OCCUPATIONAL QUALIFICATION STANDARD

Bridge Master, 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)
Bridge Master, EstQF Level 5	5

Part A
DESCRIPTION OF WORK

A.1 Description of work
Bridge Master, Level 5 plans and leads the maintenance and repairs of railway bridges, overpasses, tunnels, retaining walls, culverts, gutters (hereinafter referred to as railway bridges) and the rail track thereon (including evaluating the need for materials and mechanisms) and inspects and accepts completed work. Bridge Master, Level 5 is a mid-level specialist who works independently in unpredictable situations and is responsible for the work of teams. Bridge Master, Level 5 may need a driver's licence, a permit to drive special rolling stock as well as competency in working with mechanisms. Similar professions: Railway Mechanic, Level 4 Railway Mechanic, Level 5
A.2 Tasks
A.2.1 Planning and documenting of work 1. Analysing and using project information. 2. Creating work plans. 3. Collecting, analysing and specifying information for performing duties. 4. Checking and preparing the readiness of the technological work process. 5. Deciding on the need for tools, mechanisms and accessories. 6. Documentation of work and processing of data. A.2.2 Ensuring traffic safety 1. Selecting safety measures and supervision of the performance thereof. 2. Submitting a caution order. 3. Restricting the work area for safety. 4. Appointing a signalist for safety. 5. Making the required entries while working at the station. 6. Planning and organising the installation, maintenance and removal of road signs and railway signals. 7. Inspecting road signs and railway signals and their condition. A.2.3 Inspection of work process and condition of railway bridge 1. Preventing and identifying traffic-related malfunctions and eliminating them. 2. Following safety measures and ensuring that they are followed. 3. Following work technology, ensuring it is followed and altering technology. 4. Organising the measuring of railway facilities and planning further activities. A.2.4 Organising and performance of removal of snow from railway 1. Organising and performing the removal of snow at level and pedestrian crossings and switches. 2. Planning, organising and performing the removal of snow on railway bridges. A.2.5 Planning and organisation of repairs and maintenance of railway embankments and embankment cones of bridge

1. Planning and organising the assessment of the condition and shape changes of railway embankments, embankment cones and their fortifications.
2. Planning and organising the construction and maintenance of drainage facilities, stream beds and ditches.
3. Planning and organising the construction and maintenance of embankment slope steps.
A.2.6 Planning and organisation of repairs, condition assessments and inspections of reinforced concrete bridges (overpasses)
1. Inspecting the condition of the bridge structure of reinforced concrete bridges (overpasses) and identifying faults.
2. Planning and organising the repairs and maintenance of the bridge structure of reinforced concrete bridges (overpasses).
3. Inspecting the condition of the piers of reinforced concrete bridges (overpasses) and identifying faults.
4. Planning and organising the repairs and maintenance of the piers of reinforced concrete bridges (overpasses).
5. Planning and organising the inspections and repairs of the hydro-insulation and drainage systems of reinforced concrete bridges (overpasses).
6. Planning and organising the condition inspections and repairs of the support point and bearing mechanisms of the bridge structure of reinforced concrete bridges (overpasses).
7. Planning and organising the repairs, condition assessments and checks of the inspection and operation equipment (suspended platforms, safety rails, enclosing structures and firefighting equipment) of reinforced concrete bridges (overpasses).
8. Inspecting the condition of the retaining walls of reinforced concrete bridges (overpasses) and identifying faults.
9. Planning and organising the repairs and maintenance of the retaining walls of reinforced concrete bridges (overpasses).
A.2.7 Planning and organisation of repairs, condition assessments and inspections of metal bridges (overpasses)
1. Inspecting the condition of the bridge structure of metal bridges (overpasses) and identifying faults.
2. Planning and organising the repairs and maintenance of the bridge structure of metal bridges (overpasses).
3. Inspecting the condition of the piers of metal bridges (overpasses) and identifying faults.
4. Planning and organising the repairs and maintenance of the piers of metal bridges (overpasses).
5. Planning and organising the condition inspections and repairs of the metal and riveted, welded and bolted joints of the elements of metal bridges (overpasses).
6. Planning and organising the inspection and repairs of the ballast beds, hydro-insulation of reinforced concrete slabs of ballastless roads and drainage systems of metal bridges (overpasses).
7. Inspecting the condition of the corrosion protection of metal bridges (overpasses) and planning its restoration, if necessary.
8. Planning and organising the condition inspections and repairs of the support point and bearing mechanisms of the bridge structure of metal bridges (overpasses).
9. Planning and organising the repairs, condition assessments and checks of the inspection and operation equipment (suspended carts, suspended platforms, safety rails, ladders and firefighting equipment) of metal bridges (overpasses).
10. Inspecting the condition of the retaining walls of metal bridges (overpasses) and identifying faults.
11. Planning and organising the repairs and maintenance of the retaining walls of metal bridges (overpasses).
A.2.8 Planning and organisation of construction, repairs, condition assessments and inspections of railway culverts (tunnels) and gutters
1. Planning and organising the condition inspections of railway culverts (tunnels), identifying faults and planning further activities.
2. Planning and organising the repairs of railway culverts (tunnels).
3. Planning and organising the cleaning of railway culverts (tunnels) and assessing work results.
4. Planning and organising the condition inspections and repairs of the metal and bolted joints of the elements of metal railway culverts (tunnels).
5. Planning and organising the condition inspections of railway gutters and the elimination of faults.
6. Planning and organising the reconstruction and repairs of railway gutters.
A.2.9 Planning and organisation of maintenance and repairs of rail track superstructure on bridges and approach slabs
1. Planning and organising usability inspections of sleepers and bridge beams and planning their replacement.
2. Planning and organising the replacement of bridge beams.
3. Checking the safety angles (guard rails) and protection beams and organising their repairs or replacement, if necessary.
4. Assessing the condition of rails and ballast.
A.2.10 Supervision and management

