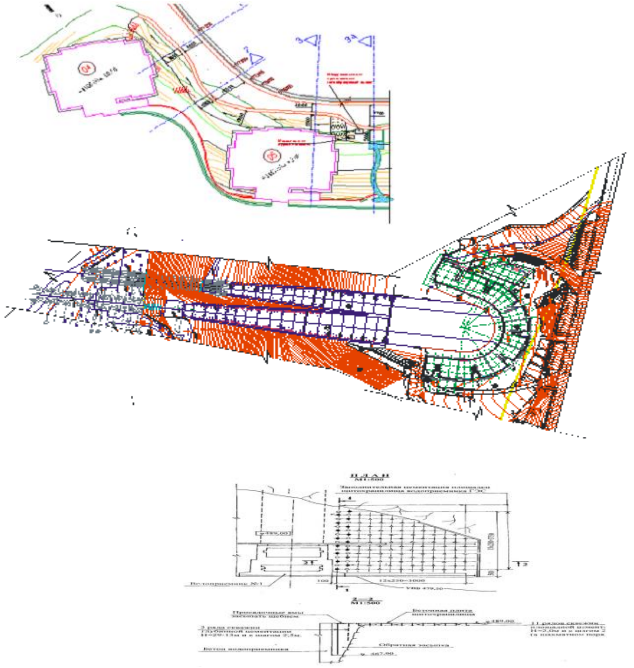
Improving the technology of construction production and ensuring the stability of the Foundation of buildings and structures

GEOTECHNICAL ENGINEERING - GEOMECHANICS - TECHNOLOGY

Scientific adviser:
Doctor of Technical Sciences, Academic Professor
Bisembayev Erik Turarovich
Group members:
Khomyakov Vitaly Anatolyevich, Doctor of Technical Sciences, Academic Professor
Nurzhanov Serik Ashirovich, Assoc. prof., Ph.D.
Kulmanov Khalizhan Serikovich, Assoc. prof., Ph.D.

Soil fixing technology developed foothill zone of Almaty city by silicatization
The practice of fixing subsidence soils of piedmont territory (on the slope of the Butakovsky gorge)
Technology developed stability of steep slopes Technology for ensuring the stability of the slope of the Almaty Ski Jump Complex.
The technological process for the installation of rammed piles and supporting structures of the springboard provides for construction and installation work on a steeply sloping slope.
Improved technology for ensuring the stability of the base of structures with cementing
Technology for strengthening and ensuring the stability of coasts and sides Kapchagai
hydroelectric dam was developed by cementation Institute of Seismology with the
participation of scientists of KazGASA ..
Improved technology for creating an anti-filtration curtain by silicatization
The technology of soil consolidation and the device of an anti-filter curtain the foundations of the Buroldai Glass Factory, by silicatization and grouting.



Contact details: kazgasa@mail.ru, erik.bessimbaev@mail.ru

Energy-saving and ecological aspects of engineering networks and systems

Scientific adviser:
Doctor of Technical Sciences, Academic Professor
Toybaev Kenzhekhan Duisebaevich
Group members:
Dzhataeva Dilyara K. - Assoc. prof., Ph.D.
Taubaldieva Aksaule S.- Assoc. prof., Ph.D.
Dzhumadilova Saule Zh. -Master of Science
Kasabekova Gulbanu T. - Master of Science
Makashev Ernar B. - Assoc. prof., Doctor PhD
Auelbekov Seilkhan Sh.- Assoc. prof., Ph.D.
Aldabergenova Gaziza B. - Master of Science
Mukanova Togzhan B. - engineer

An optimal water balance scheme and an integrated environment friendly technology re-circulating water supply to light industry enterprises **have been developed** .

A technology for creating environment friendly re-circulating water supply, **developed** jointly with the Kazmekhanobr, is proposed.

Scientifically based, environment friendly regulatory requirements **have been developed** for the quality of re-circulating water supply to light industry enterprises.

