OCCUPATIONAL QUALIFICATION STANDARD

Diploma Railway Engineer, EstQF Level 7

An occupational qualification standard is a document which describes the set of skills, knowledge and attitudes, i.e. competence requirements, needed to successfully accomplish duties.

The occupational qualification standard of a level 7 certified railway engineer forms the basis for learning and training curricula, the assessment of the competence of persons and comparison of qualifications.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Diploma Railway Engineer, EstQF Level 7	7

Possible specialisation and titles on occupational certificate	
Specialisation	**Title on occupational qualification certificate**
Construction and operation of railway rolling stock	Diploma Railway Engineer, EstQF Level 7 Construction and operation of railway rolling stock
Construction and operation of tracks	Diploma Railway Engineer, EstQF Level 7 Construction and operation of tracks
Management of railway traffic	Diploma Railway Engineer, EstQF Level 7 Management of railway traffic
Construction and operation of automatic railway equipment and communication technology	Diploma Railway Engineer, EstQF Level 7 Construction and operation of automatic railway equipment and communication technology
Planning railway transport	Diploma Railway Engineer, EstQF Level 7 Planning railway transport
Construction and operation of railway overhead contact systems	Diploma Railway Engineer, EstQF Level 7 Construction and operation of railway overhead contact systems

Part A
DESCRIPTION OF WORK

A.1 Description of work

It is the job of railway engineers to plan, organise and ensure safe passenger and freight transport on railways. Railway engineers are technical and/or technological specialists or managers with higher education who work in companies and institutions that engage in railway infrastructure management, the provision of rail transport services and the operation of railway rolling stock (hereafter referred to as rolling stock) as well as the construction of railway facilities.

Railway engineers are ready to work as part of an interdisciplinary team with railway construction, mechanical and transport engineers and logistics specialists.

Certified Railway Engineer, Level 7

Certified Railway Engineer, Level 7 applies their engineering knowledge, capabilities and practical skills in order to keep existing technologies and techniques in operation and to develop them in their field of specialisation (construction incl. design and supervision, management of railway traffic, etc.).

The work involves resource allocation, management of the activities of employees and instruction. The work requires independent action in difficult situations that call for an innovative approach as well as taking responsibility for the results of one's own work and that of other employees.

A level 7 certified railway engineer selects a narrower field of work (specialty) and occupation (area) to specialise in; see section A.2. They may act as a trainer (organiser of studies, lecturer, project supervisor, etc.) of railway engineers in their field of specialisation. Related standards: Railway Engineer, Level 6 Chartered Railway Engineer, Level 8 See the descriptions and profiles of the occupational qualification levels of railway engineers in Annex 1.
A.2 Tasks
A.2.1 The development of railway infrastructure and rolling stock and ensuring synergy between them. A.2.2 Management.
Specialised areas of work
A.2.3 Construction and operation of railway rolling stock A.2.4 Management of railway traffic A.2.5 Construction and operation of tracks A.2.6 Construction and operation of automatic railway equipment and communication technology A.2.7 Planning railway transport A.2.8 Construction and operation of railway overhead contact systems
Elective areas of work
Construction and operation of railway rolling stock: A.2.9 Construction and operation of wagons A.2.10 Construction and operation of locomotives A.2.11 Construction and operation of multiple units Construction and operation of tracks: A.2.12 Design and design control A.2.13 Technical maintenance of tracks A.2.14 Construction management in the construction of tracks A.2.15 Supervision of the construction and operation of tracks A.2.16 Technical maintenance of railway bridges Construction and operation of automatic railway equipment and communication technology: A.2.17 Design and design control A.2.18 Construction management in the construction of automatic equipment and communication technology A.2.19 Technical maintenance of communication and security devices A.2.20 Supervision of the construction and operation of automatic equipment and communication technology Construction and operation of railway overhead contact systems: A.2.21 Design and design control A.2.22 Construction management in the construction of railway overhead contact systems A.2.23 Technical maintenance of railway overhead contact systems A.2.24 Supervision of the construction and operation of railway overhead contact systems
A.3 Work environment and specific nature of work
Railway engineers work indoors and/or outdoors. They are required to work outside of normal working hours when necessary. The work may be strenuous. They have to take traffic-related risks into account and exposure to noise, vibration and exhaust gases is possible. It is obligatory to comply with occupational health and safety and road safety requirements.
A.4 Tools
Railway engineers primarily use information communication devices (computers, phones and radio stations) and intelligent transport systems (information, reservation and payment systems etc.), office equipment, software (word processing, spreadsheets, online communication, etc.), special calculation and drawing programmes and control and measuring instruments in their work.

