OCCUPATIONAL QUALIFICATION STANDARD

Railway Signalling Area Engineer, EstQF Level 5

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. Occupational qualification standards are used for compiling curricula and awarding qualifications.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Railway Signalling Area Engineer, EstQF Level 5	5

Part A
DESCRIPTION OF WORK

A.1 Description of work
Railway Signalling Area Engineer, Level 5 plans and organises maintenance and repairs of railway security and communications equipment and carries out such work in their area. The work may involve testing new traffic management systems and providing owner supervision during the construction of new safety equipment. Railway Signalling Area Engineer, Level 5 works independently in unforeseen situations and is responsible for the work of the team in their section. They work independently and in a team, their work requiring communication with co-workers, workers in other units and clients. Railway Signalling Area Engineer, Level 5 is responsible for the safety and quality of their work and the work they supervise as well as for hazardous situations resulting from breaches of safety during maintenance (e.g. improper tools and methods). There are four occupations in the field of maintenance and repairs of railway safety equipment. Railway Signalling Area Assistant, Level 2 conducts uncomplicated maintenance and repairs on railway safety and communications equipment. Railway Signalling Area Engineer, Level 4 conducts maintenance and repairs on railway safety and communications equipment. Railway Signalling Area Engineer, Level 5 plans and organises maintenance and repairs of railway safety and communications equipment and carries out such work in their section. Railway Signalling Area Engineer, Level 6 plans and organises maintenance and repairs of railway safety and communications equipment in several regions or throughout an organisation.
A.2 Tasks
A.2.1 Organising safety equipment maintenance Checking safety equipment dependence 1. Checking the dependence of safety equipment in stations, on open tracks and at crossings and verifying signal indications Organising or conducting light signal maintenance 2. Checking visibility and adjusting the settings of light signals or organising this task 3. Replacing lamps in light signals and journey displays or organising this task 4. Organising or taking electrical measurements of light signals on mains power 5. Organising or taking electrical measurements of light signals on reserve power 6. Organising or conducting maintenance of light signals without disturbing their normal operation 7. Organising or conducting maintenance of light signals with partial of total shutdown of devices 8. Organising or taking measurements of signal relay deceleration Organising or conducting turnout safety equipment maintenance 9. Organising or conducting maintenance of turnout motors and fittings that does not require the disassembly of parts or the disruption of electrical connections and does not disturb the normal operation of the device