The energy efficiency of residential buildings at individual sites of the IEC and other organizations **have been investigated**

Second stage development plans:

- an algorithm and a special program for calculating the composition of recycled water;
- mathematical, functional models of optimization and management of integrated cleaning technology;
- establishing the composition of water : dyes, their mixtures and some textile auxiliary substances for discharge into the city sewage system;
- calculation of the impact of wastewater pollution on water bodies by light industry enterprises;
- alternative energy sources;
- technologies for the utilization of sediments and wastewater treatment facilities.

Contact details: kazgasa@mail.ru kenzh.t@mail.ru

Improving the designs and operation systems of construction hoisting-and-transport machinery and equipment

Research supervisor:
Maulenov Zhumadilda Karbyshevich
Doctor of technical sciences,
professor of KazGASA IEC

- Designed excavator bucket with removable tips;

- A design of a plow type scraper bucket was developed;

- Design of reusable knives for earth moving machines

Contact details:: kazgasa@mail.ru maulenovali@mail.ru

Methods for calculating structures based on anisotropic foundations Statics. Base models. Design schemes of structures

Scientific head of the direction:
Dyussembayev Izim Nasievich
- doctor of technical Sciences, Professor of the HAC.
Group memers: Doctoral student: - Nurgaliev A.Yu.
Masters: - Hasilby S.B., Imangazy E.S., Aliakbarov A.B.

Developed project: STP # 723 UGM.09 "New technologies for the hydrocarbon and mining and metallurgical sectors and related service industries" (Grant funding of the Ministry of education and science of the Republic of Kazakhstan).

Developed project: “Geodynamics of the Kazakhstan sector of the Caspian sea shelf and problems of sustainable operation offshore drilling platforms. (Grant funding of the Ministry of education and science of the Republic of Kazakhstan).

Improved method of calculation (*Monograph*)**:** Interaction of structures with anisotropic soil base (static state). Almaty: IEC, 2020. - ISBN978-601-7966-47-8 (MES RK).

Developed by: A software package for calculating structures and structures on a linear elastic half-space in a high-level algorithmic language.

Contact details:
Mobile phone: +7 (701)339-64-75
E-mail: mars_52@mail.ru

Energy-saving and environmental aspects of engineering networks and systems

Scientific adviser:
Toybaev Kenzhekhan Duisebaevich
Doctor of Technical Sciences, Academic Professor
Group members:
Dzhataeva Dilyara K. - Associate Professor,
Ph.D., performer

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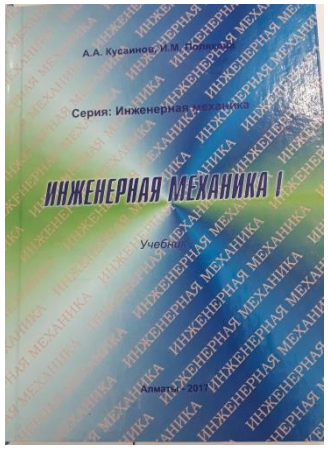
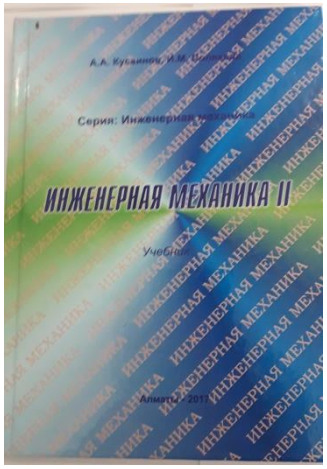
- alternative energy sources;
- technologies for the utilization of sediments and wastewater treatment facilities.

