Construction works of the railway infrastructure in the area of Rail Baltica Ülemiste terminal

**TECHNICAL SPECIFICATION**



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# GENERAL DESCRIPTION

The object of the contractual works is the design and construction work of the Ülemiste station area 1520 mm gauge railway infrastructure.

## GENERAL DESCRIPTION OF THE WORKS

The general description of the activities included in the works and the basic breakdown of the activities are given below:

**Design work:**

* + Preparation of detailed technical designs based on the master designs included in the contractual documents.
	+ As described in the Technical Specification at the stage of the operational design, modification of solutions of the detailed designs or operational designs included in the documents of the Contract or submitted by the Contracting Authority in the course of performance of the Contract (supplementation or modification of solutions of the existing detailed designs) according to the Technical Specification.
	+ Additional design work (preparation of construction design documents for additional buildings, demolition designs) as described in the Technical Specification.
	+ To the extent provided in the Technical Specification, additional inspection and conformity assessment by the Contractor of the construction design documents included in the documents of the Contract or submitted by the Contracting Authority in the course of performance of the Contract (supplementation or modification of solutions of the existing detailed designs) according to the Technical Specification.
	+ Carrying out all activities required by the CSM RA regulation for the designer in accordance with the Technical Specification.

**Securing the right to build:**

* + Obtaining building permits for all buildings to be constructed in accordance with construction design documents and temporary structures required for performance of the work, which are not procured by the Contracting Authority in accordance with the Technical Specification.
	+ Obtaining demolition permits (building permits) required for the demolition of all existing buildings, which are not procured by the Contracting Authority in accordance with the Technical Specification.

**Construction works:**

* + All construction work and other activities related to construction work that are necessary for the proper construction of the buildings specified in the construction design documents (including construction design documents to be prepared by the Contractor in accordance with the terms of the Contract), including the supply of all necessary construction materials and equipment, in accordance with the Contract and this Technical Specification.
	+ Demolition of existing buildings which is required for the construction of all buildings to be constructed and temporary structures required for performance of the work.
	+ Disposal of all waste arising from demolition, dismantling and construction of existing buildings, except to the extent that the Technical Specification provides for the transfer of materials obtained during the dismantling of the existing buildings to the Contracting Authority or a third party, or during their reuse within the Contractual construction work.
	+ To the extent provided in the Technical Specification, ensuring the public traffic during construction work (pedestrian accesses, vehicular traffic, railway traffic), and ensuring existing accesses, including the construction of temporary facilities and other similar solutions.
	+ Performance of construction work in accordance with the phased breakdown of construction works specified in the construction design documents or guidance documents provided by the Contracting Authority.
	+ Carrying out the tests (conformity, etc.) provided for in the legislation and standards applicable to all construction works.
	+ Carrying out all the tests provided for in the Contract.
	+ Carrying out all activities required by the CSM RA regulation for the builder in accordance with the Technical Specification.
	+ Proper documentation of the works, including submission of construction as-built documentation and linking it to the as-built model.
	+ Performance of duties of the main contractor in construction of scope of the contract.

**Ensuring start-up operations:**

* + Obtaining authorisations for use for all buildings under construction, including, if necessary, obtaining temporary authorisations for use and obtaining authorisations for use of temporary structures.

## THIRD PARTIES

The works include the demolition of structures belonging to the following third parties and the construction of new structures, the respective third parties being involved in the procedures for supervision and acceptance of the works by the Contracting Authority:

* + Eesti Raudtee AS (EVR);
	+ Elektrilevi OÜ;
	+ Dvigatel-Energeetika AS;
	+ Other network operators and / or owners whose infrastructure is being relocated as part of construction work.

The Contracting Authority involves construction supervision by the owner (the Owner's Supervisor) and author supervision by the designer (the Author’s Supervisor) in the performance of the works. The Contractor is obliged to co-operate with the Owner's Supervisor in accordance with the Contract and legislation.

## EXCLUSIONS FROM THE SCOPE OF THE WORKS

The following activities are not included in the scope of the works:

