

**Joint stock company
«Mukhamedjan Tynyshpayev ALT University»**



APPROVED
by the decision of the
ALT Academic Council from
03 2025y. (Protocol No. 8)
Chairman of the Board – Rector
M.S. Zharmagambetova

EDUCATIONAL PROGRAM

**Name: 8D07169 – TRANSPORT INFRASTRUCTURE ENGINEERING
(PROFILE)**

Level of training: Doctoral Studies (PhD)

**Code and classification of training area: 8D071 – Engineering and
Engineering Science**

**Code and group of the educational program: D210 – Mainline Networks and
Infrastructure**

Registration date in the Register: 30.06.2025

Registration number: 8D07100153

Almaty, 2025

1. INFORMATION ON THE CONSIDERATION, APPROVAL AND ADOPTION OF THE PROGRAM, DEVELOPERS, EXPERTS AND REVIEWERS

1. DEVELOPED BY:

Associate professor of ALT,
doctor of technical sciences

S.O. Ismagulova

Associate professor of ALT,
candidate of technical sciences

T.Zh. Tulemissov

Senior-lecturer,
master of technical sciences

A.M. Abliazova

Assistant lecturer,
master of technical sciences

A.A. Kenzhebekova

2. EXPERTS:

Director of the Branch of JSC "NC "KTZ"
– "Almaty Mainline Network Division"

A.T. Zheksenbiev

Head of the department «Construction
and building materials» Institute of
architecture and construction of KNRTU
named after K.I. Satpayev, professor,
doctor of technical sciences

S.B. Shayakhmetov

3. REVIEWERS:

Director of «GeoTrack» LLP,
candidate of technical sciences

D.K. Nusupov

Head of the Branch of JSC "NC "KTZ"
– "Almaty Mainline Network Division"
– "Almaty Track Maintenance Division"

Zh.E. Asanov

4. CONSIDERED AND RECOMMENDED:

Meeting of the AC (department of TC)
Protocol No. 1, «24» 02. 2025

G.B. Karibayeva

Meeting of the Institute's EMB
of Transport and Construction
Protocol No. 8, «17» 03. 2025

Sh.A. Abdreshov

Meeting of the EMC of
M. Tynyshpayev ALT University
Protocol No. 4, «20» 03. 2025

A.K. Kodzhabergenova

5. APPROVED by the decision of the Academic council dated «27» 03. 2025, Protocol No. 8

6. INTRODUCED FOR THE FIRST TIME

2. REGULATORY REFERENCES

The educational program has been developed on the basis of the following regulatory legal acts and professional standards:

1. Law of the Republic of Kazakhstan “On Education” dated July 27, 2007, No. 319-III.
2. National Qualifications Framework, approved by the minutes of the meeting of the Republican Tripartite Commission on Social Partnership and Regulation of Social and Labor Relations dated March 16, 2016.
3. Sectoral Qualifications Framework for the field of “Education”, approved by the Minutes No. 3 of the meeting of the Sectoral 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.
4. Standard Rules for the Activities of Higher and Postgraduate Education Organizations, Order of the Ministry of Education and Science of the Republic of Kazakhstan dated 30.10.2018, No. 595.
5. State Compulsory Standard of Postgraduate Education, Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated 20.07.2022, No. 2.
6. Qualification Directory of Positions of Managers, Specialists, and Other Employees, approved by the Order of the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan dated August 12, 2022, No. 309, with amendments and additions dated 25.07.2023.
7. Classifier of Areas of Training for Higher and Postgraduate Education, approved by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018, with amendments and additions dated 25.07.2023.
8. Classifier of Areas of Training for Higher and Postgraduate Education, approved by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 13, 2018, No. 569 (with amendments and additions as of 16.05.2023).
9. Rules for Maintaining the Register of Educational Programs Implemented by Higher and (or) Postgraduate Education Organizations, and the Grounds for Inclusion in and Exclusion from the Register, Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated 12.10.2022, No. 106.
10. RI-ALT-33 “Regulations on the Procedure for Developing Educational Programs of Higher and Postgraduate Education.”
11. Managers in the Field of Highways, dated 20.12.2024.
12. Construction of Roads and Highways, dated 21.12.2022.