10. Organising or conducting maintenance that involves adjusting a point or that requires disassembly and shutdown of a motor, fittings or their parts, disruption of electrical connections and/or disturbs the normal operation of the device
11. Organising or taking electrical and other measurements at turnouts and conducting electrical and mechanical adjustment
12. Checking the close fit of point blades with control locks and dismantling or reassembling turnout locks or organising these tasks
Organising or conducting track circuit and axle counter maintenance
13. Organising or conducting maintenance without disturbing the normal operation of the devices or changing set parameters
14. Organising or conducting maintenance that disrupts the normal operation of the devices, results in partial or total shutdown of the devices and/or changes set parameters
15. Checking the shunt resistance of track circuits or organising this task
16. Organising or taking electrical measurements and making adjustments
17. Checking the polar alternation of track circuits or organising this task
18. Organising or conducting axle counter maintenance without shutdown
19. Organising or conducting axle counter maintenance with shutdown
20. Organising or conducting maintenance of throttle transformers without shutdown
21. Organising or conducting maintenance of throttle transformers with partial shutdown without disrupting the traction current circuit
22. Organising or conducting maintenance of throttle transformers that disrupts the traction current circuit
Organising or conducting maintenance of automatic train signalling (ALSN) track equipment
23. Organising or taking code current measurements and making adjustments
Organising or conducting maintenance of electromechanical controls
24. Organising or conducting maintenance of consoles, signboards, shunting cabinets and turnout centralisers
25. Maintenance of КБ-ЦШ type controls
26. Verifying the conformity of turnout centralisation dependence devices with documentation
Organising or conducting maintenance of computer-based controls
27. Organising or conducting maintenance of traffic manager workstation hardware without disturbing the normal functionality of the devices
28. Replacing and configuring control devices or organising this task
29. Replacing, updating and restarting software and hardware for the traffic manager workstation or organising this task
30. Updating and restarting dispatcher centralisation software or organising this task
31. Updating and replacing dispatcher centralisation hardware or organising this task
Organising or conducting maintenance of internal hardware, equipment cabinets and containers
32. Organising or conducting maintenance of equipment cabinets without shutdown
33. Organising or conducting maintenance of the internal hardware of safety equipment without device shutdown
34. Replacing, updating and restarting software or organising this task
35. Replacing and maintaining control modules or organising this task
36. Replacing relays and other hardware or organising this task
37. Checking the condition of wiring and cable connections or organising this task
38. Verifying the conformity of working safety equipment with the approved technical documentation or organising this task
Organising or conducting crossing maintenance
39. Organising or conducting maintenance of automatic signalling equipment at crossings without device shutdown or changing set parameters
40. Organising or conducting maintenance of barrier light signals and automatic signalling equipment at crossings with device shutdown and changing set parameters
41. Replacing automatic crossing signalling software
Organising or conducting cable network maintenance
42. Organising or conducting maintenance of cable routes, couplers, racks and panels and taking electrical measurements without the physical disconnection of cables from terminals
43. Organising or conducting maintenance of cable couplers, racks and panels and taking electrical measurements that require cables to be disconnected from terminals
44. Organising or taking measurements of electrical circuits at the measurement point
Organising or conducting safety equipment power supply maintenance

45. Organising or conducting the general maintenance and electrical measurement of power supplies and checking protective devices
46. Checking the feed switching of power supplies and diesel generator start-up or organising this task
47. Organising or conducting maintenance of batteries without interruption to operation
48. Organising or conducting maintenance of batteries that requires turning off charging voltage
49. Organising or conducting maintenance of UPS devices without interruption to operation
50. Conducting maintenance of UPS devices with interruption to operation
51. Switching between power sources and feeders while ensuring the retention of light signal function or organising this task
52. Introducing temporary solutions to power supply circuits
Organising or conducting maintenance of protective devices and earthing of safety equipment
53. Organising or conducting inspections and the maintenance of fuses and surge protectors
54. Organising or conducting inspections and the maintenance of protective earthing and measuring soil resistivity

A.2.2 Managing safety equipment documentation
1. Drafting service area schedule plans
2. Checking the conformity of circuit diagrams and technical documentation according to working equipment and updating them or organising these tasks
3. Completing inspection documentation for safety equipment
4. Developing temporary solutions and modifications to the structure of safety equipment
5. Introducing temporary solutions and modifications to the structure of safety equipment
6. Preparation of annual reports

A.2.3 Project management
1. Compiling maintenance and operating instructions for safety equipment
2. Technical administration of construction projects and construction management
3. Organising operational work on safety equipment
4. Organising software asset management

A.2.4 Management and supervision
1. Management of a subdivision
2. Supervising less qualified workers and organising the work of a subordinate unit
3. Training and instructing employees in the use of safety equipment
4. Resource management

Elective areas of work

A.2.5 Organising or conducting maintenance of marshalling yard safety equipment
1. Organising or conducting maintenance of marshalling yard retarders and controls without interruption to operation
2. Reconfiguring marshalling yard retarders and controls with interruption to operation
3. Organising or conducting maintenance of section vacancy detection sensors without interruption to operation
4. Reconfiguring section vacancy detection sensors with interruption to operation

A.2.6 ERTMS /ETCS equipment maintenance
1. Organising or conducting maintenance and software management and updating and restarting ERTMS/ETCS internal hardware
2. Organising or conducting maintenance and software management and updating ERTMS/ETCS external hardware
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ERTMS - European Rail Traffic Management System - Euroopa raudteeliikluse juhtimissüsteem
ETCS - European Train Control System - Euroopa signalisatsioonisüsteem

A.3 Work environment and specific nature of work

A railway signalling area engineer works both indoors and outdoors. A railway signalling area engineer's working hours are fixed, but in the event of major equipment breakdowns or brief technological windows, they must work outside regular business hours, including on weekends and holidays. The workload may be unevenly distributed. The working environment is associated with an increased risk of injury and often requires working in a forced position and at heights.