A.5 Personal qualities required for work: abilities and characteristics
The work requires accuracy, the logical thinking of an engineer, creativity, assertiveness, spatial awareness, the ability to analyse, make decisions, take responsibility and adapt as well as willingness to cooperate and communicate.
A.6 Professional preparation
Obtaining the qualification of a level 7 certified railway engineer requires technical higher education, professional experience and the completion of further training.
A.7 Most common occupational titles
Specialist, engineer, project manager, railway traffic manager, railway transport manager, railway safety manager, production manager, regional manager, technologist, department or workshop manager, operation manager.
A.8 Regulations governing profession
Having an occupational qualification certificate allows one to act as a responsible specialist in the construction and maintenance of railway facilities in an area of activity recognised by the Ministry of Economic Affairs and Communications in accordance with the Building Code and the Railways Act.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
For Certified Railway Engineer, Level 7, competences B.2.1 and B.2.2, recurring competence B.25 and at least one competence from the specialisations B.2.3-B.2.7 must be certified. In addition, at least one elective competence must be certified in the following specialisations: Construction and operation of railway rolling stock: at least one competence from B.2.9-B.2.11 must be certified. Construction and operation of tracks: at least one competence from B.2.12-B.2.16 must be certified. Construction and operation of automatic railway equipment and communication technology: at least one competence from B.2.17-B.2.20 must be certified. Construction and operation of railway overhead contact systems: at least one competence from B.2.21-B.2.24 must be certified.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 The development of railway infrastructure and rolling stock and ensuring synergy between them	EstQF Level 7
Performance indicators: 1. solves problems of the railway sector and completes engineering tasks using relevant scientific, technical or technological principles; 2. implements diagnostic methods in order to determine the causes of problems and find solutions; 3. identifies and selects techniques, procedures and methods and verifies whether the technology meets the requirements, based on engineering tasks; 4. contributes to the planning and development of technological solutions; 5. implements proposed solutions and assists with their assessment; 6. utilises information and communication technology tools and options for their intended purpose; 7. complies with national and international legislation connected to railways and to national and international agreements when organising railway transport; 8. develops conditions for the maintenance and provision of railway infrastructure and safety requirements and monitors adherence to them; 9. determines the circumstances of incidents affecting railway safety, analyses them and adopts preventive measures;	

10. prepares instructions for the regulation of cooperation between companies and checks and analyses whether the instructions are up to date.
Knowledge: 1) general science (mathematics, physics, informatics, logistics); 2) general engineering (engineering graphics, electrical engineering, metrology, foundations of automation, measuring technology); 3) the foundations of the functioning of the economy, regularities and regulations; 4) means and methods of production, material processing technologies, devices and jigs used on railways; 5) interaction between various parameters and their combined impact on traffic management, road safety and the environment.

B.2.2 Management	**EstQF Level 7**
Performance indicators: 1. plans and manages the activities of the team within their area of responsibility using appropriate management techniques; 2. acquires the necessary resources, keeps the resources of a project in balance and ensures compliance with legislation; 3. implements the principles of quality and environmental management of the organisation or unit and makes proposals to improve quality indicators; 4. monitors adherence to safety requirements; 5. gathers information, analyses activities and gives feedback; 6. passes on professional skills and knowledge and coordinates the work of those being supervised based on developments in the field; 7. prepares and updates documents according to the purpose and target audience of the documentation.	
Knowledge: 1) the principles of project management, including the management of international projects; 2) economics (business economics, development and innovation); 3) the principles of quality, safety and environmental management; 4) environmental and health protection rules.	