3. EDUCATIONAL PROGRAM PASSPORT

№	Field name	Note
1	Registration number	8D07100153
2	Code and classification of the field of education	8D07 – Engineering, Manufacturing and Construction Industries
3	Code and classification of training areas	8D071 – Engineering and Engineering Science
4	Code and group of educational programs	D210 – Mainline Networks and Infrastructure
5	Name of the educational program	8D07169 – Transport Infrastructure Engineering (Profile)
6	Type of EP	New
7	Goal of the EP	Training of leading scientists and experts capable of conducting original research and developing innovative methods for the design, management, and development of mainline transport systems and infrastructure based on modern scientific approaches.
8	ISCED level	8
9	NQF level	8
10	SQF level	8
11	Distinctive features of the EP	None
	Partner-University (JEP)	-
	Partner-University (DEP)	-
12	Mode of study	Full-time
13	Language of instruction	Kazakh, russian
14	Credit volume	180
15	Awarded degree	Doctor of Philosophy (PhD) in the Educational Program 8D07169 – Transport Infrastructure Engineering (Profile)
16	Presence of an appendix to the license for the area of personnel training	№ 003 8D071 to License № KZ87LAA00036465
17	Presence of ep accreditation	no
	Name of the accreditation body	-
	Accreditation validity period	-

4. GRADUATE COMPETENCE MODEL

Objectives of the Educational Program:

1. To support the formation of graduates' ability to:
 - 1) apply knowledge, understanding, and problem-solving skills in new or unfamiliar situations within broader (or interdisciplinary) contexts related to the field of study;
 - 2) demonstrate knowledge, skills, and abilities that ensure forecasting and preliminary assessment of research outcomes;
 - 3) develop skills and abilities necessary for conducting specific scientific processes, experiments, and practical research;
 - 4) develop high-level skills in working with primary and secondary sources, with particular emphasis on analyzing and identifying key problem areas;
 - 5) continue learning independently.
2. To support the formation of graduates' readiness to:
 - 1) conduct scientific research that can contribute to the development of mainline railway networks and the road sector;
 - 2) demonstrate a significant body of scientific knowledge acquired systematically and reflecting the current state of science and practice in the field of mainline networks and the road industry;
 - 3) demonstrate the ability to design and implement projects aimed at generating new knowledge or practical solutions in relevant areas of mainline networks and the road sector;
 - 4) demonstrate a detailed understanding of scientific methods applied in research activities.

Learning Outcomes (According to NQF & Dublin Descriptors):

LO 1 – Formulate a methodology integrating hypothesis development, selection of modern data collection and analysis methods, critical interpretation of results, and development of innovative recommendations for transport infrastructure considering ethical and interdisciplinary factors.

LO 2 – Assess the technical condition of transport facilities using advanced diagnostic technologies, data analysis, and risk-oriented criteria to ensure reliability, safety, sustainability, and strategic infrastructure planning.

LO 3 – Justify the sustainability of transport infrastructure using quantitative risk and sustainable development models that incorporate climatic, technological, and social factors for ensuring system reliability and safety.

LO 4 – Apply scientific experimental methods for planning, conducting, and analyzing research, ensuring the validity of conclusions, control of variables, and increasing the scientific significance of results in the profile field.

LO 5 – Apply decision-making theories for analyzing and optimizing transport-related tasks considering risks, resources, socio-economic factors, and academic writing skills.

LO 6 – Design geoinformation solutions for transport infrastructure by integrating AI, spatial data, analytics, and visualization for planning, monitoring, and supporting strategic management decisions.

Field of Professional Activity: Mainline transport networks and the road sector.

Objects of Professional Activity: Research and design institutions, bureaus, companies, firms and organizations (enterprises), and the road industry.

Types of Professional Activity:

- organizational and managerial;

- production-technological and operational;
- design and calculation;
- scientific research;
- legal, expert, and consulting activities.