* Preparatory work carried out by a third party (Public procurement: "Preparatory works for the construction of the Rail Baltica Ülemiste Joint Terminal and its vicinity", reference number 245348);
* The construction works of Ülemiste Terminal building (ZAHA/Esplan work no 3196)(including demolition of platforms and tunnels)
* Construction of the maintenance point for the sorting park and the connection links of the washing facility, which are part of the work of Stage 1, together with the corresponding amendments to the traffic management system, specified in the infrastructure construction design (design work of the reconstruction of the Ülemiste railway infrastructure prepared by Reaalprojekt OÜ / Allspark OÜ, work No. P20037, detailed designs and operational designs).
* Replacement of railway tracks with ballast and embankment in the westward constriction of Ülemiste station. Further explanation in clause 3.1.2.
* Construction of the service building for a car loading station, utility networks, and parking lot (design parts OS02101\_REA\_AR-AR\_car\_loading\_building, OS02112\_REA\_RO-TL\_road, OS02114\_REA\_ED-EL\_electricity, OS02115\_REA\_LV-EN\_telecom, OS02116\_REA\_OL-ET\_lighting, OS02116\_REA\_WE-VKV\_water\_sewerage). The work amounts not included in the scope of works are shown in the list of costs of the above design parts.
* Making cable connections for equipment cabinets and traffic lights in the 1520 mm gauge railway traffic control system in accordance with clause 3.2.10;
* Supply of materials provided by the Contracting Authority in accordance with the technical specifications (including the materials to be dismantled and reused).
* 1435 mm gauge railway systems (including 1435 railway, 1435 electricity, 1435 catenary, 1435 telecommunications, 1435 signalling)
* AS Tallinna Vesi and car loading station pipelines from the project OS02116
* Electricity from project OS02113
* Vesse tunnel from project OS02121
* Landscaping (excluding deforestation, demolition of fences and wall, preparation works, construction of a wall, construction of a fence on the north side of 1520 railway in the sections 110+420-110+580 and 111+130-111+320 and to the bottom side of the stairs from the Kantsi overpass)
* Contractor’s Design Review from section 1.18 from the General conditions of the contract does not belong in the scope of works. In other respects, the Contractor shall have the obligations and responsibilities set out in clause 1.17 of the Contract in respect of the construction design documents submitted by the Contracting Authority.
* Establishing new forced possessions or other land use rights in relation to relocated external networks, etc. facilities, the necessary land use rights are guaranteed by the Client.
* Obtaining the necessary consent for the relocation of existing external networks from the network owner, the necessary consent is ensured through the KAHOS procedure. The task of the contractor is to obtain technical approval from the network owner for the construction project of external networks, if necessary.
* Correction of conflicts in the design given by the Client that have arisen as a result of the RAMS process

Exclusions from the scope of the works are interpreted restrictively in case of contradictions. No other exclusions in addition to those mentioned in this section shall apply. Specific work scopes can be found in annex 1.

# Work sections and TIME SCHEDULE

Construction works have been divided into work sections. There are no optional sections, all work sections are committed sections.

## Work sections

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Committed or optional** | **Commencement Date**  | **Time for Completion**  | **Authorisation for use** | **Training** | **Tests on completion** |
| 1. **Clearance of the northern construction area of Stage 1 of the Terminal (relocation of utility networks, demolition of roads, etc.), reconstruction of signalling**
 | Committed | Base Date  | 25.05.2023 | Authorisation for use only for objects constructed | Yes | Süsteemi toimivustestid ja katsed vastavad normatiivsetele nõuetele |
| 1. **Stages of infrastructure design 2a (excluding work section 1), 2b and 2c, Kantsi overpass**
 | Committed | Base Date  | 31.12.2024 | Only for Kantsi overpass | no | Süsteemi toimivustestid ja katsed vastavad normatiivsetele nõuetele |
| 1. **Clearance of the southern construction area of Stage 1 of the Terminal (relocation of utility networks, demolition of roads, etc.)**
 | Committed | Base Date | 28.04.2025 | No | no | Süsteemi toimivustestid ja kasted vastavad normatiivsetele nõuetele |
| 1. **Finishing 1520 main tracks**
 | Committed | Base Date  | 25.07.2025 | Yes  | no | Süsteemi toimivustestid ja katsed vastavad normatiivsetele nõuetele |
| 1. **All the construction works specified in Technical Specification (excluding work section 1, work section 2, work section 3 work section 4 and work section 6).**
 | Committed | Base Date  | 01.09.2026 | Yes | no | Süsteemi toimivustestid ja katsed vastavad normatiivsetele nõuetele |
| 1. **1520 railway track no 4 works, catenary**
 | Committed | Base Date  | 01.10.2026 | Yes | no | Süsteemi toimivustestid ja katsed vastavad normatiivsetele nõuetele |

## INITIAL PROGRAMME OF CONSTRUCTION WORK

The Contracting Authority's initial programme of construction work is given below.