COMPETENTCES RELATED TO SPECIALISATION

At least one competence from the specialisations B.2.3-B.2.7 must be certified.

Construction and operation of railway rolling stock	
B.2.3 Construction and operation of railway rolling stock	**EstQF Level 7**
Performance indicators: 1. plans and organises the construction, technical maintenance and repair of railway rolling stock based on the project task and instructions; 2. improves the technology of the technical maintenance and repair of railway rolling stock according to established procedures in the company; 3. updates the construction of railway rolling stock in accordance with developed solutions; 4. organises supervision and quality control in order to assess the compliance of the work with standards and requirements.	

Construction and operation of tracks	
B.2.4 Construction and operation of tracks	**EstQF Level 7**
Performance indicators: 1. plans and organises the design, construction and technical maintenance of tracks based on the project task and instructions;	

2. organises the quality control of construction and owner supervision in order to assess compliance with standards and requirements by means of measurements and tests.

Management of railway traffic	
B.2.5 Management of railway traffic	**EstQF Level 7**
Performance indicators: 1. plans and organises rail traffic and shunting along the route and at stations, using automatic rail traffic equipment and communication technology and complying with instructions and rules; 2. prepares train timetables and monitors the movement of trains according to the timetable; 3. audits and assesses the ensuring of railway safety and is responsible for the execution of road safety plans; 4. understands the laws, instructions and rules of the railway sector, including European Union legislation.	

Construction and operation of automatic railway equipment and communication technology	
B.2.6 Construction and operation of automatic railway equipment and communication technology	**EstQF Level 7**
Performance indicators: 1. plans and organises the design, construction and technical maintenance of automatic railway equipment and communication technology based on the project task and instructions; 2. organises the quality control of construction and owner supervision in order to assess compliance with standards and requirements by means of measurements and tests.	

Planning railway transport	
B.2.7 Planning railway transport	**EstQF Level 7**
Performance indicators: 1. plans rail traffic and transport timetables, the timetables of passenger trains and freight transport formation plans and coordinates their development; 2. prepares transport rules and tariff guidelines; 3. coordinates the functioning of the communication system; 4. plans the logistics of railway transport based on contracts; 5. assesses road safety, including the impact of the construction project of security devices on road safety; 6. assesses the interaction between various parameters and their combined impact on traffic management, road safety and the environment.	

Construction and operation of railway overhead contact systems	
B.2.8 Construction and operation of railway overhead contact systems	**EstQF Level 7**
Performance indicators: 1. plans and organises the design, construction and technical maintenance of railway overhead contact systems; 2. organises the quality control of construction and owner supervision in order to assess compliance with standards and requirements by means of measurements and tests.	

OPTIONAL COMPETENCES

When specialising in the construction and operation of railway rolling stock it is obligatory to certify at least one of the competences from B.2.9-B.2.11.
When specialising in the construction and operation of tracks it is obligatory to certify at least one of the competences from B.2.12-B.2.16.
When specialising in the construction and operation of automatic railway equipment and communication technology it is obligatory to certify at least one of the competences from B.2.17-B.2.20.

When specialising in the construction and operation of railway overhead contact systems it is obligatory to certify at least one of the competences from B.2.21-B.2.24.

