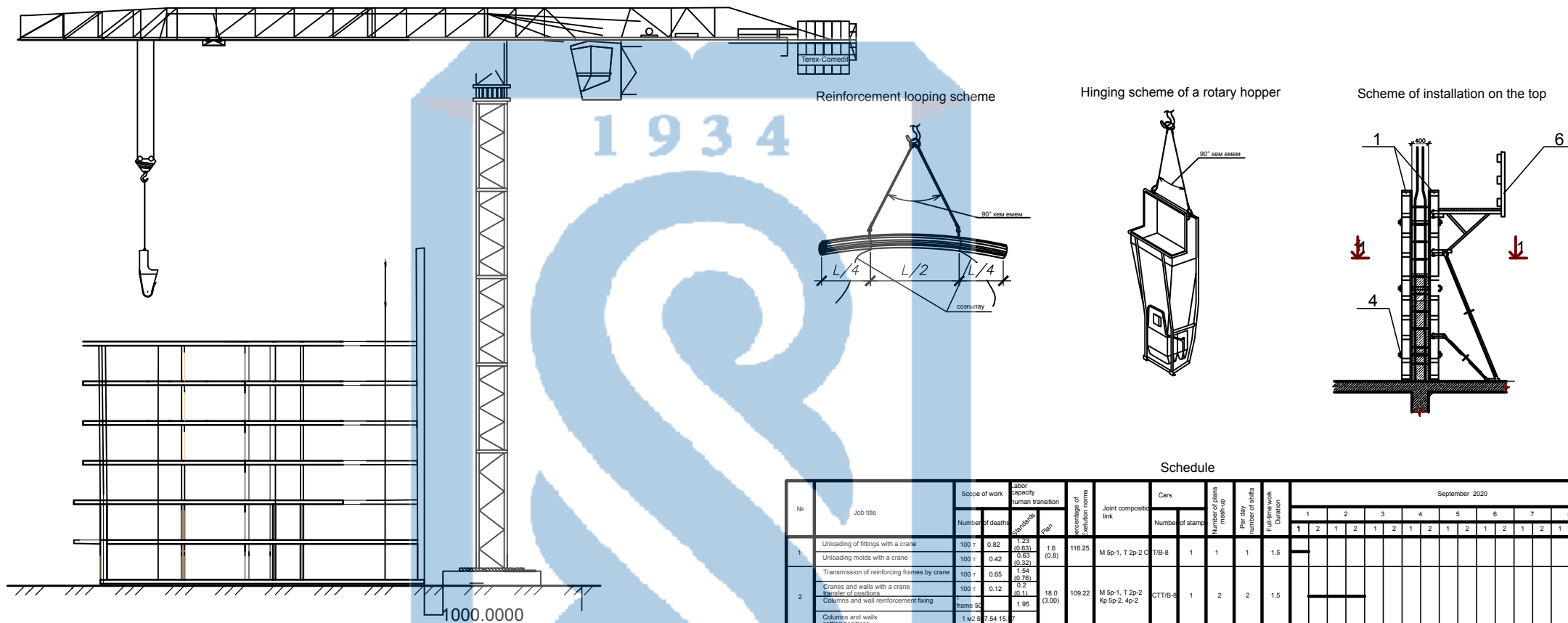
Schedule

№	Job title	Scope of work		Labor capacity / Human transition			Percentage of isolation norms	Joint composition link	Cars		Number of plans make-up	Per day number of shifts	Full-time work Duration	September 2020
		Number of deaths	Quantities		Plan				Number of stamps					
1	Unloading of fittings with a crane	100 т	0.82	1.23 (0.63)	1.6 (0.8)	116.25	M 5p-1, T 2p-2	CTT/B-8		1	1	1.5	
	Unloading molds with a crane	100 т	0.42	0.63 (0.32)									
2	Transmission of reinforcing frames by crane	100 т	0.65	1.54 (0.76)									
	Cranes and walls with a crane transfer of positions	100 т	0.12	0.2 (0.1)	18.0 (3.00)	109.22	M 5p-1, T 2p-2 Kp 5p-2, 4p-2	CTT/B-8		2	2	1.5	
	Columns and wall reinforcement fixing	frame 50		1.95									
	Columns and walls setting positions	1 м3	59.03	7.54 15.									
3	Acceptance of wall formations and FIG	1 м3	59.03	0.83 (0.35)	11.00 (2.00)	113.36	M 5p-1, Б 2p-1 Kp 5p-2, 4p-2	CTT/B-8		2	1	1.0	
	Forming of concrete mix	1 м3	59.03	11.64									
4	Concrete care	100 м2	39.02	4.2	4.0		Kp 2p-1			2	2.0		
5	Columns and walls disassembly of molds	1 м3	7.54	6.72	6.0	112.00	Kp 5p-2, 4p-2 M 5p-1, T 2p-2	CTT/B-8		1.5	2	1.5	
6	Transmission of ceilings with a crane	100 т	0.3	0.49 (0.24)	(4.00) 18.00	109.39	Kp 5p-2, 4p-2 M 5p-1, T 2p-2	CTT/B-8		3	2	2	
	Setting the ceilings	1 м2 6	5.33 19.										
7	Provision of fittings for ceilings	100 т	0.17	0.4 (0.2)	18.00 (3.00)	109.46	Kp 5p-2, 4p-2 M 5p-1, T 2p-2	CTT/B-8		3	2	1.5	