|  |  |  |
| --- | --- | --- |
| **Title** | **Commencement Date** | **End** |
| Dismantling of railway tracks in the area of Stage 1 of the Terminal, relocation of utility networks |  15.03.2023 |  25.05.2023 |
|  Infra. Stage 2a – construction of sorting park bottlenecks and restoration of electricity network and lighting; electrification of switch 131/133; clearance of the entire area for 1520 mm gauge construction; except for existing main roads IV and V, excavation, embankment, and drainage construction | 15.03.2023 |  02.10.2023 |
| Infra. Stage 2b – construction of new tracks of 1520 mm gauge. TRACKS No.: I,II, 4, V, 6, 11 (including contact network and CCS channels) | 11.04.2024 | 02.09.2024 |
| Infra. Stage 2b – construction of new tracks of 1520 mm gauge. TRACKS No.: 7, 8, 9, 10, 24 (including contact network and CCS channels) | 05.08.2024 | 27.12.2024 |
|  Infra. Stage 2c – construction of new 1520 mm tracks in the terminal area (including contact network and CCS channels) | 05.08.2024 | 16.09.2024 |
|  Infrastructure Stage 3 – connection of the I main track of 1520 mm gauge, (incl. the dismantling of the existing railway), new CCS, and commissioning No. 1 (construction DELAY PERIOD of up to 120 hours + 1-week commissioning) | 07/04/2025 |  18/04/2025 |
| Infrastructure Stage 4 – construction and commissioning of the westward end of the II main track of 1520 mm gauge incl.the dismantling of the existing railway (construction delay period of up to 72 hours) | 22.04.2025 |  28/04/2025 |
| Infrastructure Stage 5 – construction of the II main track connection (incl. the dismantling of the existing railway), Kantsi viaduct | 29.04.2025 |  05.09.2025 |
| Infrastructure Stage 6 – opening of new main tracks of 1520 mm gauge for traffic | 25/07/2025 |  25/07/2025 |
| Infra stage 7 - construction of track 4 in the Terminal area | 18.06.2026 | 14.09.2026 |

The contractor shall follow the programme during the contract.

The implementation of the construction works of the 1st stage of the Ülemiste terminal building by the Customer's other subcontractor has been taken into account for the deadlines of the schedule and Work Sections. The scope of construction works of the 1st stage of the Ülemiste Terminal Building includes the construction works of the reinforced concrete structures under the new 1520 mm railways, which are also the 0th floor of the Ülemiste Terminal Building, to be built within the framework of this Agreement.

The construction works of the respective northern structures of the 1st stage of the Ülemiste Terminal Building will begin after the Contractor has completed the works of Section No. 1 by the deadline of 25.05.2023 (the construction land will be released for the northern construction works of the 1st stage of the Ülemiste Terminal Building). The construction work of the northern structures of the 1st stage of the Ülemiste terminal building will be completed no later than 01.08.2024. After construction of the northern works of the Stage 1 of Terminal, the corresponding working land will be given again to the Contractor for the execution of Work Sections No. 2, 3 and 4 in accordance with Appendix 4 of the Technical Description.

The construction works of the respective northern structures of the 1st stage of the Ülemiste Terminal Building will begin after the Contractor has completed the works of Section No. 3 by the deadline of 28.04.2025 (the construction land will be released for the southern construction works of the 1st stage of the Ülemiste Terminal Building). The construction work of the southern structures of the 1st stage of the Ülemiste terminal building will be completed no later than 18.06.2026. After construction of the northern works of the Stage 1 of Terminal, the corresponding working land will be given again to the Contractor for the execution of Work Section no 6 in accordance with Appendix 4 of the Technical Description.

# SPECIAL REQUIREMENTS FOR THE WORKS

The following are the specific requirements of the Contracting Authority that specify or describe the quality, volume, design work or construction activities of the construction design documents. The works mentioned further in the chapter do not describe all the works that need to be done. The total scope of the works is described in the scope of this Contract, its technical annexes, and the scope of the construction design. In addition, all other necessary works that can be expected to be performed for the performance of the works and that are necessary to complete the final goal must be performed.

## DESIGN WORK

### Preparation of operational designs on the basis of detailed designs

Operational designs and models must be prepared for all design parts reflected in the detailed design (including if necessary, operational design of a trench, etc.), including (detailed) designs prepared by the Contractor. The construction work shall be based on the operational design’s data models (BIM models), working drawings, and documentation.

To design 1520 mm gauge railway tracks together with crossing utilities in the detailed technical design level. The design shall be based on the following construction design documents ordered by the Contracting Authority and to be provided:

* + **Design work of the reconstruction of Ülemiste railway infrastructure prepared by Reaalprojekt OÜ / Allspark OÜ, work No. P20037, detailed designs and operational designs, 15/09/2022.**

The design is included in the Contract documents.

The operational design must meet the requirements established for operational designs in the guidance documents and the following additional requirements:

* 1. When preparing the operational design, the need to ensure the continuous operation of railway transport during the construction process shall be taken into account.
	2. The operational design shall be prepared using BIM technology and methodology. Upon completion of the work, the operational design model must allow further development into an implementation model in accordance with the requirements of the technical specification BIM.
	3. The maintenance manual with a list of jobs shall be prepared.
	4. During the preparation of the operational design, among the coordination of the construction working documents, the Contractor shall approve the proposed materials, equipment and products. The Contractor may, in agreement with the Contracting Authority, approve the materials separately before submitting them for approval.
	5. Transverse profiles shall be prepared in regards to the facilities with a ballast bed.
	6. The explanatory note (letter of explanations) of the operational design must reflect, inter alia, the following:
		1. Detailed descriptions of the work technology;
		2. lists of machines and mechanisms with descriptions and diagrams of locations;
		3. lists of technical data of materials together with installation instructions, product sheets, and certificates;
		4. safety and environmental protection measures during construction (if necessary, a permit for special use of water);
		5. detailed requirements for materials and works.
	7. Technical solutions and detailed instructions for installation shall be prepared for various elements and assemblies of the main structures.