B.2.9 Construction and operation of wagons	**EstQF Level 7**
Performance indicators: 1. plans and organises the construction, technical maintenance and repair of wagons based on the project task and instructions; 2. improves the technology of the technical maintenance and repair of wagons; 3. organises the technical fitting of passenger carriages in accordance with the procedure established by the company; 4. updates the construction of wagons in accordance with developed solutions; 5. organises supervision and quality control in order to assess the compliance of the work with standards and requirements.	
Knowledge: 1) the construction of wagons of different types; 2) the principles of the construction of wagons; 3) the principles of the technical maintenance and repair system of wagons; 4) repair means, methods and materials; 5) the principles of strength calculation for wagon constructions; 6) the methods of testing wagons and non-destructive inspection.	
B.2.10 Construction and operation of locomotives	**EstQF Level 7**
Performance indicators: 1. plans and organises the technical maintenance and repair of locomotives based on the project task and instructions; 2. plans and organises the circulation of locomotives and train drivers; 3. improves the technology of the technical maintenance and repair of locomotives; 4. updates the construction of locomotives in accordance with developed solutions; 5. plans and improves the supply system of locomotives (oil, fuel, sand, cooling water, lubricants); 6. organises supervision and quality control in order to assess the compliance of the work with standards and requirements.	
Knowledge: 1) the principles of the construction of locomotives of different types; 2) the principles of the technical maintenance and repair system of locomotives; 3) repair means, methods and materials; 4) testing locomotives and methods of non-destructive inspection.	
B.2.11 Construction and operation of multiple units	**EstQF Level 7**
Performance indicators: 1. plans and organises the technical maintenance and repair of locomotives according to the project task and instructions; 2. plans and organises the circulation of locomotives and train drivers; 3. improves the technology of the technical maintenance and repair of locomotives; 4. updates the construction of locomotives in accordance with developed solutions; 5. plans and improves the supply system of locomotives; 6. organises supervision and quality control in order to assess the compliance of the work with standards and requirements.	
Knowledge: 1) the principles of the construction of multiple units of different types; 2) the principles of the technical maintenance and repair system of locomotives; 3) repair means, methods and materials; 4) testing locomotives and methods of non-destructive inspection.	

B.2.12 Design and design control connected to the construction and operation of tracks	EstQF Level 7
Performance indicators: 1. organises the collection and analysis of source data; 2. determines applicable regulations, standards, rules and instruction materials; 3. prepares plans and project documents; 4. coordinates the development of the different parts of the project, including the land allocation plan, layouts and vertical solutions of tracks, using project management software; 5. designs crossings for vehicles and pedestrians, platforms, the embankment of the tracks, the superstructure, drainage channels, small bridges, culverts, etc.; 6. checks completed design documentation, assesses the impact of the prepared design on road safety and the environment; 7. draws up the design, obtains confirmation from the authorities and submits it to the customer; 8. exercises the author's supervision of the design in order to assess the compliance of working drawings with the design.	
Knowledge: 1) the distinctive features of the tracks and road facilities being designed; 2) a systemic overview of the foundations of the design of tracks and their connection with the functioning of the transport sector; 3) the types of tracks superstructure and embankments and the principles of their construction, use and technical maintenance; 4) the materials and devices of tracks; the technology, machines and devices of railway construction and economics; 5) electronic databases, design software and formatting requirements for drawings; 6) surveying work and field studies in construction geodesy and construction geology; 7) the principles of road and environmental safety; 8) the principles of accounting.	
B.2.13 Technical maintenance of tracks	**EstQF Level 7**
Performance indicators: 1. plans and organises the verification of the compliance of tracks, facilities and devices with requirements and the documentation of measurements and test results; 2. plans and organises the technical maintenance and repair of tracks and facilities, including the determination of work volumes, the schedule and the budget; 3. monitors the ensuring of road and occupational safety, analyses incidents and instructs employees; 4. obtains the confirmation and permits necessary for the work; 5. organises the appropriate documentation of technical maintenance and repair works and the transfer and receipt of works; 6. organises the preparation of procurements and tenders, analyses the results of procurements; 7. prepares the documentation of technical maintenance and repair work as well as material procurement and tenders; 8. prepares the instructions for the maintenance process of tracks and devices, assigns tasks and instructs employees.	
Knowledge: 1) the types of track superstructure and embankments, the principles of their use, repair and technical maintenance; 2) the technologies of the technical maintenance and repair of tracks, the materials and devices used; 3) the maintenance standards for tracks, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) the organisation and technology of snow removal; 5) relevant laws, standards and instructions; 6) the principles of accounting.	
B.2.14 Construction management in the construction of tracks	**EstQF Level 7**
Performance indicators: 1. assesses the necessity for work, checks the source documentation, calculates work volumes and prepares the work schedule and the technological design, obtains the necessary confirmation and permits; 2. prepares contracts for services and the implementation of the quality control system;	