Exposure to chemicals and toxic agents, tick-borne infectious diseases, heat, humidity and temperature fluctuations can cause damage to health and therefore requires the use of personal protective equipment and preferably vaccination. Due to the above-average level of dangerous work, a railway signalling area engineer must strictly observe the rules of work, health and safety. Breach of safety requirements can result in illness, trauma, disability or a rail traffic accident. The occupation of Railway Signalling Area Engineer requires regular medical check-ups.
A.4 Tools
The main tools are locksmith tools (e.g. wrench, hammer and screwdriver), hand tools (e.g. shovel and electric tools), indicator instruments, aids (e.g. shunt and stencils), precision measuring instruments (e.g. multimeter), a computer and various software, computer-based diagnostics devices and office and communication devices (e.g. telephone and radio).
A.5 Personal qualities required for work: abilities and characteristics
The work of a railway signalling area engineer requires cognitive abilities (fluency of thought, logical thinking, visual memory, spatial imagination and concentration) and mathematical abilities. In addition, stress tolerance, physical strength, accuracy of movement, speed, coordination, vigour, dexterity, odour sensitivity, good vision and good hearing are required. Stress tolerance, environmental tolerance, cooperative skills, analytical skills, learning ability, accountability, reliability, emotional stability, accuracy, self-discipline, communication readiness, decision-making skills, independence and management readiness are also important in the work of Railway Signalling Area Engineer, Level 5. Railway Signalling Area Engineer, Level 5 is expected to commit to their work, accept the goals of their organisation and be prepared for change.
A.6 Professional preparation
Railway signalling area engineers are usually people who have general secondary or vocational education, previous work experience as a Level 4 railway signalling area engineer and who have acquired Level 5 professional skills under the supervision of a railway signalling area engineer with at least Level 5 qualifications.
A.7 Most common occupational titles
Senior railway safety engineer, senior communications mechanic, regional manager of railway safety.
A.8 Regulations governing profession
The work of a railway signalling area assistant is regulated by the Railways Act and the regulation of the Government of the Republic of Estonia 'List of Work Environment Hazards and Work for Which the Employment of Minors is Prohibited'.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
Competences B.2.1-B.2.4 and B.2.7 must be certified when applying for the qualification of Railway Signalling Area Engineer, Level 5. Certification of optional competences B.2.5 and B.2.6 is not mandatory.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Organising safety equipment maintenance	**EstQF Level 5**
Performance indicators: Checking safety equipment dependence	