In order to prepare the operational design, all additionally required connection conditions, views, approvals and permits necessary for the design and construction, which are not included in the existing parts of the design, must be obtained at the expense of the Contractor.

As part of the preparation of the work project, the Contractor undertakes to prepare plans of the forced possession (land use right) area in relation to the external networks to be relocated.

### Changing the solutions of the detailed designs at the operational design stage

As part of the design work, the Contractor shall make the following changes and additions to the operational design handed over by the Contracting Authority in clause 3.1.1, as compared to the solutions of the detailed designs:

* 1. Modification of 1520 mm gauge railway solution in the westward constriction. On the main track II, in the section between Turnouts 2 and 4, only the rails shall be replaced with new ones, and the profile shall be repaired with a stuffing machine; the profile to be installed westward of the turnout 2 until the beginning of the curve shall only be repaired with a filling machine. On the main track I westward of the turnout 6, the profile shall be only repaired with a stuffing machine. The addition of ballast must be provided in the sections for repairing the profile. At the new turnouts, new materials shall be provided for the construction of the block behind the cross rail, including rails;
	2. The maintenance point for the sorting park and the connection links of the washing facility, which are part of the work of Stage 1, specified in the infrastructure construction design (design work of the reconstruction of the Ülemiste railway infrastructure prepared by Reaalprojekt OÜ / Allspark OÜ, work No. P20037, detailed designs and operational designs), shall not be constructed, therefore the corresponding connection links or the corresponding amendment to the traffic management system shall not be resolved;
	3. The re-use of demolition materials shall be considered: existing used turnouts 60E1 should be used for side-tracks 16, 18, 20, 32, 34, 38, and 46, and tracks 7, 8, 9 shall use rails 60E1 which shall be dismantled from the main tracks during construction. New concrete switch-ties must be provided for turnouts and concrete sleepers for tracks. In order to make the correct choice of switch-ties , the design of the reusable turnout, year of its manufacture, and its manufacturer must be verified in advance to avoid incompatibilities (according to Annex 2);
	4. Amendments due to the following requirements (the necessity or non-necessity of the amendment must be proved by the Contractor):
		1. The load-bearing capacity of the facility structures shall allow the transmission of railway traffic load S14 according to СНиП 2.05.03-84\* and EVS-EN 1991-2:2007 (EVS-EN 1991-2:2004/NA:2007) and according to the Design Guidelines by Rail Baltica in regard to the 1435 mm gauge railway.
		2. The thickness of the ballast layer above the tunnel shall be a minimum of 35 cm in the 1520 mm gauge part, taking into account that the cross-sectional dimensions and load-bearing capacity of the viaduct allow to raise the railway up to 10 cm (i.e. the maximum ballast layer of up to 45 cm). In regard to 1435 mm gauge, the Design Guidelines by Rail Baltica must be followed.
	5. If necessary, introduction of related amendments to other parts of construction design documents, resulting from amending the solutions of the detailed designs based on this clause.

Prior to the commencement of the construction work, the Contractor shall provide the Contracting Authority with the BIM operational design’s construction information model (data model, drawings, and documentation) in the respective parts. The operational design’s construction information model must include all the necessary amendments mentioned above. The Contractor shall keep records of any amendments made to the models, drawings and documentation during the creation of the operational design which amend the solution following the detailed design handed over to the Contractor.

Calculation shall be kept in the Contracting Authority’s CDE environment in accordance with clause 4.6 of the Technical Specifications or, exceptionally, in other format approved by the Engineer. When designing the amendments, all additionally required connection conditions and technical conditions, views, approvals and permits necessary for the design and construction must be obtained.

### Preparation of additional construction design documents

Design work shall include the preparation of the following construction design documents:

* 1. If necessary (in case there is a corresponding obligation based on the legislation to perform demolition work or to obtain a demolition permit), preparation of demolition designs for other structures to be demolished.

When designing, all additionally required connection conditions and technical conditions, views, approvals and permits necessary for the design and construction must be obtained by the Contractor at its own expense.

### Ordering an INDEPENDENT EXPERT ASSESSMENT of the CONSTRUCTION DESIGN

The Contractor must order an independent construction design expert assessment for electrical installations of 1520 mm gauge railway tracks. The expert assessment must be prepared by an independent party, and the expert assessment must meet all the requirements to be set for a construction expert assessment. The purpose of the expert assessment is to find out the compliance of these detailed designs with the following requirements and the objectives of the Contracting Authority:

1. have functions according to the purpose of the installation;
2. comply with legislation and technical requirements provided in this specification;
3. long service life of materials and products;
4. be designed out of durable and wear-resistant materials and products;
5. have optimised operating and maintenance costs;
6. environmental sustainability;
7. optimality of construction costs.