3. organises the preparation of procurements and tenders, analyses the results of procurements; 4. prepares the material procurement and tender documentation of the work; 5. organises the preparation of the construction site and work, the logistics of materials and mechanisms, the execution of the work, quality control, project management and accounting; 6. monitors compliance with the requirements of the maintenance of the construction site and railway, environmental and occupational safety, analyses incidents and instructs employees; 7. organises construction meetings, inspections, measurements and tests, appropriate documentation and the transfer and receipt of work; 8. prepares instructions for the construction process and for use, instructs and trains employees.
Knowledge: 1) the types of track superstructure and embankments, the principles of their use, technical maintenance and construction; 2) the technologies of the technical maintenance and construction of tracks, the mechanisms, materials and devices used; 3) the maintenance standards for tracks, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) relevant laws, standards and instructions, the principles of preparing a construction management project; 5) project management software; 6) the principles of accounting.
B.2.15 Supervision of the construction and operation of tracks **EstQF Level 7**
Performance indicators: 1. checks the completeness and sufficiency of the construction project or the description of work, the quality and the suitability of the technology on the basis of the monitoring programme; 2. verifies whether the materials and products used and the devices meet the requirements and records the volumes and quality of work completed; 3. verifies whether the construction work and materials comply with the construction project, the agreed conditions and quality and informs the customer of any deviations; 4. verifies whether technical construction documents are completed properly and in time; 5. checks and accepts covered work and carries out inspections on parts of the facility; 6. participates in work meetings, the work of the acceptance committee of work or parts of work and granting authorisation; 7. checks instructions for use and other necessary documentation; 8. makes proposals for improving the quality of construction work and in connection with assessment, measurement, tests and expert analyses.
Knowledge: 1) the rights and obligations of the person exercising owner supervision; 2) the quality requirements of construction work; 3) the requirements of a construction project; 4) the types of track superstructure and embankments, the principles of their use, technical maintenance and construction; 5) the technologies of the technical maintenance and construction of tracks, the mechanisms, materials and devices used; 6) the principles of measuring the parameters of tracks, devices and facilities and analysing them; requirements of documents; 7) the maintenance standards for tracks, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 8) relevant laws, standards and instructions.
B.2.16 Technical maintenance of railway bridges **EstQF Level 7**
Performance indicators: 1. prepares the maintenance plan for railway bridges; 2. plans and organises the verification of the compliance of railway bridges with requirements and the documentation of measurements and test results; 3. plans, manages and organises the technical maintenance and repair of railway bridges, including work volumes, technology, the schedule and the budget;

4. prepares or commissions the work project, obtains the confirmation and permits necessary for the work; 5. monitors the ensuring of safety and occupational health, analyses incidents and instructs employees; 6. organises the inspection of the work and materials, appropriate documentation and the transfer of the work; 7. prepares the documentation of the technical maintenance of railway bridges and material procurement and tenders; analyses the results of procurements; 8. prepares the instructions for the maintenance process of railway bridges, assigns tasks and instructs employees.
Knowledge: 1) the types of railway bridges, the principles of their use, repair and technical maintenance, the technologies, materials and devices used; 2) the technologies of the technical maintenance and repair of tracks, the materials and devices used; 3) the maintenance standards for railway bridges, tracks, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) relevant laws, standards and instructions; 5) the requirements of construction projects and the documentation of work; 6) the principles of accounting.

B.2.17 Design and design control related to the construction and operation of automatic railway equipment and communication technology	**EstQF Level 7**
Performance indicators: 1. organises the collection and analysis of source data; 2. determines applicable regulations, standards, rules and instruction materials; 3. prepares project documents for automatic equipment and communication technology (including scheme plans, dependency tables and construction projects); 4. coordinates the development of the various parts of the project, using project management software; 5. checks completed design documentation, assesses the impact of the prepared design on road safety and the environment; 6. draws up the design, obtains confirmation from the authorities and submits it to the customer; 7. exercises the author's supervision of the design in order to assess the compliance of working drawings with the design.	
Knowledge: 1) the types and use of automatic equipment and communication technology systems being designed, the principles of their use and technical maintenance; 2) a systemic overview of the foundations of the design of automatic equipment and communication technology and their connection to the functioning of the transport sector; 3) the types of automatic equipment and communication technology; materials and devices; 4) the technology, machines, devices and economics of railway construction; 5) electronic databases, design software and formatting requirements for drawings; 6) the principles of electrical, road and environmental safety; 7) the principles of accounting.	