1. together with the traffic manager, checks the interdependence of safety equipment, journeys, light signals and points in accordance with the valid dependency table, checks for fouling journeys and verifies the compliance of the technical parameters of level crossing equipment with the requirements of the internal normative documents of the organisation using appropriate tools;
Organising or conducting light signal maintenance
2. organises inspections of the visibility of light signals or checks the visibility and adjusts light signals as scheduled or in the event of an emergency in accordance with the requirements of the rules for the technical use of railways and its annexes and the internal normative documents of the organisation using appropriate tools;
3. replaces lamps in light signals and journey displays in accordance with the internal normative documents of the organisation using appropriate tools or organises this task;
4. organises or takes electrical measurements of light signals on mains power and adjusts the supply voltage in light signals in accordance with the internal normative documents of the organisation using appropriate tools;
5. organises or takes electrical measurements of light signals on reserve power in accordance with the internal normative documents of the organisation using appropriate tools;
6. organises or conducts maintenance of light signals (e.g. cleans, paints and checks visibility) without disruption in accordance with the internal normative documents of the organisation using appropriate tools;
7. organises or conducts maintenance of light signals (e.g. replaces signal transformers, disconnects cables and verifies the correctness of light signal indications) by partially or completely switching off the device and verifies the correctness of light signal indications after maintenance in accordance with the requirements of the railway signalling guide and the internal normative documents of the organisation using appropriate tools;
8. measures signal relay deceleration and sets parameters in accordance with the internal normative documents of the organisation using appropriate tools or organises this task;
Organising or conducting turnout safety equipment maintenance
9. organises or conducts maintenance of turnout motors and fittings (e.g. cleans, paints, performs visual inspections, tightens bolts and replaces insulation) in accordance with the internal normative documents of the organisation and using appropriate tools;
10. organises or conducts maintenance (e.g. replaces motors and cleans automatic switches) that involves adjusting and point or that requires disassembly and shutdown of a motor, fittings or their parts, disruption of electrical connections and/or disturbs the normal operation of the equipment; checks the position of the turnout, the required fit of point blades against stock rails, friction current and phase sequence together with the traffic manager and sets parameters after maintenance, in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
11. organises or takes electrical and other measurements at turnouts (e.g. checks the fitting of point blades, clutch current, motor operating voltage and phase sequence) and makes electrical and mechanical adjustments in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
12. checks the close fit of point blades with control locks, maintains turnout locks, makes mechanical adjustments and immediately checks the position of the turnout together with the traffic manager or organises this task, in accordance with the internal normative documents of the organisation using appropriate tools.
Organising or conducting track circuit and axle counter maintenance
13. organises or conducts maintenance (e.g. checks, cleans and paints connecting cables and signal boxes and changes lock combinations) without disruption or changing set parameters in accordance with the internal normative documents of the organisation using appropriate tools;
14. organises or conducts maintenance (e.g. replaces signal box cables, transformers, variable resistors, track relays, filters and other devices) that disturbs the normal operation of the devices and involves the partial or complete shutdown of devices and/or changing set parameters, ensures the retention of frequency structure during tonal track circuit maintenance, performs these tasks in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
15. checks the shunt resistance of track circuits with the traffic manager or organises this task in accordance with the internal normative documents of the organisation using appropriate tools or organises this task;
16. organises or takes electrical measurements and makes adjustments (e.g. measures and adjusts current, voltage and frequency and sets audio frequency track circuits) in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
17. checks the polar alternation of track circuits in accordance with the internal normative documents of the organisation using appropriate tools or organises this task;
18. organises or conducts maintenance of axle counters without switching them off in accordance with the internal normative documents of the organisation using appropriate tools;