Professional Functions:

- 1) designing and organizing enterprises (and/or their structural units) for the production of construction materials and structures for transport infrastructure facilities;
- 2) optimizing compositions, properties of manufactured products, and modes of technological equipment operation;
- 3) organizing and implementing measures to ensure stability and efficiency of technological processes at operating transport sector enterprises;
- 4) developing technological processes, performing technological production calculations, preparing technical regulatory documentation (enterprise standards), products and structures for transport facilities;
- 5) managing enterprises of the transport sector or their structural divisions;
- 6) organizing, planning, and performing scientific and experimental research activities;
- 7) conducting experimental and calculation-experimental research to improve product quality indicators, and enhancing and implementing new technologies.

List of Specialist Positions:

- Researcher (Scientific employee);
- Professor, Associate Professor, Assistant Professor, Senior Lecturer;
- Researcher, Lecturer-Researcher;
- Specialists in mainline networks and transport infrastructure.

**5. MATRIX OF CORRELATION OF LEARNING OUTCOMES FOR THE
EDUCATIONAL PROGRAM WITH ACADEMIC DISCIPLINES/MODULES**

№	Name of Discipline	Credits	Matrix of Correlation Between Learning Outcomes of the Educational Program and Academic Disciplines					
			LO1	LO2	LO3	LO4	LO5	LO6
1	2	4	5	6	7	8	9	10
1	Academic Writing	4	+					
2	Research Methods	6		+	+	+		
3	Diagnostics and Assessment of the Technical Condition of Transport Infrastructure Facilities	5			+			
4	Sustainability of Transport Infrastructure Facilities	5			+			
5	Fundamentals of Scientific Experiments	5		+	+	+		
6	Decision-Making Theory in Transport Infrastructure Tasks	5					+	
7	Geoinformation Systems in Transport Infrastructure	5						+
8	Industrial (Professional) Internship	10	+	+				
9	Experimental Research Work of the Doctoral Student, including Internship and Dissertation Work	10		+	+	+	+	+
10	Writing and Defense of the Doctoral Dissertation	12		+	+	+	+	+

6. STRUCTURE OF THE DOCTORAL EDUCATIONAL PROGRAM (PHD)

№ in order	Name of Cycles of Disciplines and Types of Activities / Total Workload	Overall labor intensity	
		in academic hours	in academic credits
1.	Theoretical Training	1350	45
1.1	Cycle of Basic Disciplines (BD): 1) Academic Writing 2) Research Methods		
1)	University Component and/or Elective Component		
1.2	Cycle of Profile Disciplines (PD)		
1)	University Component and/or Elective Component		
2)	Industrial Internship	Not less than 600	Not less than 20
2	Experimental Research Work of the Doctoral Student (ERWD)	3690	123
1)	Experimental research work of the doctoral student, including internship and dissertation research		
3	Additional Types of Training (ATT)		
4	Final Attestation (FA)	360	12
1)	Writing and Defense of the Doctoral Dissertation	360	12
	Total	Not less than 5400	Not less than 180

DATE

 Springer

УТВЕРЖДАЮ:

Решением Ученого совета
АО «АЛТ Университет имени Б.Т. Шонордзе»
от 27 марта 2025 г. Протокол № 1

President, American
M.C. JAMES
ALL UNIVERSITY

СРЕДСТВО *Безопасная медицина*

УТВЕРЖДЕНО
Решением Ученого совета
АО «АЛТ Университет имени М.Т.Жукова»
от 27 марта 2025 г. Протокол № 3

ПОДПИСАНО
Проректором Ученого совета
М.С. Жарыкбаевым

АЛТ УНИВЕРСИТЕТ
ИМЕНИ М.Т.ЖУКОВА

АЛТ УНИВЕРСИТЕТ ИМЕНИ М.Т.ЖУКОВА		
1 курс	2 курс	3 курс
1 сем.	2 сем.	3 сем.
2	2	2

Закрытая кафедра

PASPADTANO:

Директор института ТИС Абдрахманов А.А.

Заведующий кафедрой ТС _____ Кирьбаева Г.В.

AGREED

"GEO-TRACK" LLP Director,
Candidate of Technical Sciences

Nussupov D.K.

