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1 РАЗРАБОТАНО:

К.т.н., Ассоциированный профессор
(должность)

(подпись)

Алимкулов М.М.
(Ф.И.О.)

К.т.н., Ассоциированный профессор
(должность)

(подпись)

Ибраимов А.К.
(Ф.И.О.)

К.т.н., Ассистент профессор
(должность)

(подпись)

Джескенбаев Е.К.
(Ф.И.О.)

д.т.н., доцент декан Академии
строительства, архитектуры и
дизайна Каспийский университет
(должность)

(подпись)

Ауесбаев Е.Т.
(Ф.И.О.)

Магистрант 2-го курса,
группа МП-ИТИ-21-1
(должность)

(подпись)

Серікбай Ақжол Дәуренұлы
(Ф.И.О.)

2 ЭКСПЕРТЫ:

Директор ТОО
«Нурлы Кала 2030»
(должность)

(подпись)

Абайхан Е.
(Ф.И.О.)

Директор ТОО
КазДПИ
(должность)

(подпись)

Кансейтов А.Ш.
(Ф.И.О.)

3 РЕЦЕНЗЕНТ:

«Казахского национального
исследовательского технического
университета имени К.И. Сатпаева»
Профессор кафедры «СИСМ»
доктор технических наук
(должность)

(подпись)

Шаяхметов С.Б.
(Ф.И.О.)

4 РАССМОТРЕНО И РЕКОМЕНДОВАНО:

Заседание АК (кафедры СИ)
Протокол №, «б»
15.03.2023 г.

(подпись зав. кафедрой)

Исмагулова С.О.
(Ф.И.О.)

Заседание КОК-УМБ
Протокол №, «7»
15.03.2023 г.

(подпись директор
института)

Чигамбаев Т.О.
(Ф.И.О.)

Заседание УМС
Протокол №, «4а»
29.03.2023 г.

(подпись проректора по АД)

Жармагамбетова М.С.
(Ф.И.О.)

5 УТВЕРЖДЕНО решением Ученого Совета от 30.03.2023 г. №13

6 ВВЕДЕНО 30.05.2023 г.

5 APPROVED by the decision of the Academic Council dated March 30, 2023. №. 13

6 INTRODUCED 05/30/2023

2. REGULATORY REFERENCES

The educational program is developed on the basis of the following regulations and professional standards:

1. Law of the Republic of Kazakhstan «On Education» dated July 27, 2007 №. 319-III (as amended and supplemented as of March 27, 2023).
2. National qualifications framework, approved by the protocol of March 16, 2016 by the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations.
3. Industry qualifications framework for the field of “Education”, approved by the Minutes of the meeting of the industry commission of the Ministry of Education and Science of the Republic of Kazakhstan on social partnership and regulation of social and labor relations in the field of education and science dated November 27, 2019 № 3.
4. State compulsory standard of higher education (Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated February 20, 2023 №. 66).
5. Qualification reference book for positions of managers, specialists and other employees, approved by order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated August 12, 2022 № 309.
6. Rules for organizing the educational process on credit technology of education in organizations of higher and (or) postgraduate education, approved by Order of the Minister of the Ministry of Education and Science of the Republic of Kazakhstan No. 152 dated April 20, 2011 (with additions and changes dated April 4, 2023 № 145).
7. Classifier of areas of training for personnel with higher and postgraduate education, approved by order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018 № 569 (with amendments and additions as of June 5, 2020).
8. Algorithm for inclusion and exclusion of educational programs in the Register of educational programs of higher and postgraduate education, approved by Order of the Minister of Education and Science of the Republic of Kazakhstan dated December 4, 2018 №. 665 (with additions and changes as of December 23, 2020 № 536).
9. RI-ALT-33 «Regulations on the procedure for developing an educational program for higher and postgraduate education».
10. Atlas of new professions: «BigData analyst in construction , Digital designer (BIM specialist)».

3. Passport of the educational program

No	Field name	Note
1	Registration number	7M07100399
2	Code and classification of field of education	7M07 - <i>Engineering, manufacturing and Civil engineering</i>
3	Code and classification of areas of training	7M071 <i>Engineering and engineering trades</i>
4	Code and group of educational programs	M210 – <i>Transmission system and infrastructure</i>
5	Name of educational program	7M07161 – <i>Transport infrastructure engineering</i>
6	Type of OP	<i>New</i>
7	Purpose of the OP	<i>Training of highly qualified specialists with research, pedagogical and professional competencies related to the development, design, operation in the transport infrastructure.</i>
8	ISCED level	7
9	Level according to NQF	7
10	ORK level	7
11	Distinctive features of the OP	<i>No</i>
	Partner university (SOP)	
	Partner university (DDOP)	
12	Form of study	<i>Full-time</i>
13	Language of instruction	<i>Kazakh, Russian</i>
14	Volume of loans	<i>120</i>
15	Academic degree awarded	<i>Master of Engineering Science in Education program 7M07161 – Transport infrastructure engineering</i>
16	Availability of an annex to the license for the direction of personnel training	<i>KZ12LAA00025205 (004)</i>
17	Availability of EP accreditation	<i>Have</i>
	Name of accreditation body	<i>NAOKO</i>
	Validity period of accreditation	<i>01.04.2023-31.03.2028</i>

4. Competency model of a graduate

Objectives of the educational program:

1. Promoting the development of the graduate's abilities:
 - 1) demonstrate developmental knowledge and understanding acquired at the higher education level that provides the basis or opportunity for the original development or application of ideas, often in the context of scientific research;
 - 2) apply knowledge, understanding, and problem-solving ability to new or unfamiliar situations within the contexts and frameworks of broader (or interdisciplinary) areas related to the field of study;
 - 3) integrate knowledge, cope with complexity and make judgments based on incomplete or limited information, taking into account ethical and social responsibility for the application of these judgments and knowledge;
 - 4) clearly and clearly communicate your conclusions and knowledge, and their justification to specialists and for non-specialists;
2. Promoting the formation of graduates' readiness to:
 - 1) develop design documentation for the creation and modernization of transport construction;
 - 2) carry out calculation and design work on the modernization of existing transport construction facilities;
 - 3) develop technical documentation and methodological materials, proposals and measures for the creation and modernization of transport construction facilities.
 - 4) conduct a technical and economic analysis, a comprehensive justification of decisions made and implemented in the field of operation, repair and maintenance of transport construction facilities, their units, systems and elements;
 - 5) apply the results in practice, strive for self-development, improve your qualifications and skills.
 - 6) to the economical and safe use of natural resources, energy and materials during operation, repair, and maintenance of transport facilities and structures.