### NOBO

Cooperation with NoBo and persons carrying out design expert assessment in order to implement their comments and obtain their approval for the design For the cooperation of NoBo, the contractor shall use the guide given in the annex 15 for guidance. The assessment shall be passed during the detailed technical design phase in the scope specified in the Technical Specification.

## Construction of Ülemiste station 1520 mm gauge railway tracks

The work shall include:

A) all works that are necessary for the implementation of the Ülemiste railway infrastructure reconstruction design prepared by Reaalprojekt OÜ / Allspark OÜ, its amendments, and the detailed technical design prepared on the basis thereof in accordance with the Contract, including the necessary demolition or dismantling works; and

B) all other relevant works required for the performance of the Contract, including necessary additional demolition works.

### GENERAL REQUIREMENTS

The Contractor shall take into account that Works are performed on the existing railway and in the vicinity of existing railway structures in service, depending on the technology of the works. The Contractor shall not use the construction site for any purpose other than the actions necessary for performing the Works. The Contractor shall ensure that no damage is caused to the existing railway tracks and related facilities. Any damage caused to the existing infrastructure shall be remedied, and the cost of repairs shall be borne by the Contractor.

For any periods when work is carried out within the railway protection zone with the railway is open for service, the Contractor shall obtain any effective permits of AS Eesti Raudtee (including special railway vehicle driving licenses and other permits, certificates, etc.required to work on the infrastructure of AS Eesti Raudtee).

It is the Contractor's responsibility to ensure obligations to passenger train operators during the construction period which include safety of passengers, access to platforms, lighting of platforms and access ways to the platform, provision of access for disabled people (e.g. installation of a wheelchair lift) and its maintenance, liability for non-compliance with delay periods, ensuring the prescribed speed limits, and other obligations arising from laws and regulations established on the basis thereof.

If necessary, the Contractor shall procure all temporary artificial lighting and electricity for the Works, pay all payments in connection therewith, procure all temporary connections, distribution lines and equipment, and remove them upon completion of the Works. In the event of a mains supply failure, the Contractor shall ensure that uninterrupted quality of the works is maintained.

For communication on the Construction Site, the Contractor shall procure portable radio stations operating on the EVR frequency. Use of the EVR frequency is free of charge but must be agreed separately. Communication between the Contractor staff must not take place on the EVR frequency. Keeping communication shall refer to communication with the EVR traffic controllers, local foreman, etc., only to ensure the safety of train traffic during construction works.

The Contractor shall observe all, inter alia, the currently existing and established speed limits.

When performing the work, the situation where the construction site needs to be shared with other Contractors working in the area must be taken into account (by the builder of the 1435 mm gauge electricity supply, contact network, and traffic control). The detailed construction schedules included in the work programme must be approved not only by the Contracting Authority but also by other potential builders working in the work area. If the Contractor does not reach an agreement with the parallel project implementers (the Contractors cannot reach an agreement on the synchronization of schedules and delimitation of the site), the decisions shall be made by the Contracting Authority.

**Workplace restrictions and passenger safety**

The Contractor shall erect and maintain temporary fences approved by the Contracting Authority's representative in order to protect the work area from unauthorised intrusion or accidental damage. The type of fence shall be selected according to the use of the adjacent land.

Infrastructure operating in the EVR must be dedicated. The movement of unauthorised persons on the construction site must be prevented, and the movement of the unauthorised persons from the construction site to the EVR territory must be prevented.

As the work progresses, it may be necessary to relocate the temporary fences, and the Contractor shall ensure that they are relocated in accordance with the Works programme.

Strong safety bars or barriers approved by the Contracting Authority's representative with a height of at least 1.5 m shall be erected at a distance of not less than 3.1 m from the nearest rail to protect the tracks of AS Eesti Raudtee in any place where, due to an accident or incorrect work, assemblies or equipment may fall into the safety zone or roll over there

There must be marked passageways for passengers to move to the platforms. The Contractor shall be obliged to ensure the EVR's obligations to passenger carriers during the construction period of the common terminal and railway infrastructure, including passenger safety, access routes to waiting platforms, lighting of waiting platforms, and access roads to the waiting platform, and, if necessary, installation and maintenance of an electrified wheelchair lift for access by disabled persons. Access must be ensured for the EVR platform maintenance service providers. Access for gutter cleaners, etc. must be ensured. Parking and rescue service options for maintenance vehicles and access for rescue teams must be ensured.

### ADDITIONAL QUALITY REQUIREMENTS

When performing the Work, the Contractor shall observe the relevant effective legislation of the Republic of Estonia, and the norms, standards, rules, instructions, technical specifications, requirements, etc. The requirements set out in the Operating Regulations of AS Eesti Raudtee, and in any annexes thereto, as well as any EVS and harmonised standards or equivalent standards regulating the respective sector, shall also be observed by the Contractor.

The Contractor shall, at the request of the Contracting Authority, carry out the tests prescribed in the relevant standards for the Materials to be supplied by the Contractor, confirming that the materials comply with the requirements.