B.2.18 Construction management in the construction of automatic equipment and communication technology	**EstQF Level 7**
Performance indicators: 1. assesses the necessity for work, checks the source documentation, calculates work volumes and prepares the work schedule and the technological design, obtains the necessary confirmation and permits; 2. prepares contracts for services and the implementation of the quality control system; 3. organises the preparation of procurements and tenders, analyses the results of procurements; 4. prepares the material procurement and tender documentation of the work; 5. organises the preparation of the construction site and work, the logistics of materials and mechanisms, the execution of the work, quality control, project management and accounting; 6. monitors compliance with the requirements of the maintenance of the construction site and railway, environmental and occupational safety, analyses incidents and instructs employees; 7. organises construction meetings, inspections, measurements and tests, appropriate documentation and the transfer and receipt of work; 8. prepares instructions for the construction process and for use, instructs and trains employees.	
Knowledge:	

1) the types of automatic equipment and communication technology and the principles of their use, construction and technical maintenance; 2) the technology of automatic equipment and communication technology; mechanisms, materials and devices used on site; 3) the maintenance standards for automatic equipment and communication technology, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) relevant laws, standards and instructions; 5) the principles of preparing a construction management project; 6) project management software; 7) the principles of accounting.	
B.2.19 Technical maintenance of communication and security devices	**EstQF Level 7**
Performance indicators: 1. plans and organises the verification of the compliance of automatic equipment and communication technology, facilities and devices with requirements and the documentation of measurements and test results; 2. plans and organises the technical maintenance and repair of automatic equipment and communication technology and facilities, including the determination of work volumes, the schedule and the budget; 3. monitors the ensuring of road and occupational safety, analyses incidents and instructs employees; 4. obtains the confirmation and permits necessary for the work; 5. organises the appropriate documentation of technical maintenance and repair work and the transfer and receipt of work; 6. organises the preparation of procurements and tenders, analyses the results of procurements; 7. prepares the documentation of technical maintenance and repair work as well as material procurement and tenders; 8. prepares the instructions for the maintenance process of automatic equipment and communication technology and devices, assigns tasks and instructs employees.	
Knowledge: 1) the types of automatic equipment and communication technology and the principles of their use, repair and technical maintenance; 2) the technologies of the technical maintenance and repair of automatic equipment and communication technology, the materials and devices used; 3) the maintenance standards for automatic equipment and communication technology, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) relevant laws, standards and instructions; 5) the principles of accounting.	
B.2.20 Supervision of the construction and operation of automatic equipment and communication technology	**EstQF Level 7**
Performance indicators: 1. checks the completeness and sufficiency of the construction project or description of overhead contact system work as well as the quality and the suitability of the technology; 2. prepares a monitoring programme and verifies whether electrical safety requirements are being adhered to; 3. verifies whether the materials and products used and the devices meet the requirements and records the volumes and quality of work completed; 4. verifies whether the construction work and materials comply with the construction project, the agreed conditions and quality and informs the customer of any deviations; 5. verifies whether technical construction documents are completed properly and in time; 6. checks and accepts covered work and carries out inspections on parts of the facility; 7. participates in work meetings and the work of the acceptance committee of work or parts of work; 8. checks instructions for use and other necessary documentation; 9. makes proposals for improving the quality of construction work and in connection with assessment, measurement, tests and expert analyses.	
Knowledge: the rights and obligations of the person exercising owner supervision; 1. the quality requirements of construction work; 2. the requirements of a construction project;	