Learning outcomes:

ON-1 Generate theoretical and methodological foundations of management psychology, methods for studying the socio-psychological characteristics of the "personality - collective", "leader – collective", interpersonal and problems within the team, based on higher school pedagogy – the formation of competence and skills suitable for activities in the field of higher school pedagogy.

ON-2 Demonstrate knowledge of the historical development of science and philosophy of science as a system of knowledge that forms a worldview, with the mastery of professional English for research in the state, Russian and foreign languages in oral and written forms.

ON-3 To use modern analytical and engineering methods for calculating the stress-strain state of transport objects using software systems when studying the mechanics of stresses and deformations of composite, bulk, solids and rocks based on general laws to solve stationary, dynamic, oscillatory and physically nonlinear problems using the finite element method.

ON-4 To confirm basic theoretical knowledge and basic practical skills in strategic management of departmental units, analysis of the strategy of the external and internal situation of the enterprise and corporate management culture with their application in business research for further implementation prospects.

ON-5 To describe the system of knowledge about the meaning and place of science, about the main stages of the development of scientific thought in the country, the methodological foundations of the organization of scientific research at various levels, the principles of planning, conducting, registration of the results of experience, experiment and other research.

ON-6 To divide transport objects depending on the type and technical and technological purpose, operational indicators, under various force influences, taking into account local conditions and using methods and means of mechanization, mechanization and automation in the preparation of technological processes.

ON-7 Consider a critical assessment of functional and operational transport construction for the formation and adoption of relevant decisions with the development and formation of Project estimates, expanding coverage and further implementation of the project providing hope and maturity.

ON-8 To trace the essence of the principles and directions of digital activity of structural units in compliance with the legislative acts of the Republic of Kazakhstan in the field of information policy and security for the formation and implementation of information and analytical automated systems in the field of development and implementation of digital transformation.

ON-9 Diagnose an object of transport infrastructure with the development of inspection, inspection, testing programs and measures to eliminate malfunctions, defects and deformations with the appointment of deadlines, priority and scope of work when assessing the technical condition.

ON-10 To establish the level of technical compliance of transport infrastructure parameters with industry standards, technical support with further solutions to issues of reconstruction and improvement of technical and economic indicators.

Area of professional activity: areas of science and technology related to road transport, roads, transport structures and transport infrastructure engineering.

Objects of professional activity:

- Local executive authorities in the field of railway transport, transport construction and their regional structures;
- Organizations and enterprises of the transport industry in the field of management, operation, maintenance of roads, urban rail transport and subways, as well as industrial transport;
- Organizations and enterprises of the transport industry in the field of technologies for material processing production during maintenance, rail urban transport, subways and industrial transport;
- Research organizations.

Types of professional activities:

- production and technological;
- organizational and managerial;
- experimental research;
- calculation and design;
- scientific research;
- pedagogical.

Functions of professional activity:

1) participation in the development of draft technical conditions and requirements, standards and technical descriptions, regulatory documentation for new objects of professional activity; formation of project (program) goals, problem solving, criteria and indicators for achieving goals, building a structure of their relationships, identifying priorities for solving problems, taking into account the moral aspects of activity;

2) participation in the design of new and reconstruction (modernization) of existing transport facilities, in the development of technological processes for the maintenance and repair of highways;

3) the use of information technology in the calculations of the structures of transport structures, the design of new and reconstruction (modernization) of existing transport structures, the development of technological processes for the maintenance and repair of highways;

4) economic and organizational planning calculations for the reorganization of production;

5) development of theoretical models that make it possible to predict changes in the technical condition of highways and the dynamics of parameters of the efficiency of their technical operation; analysis of the state and dynamics of quality indicators of objects of professional activity using the necessary research methods and tools; development of plans, programs and methods for conducting research on objects of professional activity; conducting scientific research on individual sections (stages, tasks) of the topic as a responsible executor or together with a supervisor;

6) analysis, synthesis and optimization of processes for ensuring the quality of tests, certification of products and services using problem-oriented methods; information search and analysis of information on research objects; implementation of metrological verification of basic measuring instruments; carrying out experimental design developments; justification and application of new information technologies; participation in the preparation of practical recommendations on the use of research and development results;

7) organization of the work of a team of performers, selection, justification, adoption and implementation of management decisions in the face of different opinions, determination of the order of work; organization and preparation of initial data for the selection and justification of scientific, technical and organizational decisions based on economic analysis;

8) organization of the process of training and education in the field of education using technologies that reflect the specifics of the subject area and the psychophysical characteristics of students corresponding to their age, including their special educational needs;

9) designing educational programs and individual educational routes for students; designing the content of educational disciplines (modules), forms and methods of control and control and measuring materials; designing educational environments that ensure the quality of the educational process; designing a further educational route and professional career.

List of specialist positions: Teacher of educational organization, leading researcher, senior researcher, researcher, junior researcher, head of a research laboratory, head of a laboratory, researcher, first head of a production organization (enterprise), deputy head of a production organization (enterprise), chief engineer of a production organization (enterprise), head of a structural unit of a production organization (enterprise), deputy head of a structural unit of a production organization (enterprise), manager, engineering and technical worker.

Professional certificates received upon completion of training: not provided.

Requirements for the previous level of education: higher education (bachelor's degree) in the field of study 7M071 Engineering and engineering trades.

The educational program of the scientific and pedagogical master's degree includes two types of internship:

- teaching practice – in the organization of education;
- research practice – at the place where the dissertation was completed.

Teaching practice.

Pedagogical practice of master's students is practical training of future teachers, carried out in conditions as close as possible to the professional activities of a teacher. Pedagogical practice is aimed at the formation of functional competencies and the development of abilities to perform tasks in the professional and educational spheres. In the process of teaching practice, the professional and personal development of future teachers is activated. During the internship, master's students draw up and implement a plan of educational activities with a group of

students, develop and conduct a system of classes that reflect the completed segment of the learning process based on the content of their major disciplines, and demonstrate mastery of modern technologies and teaching methods.