The Contractor personnel performing the respective Work shall comply with the professional standards established for the respective Works.

### Preparatory work

Preparatory work shall include various tasks that prepare the workplace, including the necessary informational and surveying work (including control measurements), together with the marking and binding of points for railway geometrical parameters. It shall also include temporary traffic arrangements (including temporary traffic management equipment, information boards, etc.), temporary structures such as culverts, crossings, crossings or accesses that shall be dismantled after the works have been completed. Preliminary work shall also include the procurement, storage and return of temporary and inventory materials.

Implementation of barriers and erection of necessary safety facilities must be carried out on the construction site throughout the work.

Throughout the contract, the Contractor shall ensure, mark and maintain safe access ways to the Construction Site designated for staff. The Contractor shall take all necessary precautions to ensure that only authorised persons will have access to the Construction Site.

The Contractor shall be responsible for the construction and maintenance of the necessary temporary roads located within the Construction Site and / or in the places to be used for the temporary storage of materials.

The Contractor shall be obliged to build, if necessary, a temporary fence between the railway under construction and a functioning railway. The aim is to separate the construction site from the functioning system so that there is no risk of the fence moving and overturning in the area of the functioning railway infrastructure.

The Contractor is obliged to record and photograph the technical condition of the buildings in the vicinity of the site. Monitoring the condition during preparatory and demolition work, and correcting any problems if they occur.

The specifications for geodetic works are given in the annex 18 of the technical specification.

During construction works, operating in the protection zone of a national or local geodetic mark must be coordinated with the owners of the point (the Land Administration or the local government, respectively), and the elimination or relocation of points must be carried out in accordance with the drawn up and coordinated project.

The costs associated with these works should be reflected in the expense lines related to preparatory works.

### Dismantling and demolition work

It includes various works that will prepare the ground for the construction of the new Rail Baltica 1435 mm gauge railway, including the disconnection and dismantling of the existing railway, the dismantling of contact network equipment, traffic control equipment, lighting, etc., and dismantling of facilities within the working area. The works shall also include the use of the dismantled materials described in Annex 2 in the performance of construction work or handing them over to the owner at the request of AS Eesti Raudtee or AS Eesti Raudtee for utilisation in accordance with the waste management requirements prescribed by law and described in the design and its annexes. The Contractor shall be responsible for the preservation of usable materials until they are handed over to the EVR or re-installed and accepted as part of the works by the Contracting Authority. Prior to the dismantling work, the requirements for dismantling must be agreed with the Contracting Authority and the EVR (rail lengths, cutting locations, and cutting method). The 60E1 turnouts not used in the new solution must be returned to EVR as a complete set blocks, other turnouts may be returned as parts. The Contractor must take into account the need to dismantle the grid in sections of up to 25 m and provide suitable machinery.

### Embankment and drainage work

The works shall include general site preparation for drainage, excavation of embankments, works related to soil transportation, utilisation of contaminated or unsuitable soil to be excavated, necessary materials for the work site and their supply, construction of railway embankments, landscaping, earthmoving and compaction works if necessary, geogrid and geotextile installation work, drainage works, trenching and site planning and, if necessary, the removal of line facilities from the work area to ensure the smooth operation of existing systems.

### Construction work for electricity supply and lighting

The works shall include, if necessary, the construction of temporary facilities and the temporary relocation of utility networks within the work area.

### Electricity supply, contact network and external lighting for the 1520 mm gauge railway infrastructure

The works shall include, if necessary, the construction of temporary facilities and the temporary relocation of utility networks within the work area.

### Relocation of utility networks, cable work

This sub-item shall includes, inter alia, the relocation of existing water supply and sewerage, electricity, communication, etc. lines to the construction site. Any interruptions must be as short as possible and coordinated with all parties involved. The work shall include the supply of basic and auxiliary materials for the work.

When planning technology and resources, the Contractor shall take into account and ensure that existing cables (power, signalling, telecommunications, electricity, etc.) cables are not severed during the Works. The position of all existing cables in the construction area must be marked. The locations of the cables shall be generally specified in the design or indicated by their owners.

If the position of the cables is changed due to relocation work, the Contractor shall mark their position in the construction area and correct the drawings accordingly (in the as-built model and as-built drawings).

In the event of damage to the cables, the Contractor shall, at its own expense, repair these cables at its own expense and reimburse any claims made by third parties.

### Work on 1520 mm gauge railways

This subsection covers, inter alia, all operations related to preparing the tracks, the supply of materials required for the work, track bed body operations, laying the track and turnouts; lifting, alignment and tamping the track; rail replacement and de-stressing, rail welding, post-tamping, and installation of railroad signs.

### 1520 mm gauge traffic control construction work

This subsection shall cover, inter alia, all works and the supply of materials necessary for the performance of the works. AS Eesti Raudtee has entered into a contract with the system supplier Siemens; the system equipment described in Annex 6 (traffic lights, standard traffic lights, foundations, equipment cabinets, cables, isolating locks, cable transformers, and turnout drives) shall be supplied by the above supplier and included in the Contracting Authority's materials according to the Technical Specification’s clause 4.4. The scope of work of the Contractor shall include the installation of the respective equipment and other related work (except for making cable connections for equipment cabinets and traffic lights, which shall be done by the system supplier Siemens).