	Installation and fastening of fittings	1 т	16.8	1.97									
8	Acceptance of concrete mix and ceilings transfer to molds	1 м3	139.67	(0.84)	10.0 (2.0)	119.7	M 5p-1, Б 2p-1 Kp 5p-2, 4p-2	CTT/B-8		2	1		
	Formwork of concrete mix ceilings Puring	1 м3	19.67	10.00									
9	Concrete care	100 м2	2.98	0.12	4.0		Kp 2p-1			2	2.0		
10	Disassembly of ceilings	1 м2	698.33	3.62	3.0	112.29	Kp 5p-2, 4p-2			2	1.5		
		Total:	102.17 (77.65)	94 (24.8)	108.4								

September 2020: 1 2 3 4 5 6 7 8 9

Жұмысшылар қозғалысының эпюрасы

Technical and economic indicators

№	Name of indicators	Death-One	Number
1	Volume of concrete to be laid	м3	198.7
2	Duration of work	Shif	18
3	Labor intensity of work	Person-shifts	94
4	Production per person-shift	м3/person-shift	2.11
5	Salary per person-shift	тг/ person- shift	1559.2

2-2   3-3

Inventory of molding elements

№	Names	NU
1	Formwork board 600x3000	4
2	Formwork board 450x3000	2
3	Disassemble the stand	2
4	Shkvoren	6
5	Wedge castle	8
6	Mattresses	1

COMEDIL CTT / B-8 crane load characteristics

8.0
6.67
5.6

Load capacity

0 5 10 15 20 25 30 35 40

Arrow length, m
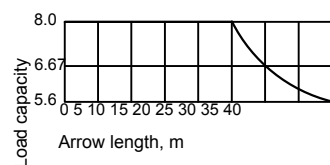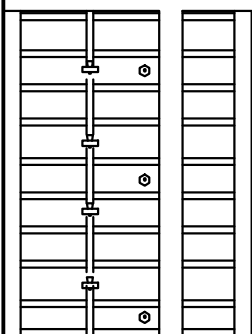
KAZNITU-5B072900-Civil Engineering-29-05-2020-DP

Multi-story Hoste in Taraz

Chan	Num.par.List	doc	Sign	date
Dean of kaf	K.A. Akmalayu			
N. controller	Kozyukova N.V.			
Supervisor	Kozyukova N.V.			
Consultant	Kozyukova N.V.			
Created	Babur Kargar			