The purpose of teaching practice is:

- consolidation and deepening of knowledge in general scientific, psychological-pedagogical, methodological, basic and core disciplines;
- formation of pedagogical abilities, skills and competencies based on theoretical knowledge.

The teaching practice program is developed by the department and approved by the President-Rector of the Academy of Logistics and Transport.

The teaching practice program should be aimed at developing professionally significant skills in students and the formation of key competencies:

- planning, forecasting, analysis of the main components of the training and education process;
- the use of various forms and methods of organizing and implementing educational, cognitive, labor, social, environmental, recreational, gaming and other types of activities for students;
- implementation of an individual approach to students during educational and educational work, taking into account the characteristics of their development;
- conducting pedagogical diagnostics of the state of the pedagogical process.

The bases for teaching practice are educational organizations that provide secondary vocational education and higher education.

The duration of teaching practice is determined by the curriculum of the educational program in the direction of training 7M071 Engineering and engineering trades.

Research practice.

Research practice is a type of research activity aimed at deepening and systematizing the theoretical and methodological training of a master's student, practical mastery of the technology of research activities, acquisition and improvement of practical skills in performing scientific and experimental work in accordance with the requirements for the level of master's training.

Research practice of students is carried out with the aim of familiarizing themselves with the latest theoretical, methodological and technological achievements of domestic and foreign science, with modern methods of scientific research, processing and interpretation of experimental data. The content of research practice is determined by the topic of the dissertation research.

The master's student's research practice is carried out at the place of study or in scientific organizations, which can be considered as experimental sites for conducting research related to the topic of the master's thesis. During the internship, master's students are given the opportunity to conduct experimental research according to a pre-developed program that takes into account the objectives of the master's thesis.

Research work of a master's student (RWMS).

Planning of scientific research work in weeks is determined based on the standard work time of the undergraduate during the week. The number of credits allocated for the implementation of research work in a specific academic period is determined by the working curriculum of the professional educational program in the direction of training 7M071 - Engineering and Engineering.

RWMS should:

- 1) correspond to the main issues of the master's educational program on which the master's thesis is defended;
- 2) be relevant and contain scientific novelty and practical significance;
- 3) be based on modern theoretical, methodological and technological achievements of science and practice;

4) be based on modern methods of processing and interpreting data using computer technology;

5) be carried out using modern scientific research methods;

6) contain research (methodological, practical) sections on the main protected provisions.

The master's thesis is carried out during the period of scientific research.

Within the framework of NIRM, the individual work plan of a master's student for familiarization with innovative technologies and new types of production provides for mandatory scientific internship in scientific organizations and (or) organizations of relevant industries or fields of activity.

The purpose of the research work is to prepare a master's student who is proficient in the methodology of scientific knowledge of processes and is able to apply scientific methods in studying the problems of modern production, the final result of whose research activity is the writing and successful defense of a master's thesis.

Objectives of the research work:

- to prepare highly qualified modern specialists with broad fundamental knowledge;

- develop the abilities and skills of undergraduates to critically analyze and master theoretical concepts in order to implement them in practice and with subsequent testing at the international level;

- to form in master's students the ability for professional growth and self-development, skills for independent creative mastery of new knowledge throughout their entire active life.

As a result of mastering the master's program, graduates should be prepared to perform the following types and tasks of professional research work:

- demonstrate a systematic understanding of the field of study, mastery of the skills and research methods used in this field;

- plan, develop, implement and adjust the complex process of scientific research;

- contribute with their own original research to expanding the boundaries of the scientific field, which may merit publication at the national or international level;

- critically analyze, evaluate and synthesize new and complex ideas;

- communicate your knowledge and achievements to colleagues, the scientific community and the general public;

- promote the development of a knowledge-based society.

Scientific internship is carried out for the purpose of:

- fulfilling the objectives of the master's thesis;

- familiarization with innovative technologies and new types of production;

- familiarization with the latest theoretical, methodological and technological achievements of domestic and foreign science;

- familiarization with modern methods of scientific research, processing and interpretation of experimental data;

- consolidating theoretical knowledge acquired in the process of learning to acquire practical skills, competencies and professional experience, as well as mastering best practices in this field.

Requirements for RWMS:

1) compliance with the main issues of the master's educational program for which the master's thesis is being defended;

2) is relevant and contains scientific novelty and practical significance;

3) is based on modern theoretical, methodological and technological achievements of science and practice;

4) is based on modern methods of processing and interpreting data using computer technology;

5) is carried out using modern scientific research methods;

6) contains research (methodological, practical) sections on the main protected provisions.

The Academy determines special requirements for the preparation of undergraduates for the research part of the program. Special requirements include:

- knowledge in the field of scientific and management activities in conditions of constant updating of knowledge and modernization of society;
- conducting independent research activities on problems and disciplines;
- the ability to practically process and transmit information using modern technical means;
- ability to predict directions of technical and scientific development of the country;
- possession of modern specialized skills and methods necessary to make effective decisions in the field of engineering and technology.

The main content of the scientific research work is reflected in the individual work plan of the master's student.

Contents of RWMS.

Research work of a master's student can be carried out in the following forms:

- fulfillment of tasks of the scientific supervisor in accordance with the approved plan of scientific research work;
- participation in the research work of the department;
- participation in scientific and scientific-methodological seminars conducted by the Academy and the department;
- use of modern methods of data processing and interpretation using computer technologies;
- participation in the development of project documents and other provisions related to the subject area of scientific research;
- participation in scientific research, including joint scientific projects and programs;
- preparation and defense of a master's thesis.

The form of a master's student's research work can be specified and supplemented depending on the specifics of the master's program and the topic of the master's thesis.

The undergraduate research work includes:

- research work;
- scientific internship;
- scientific publications (participation in scientific conferences and seminars);
- writing a master's thesis.

Organization of scientific internship within the framework of the Scientific Research Institute of Mechanical Engineering.

Scientific internship is one of the most important components in the preparation of master's degrees and is implemented in accordance with the IPRM within the time frame determined by the academic calendar and the individual work plan of the master's student.

The terms of the scientific internship are determined by the Academy independently.

A scientific internship is usually planned during the second year of a master's degree.

Scientific internship of a master's student is carried out on the basis of agreements concluded with enterprises/organizations/institutions, universities and scientific organizations and leading scientists within the framework of Agreements and Memorandums of Cooperation in the field of education and science, as well as on the basis of personal invitations from educational and scientific organizations.