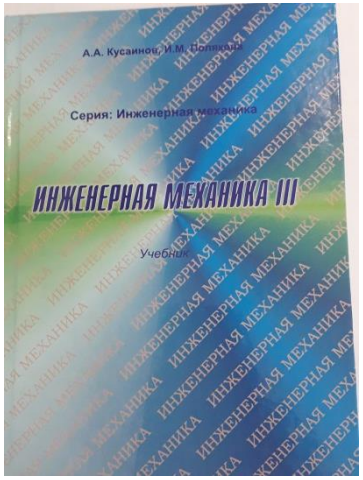
Contact details: kazgasa@mail.ru dilyara.kd@mail.ru

Shell elements stress-strain state study

Scientific adviser:
Polyakova Irina
candidate of technical sciences PhD,
associate professor Kazakh Leading Academy of Architecture and Civil Engineering







Received:
related articles are published, thesis defence, scientific and practical contractual topics implementation

Six scientific and practical topics completed

Practical recommendations for the construction of facilities have been developed

Contact details : kazgasa@mail.ru pim8192t@mail.ru

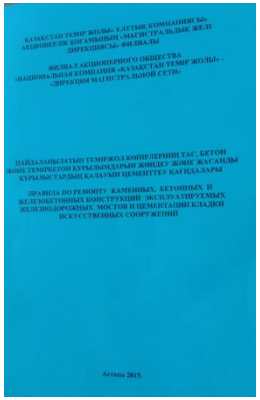
Technology and properties of effective modified building materials based on local raw materials

Scientific adviser:
Aubakirova Bakyt
candidate of technical sciences PhD, associate professor
Kazakh Leading Academy of Architecture and Civil Engineering

New multi-purpose materials based on natural raw materials and industrial wastes

Conclusion on the grant of a patent for an invention
№ 28601 dated 09/05/2017.
Aerated concrete using oil bituminous rocks and waste processing

Funded order completed Joint-Stock Company«НК «Қазақстан темір жолы», Astana, order No. 347 of 08/27/2015



Designed by "Rules for the repair of stone, concrete and reinforced concrete structures of operated railway bridges and cementation masonry artificial structures "

Contact details: kazgasa@mail.ru aubakirova.baxyt@mail.ru

Improving the designs and operation systems of construction hoisting-and-transport machinery and equipment

Executor of the direction:
Nurpeissova Saule Abdrakhmanovna
candidate of pedagogical sciences,
professor of KazGASA IEC
Group members:
Maulenov Zhumadilda Karbyshevich
Doctor of technical sciences,
professor of KazGASA IEC

- Designed excavator bucket with removable tips;

- A design of a plow type scraper bucket was developed;

- Design of reusable knives for earth moving machines

Contact details:: kazgasa@mail.ru ailight@bk.ru

Energy-saving and environmental aspects of engineering networks and systems

Scientific adviser:
Toybaev Kenzhekhan Duisebaevich
Doctor of Technical Sciences, Academic Professor
Group members:
Taubaldieva Aksaule S. - Associate Professor,
Ph.D., performer

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- calculation of the impact of wastewater pollution on water bodies by light industry enterprises;
- alternative energy sources;
- technologies for the utilization of sediments and wastewater treatment facilities.

Contact details: kazgasa@mail.ru nfe.aksaule@mail.ru

«Optimization of the construction and design of construction objects»
Scientific supervisor Dubinin A. A. candidate of technical Sciences

1. Development in the implementation of scientific and technical programs and projects (national, regional, international, including initiative).

The agreement No. 214-14 from 25.0.2.2019 G. Execution of a cycle of experimental design work on the theme "Optimization of the construction and design of building structures", in the amount of 1000 000 tenge. Period of performance: – the beginning of March 2019. The end of December 2020. Use in the project of the master's work of a second-year master's student.

Expected result;- Drawings of existing surveyed objects, statements of the scope of work, a summary statement of the buildings being surveyed. Report on the calculation of structures. Acts of completed work. Technical documentation and conclusions (recommendations for objects).

2. Development of legislative and regulatory acts, concepts, programs that contribute to the development of industries in Kazakhstan.

- Development and implementation in the educational process of MRUP 2019. 6B07329 - "Hydraulic engineering construction", according to the state standard of education-2018, the term of full-time training is 4 years.

- Participation in the creation of professional standards "BIM technologies" - consultations.

- Participation in the forum of the Union of builders-discussion and decision-making on the formation of SRO(independently regulated organizations, certification of all specialists in the field of construction)

- Participation in the Atameken forum on the topic "system of engineering training through the introduction of dual training and industry certification of specialists. Topics were reviewed and approved:- "Industry certification of specialists"

- "Methodology for rating educational programs of higher educational institutions of the Republic of Kazakhstan»

3. The results Obtained for items 1 and 2: preparation for industrial implementation and their introduction into production.