2025

«Мухаметжан Тынышбаев атындағы
ҚАЗАҚСТАН РЕСПУБЛИКАСЫ АЛМАТЫ АЯЛ-
МАНЫ АУДАНЫ
INSTITUTE OF TRANSPORT AND
CONSTRUCTION OF «M. Tynyshbayev ALT
UNIVERSITY» JSC
АО «АЛТ Университет имени Мухаметжана Тынышбаева»
Sh.A. Abdrashov
2025

8. CATALOGUE OF UNIVERSITY COMPONENT DISCIPLINES

8D07169 – TRANSPORT INFRASTRUCTURE ENGINEERING
Year of admission: 2025
Duration of study: 3 years

EDUCATIONAL PROGRAM
Education level: Doctoral Studies

Module	Cycle	Component	Course Title	Total Workload			Semester	Learning Outcomes	Brief Course Description	Prerequisites	Postrequisites
				in academic hours	in academic credits						
1	2	3	4	5	6	7	8		9	10	11
									The objectives of the discipline are: mastering the structural features and requirements for the design of academic and scientific texts. Improve the skills of abstracting and concise presentation of information, writing a bibliographic review. The ability to report scientific achievements to the general public and write scientific articles for publication in international publications.	Disciplines of the cycle of basic and specialized disciplines of the master's degree program	Industrial Practice, Experimental research work of a doctoral student, including an internship and completion of a doctoral dissertation Final assessment
Module 1 – Scientific Competencies	BD	UC	Academic writing	120	4	1	LO1		Formation of a systematic understanding of theoretical and applied scientific research methods, including planning, organization and implementation of experimental research projects. Modern methods of data analysis and interpretation, information processing technologies, digital tools and approaches based on artificial intelligence, competencies for the preparation of scientific publications, presentation and protection of research results are being mastered. Special attention is paid to	Disciplines of the cycle of basic and specialized disciplines of the master's degree program	Industrial Practice, Experimental research work of a doctoral student, including an internship and completion of a doctoral dissertation Final assessment
	BD	UC	Research methods	180	6	1	LO2, LO3, LO4				

[illegible]

Head of the department of «Transport construction»

G.B. Karibaeva

AGREED

"GEO TRACK" LLP Director,

Candidate of Technical Sciences

Nussupov D.K.

« 2025

«Мухаметжан Тынышбаев атындағы АЛТ университеті» АҚ

Director of the Institute of Transport and construction of «M. Tyныshpayev AЛT University» JSC

Sh.A. Abdrashov

« 2025

9. CATALOGUE OF ELECTIVE COMPONENT DISCIPLINES

EDUCATIONAL PROGRAM
Education level: Doctoral Studies

8D07169 – TRANSPORT INFRASTRUCTURE ENGINEERING
Year of admission: 2025
Duration of study: 3 years

Module	Cycle	Component	Course Title	Total Workload		Semester	Learning Outcomes	Brief Course Description	Prerequisites	Postrequisites
				in academic hours	in academic credits					
1	2	3	4	5	6	7	8	9	10	11
Module 1 – Scientific Competencies	BD	UC	Diagnostics and assessment of the technical condition of transport infrastructure facilities	150	5	1	LO3	The discipline studies methods for diagnosing, monitoring and assessing the technical condition of transport infrastructure facilities in order to ensure their reliability, safety of operation and extension of service life.	Disciplines of the cycle of basic and specialized disciplines of the master's degree program	Industrial Practice, Experimental research work of a doctoral student, including an internship and completion of a doctoral dissertation Final assessment
			Sustainability of transport infrastructure facilities					The discipline studies the principles of ensuring the stability of transport infrastructure facilities to external and internal influences, including natural and man-made factors, using methods of risk analysis, modeling and engineering strengthening of structures.	Disciplines of the cycle of basic and specialized disciplines of the master's degree program	Industrial Practice, Experimental research work of a doctoral student, including an internship and completion of a doctoral dissertation Final assessment
Module 2 – Specialized Competencies	PD	EC	Geographic information systems in transport	150	5	1	LO5	The discipline studies the application of geographic information systems in transport infrastructure, including methods of analysis, modeling and management of transport	Disciplines of the cycle of basic and specialized disciplines of the master's degree	Industrial Practice, Experimental research work of a doctoral student,

10. EXPERT CONCLUSIONS

1) Expert Conclusion on the Educational Program

8D07169 – Transport Infrastructure Engineering (Profile)

The educational program 8D07169 “*Transport Infrastructure Engineering*” (Profile) is an important component in the preparation of highly qualified specialists for the implementation and effective management of projects in the field of construction, reconstruction, operation, and maintenance of highways and road construction facilities.