Completing training under exchange programs, including double degree programs, joint educational programs with foreign universities and organizations is equivalent to completing a scientific internship.

In case of failure to complete a scientific internship, a master's student is not allowed to take the final certification.

The final certification of the master's student is carried out in the form of writing and defending a master's thesis.

The purpose of the final certification of a master's student is to assess the scientific, theoretical and research-analytical level of the master's student, developed professional and managerial competencies, readiness to independently perform professional tasks and the compliance of his preparation with the requirements of the master's educational program.

Students who have completed the educational process in accordance with the requirements of the educational program, working curriculum and working educational programs, as well as those who have passed a preliminary defense (extended meeting) based on the results of dissertation research, are allowed to take part in the final certification.

6. STRUCTURE OF THE MASTER'S BASIC EDUCATIONAL PROGRAM IN SCIENTIFIC AND PEDAGOGICAL DIRECTIONS

№	Name of cycles of disciplines and activities	Total labor intensity	
		in academic hours	in academic credits
1.	Theoretical training	2640	88
1.1	Cycle of basic disciplines (BD)	1050	35
1)	University component (VC):	600	20
	History and philosophy of science		
	Foreign language (professional)		
	Higher education pedagogy		
	Psychology of management		
	Teaching practice		
2)	Component of choice (CV)	450	15
1.2	Cycle of major disciplines (PD)	1590	53
1)	University component and (or) elective component		
2)	Research practice		
2.	Research work of a master's student	720	24
1)	Master's student's research work, including internship and master's thesis	720	24
3	Additional types of training (ADE)	-	-
4	Final certification (IA)	Not less than 240	At least 8
1)	Preparation and defense of a master's thesis (OiZMD)	240	8
	Total	Not less than 3600	Not less than 120

7. Working curriculum for the entire period of study

JSC "Academy of Logistics and Transport"

CURRICULUM

Form of study: full-time

Training area:
7M071-Engineering and Engineering

Duration of training: 2 years

Group of educational programs:
M210-Backbone networks and infrastructure

Admission: 2023

Name of the educational program:
7M07161-Transport Engineering infrastructure

Degree: Master of Technical Sciences

APPROVED

By the decision of the ALT Academic Council
from " " 2023 d. Protocol no. ____

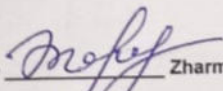
Chairman of the Academic Council


S. N. Amirgalieva

№	Disciple code	Name of cycles and disciplines	Total labor intensity		Control form, semester		Amount of training load, contact hours					Distribution by semester				Assignment to the department	
			in academic hours	in academic credits	Exam	KP (KR)	Total hours	Classroom settings			SRO		1st course		2nd course		
								lectures	practical features	laboratory data	SROP	SRO	1 sem. 15 weeks	2 sem. 15 weeks	3 sem. 15 weeks		4 sem. 15 weeks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. CYCLE OF BASIC DISCIPLINES (DB):																	
1.1. University component:			600	20	5		600	68	82	0	32	298	9	11	0	0	
1.1.1.	23-0-M-VK-IFN	History and philosophy of science	150	5	1		150	30	15		8	97	5				SRSiFV
1.1.2.	23-0-M-VK-IYa(P)	Foreign language (professional)	120	4	1		120		45		8	67	4				YAP
1.1.3.	23-0-M-VK-PVSh	Higher school pedagogy	150	5	2		150	30	15		8	97		5			SRSiFV
1.1.4.	23-0-M-VK-PU	Management psychology	60	2	2		60	8	7		8	37		2			SRSiFV
1.1.5.	23-0-M-VK-PedPr	Teaching practice	120	4	2		120							4			SRSiFV
1.2. Component of your choice:			450	15	2	0	450	75	75	0	16	284	9	6	0	0	
1.2.1.	23-0-M-KV-UP	Elasticity and plasticity	270	9	1		270	45	45		8	172	9				si
	23-0-M-KV-MUDTT	Mechanics of an elastic deformable solid															
1.2.2.	23-0-M-KV-SM	Strategic management	180	6	2		180	30	30		8	112		6			LMT
	23-0-M-KV-BI	Business research															
TOTAL by DB cycle:			1050	35	7	0	1050	143	157	0	48	582	18	17	0	0	
2. CYCLE OF PROFILE DISCIPLINES (PD):																	
2.1. University component:			600	20	3		600	75	75	0	16	284	6	0	14	0	
2.1.1.	23-0-M-VK-OPNI	Organization and planning of scientific research (engl.)	180	6	1		180	30	30		8	112	6				si
2.1.2.	23-61/62-M-VK-PMKEZIsT	Application of the finite element method in transport infrastructure problems	270	9	3		270	45	45		8	172		9			si
2.1.3.	23-0-M-VK-IsPr	Research practice	150	5	3		150							5			si
2.2. Component of your choice:			990	33	5	0	990	165	165	0	40	620	6	12	15	0	
2.2.1.	23-61/62-M-KV-UOTIs	Construction of transport infrastructure facilities	180	6	1		180	30	30		8	112	6				si
	23-61/62-M-KV-SRIsOT	Maintenance and repair of transport infrastructure facilities															
2.2.2.	23-0-M-KV-PSDTS	Design and estimate work in transport construction	180	6	2		180	30	30		8	112		6			si
	23-0-M-KV-PSDTS	Design and estimate documentation of transport structures															

2.2.3.	23-0-M-KV-ITTS	Innovative technologies in transport construction	180	6	2		180	30	30	8	112	6			si	
	23-0-M-KV-TsIsT	Digitalization of transport infrastructure														
2.2.4.	23-61/62-M-KV-DOTs	Diagnostics of transport infrastructure objects	270	9	3		270	45	45	8	172		9		si	
	23-61/62-M-KV-KTIsOT	Monitoring the technical condition of transport infrastructure facilities														
2.2.5.	23-61-M-KV-UIsOT	Strengthening transport infrastructure facilities	180	6	3		180	30	30	8	112		6		si	
	23-61-M-KV-KPRRIsOT	Integrated design solutions for the reconstruction of transport infrastructure facilities														
TOTAL for the PD cycle:			1590	53	8	0	1590	240	240	0	56	904	12	12	29	0
TOTAL FOR THE THEORETICAL COURSE OF STUDY (MSW):			2640	88	15	0	2640	383	397	0	104	1486	30	29	29	0
3.	23-0-M-VK-NORM	Research work of a master's student, including passing an internship and completing a master's thesis	720	24									1	1	22	si
4.	23-0-M-VK-OZMD	Preparation and defense of a master's thesis	240	8											8	si
TOTAL FOR THE ENTIRE TRAINING PERIOD:			3600	120			2640	383	397	0	104	1486	30	30	30	30
ADDITIONAL TYPES OF TRAINING (DVE):																
5.	Additional types of training															

AGREED:

Vice-Rector for AD  Zharmagambetova M. S.