-Implementation of the project under the Agreement No. 214-14 dated 25.0.2.2019 Term of execution: - beginning of March 2019. The end of December 2020.Completion of 20%-payment will be made on completion of 30%

- Introduced in the educational process of MRUP 2019. 6B07329 - "Hydraulic engineering construction", according to the state standard of education-2018, the term of full-time training is 4 years.

- Union of builders-the decision on the formation of SRO(independently regulated organizations, certification of all specialists in the field of construction) is published on the website.

- Atameken on the topic " system of engineering training through the introduction of dual training and industry certification of specialists. Topics were reviewed and approved:- "Industry certification of specialists"

- "Methodology for rating educational programs of higher educational institutions of the Republic of Kazakhstan»

The work performed is published on the official website. mor.KAZGASA

Energy-saving and environmental aspects of engineering networks and systems

Scientific adviser:
Toybaev Kenzhekhan Duisebaevich
Doctor of Technical Sciences, Academic Professor
Group members:
Auelbekov Seilkhan Sh.- Associate Professor,
Ph.D., performer

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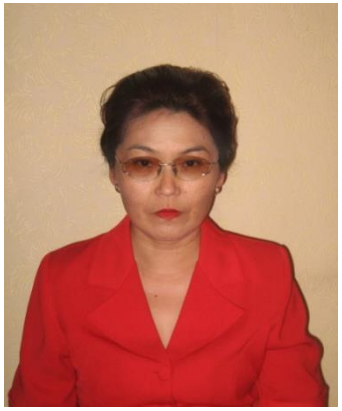
• Contact details: kazgasa@mail.ru auelbekov.s@mail.ru



Improving the theory and methods of calculating applied problems of mechanics of a deformable solid body for studying the stress-strain state of building structures.

Slyambaeva Aimash Konyrgazievna	Associate Professor of KazGASA, Candidate of Technical Sciences

Scientific adviser:
Dostanova Saule Khazhigumarovna, Doctor of Technical Sciences, academic professor

Group members:
Slyambaeva Aimash Konyrgazievna, c.t.s., assoc. prof. KazGASA
Kasymova Gulsum Temirkhanovna, m.t.s., assistant. prof. KazGASA

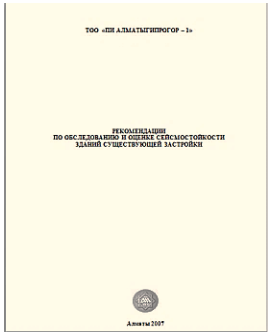
Algorithms and programs for PCs have been developed for calculating spatial systems for dynamic and static effects; The stress-strain state of laminated plates on an elastic base is investigated; Recommendations are developed for static and dynamic calculation of pavement; Calculation of frames, beams, as well as the method of calculating beams of constant cross-section for strength and bending stiffness were introduced into the educational process. Calculations are performed using the AutoCAD Mechanical Power Pack system.

Contact details: **balweker@mail.ru** kazgasa@mail.ru

Research and evaluation of technical condition of existing buildings and structures

Inspection of buildings and structures - Assessment of technical condition of buildings and structures

Scientific direction director:
Kelemeshev Alpysbai Dzhumagalievich,
Candidate of technical sciences, assoc.. professor IEC (KazLAACE)



Developed:
Together with PI Almatygiprogor-1 LLP
research recommendations and seismic resistance assessment
buildings of existing buildings

Conducted:
Inspection of the building of the music school named after them. M. Tolebaeva, located in Bostandyk district Almaty on ave. Abaya 54