The purpose of this program is to train specialists capable of solving tasks related to the design, organization, and management of transport flows, operation and maintenance of road transport infrastructure, as well as the application of modern technologies in transport engineering and the construction of mainline roads.

Considering the continuously growing requirements for linear transport infrastructure, as well as the need to improve road safety and environmental sustainability of transport systems, the demand for highly qualified specialists in the field of transport engineering is becoming increasingly relevant.

Highways and mainline roads are essential elements of the transport network and play a decisive role in ensuring uninterrupted freight and passenger transportation, reducing travel time, and improving logistics processes. Therefore, new technological solutions, improved quality of design, construction, and operation of road facilities are required, which in turn demands highly skilled personnel.

The program includes training in several key areas:

1. Design and construction of transport infrastructure;
2. Operation and management of transport infrastructure;
3. Management of construction and reconstruction projects;
4. Technical maintenance and road safety;
5. Environmental safety and sustainable development of transport

systems.

Doctoral students will develop the following competencies:

- Design of mainline roads and infrastructure facilities considering safety, environmental, and innovative technology requirements.
- Assessment of the environmental impact of transport infrastructure and development of measures to minimize such impact.
- Application of intelligent transport systems and other high-tech solutions to increase the efficiency of road operation.

Assessment of the Program's Compliance with Labor Market Requirements

The program aligns with current labor market needs in the field of transport infrastructure, where there is a growing demand for highly qualified specialists capable of solving complex problems in the design, construction, and operation of roads.

Advantages of the Program

- Interdisciplinarity;

- Use of modern technologies.
- Recommendations:
- Expand the module dedicated to digital technologies in transport infrastructure and road safety.
- Increase the number of practical training sessions and internships at road construction sites and transport companies involved in infrastructure operation.

The doctoral program 8D07169 “*Transport Infrastructure Engineering (Profile)*” is a high-quality educational program that fully meets modern industry requirements and provides doctoral students with the necessary knowledge and competencies for successful professional activity. The program is well-balanced in content and aims to prepare specialists capable of solving complex engineering and managerial tasks in the field of transport infrastructure. It is recommended for implementation in higher technical education institutions.

Expert,
Director of the Branch
JSC “National Company
‘Kazakhstan Temir Zholy’” –
“Almaty Mainline Network Division”



Zheksenbiyev A.T.

2) EXPERT CONCLUSION

on the PhD Educational Program 8D07169 – “Transport Infrastructure Engineering”

The PhD educational program 8D07169 – “*Transport Infrastructure Engineering*” represents a modern and well-balanced model for training research personnel, aimed at solving applied and strategic tasks related to the development of the transport system under the conditions of digitalization, urbanization, and climate challenges.

1. Program Goals and Objectives

The program is aimed at developing deep professional and research competencies in doctoral students, covering the entire life cycle of transport infrastructure—from conceptual design to operation and monitoring.

The program ensures the development of skills in:

- independent scientific analysis;
- critical evaluation of technical solutions;
- implementation of innovative technologies;
- management of transport systems based on modern IT solutions.

2. Compliance with Modern Requirements

The program complies with international educational and scientific standards and includes:

- modules on managing the sustainability and reliability of infrastructure facilities;
- practice-oriented courses and research seminars;
- preparation for publication and patent activity;
- academic mobility and international internships.

3. Prospects and Application

The acquired knowledge and skills will enable graduates to:

- manage innovative projects in the transport sector;
- participate in the development of regulatory and methodological documents;
- integrate into international research networks and consortia.

The program contributes to strengthening cooperation between science, education, and industry, as well as fostering a new level of engineering thinking.

Conclusion

The PhD educational program 8D07169 – “*Transport Infrastructure Engineering*” is relevant, scientifically grounded, and oriented toward training highly qualified specialists capable of influencing the development of the national transport system and international engineering practices.