DAPC Director  Lipskaya M. A.

DEVELOPED BY:

Director of the TI Institute"  Chigambaev T. O.

Head of the Department "SI"  Ismagulova S. O.

8. CATALOG OF DISCIPLINES OF THE UNIVERSITY COMPONENT

EDUCATIONAL PROGRAM

7M07161 – Transport infrastructure engineering

Level of education: Scientific and pedagogical

Duration of study: 2 years

Year of admission: 2023

Cycle	Component	Name of the discipline	Total labor intensity		Semester	Learning outcomes	Brief description of the discipline	Prerequisites	Post-requisites
			academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10
DB	VK	History and philosophy of science	150	5	1	NO 2	Formation of an interdisciplinary worldview among master students based on a deep understanding of the history and philosophy of scientific thinking as part of universal culture. The discipline includes units that are devoted to the essence of science in a broad socio-cultural context and its historical development; the problems of the crisis of modern man-made civilization, global trends in changing the scientific picture of the world, types of rationality, value systems that scientists are guided; the main ideological and methodological problems arising in science at the present stage of its development.	Undergraduate disciplines	Master's student's research work Master's thesis defense
DB	VK	Foreign language (professional)	120	4	1	NO 2	Formation of foreign language communicative competence in the field of professional communication, systematization of skills and abilities necessary for master students for further developing of scientific linguistic, discursive and socio-cultural competencies, expansion of knowledge in a foreign language on professional vocabulary, terminology and their subsequent application in research activities at the international level. The discipline includes units that are devoted to personal and socio-humanitarian competencies; career and future work; international cooperation;	Undergraduate disciplines	Master's student's research work Master's thesis defense

							new technologies in the field of relevant educational programs and research work.		
DB	VK	Higher school pedagogy	150	5	2	NO 1	Studying the theoretical and methodological foundations of higher education pedagogy, the modern paradigm of higher education and the system of higher professional education in the Republic of Kazakhstan, didactics and the process of education in higher education, the formation of professional competence and skills necessary for the implementation of full-fledged teaching activities. The discipline uses interactive teaching methods such as role-playing games and group work	Undergraduate disciplines	Master's student's research work Master's thesis defense
DB	VK	Management psychology	60	2	2	NO 1	It is aimed at studying the theoretical and methodological foundations of management psychology, the main socio-psychological problems of management and ways to solve them, familiarization with the methods of studying important socio-psychological characteristics of the individual and the team, professional, interpersonal and intrapersonal problems by means of management psychology.	Undergraduate disciplines	Master's student's research work Master's thesis defense
DB	VK	Teaching practice	120	4	1	NO 4	The discipline is aimed at studying the theoretical and methodological foundations of higher education pedagogy; examines the modern paradigm of higher education and the system of higher professional education in the Republic of Kazakhstan; studies didactics and the process of education in higher education; develops professional competence and skills necessary to implement	Undergraduate disciplines	NIRM, ZMD
PD	VK	Organization and planning of scientific research (engl.)	180	6	1	NO 5	Formation of the peculiarities of the implementation of scientific research projects in the field of transport among undergraduates. The discipline will study: organization of research work in universities and research institutions of Kazakhstan; methodology and methodology of scientific research; science and scientific research; preparatory stage of research work; collection and processing of scientific information; writing and registration of the results of scientific works;	Undergraduate disciplines	Strategic management Solving engineering problems using the finite element method Research practice Design and estimate

							copyright and patent law.		documentation for the construction of linear structures Digital infrastructure Inspection and testing of transport structures Integrated design solutions for the reconstruction of linear structures NIRM, ZMD
PD	VK	Application of the finite element method in transport infrastructure problems	270	9	3	NO 3	Studies the theoretical foundations of constructing computational finite element models of transport infrastructure using the basic provisions of the theory of elasticity, plasticity, mechanics of deformable solids and numerical analysis, basic techniques for constructing element matrices, algorithms for solving stationary, dynamic and physically nonlinear problems in order to form competencies in the field of application of finite element analysis for modeling complex engineering problems.	Undergraduate disciplines	NIRM, ZMD
PD	VK	Research practice	150	5	3	NO 3,4,5,6	The goal of the master's student's research practice is the formation and development of professional knowledge in the field of the chosen Educational program, consolidation of the acquired theoretical knowledge in the disciplines of the direction and special disciplines of the master's program, mastery of the necessary professional competencies in the chosen area of training.	Cycle of basic disciplines (BD), Cycle of major disciplines (PD)	NIRM, ZMD
PD	MSW	Research work of a master's student, including passing an internship and	720	24	4	NO 2,3,4	The purpose of the research work is to form and develop in the master's student methodologies of scientific knowledge of the processes of studying the problems of modern transport construction, familiarization with innovative technologies and new types of production, the latest theoretical,		PHI

		completing a master's thesis					methodological and technological achievements of domestic and foreign science, consolidation of theoretical knowledge acquired in the learning process acquiring practical skills, competencies and professional experience, as well as mastering best practices in this field.		
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9. CATALOG OF CHOICE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM

7M07161 – Transport infrastructure engineering

Level of education: Scientific and pedagogical

Duration of study: 2 years

Year of admission: 2023

Cycle	Component	Name of the discipline	Total labor intensity		Semester	Learning outcomes	Brief description of the discipline	Prerequisites	Post-requisites
			academic hours	academic credits					
1	2	3	4	5	6	7	8	9	10
DB	KV	Elasticity and plasticity	270	9	1	NO 3	The study of modern analytical and engineering methods for analyzing the stress-strain state of transport industry objects, as well as software packages designed to study the stress-strain state of transport structures for various purposes, analyze stresses and deformations, solve elementary two-dimensional problems in rectangular and polar coordinates and three-dimensional problems of elasticity theory using experimental solution methods.	Undergraduate disciplines	Solving engineering problems using the finite element method Research practice Strategic management Design and estimate documentation for the construction of linear structures
		Mechanics of elastic deformable solid				NO 3	The study of modern methods and approaches in the study of elastic-plastic deformation on the basis of general laws, on which a unified connected structure of the theory of the continuum model of matter and the basic equations of continuum mechanics is built, allows us to demonstrate solutions to the problem of elastic-plastic deformation of solids and rocks, the problem of deformation of bulk and powder, as well as composite materials.		