The scope of the contractor's works shall include the supply of various types of traffic lights and their foundations.

Electrified traffic control must be ensured throughout construction work. All electrified traffic control interruptions must be approved by AS Eesti Raudtee. In the absence of electrical control of the switches, the Contractor shall arrange for the switches to be adjusted manually.

### Lifting

When using lifting and other equipment, the following conditions must be taken into account based on the requirement of the Transport Board in letter No. 13.6-3/21/9497-2 dated 26/04/2021:

* + If the height of the crane or other technical equipment is greater than ABS+84.2 m, the solution must be approved by the Transport Board.
	+ If the height of the crane or other technical equipment is greater than ABS+91.0 m, an aeronautical expert assessment (critical review) shall be prepared pursuant to § 35 of the Aviation Act. In Estonia, the respective expert assessment can be performed by Lennuliiklusteeninduse AS (charts@eans.ee).
	+ Use of lifting equipment shall be coordinated with Estonian Railways when the lifting equipment is within the boundaries of the railway construction sections.

### Work on vehicular and pedestrian crossings

When crossing the railway with carriageways and / or walkways, work must be carried out in accordance with the design and Annex 4 “Instructions for the construction, maintenance and use of level crossings and cross walks” to the Rules for Technical Use of Railways

### PROCUREMENT OF MATERIALS

The Contractor shall purchase all materials required for the construction of the railway infrastructure structures (excluding materials supplied by the Contracting Entity), including the following basic materials (but not limited to):

* + Rails
	+ Sleepers
	+ Switches;
	+ Ferro-concrete switch-ties (with the flexible rail fastening system);
	+ Crushed granite with the fraction size of 31.5–63 mm;
	+ Crushed limestone with the fraction size of 8–16 and 32–64 mm (if required);
	+ Embankment materials;
	+ Other fastening and metal parts required for the job (e.g. fasteners, fishplates, etc.);
	+ Spare and protective cable ducts;
	+ Drainage materials;
	+ Pavement slabs for railway crossings and pedestrian crossings, including necessary materials;
	+ Signs and posts;
	+ Railings, posts, etc. for pedestrian crossings;
	+ materials required for construction and reconstruction of facilities.

All materials must meet the requirements of the material specifications in the design.

Only one type of sleepers and fasteners shall be used, which shall be pre-approved by the Contracting Authority.

Quality indicators of any materials purchased by the Contractor shall be subject to pre-approval by the Contracting Authority before their use. Before placement of any material into the railroad, the Contractor shall present the Contracting Authority the quality certificates, test results, and other required document of such material. The Contracting Authority may refuse acceptance and use of materials if any discrepancies vis-à-vis the requirements are discovered, or if documents evidencing of the quality and origin of the material are missing.

The Contracting Authority may inspect the materials supplied by the Contractor before and after they are placed in the railroad. If substandard quality is discovered before placement of the material in the railroad, the Contractor may not use such materials for work, and have to purchase new compliant materials, causing them to be additionally approved by the Contracting Authority. If non-compliance of materials delivered by the Contractor is discovered after they are placed in the railroad, the Contractor shall replace the same at their own expense. In both cases the parties shall prepare a bilateral instrument regarding the non-compliance, which shall state the non-compliant material, its quantity, location, and the conditions and time of replacement.

The conductor service related to transportation of railroad materials shall be included in the scope of the Works.

The Contracting Authority will not provide wagons for transporting superstructure materials, and if needed their availability shall be ensured by the Contractor. In case of availability of vacant wagons, AS Eesti Raudtee may rent hopper wagons, flat wagons, and wagons for hauling jointless rails.

### Railway Vehicle and Equipment Units

**General**

The conditions of use and loading of a railway vehicle is set forth in the Operating Regulations of AS Eesti Raudtee.

Any machines and equipment used by the Contractor shall be in good technical condition. Any equipment, machinery, materials, etc.that in the opinion of the representative of the Contracting Authority are not safe or are unfit for the Works, shall be removed, replaced, or altered, without increasing the Contract price. The right to drive on the infrastructure of AS Eesti Raudtee shall be granted by the respective committee of AS Eesti Raudtee.

The Contractor shall fit the maintenance railway vehicles with radio stations that makes it possible to maintain radio communication in the MotoTRBO radio communication system of AS Eesti Raudtee at the frequencies 146MHz – 174MHz; radio station type: Motorola DM4600, DM4400 series. Any necessary programming will be performed by the telecom and protection system department of AS Eesti Raudtee. AS Eesti Raudtee shall provide shunting and train radio frequencies. Any frequency bands necessary for the Contractor’s own purpose shall be requested by the Contractor from the Technical Surveillance Authority.