3. the types of communication and security devices and the principles of their use, technical maintenance and construction; 4. the technologies of the technical maintenance and construction of communication and security devices, the mechanisms, materials and devices used; 5. the principles of measuring the parameters of communication and security devices and facilities and analysing them; the requirements for documents; 6. the maintenance standards for communication and security devices, facilities and equipment; electrical, road and environmental safety requirements; quality assurance and control systems; 7. relevant laws, standards and instructions.	
B.2.21 Design and design control related to the construction and operation of railway overhead contact systems	**EstQF Level 7**
Performance indicators: 1. organises the collection and analysis of source data; 2. determines applicable regulations, standards, rules and instruction materials; 3. prepares plans and project documents; 4. coordinates the development of the various parts of the construction project for overhead contact systems, using project management software; 5. checks completed design documentation, assesses the impact of the prepared design on road safety and the environment; 6. draws up the design, obtains confirmation from the authorities and submits it to the customer; 7. exercises the author's supervision of the design in order to assess the compliance of working drawings with the design.	
Knowledge: 1) the types and use of the overhead contact systems being designed; 2) a systemic overview of the foundations of the design of overhead contact systems and their connection to the functioning of the transport sector; 3) the principles of the construction, use and technical maintenance of the overhead contact systems; 4) the types of overhead contact systems, materials and devices; 5) the technology, machines, devices and economics of the construction of overhead contact systems; 6) electronic databases, design software and formatting requirements for drawings; 7) surveying work and field studies in construction geodesy and construction geology; 8) the principles of road and environmental safety; 9) the principles of accounting.	
B.2.22 Construction management in the construction of overhead contact systems	**EstQF Level 7**
Performance indicators: 1. assesses the necessity for work, checks the source documentation, calculates work volumes and prepares the work schedule and the technological design, obtains the necessary confirmation and permits; 2. prepares contracts for services and the implementation of the quality control system; 3. organises the preparation of procurements and tenders, analyses the results of procurements; 4. prepares the material procurement and tender documentation of the work; 5. organises the preparation of the construction site and work, the logistics of materials and mechanisms, the execution of the work, quality control, project management and accounting; 6. monitors compliance with the requirements of the maintenance of the construction site and railway, environmental and occupational safety, analyses incidents and instructs employees; 7. organises construction meetings, inspections, measurements and tests, appropriate documentation and the transfer and receipt of work; 8. prepares instructions for the construction process and for use, instructs and trains employees.	
Knowledge: 1) the types of overhead contact systems and the principles of their use, technical maintenance and construction; 2) the technologies of the technical maintenance and construction of overhead contact systems, the mechanisms, materials and devices used; 3) the maintenance standards for overhead contact systems, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) relevant laws, standards and instructions;	

5) the principles of preparing a construction management project; 6) project management software; 7) the principles of accounting.	
B.2.23 Technical maintenance of overhead contact systems	**EstQF Level 7**
Performance indicators: 1. organises the operation of the electrical devices of overhead contact systems on the basis of instructions; 2. plans and organises the verification of the compliance of overhead contact systems, facilities and devices with requirements and the documentation of measurements and test results; 3. plans and organises the technical maintenance and repair of overhead contact systems and facilities, including the determination of work volumes, the schedule and the budget; 4. monitors the ensuring of road and occupational safety, analyses incidents and instructs employees; 5. obtains the confirmation and permits necessary for the work; 6. organises the appropriate documentation of technical maintenance and repair work and the transfer and receipt of work; 7. organises the preparation of procurements and tenders, analyses the results of procurements; 8. prepares the documentation of technical maintenance and repair work as well as material procurement and tenders; 9. prepares the instructions for the maintenance process of overhead contact systems and devices, assigns tasks and instructs employees.	
Knowledge: 1) the types of overhead contact systems and the principles of their use, repair and technical maintenance; 2) the technologies of the technical maintenance and repair of overhead contact systems, the materials and devices used; 3) the maintenance standards for overhead contact systems, facilities and devices; road and environmental safety requirements; quality assurance and control systems; 4) relevant laws, standards and instructions; 5) the principles of accounting.	
B.2.24 Supervision of the construction and operation of railway overhead contact systems	**EstQF Level 7**
Performance indicators: 1. checks the completeness and sufficiency of the construction project or description of overhead contact system work as well as the quality and the suitability of the technology; 2. verifies whether electrical safety requirements are being adhered to on the basis of a previously prepared monitoring programme; 3. verifies whether the materials and products used and the devices meet the requirements and records the volumes and quality of work completed; 4. verifies whether the construction work and materials comply with the construction project, the agreed conditions and quality and informs the customer of any deviations; 5. verifies whether technical construction documents are completed properly and in time; 6. checks and accepts covered work and carries out inspections on parts of the facility; 7. participates in work meetings and the work of the acceptance committee of work or parts of work; 8. verifies whether instructions for use and other documents meet the requirements; 9. makes proposals for improving the quality of construction work and in connection with assessment, measurement, tests and expert analyses.	
Knowledge: 1) the rights and obligations of the person exercising owner supervision; 2) the quality requirements of construction work; 3) the requirements of a construction project; 4) the types of overhead contact systems and the principles of their use, technical maintenance and construction; 5) the technologies of the technical maintenance and construction of overhead contact systems, the mechanisms, materials and devices used; 6) the principles of measuring the parameters of overhead contact systems, devices and facilities and analysing them; requirements of documents;	