19. organises or conducts maintenance of axle counters that requires switching them off (e.g. cleans, replaces sensors, maintains transmission links and replaces transmission devices) and coordinates maintenance with the traffic manager in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
20. organises or conducts maintenance of throttle transformers without switching them off in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
21. organises or conducts maintenance of throttle transformers that requires partially switching them off without interrupting the electrical circuit in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
22. conducts maintenance of throttle transformers with interruption to the electrical circuit in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
Organising or conducting maintenance of automatic train signalling (ALSN) track equipment
23. measures and adjusts code current in accordance with the internal normative documents of the organisation using appropriate tools or organises this task;
24. Organising or conducting maintenance of electromechanical controls
25. organises or conducts maintenance of controls, signboards, shunting cabinets and turnout centralisers in accordance with the internal normative documents of the organisation using appropriate tools;
26. maintains КБ-ЦШ type controls in accordance with the internal normative documents of the organisation using appropriate tools;
27. verifies the conformity of turnout centralisation dependence devices to documentation in accordance with the internal normative documents of the organisation using appropriate tools;
Organising or conducting maintenance of computer-based controls
28. organises or conducts maintenance of traffic manager work station hardware without disturbing the normal functionality of the devices in accordance with the internal normative documents of the organisation using appropriate tools;
29. replaces and reconfigures control devices, verifies the version of the update when restarting software, uses pre-configured devices where possible, launches necessary automatic test procedures and monitors their results or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
30. replaces hardware and software, verifies the version of the update, uses pre-configured hardware where possible, launches automatic tests and monitors the process or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
31. replaces and restarts dispatcher centralisation software, verifies the version of the update, launches automatic test procedures and monitors the process, configures the required user permissions or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
32. replaces dispatcher centralisation hardware, verifies the version of the update, uses pre-configured hardware where possible, configures the required user permissions or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
Organising or conducting maintenance of internal hardware, equipment cabinets and containers
33. organises or conducts maintenance of equipment cabinets (e.g. performs visual inspections, cleans and paints cabinets) without device shutdown in accordance with the internal normative documents of the organisation using appropriate tools;
34. organises or conducts maintenance of the internal hardware of safety equipment (e.g. performs visual inspections and general cleaning and tightens attachments) without shutdown, checks the condition of alarm interfaces, notifies their line manager in the event of alarms and eliminates them within the limits of their competence in accordance with the internal normative documents of the organisation and using appropriate tools;
35. replaces, updates and restarts software and verifies the version of the update or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
36. replaces and maintains control modules or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
37. replaces relays and other hardware or organises this task in accordance with the internal normative documents of the organisation using appropriate tools;
38. checks the condition of wiring and cable connections or organises this task in accordance with the internal normative documents of the organisation using appropriate tools;

39. verifies the conformity of working equipment to technical documentation in accordance with the internal normative documents of the organisation using appropriate tools; Organising or conducting maintenance of safety equipment at level crossings 40. organises or conducts maintenance of automatic signalling equipment at level crossings (e.g. checks, cleans, paints and checks visibility and audibility) without disruption or changing set parameters in accordance with the internal normative documents of the organisation using appropriate tools; 41. organises or conducts maintenance of automatic signalling equipment at level crossings that requires shutdown and changing set parameters and maintains barrier light signals in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 42. replaces, updates and restarts automatic signalling equipment software and verifies the version of the update in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; Organising or conducting cable network maintenance 43. organises or conducts maintenance of cable routes, couplings, racks and panels (e.g. inspects, cleans, checks connection quality and secures connections) and takes electrical measurements without detaching cables (e.g. measuring insulation resistance and cable circuit resistance) in accordance with the internal normative documents of the organisation and using appropriate tools; 44. maintains cable couplings, racks and panels and takes electrical measurements by detaching cables, verifies dependencies and conformity to technical documentation after maintenance in accordance with the internal normative documents of the organisation and using appropriate tools; 45. organises or takes measurements of electrical circuits at measurement points (e.g. measures the insulation resistance of turnout and track circuit signal circuits) in accordance with the internal normative documents of the organisation using appropriate tools; Organising or conducting safety equipment power supply maintenance 46. organises or conducts general maintenance and takes electrical measurements of power supplies and checks protective devices (e.g. inspects, checks and secures connections, checks feed availability and measures power and voltage) in accordance with the internal normative documents of the organisation using appropriate tools; 47. checks feed changeover and diesel generator start-up or organises this task in accordance with the internal normative documents of the organisation using appropriate tools; 48. organises or conducts maintenance of batteries (e.g. measures electrolyte density, cleans the case and parts and measures battery jars with cell testers) without interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 49. organises or conducts maintenance of batteries that requires disruption of charging voltage (e.g. checks battery capacity and replaces individual battery jars) in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 50. organises or conducts UPS device maintenance without interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 51. conducts UPS device maintenance with interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 52. switches between power supplies and feeds while ensuring the retention of light signal function or organises this task in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 53. introduces temporary solutions to power supply electrical circuits in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; Organising or conducting maintenance of protective devices and earthing of safety equipment 54. organises or conducts inspections and maintenance of fuses and surge protectors (e.g. checks the condition and replaces expired fuses) in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools; 55. organises or conducts inspections and maintenance of protective earthing (e.g. checks the condition of earthing conductors and the quality of connections) and measures soil resistivity in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools;
Knowledge: 1) types and construction of light signals, principles of operation and maintenance; 2) signalling systems of light signals and journey displays; 3) types and construction of turnouts, principles of operation and maintenance; 4) types and construction of track circuits, principles of operation and maintenance;