The Technological Part of the construction

stage	List	Lists
CW	6	8

Cran Master Plan

department of construction and construction materials

General Master plan
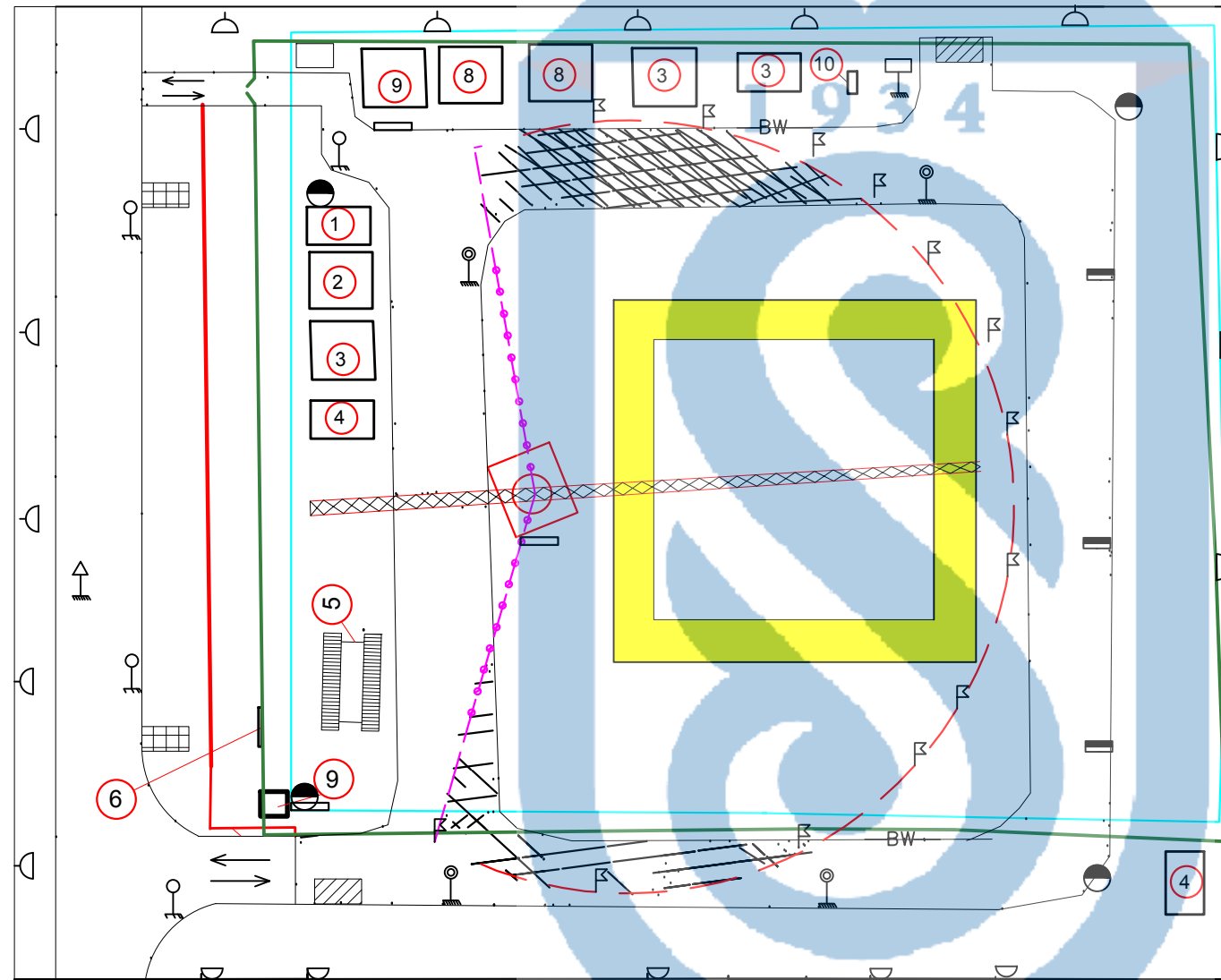
Explication of temporary buildings and structur

N	Names of buildings and structures	өлшем бірлігі	саны	ауданы м2.	типтік жоспар	тип ғимарат.
1	Place of leadership	дана	1	10	УТС 420-01-3	контейнернлі
2	Contact point	дана	1	10	УТС 420-01-3	контейнернлі
3	Workers' car	дана	3	10	420-04-3	контейнернлі
4	Unheated closed warehouse	дана	1	12	420-13-3	контейнернлі
5	Tire washing station	дн/м2	1	20	—	Малтатас төселінген
6	Fire-fighting equipment	дана	2	—	—	Өрттік инвентармен
7	Temporary parking	дн/м2	—	70	—	—
8	Open storage areas	дн/м2	3	115	—	инвентармен
9	Security room		2	10		Пластикті жылытылған
10	The toilet is for three people		1			