									Inspection and testing of transport structures Strengthening the infrastructure of linear structures Integrated design solutions for the reconstruction of linear structures
DB	KV	Strategic management	180	6	2	NO 4	Formation of master students' basic practical skills in the field of strategic management of enterprises and organizations, strategic analysis of the external and internal environment of the company, the company's competitive strategy and corporate management strategy. The discipline will study: methodology of strategic management; analysis of strategic factors; management analysis; portfolio analysis; competitive advantages and diversification.	Undergraduate disciplines	Solving engineering problems using the finite element method Research practice Inspection and testing of transport structures Technical diagnostics of transport structures
		Business research				NO 4	Mastering theory by undergraduates, as well as developing practical skills in business research and analytics, life cycle analysis of the development of promising technologies. The scientific and technical aspects of the project are being studied.	Undergraduate disciplines	Design and estimate documentation for the construction of linear

									structures Strengthening the infrastructure of linear structures Integrated design solutions for the reconstruction of linear structures Solving engineering problems using the finite element method
DB	KV	Construction of transport infrastructure facilities	180	6	1	NO 6	Studies the understanding of geodetic work at all stages of the maintenance of structures, namely surveying, design, carrying out alignment work, executive surveys, geodetic support of operation, preparation of engineering and graphic documentation, during surveying, alignment grids, alignment elements of the route, profile, plan, executive surveys , deformation of the subgrade, on technical operation and basics of design of linear structures, methods of increasing reliability, theoretical foundations and principles of construction of linear structures.	Undergraduate disciplines	Solving engineering problems using the finite element method Innovative technologies in transport construction Digital infrastructure NIRM, IA.
		Maintenance and repair of transport infrastructure facilities				NO 6	The study of modern methods, methods and technical means of mechanization, mechanization and automation for the development of technological processes for complex complexes and certain types of work on the current maintenance and repair of transport infrastructure facilities, taking into account their technical, technological and operational characteristics and feasibility studies of capital	Undergraduate disciplines	Solving engineering problems using the finite element method Innovative

							investments and operating costs.		technologies in transport construction Digital infrastructure NIRM, IA.
DB	KV	Design and estimate work in transport construction	180	6	2	NO 7	Studies the functional and operational requirements of transport construction, the requirements of regulatory and legislative acts and documents, design output data, the procedure for developing, forming and making design decisions, evaluating the quality of design decisions and the development of design and estimate documentation with design and estimate documentation, general information about design and survey work and estimate documentation for transport construction.	Undergraduate disciplines	Solving engineering problems using the finite element method Inspection and testing of transport structures Technical diagnostics of transport structures NIRM, IA.
		Design and estimate documentation of transport structures				NO 7	Studies the preparation of a set of documents that reveal the essence of the project and contain the rationale for its feasibility and further implementation, carried out to ensure the reliability and durability of transport structures, using the theoretical foundations of compaction of the roadbed and normalization of the degree of compaction, the main provisions on methods and means to ensure the required degree of compaction of transport structures.	Undergraduate disciplines	Solving engineering problems using the finite element method Inspection and testing of transport structures Technical diagnostics of transport structures NIRM, IA.
DB	KV	Innovative	180	6	2	NO 8	Study of the essence, principles and directions of digital	Undergraduate	Solving

		technologies in transport construction				activity, information and analytical automated systems of organizations (enterprises) to ensure the quality of transport construction with technical solutions aimed at simplifying the process and reducing construction time, operational management	te disciplines	engineering problems using the finite element method Research practice Strengthening the infrastructure of linear structures Integrated design solutions for the reconstruction of linear structures
		Digitalization of transport infrastructure			NO 8	Formation of theoretical knowledge in the field of digital technologies used in production, as well as familiarization with the main trends in the development of production due to the introduction of digital technologies. During the development, the sustainable development of transport infrastructure is studied, increasing the overall economic effect of the design, construction and operation of transport infrastructure through the use of digital technologies, informatization in the field of planning, design, construction and operation of transport infrastructure.	Undergraduate disciplines	Solving engineering problems using the finite element method Research practice Strengthening the infrastructure of linear structures Integrated design solutions for the reconstruction of linear structures

		Diagnostics of transport infrastructure objects	270	9	3	NO 9	Studies the logical correspondence between the various requirements of regulatory literature in the diagnosis of transport infrastructure facilities (calculation of load capacity, load and impact, bearing capacity, deformations and displacements, technical and economic indicators, development of survey and test programs, proposals and measures for effective and safe diagnostic methods) in order to make the most optimal decisions to assess their technical condition.	Undergraduate disciplines	NIRM, IA.
		Monitoring the technical condition of transport infrastructure facilities				NO 9	Studies the basics of analyzing the technical condition of transport infrastructure facilities based on the results of surveys, the development of methodological materials, proposals and measures for effective and safe methods of surveys and tests of transport infrastructure facilities, the fundamental methods and methods of surveys and tests of artificial structures necessary for the purposes of solving practical tasks to assess their technical condition	Undergraduate disciplines	NIRM, IA.
PD	KV	Strengthening transport infrastructure facilities	180	6	6	NO 10	The formation of knowledge of holistic perception and prospects for strengthening the current technical condition of infrastructure facilities to modern requirements is aimed at studying approaches used for processing data on design and problem solving by methods of sorting through possible new parameters, operational, technical conditions for placing devices of all farms based on the results of technical and economic decisions.	Undergraduate disciplines	NIRM, IA.
		Integrated design solutions for the reconstruction of transport infrastructure facilities				NO 10	Assess the technical condition and equipment of linear structures (state of constant parameters, compliance with their design standards, operational indicators) to solve problems of changing parameters, in preparing complex design solutions for infrastructure in general that meet the requirements for increasing throughput and carrying capacity that are optimal in terms of timing and volume operational and economic measures for the reconstruction of linear structures	Undergraduate disciplines	NIRM, IA.