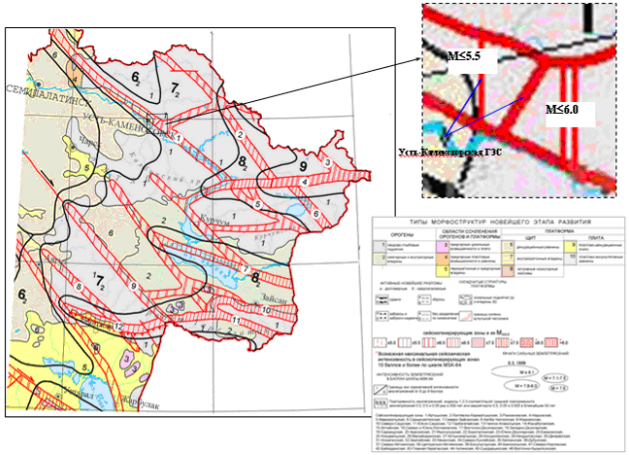
Conducted:
Inspection of the building of the main production shop AZMK LLP, located at the address of Almaty st. Bekmakhanova 96 A

Contact details: kelemeshev_59@mail.ru

Development of new scientific and methodological bases for ensuring seismic safety of strategic objects

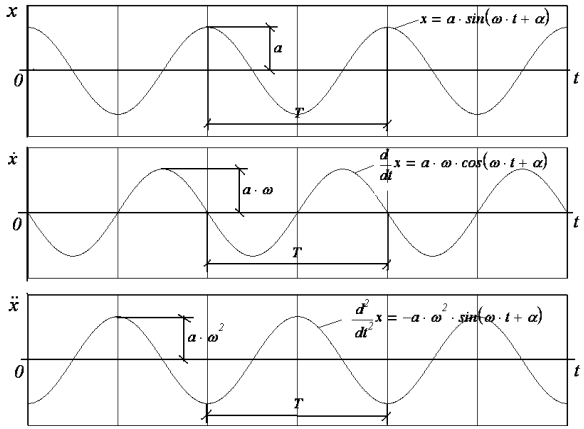
Research supervisors topics:
Satov Muhambet Zhunisbaevich,
doctor of techn. Sc., academician of the NANS of the RK

Sadyrov Ruslanzhan Karimzhanovich,
candidate of techn. Sc., assoc. Professor KazHACA

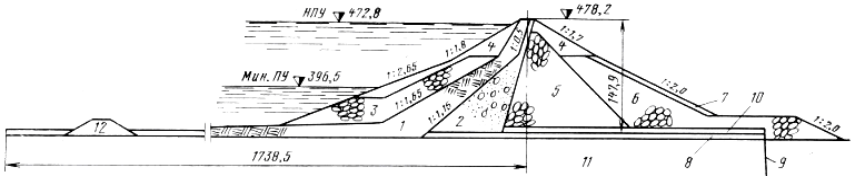


The optimal system for diagnosing the technical condition of objects and the method for calculating seismic impacts **is selected**.
Systems for seismological monitoring of oil and gas, mining and metallurgical and energy industries **has been developed**, taking into account the specific characteristics of these strategic objects.
A pilot project for monitoring objects that are potentially dangerous as sources of man-made disasters **has been developed**.

Scientific novelty of the results obtained.
A generalized regulation on creating polygons and conducting seismological monitoring of strategic objects has been drawn up, aimed at ensuring their protection from the impact of seismic processes and phenomena.



Practical significance of research results.
The results will be used in the design, construction and operation of particularly important facilities, as well as for the forecast and targeted reduction of damage from catastrophic natural and man-made earthquakes.



Contact details: srk999@mail.ru

Research in the field of transport construction based on the practices of domestic and foreign construction

Scientific supervisor directions:

Zhalaiyrs Asylkhan Kasenovich - doctor of technical Sciences, Professor, Director of LLP "ASDI»

Structure of group:

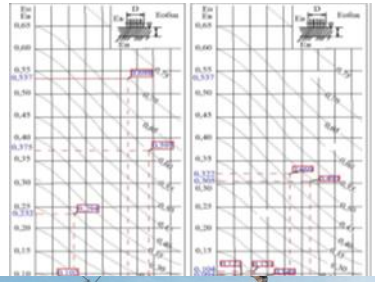
Mursalina Gulshat Buharbaeva - candidate of technical Sciences, associate Professor, Department of General construction