1. Appointing and supervising a foreman. 2. Supervising workers with a lower occupation level. 3. Coordinating mechanism work. 4. Managing resources. 5. Developing and organising plans for improvement. 6. Evaluating work results and compliance with quality requirements.
A.3 Work environment and specific nature of work
Bridge Master, Level 5 works outdoors and mostly during the working week. Occasionally, they may need to work outside of their usual working hours (round the clock, on days off and on public holidays) to eliminate malfunctions. The work of Bridge Master, Level 5 varies and requires focus and responsibility in checking the condition of railway track structures, analysing results, implementing measures, planning work, leading timely repair work, ensuring traffic safety and inspecting completed work. A bridge master works in a high-risk environment on railways open to rail traffic, as well as on uneven ground and in various weather conditions. It is therefore important for a bridge master to be in good physical shape and ready to work outdoors. Due to the high-risk work, a bridge master must follow work policies and health and safety requirements, wear appropriate work gear for the task and weather and wear personal protective equipment, including a safety vest. Not following safety requirements may cause railway accidents, trauma to workers or death. The occupation of bridge master requires regular medical check-ups.
A.4 Tools
The main tools are small railway mechanisms, signals and telecommunication, ICT and measuring equipment. Bridge Master, Level 5 uses documents (projects and plans) and office technology in their work.
A.5 Personal qualities required for work: abilities and characteristics
The work of a bridge master requires physical resilience, a sense of responsibility, decision-making skills, the ability to focus, readiness for cooperation, readiness to work in a team and lead a team according to the given work instructions, logical thinking, accuracy and creativity, analytical skills, the drive to achieve, self-discipline, a positive attitude to life and readiness to react both positively and negatively to people and situations.
A.6 Professional preparation
Bridge Master, Level 5 is usually a person with at least secondary education who has acquired their professional skills in the course of practical work under the supervision of a bridge master.
A.7 Most common occupational titles
Road master, bridge master, foreman.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
Competences B.2.1-B.2.11 must be certified when applying for the qualification of Bridge Master, Level 5.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Planning and documenting of work	**EstQF Level 5**
Performance indicators 1. Analyses and uses project information to define the duties of their subordinates and working groups. 2. Compiles work plans based on duties and by determining the material expenses, the approximate working time and the sequence of work operations based on primary data. 3. Collects (incl. acquiring the necessary permits), specifies and analyses information for performing duties, according to duties.	