5) types of axle counters and their construction, principles of operation and maintenance; 6) principles of operation and maintenance of throttle transformers; 7) types of continuous automatic train signalling (ALSN) track equipment and their construction, principles of operation and maintenance; 8) types and construction of electromechanical controls, principles of operation and maintenance; 9) types and construction of computer-based controls, principles of operation and maintenance; 10) types and construction of internal hardware, equipment cabinets and containers, principles of operation and maintenance; 11) types and construction of automatic signalling equipment at crossings, principles of operation and maintenance; 12) cable network construction, principles of operation and maintenance; 13) types and construction of batteries, principles of operation and maintenance; 14) types and construction of protective devices and earthing, principles of operation and maintenance;
B.2.2 Managing safety equipment documentation **EstQF Level 5**
Performance indicators: 1. Drafts service area schedule plans in accordance with the internal normative documents of the organisation and the equipment manufacturer's instructions. 2. Organises and participates in checking the conformity of circuit diagrams and technical documentation to working equipment and updating them in accordance with the internal normative documents of the organisation and the equipment manufacturer's instructions. 3. Completes safety equipment inspection documentation in accordance with the internal normative documents of the organisation. 4. Develops modifications to the structure of the external hardware of the station and open track based on standard solutions and the requirements of the rules for the technical use of railways, the internal normative documents of the organisation and the equipment manufacturer's instructions. 5. Introduces temporary solutions and modifications to the structure of safety equipment based on standard solutions or manufacturer-approved technical solutions and the internal normative documents of the organisation. 6. Prepares annual reports in accordance with the internal normative documents of the organisation.
Knowledge: 1) principles of the design and preparation of circuit diagrams; 2) meanings of symbols on circuit diagrams; 3) principles of the functionality of standard nodes on circuit diagrams; 4) principles of completing and managing inspection documentation for safety equipment. 5) principles of work planning and drafting service area schedule plans; 6) preparation of annual reports.
B.2.3 Project management **EstQF Level 5**
Performance indicators: 1. Compiles operation and maintenance instructions for safety equipment in accordance with the rules for the technical use of railways, the internal normative documents of the organisation and the equipment manufacturer's instructions. 2. Conducts technical administration and management of construction projects and works in accordance with the internal normative documents of the organisation and the requirements of the technical documentation of the project. 3. Organises operational work on safety equipment in accordance with the rules for the technical use of railways and its annexes, the internal normative documents of the organisation and the manufacturer's instructions. 4. Manages software assets and restores default settings in accordance with the internal normative documents of the organisation and the manufacturer's instructions.
Knowledge: 1) types of main safety equipment devices and principles of alarm system operation; 2) principles of compiling operating instructions for safety equipment; 3) principles of compiling maintenance instructions for safety equipment; 4) principles of the technical administration of construction projects and construction work; 5) principles of organising operational work on safety equipment; 6) principles of software asset management.
B.2.4 Management and supervision **EstQF Level 5**
Performance indicators:

1. Manages a subdivision in accordance with the structure and internal normative documents of the organisation. 2. Supervises employees with lower technical and administrative qualifications and organises the work of a subordinate unit in accordance with the principles of work coordination and the internal normative documents of the organisation. 3. Trains and instructs employees in using safety equipment in accordance with the internal normative documents of the organisation and the manufacturer's instructions. 4. Manages resources (e.g. funds according to budget, warehouse resources, materials and tools) and organises logistics in accordance with the internal normative documents of the organisation.
Knowledge: 1) basics of planning and organisation. 2) principles of teamwork; 3) basics of communication psychology, including assertiveness; 4) basics of motivation; 5) basics of labour law; 6) basics of document management and administration.