Kenebaev Ainur Kerimkulova – master of technical Sciences, assistant Professor of the faculty of General construction

The road surface on the road section was **studied and calculated** «Ust-Kamenogorsk - Zyryanovsk-Bolshenarymskoe-Katon-Karagay-Rakhmanov keys» km 72-88 together with the engineer of *«Almaty Zhoba» LLP B.M. Maratov.*

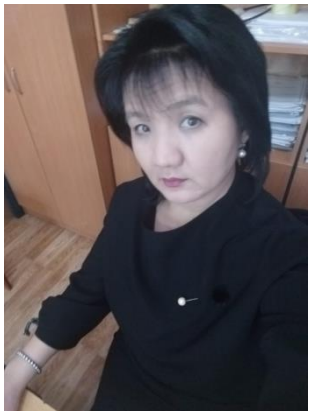
The road surface on the road section was **studied and calculated** Center-South «Astana-Karaganda-Balkhash-Almaty» of the Republican highwayvalues «Gr of the Russian Federation (on Yekaterinburg) – Almaty» km 2169-2105 section Mynaral-Ulken together with the engineer of *«Almaty Zhoba» LLP, B. M. Maratov.*

A reinforced concrete culvert ZKP 2.200 with a diameter 1.0 m of was **tested with an assessment** of strength and crack resistance in conjunction with *«AZDI» LLP.*



Contact information: kazgasa@mail.ru gulshat_mb@mail.ru

Problems of synthesis of drive kinematic chain of multi-circuit mechanisms for optimal force transfer MECHANICS-THEORY OF MECHANISMS AND MACHINES - MECHANICAL ENGINEERING



Performer of the direction:

Nurmaganbetova Ayman Turumovna,

candidate of technical Sciences,

Associate Professor of KazGASA

Received a patent for an invention on the topic: "PLATFORMS WITH ROTATIONAL PAIRS", bul. no. 6, 08.02.2019.

The problem of optimizing the drive of load-lifting mechanisms with straight-forward movement of the platform of the "Nuremberg shears" type is solved and competing drive schemes based on high-class mechanisms are obtained.

The method of kinematic and kinetostatic analysis of multi-contour mechanisms of high classes used as lifting mechanisms is developed.The proposed analytical solution of the problem of synthesis of the input kinematic chains of planar lever mechanisms for optimal power transmission (from the drive chain to the working body) based on the approximation quadratic approximation tasks.

A complex of applied programs for the synthesis of load-lifting mechanisms with an optimal drive scheme based on a combination of analytical synthesis and numerical optimization methods has been developed.New kinematic schemes of high-class load-lifting mechanisms, which have advantages over existing mechanisms, have been developed.

Contact information: aknur_1972@mail.ru

Strengthening building structures, design and calculation of load-bearing elements

CONSTRUCTION DESIGN - DESIGN and CALCULATION - DESIGN- REINFORCEMENT GEOTECHNIC

Scientific adviser:
Khomyakov Vitaliy Anatolevich,
Doctor of Technical Sciences, academic professor of FOS
Group members:FOS
Yelzhanov Erbol Abdrachmanovich, k.t.s., assos. prof. FOS

- **Developed a conclusion on strengthening the basement entrance group premises located at: st. Manas / Zhandosov, 34A / 8A, in the Bostandyk district, Almaty**
- According to the result of the survey, calculations were made, and a project was created in which, spelled out all the elements that are subject to amplification. Also in recommendation on reinforcing reinforced concrete elements, the necessary Technical information and financial costs of these works.
- **The project of an individual residential building located at: Almaty city, Medeu district, west of the river. Esentai, plot 57**
- Project of a 2-storey individual residential building with a built-in garage on 2 cars and with the calculation of the main load-bearing elements (foundation, walls, floors, reinforced concrete stairs).
- **The calculation of the monolithic overlap of a 2-storey residential building located at: Almaty region, Karasai district, p. Kyrgauyldy, st. Akzhar, 4a.**
- Calculation and design of monolithic overlap, development of the graphic part the project, the development of the QOL part, the determination of the consumption of materials for the installation of ceilings,budgeting for construction work.