## Technical and economic indicator

N	Name of indicators	Өлшем бірлігі	Саны
1	Construction site area	м²	4801,55
2	Closed storage area	м²	68,88
3	Open storage area	м²	206,4
4	The length of the temporary fence	м	281,5
5	The length of the lighting line	п.м.	320
6	The length of the temporary water supply	п.м.	67,5
7	The length of the fire water pipe	п.м.	115
9	K1 (area utilization factor)	%	14,7
10	Construction area	м²	705

Symbols

- Construction site boundary
- Temporary fencing
- The old construction site the boundary of the fence
- Cart movement on the crane shaft border

Symbols

- Object passport
- Unauthorized access is prohibited construction mark
- Speed limit sign
- Parking sign
- The tense area of the road
- External storage
- BW — Temporary electrical system

- W — DC power system
- B — Transformer station
- Distribution paddle
- Fire hydrant
- Light bulb
- Fire protection
- Dangerous area of crane operation

KAZNITU-5B072900-Civil Engineering-29-05-2020-DP

Multi-story hostel in Taraz

Chan,Num	par.List doc	Sigh	date	
Dean of kaf	A.Akmalayuli			
N.controller	Kozyukova N.V.			
Supervisor	Kozyukova N.V.			
Consultant	Kozyukova N.V.			
Created	Babur Kargac			

The Technological Part of the construction	stage	list	lists
	cw	7	8

General Master Plan

Department of construction and construction materials

Schedule

Serial number	Construction of the processor Names	Number of shifts	Labor costs			In a day number of shifts	According to ENIR link structure	Duration of work	Months					
			Workload number	Mash. shifs	Human sam number per day				May	June	Julay	August	September	octobar
1	2	3	4	5	6	7	8	9						
1	Earthworks	1000м3	15.67	24	46.5	1	2	23						
2	Installation of cast-in-place foundation works	1 м3	913	36.74	207	2	10	11						
3	Foundry works	1 м3	195	35.67	184.33	2	11	9						
4	T / b with ingot hardness core wall works	1 м3	1050	154	496	2	11	28						
5	Cast beams	1 м3	50	5.43	42	2	11	2						
6	Ceiling and ceiling works.Normal installation	1 м3	1211	145	439	2	11	20						
7	Cast ladder works	1 м3	104	26.63	101	2	11	5						
8	Walls and partitions of wall works	1 м3	650	156	650	2	10	26						
9	Wall plastering	1	6750	47	134	2	5	13						
10	Cement mortar and ceramic tile works	1 м2	3250	79	205	2	5	20						
11	Ventilation and heating		15%		200	2	5	20						
12	Water supply and sewerage		15%		200	2	5	20						
13	Wiring		10%		140	2	5	14						
14	Gas supply works		4%		60	2	5	6						
15	Other works		5%		70	2	5	7						
16	Improvement		5%		70	2	5	7						

Workforce schedule

The maximum number of employees is N max = 52 people
Mid- workers an average of N = Q / t = 4775/120 = 40people
Coefficient of uniform flow of labor
K= Nmax/Nopr=52/40=1.3<1.5

Technical and economic indicators
Construction time - 180 days
The total labor intensity in construction is 3245 people
The coefficient of uniform movement of labor K = 1.3<1.5

Chan,Num	par.List doc	Sigh	date	KAZNITU-5B072900-Civil Engineering-29-05-2020-DP			
				"Multi-story hostel" in Taraz			
Dean of kaf	A.Akmalayuli			The Technological Part of the construction	stage	list	lists
N.controller	Kozyukova N.\				cw	8	8
Supervisor	Kozyukova N.\						
Consultant	Kozyukova N.\			Schedule Workforce schedule	Department of construction and construction materials		
Created	Babur Kargar						

Протокол анализа Отчета подобия Научным руководителем

Заявляю, что я ознакомился(-ась) с Полным отчетом подобия, который был сгенерирован Системой выявления и предотвращения плагиата в отношении работы:

Автор: Каргар Бабур

Название: Multi-storey hostel in Taraz

Координатор: Надежда Козюкова

Коэффициент подобия 1:3,9

Коэффициент подобия 2:0,6

Замена букв:28

Интервалы:0

Микропробелы:0

Белые знаки: 0

После анализа Отчета подобия констатирую следующее:

☐ обнаруженные в работе заимствования являются добросовестными и не обладают признаками плагиата. В связи с чем, признаю работу самостоятельной и допускаю ее к защите;

☐ обнаруженные в работе заимствования не обладают признаками плагиата, но их чрезмерное количество вызывает сомнения в отношении ценности работы по существу и отсутствием самостоятельности ее автора. В связи с чем, работа должна быть вновь отредактирована с целью ограничения заимствований;

☐ обнаруженные в работе заимствования являются недобросовестными и обладают признаками плагиата, или в ней содержатся преднамеренные искажения текста, указывающие на попытки сокрытия недобросовестных заимствований. В связи с чем, не допускаю работу к защите.

Обоснование:

Обнаруженные в работе заимствования являются добросовестными,и не обладают признаками плагиата. В связи с чем,признаю работу самлстоятельной и допускаю ее к защите.

……………………… …………………………………………

Дата *Подпись Научного руководителя*

Протокол анализа Отчета подобия

заведующего кафедрой / начальника структурного подразделения

Заведующий кафедрой / начальник структурного подразделения заявляет, что ознакомился(-ась) с Полным отчетом подобия, который был сгенерирован Системой выявления и предотвращения плагиата в отношении работы:

Автор: Каргар Бабур

Название: Multi-storey hostel in Taraz

Координатор: Надежда Козюкова

Коэффициент подобия 1:3,9

Коэффициент подобия 2:0,6

Замена букв:28

Интервалы:0

Микропробелы:0

Белые знаки:0

После анализа отчета подобия заведующий кафедрой / начальник структурного подразделения констатирует следующее:

☐ обнаруженные в работе заимствования являются добросовестными и не обладают признаками плагиата. В связи с чем, работа признается самостоятельной и допускается к защите;
☐ обнаруженные в работе заимствования не обладают признаками плагиата, но их чрезмерное количество вызывает сомнения в отношении ценности работы по существу и отсутствием самостоятельности ее автора. В связи с чем, работа должна быть вновь отредактирована с целью ограничения заимствований;
☐ обнаруженные в работе заимствования являются недобросовестными и обладают признаками плагиата, или в ней содержатся преднамеренные искажения текста, указывающие на попытки сокрытия недобросовестных заимствований. В связи с чем, работа не допускается к защите.

Обоснование:

Обнаруженные в работе заимствования являются добросовестными

и не обладают признаками плагиата.

В связи с чем, работа признается самостоятельной и допускается к защите;

.... ~~~~ ....

Дата   Подпись заведующего кафедрой /

                                                                 начальника структурного подразделения

Окончательное решение в отношении допуска к защите, включая обоснование:

Работа признается самостоятельной и допускается к защите.

Обнаруженные в работе заимствования являются добросовестными

и не обладают признаками плагиата.

....

Дата   *Подпись заведующего кафедрой /*

начальника структурного подразделения

RESPONSE

OF THE SUPERVISOR
for the graduation project

Kargar Babur
5B072900-Civil Engineering

Topic: "Multi-storey hostel in Taraz"

Graduation project of Kargar Babur made in accordance with the requirements and includes all the necessary sections of the diploma project. In the Architectural part, facades, sections, floor plans and connection nodes of structures are presented. The thermotechnical calculation of the wall fencing was made.

In the constructive section, the calculation of the floor slab, frames on the LIRA CAD program is performed. In the technological part, technological maps for earthworks and stone works have been developed.

The economic part of the project is calculated according to the program of SMETA of the RK. All drawings are made in Autocad.

In general, the graduation project was performed at a good level, the student Kargar Babur showed good knowledge both during training and during the implementation of the project. The work deserves a good grade.

Supervisor
Master of technical science, lecturer

_____ Kozyukova N.V.

«25» _____ 05 _____ 2020 г.