4. Checks the readiness of the technological process or prepares the technological process by providing and checking for the existence of the materials, tools, mechanisms and labour force necessary for work, based on duties. 5. Decides on the need for tools, small mechanisms and accessories according to the nature of the job and the technology. 6. Checks the use of personal protective equipment and uses it in their work according to duties, risk factors and the requirements of normative documents. 7. Documents work and processes data according to internal work organisation. 8. Compiles reports according to the requirements of normative documents.	
Knowledge: 1) knowledge of the design scope and the professional terminology and drawing symbols used in it; 2) principles of creating work plans; 3) basics of work documentation and data processing.	
B.2.2 Ensuring traffic safety	**EstQF Level 4**
Performance indicators Observing the requirements of normative documents: 1. selects safety requirements and monitors that they are followed; 2. submits a caution order; 3. checks that the work place is restricted with railway signals in order to ensure safety or performs this duty; 4. appoints a signalist to ensure safety; 5. plans and organises the installation, maintenance and removal of road signs and railway signals or performs these duties; 6. checks for the presence and inspects the condition of road signs and railway signals.	
B.2.3 Inspection of work process and condition of road	**EstQF Level 5**
Performance indicators 1. Prevents and identifies traffic-related malfunctions, notifies of this pursuant to the established procedure and plans the activities and chooses the equipment to eliminate the malfunction according to the requirements of normative documents. 2. Follows safety requirements and ensures that they are followed according to the requirements of normative documents. 3. Observes work technology, ensures that it is observed and changes it according to the requirements of normative documents. 4. Organises the measuring of railway facilities or performs this duty, using appropriate measuring instruments and following the requirements of measuring instrument manuals and normative documents, and plans further action based on measurement results.	
B.2.4 Planning and organisation of snow removal on railways	**EstQF Level 5**
Performance indicators 1. Plans and organises the removal of snow at level and pedestrian crossings, pedestrian bridges, tunnels and switches or performs these duties, using the appropriate tools and following the requirements of normative documents. 2. Plans and organises the removal of snow at level and pedestrian crossings, pedestrian bridges, tunnels and switches or performs these duties, using small mechanisms and following the requirements of their manuals and normative documents. 3. Plans and organises the removal of snow with machines and mechanisms and ensures it is performed, according to the prescribed procedure and the requirements of normative documents.	
Knowledge: 1) operating, maintenance and storage principles of small mechanisms used in snow removal; 2) operating, maintenance and storage principles of snow removal machines and mechanisms; 3) technology for and safety requirements of manual snow removal.	
B.2.5 Planning and organisation of repairs and maintenance of railway embankments and embankment cones of railway bridges	**EstQF Level 5**
Performance indicators 1. Plans and organises condition assessments of railway embankments, embankment cones and their fortifications on a bridge or assesses the condition and shape changes of the embankments and identifies the cause of	

embankment defects according to the requirements of normative documents, and plans further activities based on assessment results. 2. Plans and organises the construction and maintenance of drainage facilities, stream beds and ditches or performs these duties, using the appropriate tools and following the requirements of normative documents. 3. Plans and organises the construction and maintenance of embankment slope steps or performs these duties, using the appropriate tools and following the requirements of normative documents.

B.2.6 Planning and organisation of repairs, condition assessments and checks of reinforced concrete bridges (overpasses)	**EstQF Level 5**
Performance indicators 1. Plans and organises the condition inspections of the bridge structures and piers of reinforced concrete bridges (overpasses) and the identification of faults according to the requirements of normative documents. 2. Plans and organises the repairs and maintenance of the bridge structures and piers of reinforced concrete bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools. 3. Inspects the condition of the hydro-insulation and drainage systems of reinforced concrete bridges (overpasses) and identifies faults according to the requirements of normative documents. 4. Plans and organises the repairs and maintenance of the hydro-insulation and drainage systems of reinforced concrete bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools. 5. Plans and organises the condition inspections of the support point and bearing mechanisms of the bridge structures of reinforced concrete bridges (overpasses) and the identification of faults according to the requirements of normative documents. 6. Plans and organises the repairs and maintenance of the support point and bearing mechanisms of the bridge structures of reinforced concrete bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools. 7. Plans and organises the condition inspections and repairs of the inspection and operation equipment (suspended platforms, safety rails, enclosing structures and firefighting equipment) of reinforced concrete bridges (overpasses) according to the requirements of normative documents, using the appropriate tools. 8. Plans and organises the condition inspections of the retaining walls of reinforced concrete bridges (overpasses) and the identification of faults according to the requirements of normative documents. 9. Plans and organises the repairs and maintenance of the retaining walls of reinforced concrete bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools.	