ТОО «Нурлы Кала 2030»

РК, г.Алматы, мкр.Мамыр-4, д.197А, оф.№303
БИН 150540011726, ГСЛ. №16003073

тел: 8702 95 15 666
Email: nurly2030@mail.ru

ЭКСПЕРТНОЕ ЗАКЛЮЧЕНИЕ

на образовательную программу «7М07161 – Инженерия транспортной инфраструктуры»
Уровень подготовки: магистратура научно-педагогическая (2 года)

В учебном плане образовательной программы "7М07161 Инженерия транспортной инфраструктуры" (2 года) на основе опыта, определен перечень всех учебных дисциплин обязательного компонента и компонента по выбору, трудоемкость каждой учебной дисциплины в кредитах, последовательность их изучения, виды учебных занятий и формы контроля. Актуально изучение вопросов экологической обстановки и обеспечение условий безопасной трудовой деятельности на предприятиях транспортно-эксплуатационного комплекса инфраструктуры транспортных сооружений.

Профессиональная подготовка выпускников: Сотрудники, прошедшие обучение по данной программе, демонстрируют высокий уровень знаний в области инженерии транспортной инфраструктуры. Они обладают необходимыми теоретическими знаниями и практическими навыками для успешной работы в данной сфере.

Актуальность учебного плана: Программа предоставляет студентам современные знания и широкий спектр компетенций, необходимых для успешной карьеры в области транспортной инфраструктуры. Мы отмечаем актуальность и соответствие учебной программы современным требованиям индустрии.

Практическая направленность программы: Большой упор на практическое применение знаний позволяет выпускникам с легкостью интегрироваться в рабочую среду и эффективно решать задачи, связанные с инженерией транспортной инфраструктуры.

Адаптивность к изменениям в индустрии: Программа обладает гибкостью и способностью быстро адаптироваться к изменениям в индустрии, что позволяет выпускникам быть в курсе последних тенденций и новых технологий.

Подготовка к карьере: Студенты, завершившие программу, обладают не только техническими знаниями, но и мягкими навыками, такими как коммуникация, решение проблем, и умением работать в команде, что важно для успешной карьеры.

На основе нашего опыта с выпускниками данной программы, могу утверждать, что она готовит высококвалифицированных специалистов, готовых к решению реальных задач в сфере транспортной инфраструктуры.

С уверенностью могу рекомендовать данную программу как важный и эффективный инструмент подготовки специалистов в области инженерии транспортной инфраструктуры.

С уважением,
Директор
ТОО «Нурлы Кала 2030»



Абайхан Е.

Рецензия
на образовательную программу
«7М07161 Инженерия транспортной инфраструктуры» по направлению
подготовки «7М071 – Инженерия и инженерное дело»

Образовательная программа (магистратура научно-педагогическая – 2 года) «7М07161 Инженерия транспортной инфраструктуры» содержит следующую информацию: квалификация выпускника, форма и срок обучения, направление и характеристика деятельности выпускников, приведен полный перечень компетенций, которыми должен обладать выпускник в результате освоения данной образовательной программы.

Дисциплины учебного плана по рецензируемой образовательной программе формируют весь необходимый перечень общекультурных и профессиональных компетенций, предусмотренных ГОСО по соответствующим видам деятельности.

В учебном плане образовательной программы определен перечень всех учебных дисциплин обязательного компонента и компонента по выбору, трудоемкость каждой учебной дисциплины в кредитах, последовательность их изучения, виды учебных занятий и формы контроля. Каталог элективных дисциплин, Каталог внутривузовского компонента полностью отражают преемственность дисциплин («Техническая диагностика транспортных сооружений», «Усиление инфраструктуры линейных сооружений», «Инновационные технологии в транспортном строительстве», «Решение инженерных задач методом конечных элементов»).

Соблюдена последовательность изучения дисциплин, включены дисциплины необходимые для производства и технологического процесса.

Содержание рабочих программ учебных дисциплин и практик позволяет сделать вывод, что оно соответствует компетентностной модели выпускника.

Образовательная программа предусматривает профессионально-практическую подготовку магистрантов в виде практики. Содержание программ практик свидетельствует об их способности сформировать практические навыки обучающихся.

Для разработки образовательной программы были привлечены опытный профессорско-преподавательский состав, ведущие представители работодателя, обучающиеся, учтены их требования при формировании дисциплин профессионального цикла.

Заключение:

В целом, рецензируемая образовательная программа отвечает основным требованиям ГОСО, национальной рамке квалификаций, отраслевой рамке квалификаций, профессиональных стандартов, Атласу новых профессий и способствует формированию общекультурных и профессиональных компетенций по направлению подготовки «7М071 – Инженерия и инженерное дело».

Рецензент

**«Казахского национального
исследовательского технического
университета имени К.И. Сатпаева»
Профессор кафедры «СиСМ»
доктор технических наук**



(подпись, дата, печать)

Шаяхметов С.Б.



ТОО «Нурлы Кала 2030»

РК, г.Алматы, мкр.Мамыр-4, д.197А, оф.№303
БИН 150540011726, ГСЛ. №16003073

тел: 8702 95 15 666
Email: nurly2030@mail.ru

Рекомендательное письмо от работодателя

Уважаемая Салтанат Нурадиловна!

Руководство ТОО «Нурлы Кала» в лице Абайхан Ербулан ознакомилось с содержанием образовательной программы «7М07161 Инженерия транспортной инфраструктуры» и внесло следующие рекомендации:

- включить больше практических заданий, связанных с реальными кейсами из индустрии. Это поможет студентам лучше понимать и применять полученные знания на практике;
- установить партнерство с компаниями инженерной сферы для организации стажировок или практик. Это даст студентам возможность познакомиться с реальными задачами индустрии и наладить контакты для будущего трудоустройства.
- обновить программу с учетом последних тенденций и новых технологий в области транспортной инфраструктуры. Это позволит выпускникам быть более конкурентоспособными на рынке труда.
- добавление курсов, которые объединяют различные области знаний (например, инженерия, IT технологиями, управление проектами, экономика), поможет студентам получить более широкий спектр компетенций.
- актуализировать содержание образовательных программ путем включения в цикл базовых и профилирующих модулей дисциплины, отражающие современные инновационные технологии в транспортно-коммуникационной сфере. Предлагается включить следующие дисциплины: «Диагностика объектов транспортной инфраструктуры», «Устройство объектов транспортной инфраструктуры», «Инновационные технологии в транспортном строительстве»;
- увеличить количество часов, выделяемых на проведение производственных практик.