It is recommended for implementation, further development, and academic cooperation.

**Expert,
Head of the Department
“Construction and Building Materials”
Satbayev Kazakh National Research
Technical University,
Professor, Doctor of Technical Sciences**



Shayakhmetov S.B.

11. REVIEWERS' CONCLUSIONS

1) Review of the Educational Program

8D07169 – “Transport Infrastructure Engineering”

The educational program is a profile-oriented one-year training aimed at providing specialized knowledge and skills in the chosen field.

The doctoral program 8D07169 – “*Transport Infrastructure Engineering*” has been developed in accordance with modern requirements for preparing highly qualified research and engineering personnel in the field of transport engineering. The program is aimed at developing deep theoretical knowledge, scientific analytical skills, the ability to conduct applied and fundamental research, and the competence to develop and implement innovative engineering solutions in the field of transport infrastructure.

1. Relevance

The development of transport infrastructure is a priority for ensuring sustainable economic growth, enhancing logistical connectivity of regions, and integrating into international transport corridors. The program meets the current challenges and is essential for training highly qualified specialists capable of ensuring technological modernization and scientific support for transport projects.

2. Program Content

The program includes the study of:

- modern engineering disciplines;
- intelligent transport systems (ITS);
- principles of sustainable development of transport infrastructure;
- geoinformation technologies;
- digital modeling and data analysis;
- research methodology and academic writing.

Additionally, the program provides for:

- mandatory scientific internship;
- participation in international scientific projects;
- publication activity in journals indexed in Scopus and Web of Science.

3. Practical and Scientific Focus

The program combines academic preparation with a practice-oriented approach. Research topics cover the following relevant areas:

- modernization of transport networks;
- digitalization of infrastructure management;
- improvement of safety and energy efficiency;
- implementation of innovative construction and operational technologies.

Conclusion

The educational program 8D07169 – “*Transport Infrastructure Engineering*” is relevant, scientifically grounded, and aligned with the objectives of training highly qualified research engineering personnel. The program takes into account the needs of the industry, contributes to the development of the scientific and technological potential of the country, and can be recommended for implementation within the postgraduate education system, particularly for the preparation of PhD doctors.

Reviewer,
Director of LLP “GeoTrack”,
Candidate of Technical Sciences



Nusupov D.K.

2) Review of the Educational Program

8D07169 – “Transport Infrastructure Engineering” (profile)

The educational program 8D07169 – “*Transport Infrastructure Engineering*” has been developed in consideration of modern trends in the transport industry and is aimed at preparing highly qualified research and engineering personnel.

The content of the program includes an in-depth study of theoretical and applied aspects of the design, construction, operation, and reconstruction of transport infrastructure facilities. Special attention is given to research activities, digitalization, sustainable development, and the implementation of innovative technologies in transport construction.

The curriculum is oriented toward the development of research competencies, analytical thinking, and the ability to solve complex engineering tasks.

The program complies with the requirements of the State Compulsory Standard of Higher and Postgraduate Education of the Republic of Kazakhstan, as well as international academic standards.

The program provides active collaboration with industrial organizations, research institutes, and enterprises of the transport sector, which contributes to the practical relevance of scientific research.

Conclusion:

The educational program 8D07169 – “*Transport Infrastructure Engineering*” meets modern requirements and the needs of the transport industry, ensures the preparation of highly qualified scientific personnel, and is recommended for approval.

Reviewer,
Head of the Branch
JSC “NC “KTZ” –
“Almaty Mainline Network Division”
“Almaty Track Distance”



Asanov Zh.E.

12. LETTER OF RECOMMENDATION
Branch of JSC “National Company ‘Kazakhstan Temir Zholy’” –
“Almaty Mainline Network Division”

To ALT University
named after M. Tynyshpaev

LETTER OF RECOMMENDATION

The Branch of JSC “National Company ‘Kazakhstan Temir Zholy’” – “Almaty Mainline Network Division” expresses full support and provides a high professional assessment of the PhD educational program 8D07169 – “*Transport Infrastructure Engineering*” (profile) developed by ALT University named after Mukhamedzhan Tynyshpaev.