B.2.7 Planning and organisation of repairs, condition assessments and inspections of metal bridges (overpasses)	**EstQF Level 5**
Performance indicators 1. Plans and organises the condition inspections of the bridge structures and piers of metal bridges (overpasses) and the identification of faults according to the requirements of normative documents. 2. Plans and organises the repairs and maintenance of the bridge structures and piers of metal bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools. 3. Inspects the condition of metal bridges (overpasses) (condition of corrosion protection, metal and riveted, welded and bolted joints) and identifies faults according to the requirements of normative documents. 4. Inspects the condition of the ballast beds, hydro-insulation of reinforced concrete slabs of ballastless roads and drainage systems of metal bridges (overpasses) and identifies faults according to the requirements of normative documents. 5. Plans and organises the repairs and maintenance of the ballast beds, hydro-insulation of reinforced concrete slabs of ballastless roads and drainage systems of metal bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools. 6. Plans and organises the repairs and maintenance of the support point and bearing mechanisms of the bridge structures of metal bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools. 7. Plans and organises the condition inspections and repairs of the inspection and operation equipment (suspended carts, suspended platforms, safety rails, ladders and firefighting equipment) of reinforced concrete bridges (overpasses) according to the requirements of normative documents, using the appropriate tools.	

8. Plans and organises the condition inspections of the retaining walls of metal bridges (overpasses) and the identification of faults according to the requirements of normative documents. 9. Plans and organises the repairs and maintenance of the retaining walls of metal bridges (overpasses) or performs these duties according to the requirements of normative documents, using the appropriate tools.	
B.2.8 Planning and organisation of repairs and condition assessments of railway culverts and gutters	**EstQF Level 5**
Performance indicators 1. Plans and organises condition inspections of and the identification of faults in railway culverts (tunnels) or inspects their condition and visually identifies faults according to the requirements of normative documents and plans further activities based on the results of the check. 2. Plans and organises the repairs of railway culverts (tunnels) or performs these duties, using the appropriate tools and following the requirements of normative documents. 3. Plans and organises the construction and reconstruction of railway culverts (tunnels) or performs these duties, using the appropriate tools and following the requirements of project documentation and normative documents. 4. Plans and organises the cleaning of railway culverts (tunnels) and assesses the result, following the requirements of normative documents. 5. Inspects the condition of metal railway culverts (tunnels) (condition of corrosion protection, metal and bolted joints) and identifies faults according to the requirements of normative documents. 6. Plans and organises the condition inspections of and elimination of faults in railway gutters and assesses the result, following the requirements of normative documents. 7. Plans and organises the repairs of railway gutters or performs these duties, using the appropriate tools and following the requirements of normative documents.	
B.2.9 Condition inspections, maintenance and repair of rail tracks on railway bridge and approach slabs	**EstQF Level 5**
Performance indicators 1. Plans and organises usability inspections of bridge beams following the requirements of normative documents and plans the replacement of bridge beams based on the results. 2. Plans and organises the replacement of bridge beams or performs these duties, using the appropriate tools and according to technology and the requirements of normative documents. 3. Plans and organises the replacement of safety angles (guard rails) and protection beams or performs these duties, using the appropriate tools and according to technology and the requirements of normative documents.	
B.2.10 Supervision and management	**EstQF Level 5**
Performance indicators 1. Supervises workers with a lower occupation level when following occupational health and safety requirements, defining and assessing possible work-related risks and choosing measures for mitigating them in compliance with the requirements of normative documents. 2. Manages resources based on the nature, scope and time of work. 3. Plans and organises improvements based on work result analysis and feedback. 4. Assesses the results of the work process, ensures that quality requirements are followed and gives feedback to employees based on the nature and scope of work. 5. Organises the work of mechanisms based on the nature of work and the requirements of normative documents.	