- **The reinforcement technology for reinforced concrete structures has been improved, which can significantly extend the life of buildings and elements**
- **Improved calculations and design of load-bearing elements with the help of calculation and graphical programs, allowing to reduce the time for completing tasks**
- Contact details: fos.kazgasa@mail.ru, Eljanov@mail.ru

Strengthening building structures, design and calculation of load-bearing elements

CONSTRUCTION DESIGN - DESIGN and CALCULATION - DESIGN- REINFORCEMENT

Scientific adviser:
Khomyakov Vitaliy Anatolevich,
Doctor of Technical Sciences, academic professor of FOS
Group members:FOS
Azhgalieva Banu Akkuanovna, m.t.s., assist. prof. FOS
Dzhumagaliev Talgat Kumargalievich, m.t.s., assistant. prof. m.t.s.

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- Contact details: fos.kazgasa@mail.ru, Banu_42@mail.ru

Energy-saving and environmental aspects of engineering networks and systems

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Doctor of Technical Sciences, Academic Professor
Group members:
Kasabekova Gulbanu T. - Master of Science, performer

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- alternative energy sources;
- technologies for the utilization of sediments and wastewater treatment facilities.

Contact details: kazgasa@mail.ru kasabekovag@mail.ru

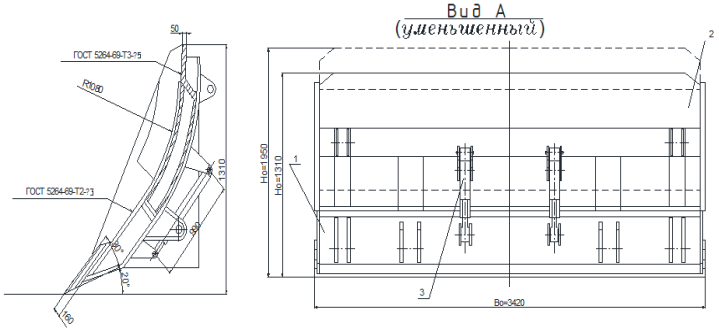
IMPROVEMENT OF TECHNOLOGIES FOR CONSTRUCTION OF WATER DRAINS IN WATER SUPPLY AND WATER DISPOSAL SYSTEMS

BUILDING DESIGN - DESIGN AND CALCULATION - TECHNOLOGY

Scientific adviser :
Abdurasulov Ilimidin,
doctor of Technical Sciences, Professor of KRSU named after B. Yeltsin of the Kyrgyz Republic
Group members :
Jumagaliyev Talgat Kumargalievich, magitr of technical Sciences, assistant prof. FGC
Azhgalieva Banu Akkuanovna, magitr of technical Sciences, assistant prof. FGC

- **Investigated Advanced Worker Parameters bulldozer body**
- **Improved modernized dozer blade**

Introduced into the educational process of the Kyrgyz-Russian Slavic University and at the production of “Slutur” LLP.



- **Physical and mechanical characteristics of materials of load-bearing structures, the presence and nature of reinforcement were examined.**

Based on the results of the survey, calculations were made, and a project was created, in which all the elements that are subject to strengthening are spelled out.

- **Improved technology for reinforced concrete structures that significantly extend the life of buildings and elements**

contact information : fos.kazgasa@mail.ru, t68.05@mail.ru

Energy-saving and environmental aspects of engineering networks and systems

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Toybaev Kenzhekhan Duisebaevich
Doctor of Technical Sciences, Academic Professor
Group members:
Aldabergenova Gaziza B. - Master of Science, performer

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The energy efficiency of residential buildings at individual sites of the IEC and other organizations **have been investigated**

Second stage development plans:

- an algorithm and a special program for calculating the composition of recycled water;
- mathematical, functional models of optimization and management of integrated cleaning technology;
- establishing the composition of water : dyes, their mixtures and some textile auxiliary substances for discharge into the city sewage system;
- calculation of the impact of wastewater pollution on water bodies by light industry enterprises;
- alternative energy sources;
- technologies for the utilization of sediments and wastewater treatment facilities.