Our organization, being a key regional subdivision of the mainline network of JSC “NC “KTZ”, has a continuous need for highly qualified engineering personnel and scientific-analytical specialists capable of solving complex tasks related to the development, modernization, and improvement of transport infrastructure efficiency. After a thorough review of the program content, we are confident that it meets modern scientific and industry standards and fully reflects the current needs of the railway sector.

Scientific and practical significance of the program

The program places significant emphasis on developing research competencies necessary for analyzing infrastructure conditions, assessing reliability, and designing innovative engineering solutions. In-depth study of reliability theory, transport systems modeling, and new design technologies enables PhD candidates to contribute meaningfully to improving the operational characteristics of the railway network.

Focus on innovation and digital technologies

The railway industry is actively implementing digital tools for management, monitoring, and modeling. The inclusion of modules on digitalization of transport processes, big data analysis, geographic information technologies, and intelligent infrastructure management systems aligns with current demands and ensures the preparation of specialists capable of adopting advanced technologies.

Development of managerial and strategic competencies

The program develops knowledge in infrastructure project management, strategic planning, risk assessment, and economic efficiency. These competencies are essential for training leaders and experts capable of making strategically important decisions at the level of the mainline network.

The Branch of JSC “NC “KTZ” – “Almaty Mainline Network Division” confirms its readiness to cooperate with ALT University named after M. Tynyshpaev in the areas of industrial internships, research projects, and dissertation expertise, and considers graduates of the program as priority candidates for scientific-analytical and engineering-management positions.

Conclusion

Based on the above, the PhD educational program 8D07169 – “*Transport Infrastructure Engineering*” is recommended for approval and implementation in the educational process.

Director of the Branch
JSC “National Company
‘Kazakhstan Temir Zholy’” –
“Almaty Mainline Network Division”



Zheksenbiyev A.T.

12. LETTER OF RECOMMENDATION
Branch of JSC “National Company ‘Kazakhstan Temir Zholy’” –
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To ALT University
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Director of the Branch
JSC “National Company
‘Kazakhstan Temir Zholy’” –
“Almaty Mainline Network Division”



Zhaksenbiyev A.T.

13. PROTOCOLS OF CONSIDERATION AND APPROVAL

«ALT University named after Mukhamedzhan Tynyshpayev» JSC

PROTOCOL No. 1

of the meeting of the Academic committee for the educational program
8D07169 – “Transport Infrastructure Engineering” (profile track), and leading lecturers
of the «Transport construction» department

Almaty city

«24» february 2025

Chairperson: Ismagulova S.O.

Secretary: Kusman B.K.

Present: Members of the Academic Committee, leading faculty members of the department

Industry representatives: Zheksenbiyev A.T. (JSC “NC “KTZ”)

Students: Representatives of the PhD program 8D07169

AGENDA:

1. Review of the competency model of the graduate for the educational program 8D07169 – Transport Infrastructure Engineering (profile).
2. Review of the possibility of including new disciplines in the CED (Catalog of Elective Disciplines) and WEP (Working Educational Program).

SPEAKER:

Head of the Department, Karibayeva G.B., proposed to review the graduate’s competency model across three levels of education: bachelor’s, master’s, and doctoral studies.

The competency model of the graduate includes the following sections:

- the purpose and objectives of the educational program;
- learning outcomes;
- the scope, objects, types and functions of professional activity;
- the list of job positions under the educational program;
- professional certificates awarded upon completion of the studies;
- requirements for the preceding level of education.

SPEAKER:

Employer representative — Zheksenbiyev A.T. — emphasized the need to reflect the involvement of graduates in digital modeling, design, and management of transport infrastructure within the objects of professional activity.

SPEAKER:

Department member Tulemisov T.Zh. proposed expanding competencies in the use of BIM technologies, traffic flow analysis, and methods of sustainable development of transport systems. After reviewing the competency model of the graduate, it was proposed to approve the Model for all three levels of education.

RESOLVED:

To submit the competency model of the graduate for the educational program 8D07169 – Transport Infrastructure Engineering (profile) for consideration and approval by the Council of the Institute of Transport and Construction.