Директор
ТОО «Нурлы Кала 2030»



Абайхан Е.

13. Protocols of review and approval

Академия логистики и транспорта

ПРОТОКОЛ №6 (начало формирования ОП)
Заседания

Академического комитета по образовательной программе и ведущих преподавателей кафедры «Строительная инженерия»

г. Алматы

«15» 03 2023 года

Председатель: Исмагулова С.О.

Секретарь: Жадраев Р.Ж.

Присутствовали: члены Академического комитета, ведущие ППС кафедры

Представители с производства: Директор ТОО «Нурлы Кала 2030» Абайхан Е.,
Директор ТОО «КазДПИ» Кансейтов А.Ш.

Обучающиеся: Магистрант 2-го курса, группа МП-ИТИ-21-1 Серікбай А.Д.

ПОВЕСТКА ДНЯ:

1. Рассмотрение компетентностной модели выпускника
 2. Рассмотрение возможности включения дисциплин в КЭД и РУП
- По первому вопросу

ВЫСТУПИЛ(а):

Зав. кафедрой Исмагулова С.О. предложил рассмотреть компетентностную модель выпускника по 3 уровням образования: бакалавриат, магистратура, докторантура.

Компетентностная модель выпускника включает в себя следующие части:

- Цель и задачи образовательной программы;
- Результаты обучения;
- Область, объекты, виды и функции профессиональной деятельности;
- Перечень должностей по образовательной программе;
- Профессиональные сертификаты, полученные по окончании обучения;
- Требования к предшествующему уровню образования.

ВЫСТУПИЛ: Директор ТОО «Нурлы Кала 2030» - Абайхан Е., который предложил в силу специфики их организации отразить в объектах профессиональной деятельности следующее: Современные инновационные технологии в транспортно-коммуникационной сфере.

ВЫСТУПИЛ:

Член кафедры Ибраимов А.К., который предложил утвердить.

После рассмотрения компетентностной модели выпускника было предложено утвердить данную Модель по 3 уровням образования.

ПОСТАНОВИЛИ:

- предоставить компетентностную модель выпускника по 3 уровням образования: бакалавриат, магистратура, докторантура для рассмотрения и утверждения на Совете института «Транспортная инженерия».

По второму вопросу

ВЫСТУПИЛ(а): зав кафедрой Исмагулова С.О. с предложением заслушать представителей работодателей и обучающихся по включению новых дисциплин в КЭД и РУП приема 2023г.

ВЫСТУПИЛ: Директор ТОО «КазДПИ» Кансейтов А.Ш.

Организации заинтересованы в специалистах, имеющих хороший уровень подготовки и знаний в области проектирования и строительство мостов, тоннелей и метрополитенов. Вносим предложения о внесении в РУП следующих востребованных дисциплин: Техническая диагностика транспортных сооружений, Усиление инфраструктуры линейных сооружений, Инновационные технологии в транспортном строительстве.

ВЫСТУПИЛ: Магистрант 2-го курса, группа МП-ИТИ-21-1 Серікбай А.Д.

Считаем необходимым включить в РУП следующие дисциплины: Проектно-сметная документация транспортных сооружений, Содержание и ремонт инфраструктурных объектов транспорта.

ПОСТАНОВИЛИ:

1. Информацию принять к сведению;
2. Учесть предложения и рекомендации работодателей и обучающихся;

Рассмотреть включение в РУП следующие дисциплины: Проектно-сметная документация транспортных сооружений, Содержание и ремонт инфраструктурных объектов транспорта.

Председатель:



Исмагулова С.О.

Секретарь:



Жадраев Р.Ж.

Академия логистики и транспорта

ПРОТОКОЛ №7 (перед утверждением ОП на УС)

Заседания КОК УМБ института «Транспортная инженерия»

г. Алматы

«15» марта 2023 года

Председатель: Чигамбаев Т.О.
Секретарь: Утепова А.

Присутствовали: члены КОК УМБ, члены Академического комитета
Представители с производства: Директор ТОО «Нурлы Кала 2030» Абайхан Е.,
Директор ТОО «КазДПИ» Кансейтов А.Ш.
Обучающиеся: Магистрант 2-го курса, группа МП-ИТИ-21-1 Серікбай А.Д.

ПОВЕСТКА ДНЯ:

1. Рассмотрение Каталога элективных дисциплин (КЭД), Рабочей учебной программы (РУП), паспорта образовательных программ бакалавриата, магистратуры и докторантуры.

ВЫСТУПИЛ(а): зав. кафедрой Исмагулова С.О. представил (а) на рассмотрение КЭД, РУП бакалавриата, магистратуры и докторантуры.

На кафедре «Строительная инженерия» было проведено заседание с привлечением представителей работодателей и обучающихся по обсуждению структуры и содержанию образовательной программы 7М07161 Инженерия транспортной инфраструктуры.

Представителями работодателей и обучающимися были предложены ряд новых актуальных дисциплин, которые кафедра одобрила и включила в новые КЭД и РУП.

ПОСТАНОВИЛИ:

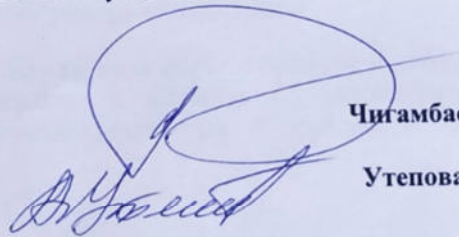
1. Информацию принять к сведению;
2. Учесть все предложения и рекомендации работодателей, представителей студенческого актива;
3. Представить КЭД, РУП и ОП бакалавриата, магистратуры и докторантуры для рассмотрения и утверждения на Совете института, УС Академии.

Председатель КОК УМБ

Секретарь

Чигамбаев Т.О.

Утепова А.



15. REGISTRATION SHEET OF CHANGES

No.	Section, paragraph document	Type of change (replace, cancel, add)	Number and date notices	Change made	
				date	Last name and initials, signature, position