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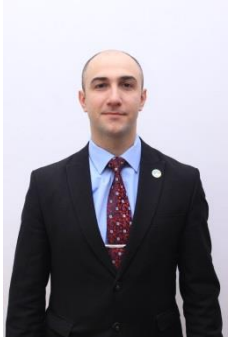
IMPROVING OF STRUCTURAL CONCEPTS AND METHOD OF DESIGN OF WELDED I-BEAMS WITH CORRUGATED WEBS WEAKENED BY THE TEMPORARY HOLES



Scientific supervisor of the direction : ALEXANDER BRYANTSEV,
Master, Assistant Professor, IEC (KazGASA)

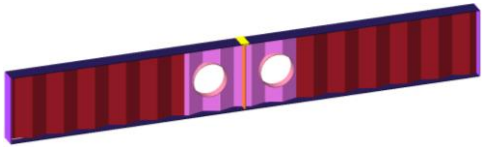
Investigated

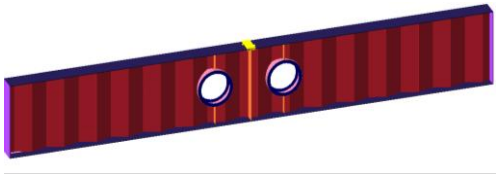
I-beams with transversally corrugated web that features V-shaped corrugations with different geometrical parameters and are weakened by the round temporary holes of various diameters and spacing along the length and height of the web.

Scientific novelty of the results

1. For the first time, the effective parameters of the corrugations of the triangular web from 2 to 10 mm have been established.
2. For the first time, according to the Eurocodes requirements, the Cross section of the corrugated wall beam classification was determined, and the combined calculation method was applied in order to improve the calculation methods for the corrugated web beams.
3. The optimal pitch, diameter and effective position for two and three openings in the height of the web were found.
4. In order to reduce the deformation property of the corrugated web beams, weakened by temporary perforations, the construction solutions for reinforcing round perforations in the corrugated web were improved, in the fact, that optimal parameters of the thickness and bordering area, the thickness and width of the stiffeners, the thickness and height of the outer edges of the bordering, the thickness of the double web located in the area of the perforations.

Completed Computer simulation and laboratory experiment of beams with a corrugated web.





Completed Implementation act No. 01-58 of September 2, 2019.

Received

Patent for invention
No. 4540, 4318 from 2019.
Corrugated I beam with reinforced holes

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Research in the field of transport construction based on the practices of domestic and foreign construction

Scientific supervisor directions:
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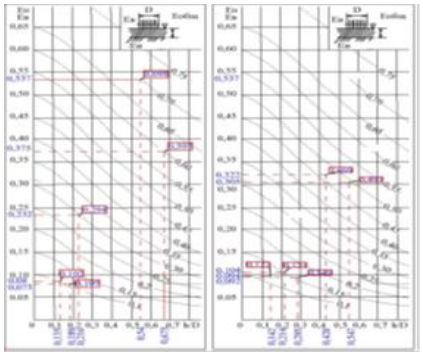
Murzalina Gulshat Bukharbayevna-candidate of technical Sciences, Assoc. prof. FGC



The road surface on the road section was studied and calculatedUst-Kamenogorsk - Zyryanovsk-Bolshenarymskoe-Katon-Karagay-Rakhmanov keys» km 72-88 together with the engineer of "Almaty Zhoba" LLP B.M Maratov

The road surface has been studied and calculated forsection of the Center-South highway " Astana-Karaganda- Balkhash-Almaty " Republican highwayvalues "Gr of the Russian Federation (on Yekaterinburg) - Almaty" km 2169-2105Mynaral-Ulken section together with an engineerAlmaty Zhoba LLP by B. M. Maratov

A reinforced concrete culvert was tested ZKP2. 200 with a diameter of 1.0 m with a strength rating andcrack resistance in cooperation with AZDI LLP.

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