7) the maintenance standards for overhead contact systems, facilities and devices; electrical, road and environmental safety requirements; quality assurance and control systems; 8) relevant laws, standards and instructions.

RECURRING COMPETENCES

B.2.25 Recurring competences of Certified Railway Engineer, Level 7	**EstQF Level 7**
Performance indicators: 1. is guided by the engineer's professional ethics and code of conduct in their activities (see Annex 2); 2. acts responsibly and purposefully in accordance with occupational health and safety and road safety requirements; 3. takes part in teamwork, understands their role in the team and acts to achieve the best possible outcome collectively; creates a positive communication environment; 4. understands regulations (EU directives, standards, instructions, etc.) and institutions (e.g. the Technical Regulatory Authority and the European Union Agency for Railways) associated with the profession; 5. chooses a manner of communication corresponding to the target audience (colleagues, customers, specialists from a related field), provides information clearly, logically and in a manner understandable to the target audience; 6. maintains and develops their professional skills, including professional communication skills; keeps up to date with technological innovations; 7. promotes their profession and cooperates with institutions and cooperation networks associated with the profession; 8. keeps up to date with technological developments, navigates the various aspects of the occupation and makes proposals for innovative changes; 9. shares and mediates technical information, provides information clearly, logically and in a manner understandable to the target audience; 10. in their work, uses at least one foreign language at the B2 level (see Annex 3 'Language skills level descriptions'); 11. uses a computer in their work according to the level required by the base modules and standard module 'Presentation' (see Annex 4 'Computer skills').	

Part C
GENERAL INFORMATION AND ANNEXES

C.1 Information concerning compilation and certification of occupational qualification standard and reference to classification of occupations	
1. ID of occupational qualification standard in register of occupational qualifications	12-30062017-1.2/6k
2. Occupational qualification standard compiled by:	Arvo Smiltinš, Leonhard Weiss Baltic Holding OÜ Urmas Lükki, Edelaraudtee Infrastruktuuri AS kutsekomisjon Kristina Fuks-Kuus, Tehnilise Järelevalve Amet Rita Ojala, Edelaraudtee Infrastruktuuri AS Anto Looken, SA Raudteekutsed Tarvi Viisalu, AS Eesti Raudtee
3. Occupational qualification standard approved by:	Transport and Logistics
4. No. of decision of Sectoral Council	7
5. Date of decision of Sectoral Council	30.06.2017
6. Occupational qualification standard valid until	28.04.2022
7. Occupational qualification standard version no.	6
8. Reference to International Standard Classification of Occupations (ISCO 08)	2144 Mechanical Engineers
9. Reference to European Qualifications Framework (EQF)	7

C.2 Occupational title in foreign language	
English:	Diploma Railway Engineer, EstQF Level 7
Russian:	Дипломированный инженер железнодорожного транспорта
C.3 Annexes	
Lisa 1 Descriptions and profiles of occupational qualification levels of railway engineers	
Lisa 2 Engineer's Professional Ethics and Code Of Conduct	
Lisa 3 Language skills level descriptions	
Lisa 4 Computer Skills	