RECURRING COMPETENCES

B.2.11 Recurring competences of Bridge Master, Level 5	**EstQF Level 5**
Performance indicators 1. Observes the principles of railway transport work and traffic management. 2. Complies with road maintenance requirements, including specifics dependent on air temperature. 3. Cooperates with security equipment and energetics workers in repair and maintenance work. 4. Performs repairs and maintenance on electric railway lines. 5. Uses communication and signalling tools (radio tools and hand and sound signalling devices). 6. Reports their readiness for work and completion of work to the responsible employee. 7. Understands the function of the switch and is able to classify rail types.	

8. Gauge requirements and inspection. 9. Follows the requirements of all relevant legal acts. 10. Works diligently and accurately without endangering anyone's health, property or the environment. 11. 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. 12. 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. 13. Uses personal protective equipment (wears appropriate clothing and footwear and a safety vest, uses headphones and anti-vibration gloves, etc.) and appropriate work methods and techniques that do not endanger life or health. 14. Identifies the risks (safety and deadlines) that may be associated with the achievement of goals and takes measures to mitigate them. 15. In the event of an occupational accident, performs first aid and informs the representative of the employer. 16. In the event of a health, technical, traffic or environmental hazard, terminates work and immediately informs the shift manager, employer or the employer's representative. 17. Acts appropriately in unusual situations (forwards information, takes action and performs rescue work). 18. Follows work instructions, technologies and quality requirements as well as the rules established in the enterprise. 19. Uses all work equipment and tools prudently and properly, according to their operation instructions. 20. Regularly organises and cleans the tools, devices and protective equipment used during work, according to their maintenance instructions. 21. 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. 22. 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. 23. Participates in professional discussions within the limits of their competence, presenting and defending their opinions in a well-argued way. 24. Participates in continuing vocational training, applies what they have learned in professional work. 25. Can communicate professionally in Estonian and Russian at the A2 level (see Annex 1). 26. Uses a computer at the Independent user level in the following fields: information processing, communication, safety and problem-solving; is proficient in professional software and can use modern technological aids and applications (e.g. smart devices). Annex 2 Scale of self-assessment in digital competence.
Knowledge: 1) construction and maintenance requirements for railway embankments; 2) construction and maintenance requirements for railway superstructures (rails, communication parts, sleepers, beams, ballast, switches and track circuits); 3) construction and maintenance requirements for railway bridges, overpasses, tunnels, retaining walls, culverts and gutters; 4) sleeper types and parameters, installation plans; 5) bridge beam types and sets and installation plans; 6) rail types and key parameters; 7) gauge requirements; 8) principles of railway transport work and traffic management; 9) railway signalling systems; 10) principles of using, maintaining and storing the necessary tools, measuring instruments and devices; 11) the main work methods and their implementation in different work situations; 12) dangers related to weather conditions (lightning, strong winds, rain, ice, etc.) and the specific nature of the work related to this; 13) principles of responding to dangerous situations; 14) principles of providing first aid at the scene of an accident; 15) principles of occupational health and safety, including types of personal protective equipment, their principles of use and maintenance; 16) applicable quality requirements within the limits of their professional level; 17) requirements of occupational legal acts and normative documents and definitions of occupational terminology; 18) technical documentation requirements within the limits of their professional level;

19) principles of waste management.
Assessment method(s) Recurring competences are assessed as part of the assessment of the other competences listed in the occupational 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	12-15052019-2.1.1/1k
2. Occupational qualification standard compiled by:	Aleksei Gornev, Tehnilise Järelevalve Amet Anto Looken, SA Raudteekutsed Moonika Siniallik, Edelaraudtee Infrastruktuuri AS Rein Ljäkin, AS Eesti Raudtee Tarvi Viisalu, AS Eesti Raudtee Tatjana Beljatskaja, EMLINTE OÜ
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	14.11.2023
7. Occupational qualification standard version no.	1
8. Reference to International Standard Classification of Occupations (ISCO 08)	7215 Riggers and Cable Splicers
9. Reference to European Qualifications Framework (EQF)	5
C.2 Occupational title in foreign language	
English:	Bridge Master, EstQF Level 5
Russian:	Мостовой мастер
C.3 Annexes	
Lisa 1 Language skills level descriptions	
Lisa 2 Scale of self-assessment in digital competence	