Regarding the second item

SPEAKER:

Head of the Department, Karibayeva G.B., proposed to hear the suggestions of employers and students regarding the inclusion of new disciplines in the CED and WEP for the 2025 admission cycle.

SPEAKER:

Employer representative Zheksenbiyev A.T. noted that specialists must possess knowledge in the field of digitalization and modern technologies in transport construction.

He proposed including the following disciplines in the WEP:

- “BIM Modeling in Transport Infrastructure”;
- “Digital Technologies of Project Management”;
- “Intelligent Transport Systems”.

SPEAKER:

PhD candidate Imankulova A.S. proposed additionally including the discipline “Modern Methods of Transport Network Analysis” and expanding the module “Sustainable Development of Transport Systems”.

RESOLVED:

1. To take the information into consideration.
2. To take into account the suggestions and recommendations of employers and students.
3. To consider including the following disciplines in the WEP:
 - “BIM Modeling in Transport Infrastructure”;
 - “Digital Technologies of Project Management”;
 - “Intelligent Transport Systems”;
 - “Modern Methods of Transport Network Analysis”.

Chairperson
Secretary



Ismagulova S.O.
Kusman B.K.

«ALT University named after Mukhamedzhan Tynyshpayev» JSC

Institute of «Transport and construction»

PROTOCOL No. 8

of the meeting of the Educational and methodological bureau of the institute of «Transport and Construction»

Almaty city

«17» march 2025

Chairman: Chairman of the Educational and methodological bureau of the institute «Transport and construction», doctor of PhD Abdreshov Sh.A.

Secretary: candidate of technical sciences, associate professor Murzalina G.B.

Present: Members of the Educational and Methodological Council of the Institute “Transport and Construction”, members of the Academic Committee

Industry representatives: Zheksenbiyev A.T. (JSC “NC “KTZ”)

Students: Representatives of the PhD and Master’s programs in 8D07169

AGENDA:

1. Review of the Catalog of Elective Disciplines (CED), the Working Curriculum (WEP), and the passports of the bachelor’s, master’s, and doctoral educational programs in the field 8D07169 – Transport Infrastructure Engineering (profile).

SPEAKER:

Head of the Department, Karibayeva G.B., presented for review the CED, WEP, and the educational program passports of the bachelor’s, master’s, and doctoral levels in Transport Infrastructure Engineering.

A meeting was held at the Department of Transport Construction with the participation of employer representatives and students to discuss the structure and content of the educational program 8D07169 – Transport Infrastructure Engineering (profile).

Employers and students proposed several new and relevant disciplines, including:

- “BIM Modeling in Transport Infrastructure”
- “Digital Technologies of Project Management”
- “Intelligent Transport Systems”
- “Modern Methods of Transport Network Analysis”

The department reviewed these proposals, approved them, and incorporated them into the updated versions of the CED and WEP.

RESOLVED:

1. To take the information into consideration.
2. To take into account all suggestions and recommendations from employers and student representatives.
3. To submit the CED, WEP, and the bachelor’s, master’s, and doctoral educational programs for review and approval by the Institute Council “Transport and Construction” and the University Academic Council.

Chairperson

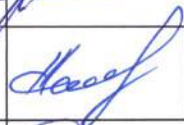
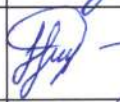
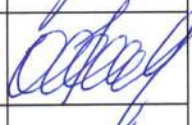
Secretary



Abdreshov Sh.A.

Murzalina G.B.

14. APPROVAL SHEET

№	Initials and Surname	Place of Work	Position	Date	Signature
1	Abdreshov Sh	IT and C	director	24.02.25	
2	Toigochinova	Eand DTI	director	24.02.25	
3	Musayeva G.S.	Land B	director	24.02.25	
4	Kapuralov P.B	ALT, TC	zab. korp	24.02.25	
5	Kudmanov K.S.	A and const. engin	Head of the Dep.	24.02.25	
6	To'urmatov A.E.	ALT korp "ATC u Buz"	Head of the dep.	24.02.25	
7	Chigimbayev T.O.	ALT river. korp	n. 2. korp	24.02.25	
8	Kudmanov K.S.	ALT river. korp	n. 2. korp	24.02.25	