OPTIONAL COMPETENCES

Certification of optional competences B.2.5 and B.2.6 is not mandatory.

B.2.5 Organising or conducting maintenance of marshalling yard safety equipment	**EstQF Level 5**
Performance indicators: 1. Organises or conducts maintenance of marshalling yard retarders and controls without interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools. 2. Reconfigures marshalling yard retarders and controls with interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools. 3. Organises or conducts maintenance of section vacancy detection sensors (electromagnetic, photoelectric, radiotechnical and track circuits) without interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools. 4. Reconfigures section vacancy detection sensors (electromagnetic, photoelectric, radiotechnical and track circuits) with interruption to operation in accordance with the internal normative documents of the organisation and the manufacturer's instructions using appropriate tools.	
Knowledge: 1) types and construction of marshalling yard retarders and controls, principles of operation and maintenance; 2) types and construction of section vacancy detection sensors, principles of operation and maintenance.	
B.2.6 Organising or conducting maintenance of ERTMS /ETCS devices	**EstQF Level 5**
Performance indicators: 1. Organises or conducts maintenance of ERTMS/ETCS internal hardware and manages, updates and restarts software in accordance with the internal normative documents of the organisation and the manufacturer's instructions; 2. Organises or conducts maintenance of ERTMS/ETCS external hardware (e.g. replaces and updates software) in accordance with the internal normative documents of the organisation and the manufacturer's instructions.	
Knowledge: 1) types and construction of ERTMS/ETCS internal hardware, principles of operation and maintenance; 2) types and construction of ERTMS/ETCS external hardware, principles of operation and maintenance.	
ERTMS - European Rail Traffic Management System - Euroopa raudteeliikluse juhtimissüsteem ETCS - European Train Control System - Euroopa signalisatsioonisüsteem	

RECURRING COMPETENCES

B.2.7 Recurring competences of Railway Signalling Area Engineer, Level 5	EstQF Level 5
Performance indicators: 1. Independently eliminates malfunctions in safety equipment or organises this task, immediately informs their line manager of any issues and seals devices. 2. Eliminates malfunctions in safety equipment as part of assistive work. 3. Modifies the structure of the external hardware of the station and open track by conducting shutdown and switching operations while maintaining signal functions. 4. Introduces temporary solutions to the circuit diagrams of safety equipment. 5. Immediately informs traffic control and other units of traffic-related malfunctions, coordinates their activities with other units within the limits of their competence and coordinates their activities with other units when planning work. 6. Organises or conducts maintenance of the traffic manager work station (telephone and radio equipment, eliminating minor faults, replacing panel lamps, etc.). 7. Conducts safety equipment activation and switch-off procedures according to the prescribed rules. 8. Analyses the causes of repeated malfunctions in safety equipment and seeks solutions. 9. Immediately informs their line manager of any issues that fall outside the limits of their competence. 10. Pays heed to the instructions of safety equipment manufacturers. 11. Checks the proper functioning of the equipment after carrying out work independently or with the traffic manager. 12. Documents work and makes necessary record entries. 13. Pays heed to work instructions, technologies and quality requirements as well as the requirements of all relevant legislation (both national and international), including waste management regulations. 14. Works diligently and accurately without endangering human health, property or the environment; 15. Organises the workplace as required and selects appropriate tools in accordance with the nature of the work, ensuring they are in working order and safe before starting work; 16. Strictly observes occupational health and safety requirements when planning work, preparing the workplace, working and organising the workplace, and takes surrounding people and the environment into account in order to prevent occupational accidents; 17. Uses personal protective equipment (appropriate clothing and footwear, safety vest, etc.) and appropriate work methods and techniques that do not endanger life or health; 18. Identifies the risks (e.g. safety and deadlines) that may be associated with the achievement of goals and takes measures to mitigate them. 19. In the event of an occupational accident, performs first aid, calls for professional help and informs the emergency services and the employer of the accident; 20. In the event of a health, commercial, technical or environmental hazard, terminates the work and immediately informs the employer or the employer's representative; 21. Uses all work equipment and tools prudently and properly, according to their operation instructions; 22. Regularly organises and cleans the tools, devices and protective equipment used during work, according to their maintenance instructions; 23. Is open to cooperation, takes part in teamwork, shares all necessary and useful information with others and works towards achieving the best result for all concerned; 24. Is capable of independently adapting to changes in working conditions and can find and analyse appropriate information to perform their duties and solve work-related problems. 25. Participates in professional discussions within the limits of their competence, presenting and defending their opinions in a well-argued way. 26. Participates in continuing vocational training, applies what they have learned in professional work; 27. Estonian language skills levels: understanding B2, speaking B1 and writing B1; Russian language skills levels: understanding B2 and speaking B1; English language skills levels: understanding B2. 28. Ensures traffic safety during repair, maintenance and construction work. 29. Maintains different types of safety equipment (e.g. automatic blocking and semi-automatic blocking) and safety equipment of different generations; 30. Uses a computer for information processing, communication, content creation and safety at the Basic user level on the Digital Competence Self-Assessment Scale (see Annex 2);	
Knowledge: 1) rules for the technical use of railways with annexes;	

2) requirements of professional legislation and regulations, meanings of professional terms; 3) requirements of drafting technical documentation (e.g. technical maintenance instructions for devices and the technical management act of the station) and documents; 4) requirements of operating on railways; 5) occupational safety requirements; 6) what to do in an emergency situation; 7) principles of first aid at the site of an accident; 8) principles of waste management; 9) principles of operation and maintenance of computer equipment; 10) fire safety requirements; 11) environmental protection requirements. 12) what to do in the event of traffic and occupational accidents; 13) requirements of notification procedures in the event of railway accidents and incidents; 14) types of traffic control devices used on railways; 15) types of communication used on railways; 16) point construction and principles of operation; 17) requirements of signal construction, installation and visibility; 18) principles of road safety for repair, maintenance and construction work; 19) principles of demarcating obstacle points and hazardous areas; 20) principles of hand signalling; 21) principles of issuing a caution order; 22) requirements of section availability detection sensors; 23) requirements of open track vacancy detection sensors; 24) requirements of automatic engine signalling equipment; 25) requirements of signalling equipment at crossings; 26) requirements of route-blocking equipment; 27) requirements of road-blocking equipment; 28) requirements of station-blocking equipment; 29) requirements of interdependence between points, signals and journeys; 30) maintenance requirements of safety and communications lines;
Assessment methods: Recurring competences are assessed in an integrated manner as part of the assessment of the other competences listed in the occupational qualification standard.

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	12-15052019-1.1.4/6k
2. Occupational qualification standard compiled by:	Aleksandr Malõsev, AS Eesti Raudtee Andres Türn, Edelaraudtee Infrastruktuuri AS Anto Looken, SA Raudteekutsed Indrek Süld, AS Eesti Raudtee Mati Lõhmus, AS Eesti Raudtee Tarvi Viisalu, AS Eesti Raudtee Tiiu Poltruk, Edelaraudtee Infrastruktuuri AS
3. Occupational qualification standard approved by:	Transport and Logistics
4. No. of decision of Sectoral Council	12
5. Date of decision of Sectoral Council	15.05.2019
6. Occupational qualification standard valid until	10.04.2024

7. Occupational qualification standard version no.	6
8. Reference to International Standard Classification of Occupations (ISCO 08)	7412 Electrical Mechanics and Fitters
9. Reference to European Qualifications Framework (EQF)	5
C.2 Occupational title in foreign language	
English:	Railway Signalling Area Engineer, EstQF Level 5
Finnish:	Rautatie mekaanikko
Russian:	Механик СЦБ железнодорожного транспорта
C.3 Annexes	
Lisa 1 Language skills level descriptions	
Lisa 2 Scale of self-assessment in digital competence	