The Contractor shall cover the cost of re-railing of a railway vehicle derailed due to the Contractor’s fault.

**Tools**

All Works shall be carried out using approved tools, machinery and equipment, which shall be maintained in good working order. During the performance of Work, the Contracting Authority may inspect the technical gear of the Contractor, and suspend the Work, when it is discovered that the machinery and equipment is not compliant.

**Use of Cranes and Tampering of Tracks**

The Contractor shall purchase lifting beams and rail clips of the structure approved by AS Eesti Raudtee. The Contractor shall be confident at any time that all items of lifting equipment to be used have robust structure and are in good condition, and that they are used correctly.

The Contractor shall present proof that the crane operators and sling operator employed by them have been duly instructed and are qualified to use the specialised lifting equipment referred to in this clause.

**Contractor's Railway Vehicles and Equipment Running on Rails**

For the purpose of performing the Work constituting the object of the procurement, the Contractor shall acquire or take into use necessary machinery, equipment and railway vehicles. Any railway vehicle used shall have the right to run on the public railway network of the Republic of Estonia, including on the infrastructure of AS Eesti Raudtee.

The Contractor shall submit the following documents in respect of any railway vehicle (other than special railway vehicles with guide wheels):

* + initial authorisation for placing in service (in case of the first placement in service of the railway vehicle on the public railway network of the EU and the Republic of Estonia);
	+ certificate of registration of the railway vehicle in the state railway traffic register of its country of origin;
	+ permit for running on the network of AS Eesti Raudtee.

All Contractor’s railway vehicles and equipment running on rails shall be maintained in good order in accordance with the effective standards such that they could operate safely and correctly on the infrastructure of AS Eesti Raudtee, and in compliance with the Operating Regulations of AS Eesti Raudtee. The requirements set out in the effective Special Vehicle Operating Instructions of AS Eesti Raudtee shall be observed in respect of any special railway vehicle running on the infrastructure of AS Eesti Raudtee.

**Use of Station Gridirons**

The Contractor shall notify the EVR of the need to use station gridirons in connection with movements of work trains, preparation of lattice girders of the tracks, and loading and unloading of wagons. If the use of a station gridiron requires making changes in the effective traffic schedule, the notice shall be given 45 days, and in other cases – 28 days in advance. Provision of gridirons/ refusal to provide the same depends on the possibilities of the Contracting Authority, and the need to use the gridirons for its own needs. If the use of station gridirons for any work operations of the Contractor requires performing additional maintenance or repairs, the respective cost shall be borne by the Contractor.

### Load tests

In order to carry out the load tests, the Contractor shall submit for approval a test programme showing the equipment and delay periods required for the works. The Contracting Authority shall review the submitted programme and, if appropriate, give its approval within 14 calendar days. The tests shall be performed within 14 working days of receipt of the approval. In order to carry out the tests, the Contractor must procure the rolling stock and, if necessary, order the delay periods at its own expense from the EVR.

### Tolerances upon Acceptance of Work

**Measurements of Unloaded Railroad**

|  |  |
| --- | --- |
| Title | Tolerance |
| Track gauge:in a random locationvariation |  ± 2 mm1 mm per 2 meters |
| Elevation of external rail in curve sections:in a random locationvariation |  ± 3 mm1 mm per 2 meters |
| Transverse profile (level):in a random location |  ± 3 mm |
| Longitudinal profile:Deviation from designed profileVariation |  +10, -20 mm1 mm per 2 m |
| Maximum penalty points (buckling) per kilometre, measured by a measurement wagon | 15 |

### CONFORMITY ASSESSMENT

Conformity assessment of TSI shall be carried out in accordance with the Rail Baltica Guidelines in Appendix no. 15 and the following laws, regulations and other guidelines:

* + Directive (EU) 2016/797 (hereinafter also Interoperability Directive) of the European Parliament and of the Council of 11 May 2016 on the Interoperability of the Rail System within the European Union, 2016
	+ Commission Regulation (EU) No 1299/2014 of 18 November 2014 on the technical specifications for interoperability relating to the ‘infrastructure’ subsystem of the rail system in the European Union (hereinafter – TSI INF)
	+ Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union’s rail system for persons with disabilities and persons with reduced mobility (hereinafter – TSI PRM)
	+ Commission Regulation (EU) No 1303/2014 of 18 November 2014 concerning the technical specification for interoperability relating to ‘safety in railway tunnels’ (hereinafter – TSI SRT) of the rail system of the European Union

The Contractor must also bear in mind that all interoperability components (rails, rail fastening systems, sleepers and bearers) must comply with COMMISSION REGULATION (EU) No. 1299/2014 (clause 5), and a conformity assessment must be carried out by a notified body.

## CLOSURE OF TRAFFIC DURING CONSTRUCTION WORK

Pedestrian, road, tram and rail traffic on the site transferred to the Contractor may be restricted only under the following conditions, including with the permission of the following third parties:

1. The 1520 mm gauge train traffic must not be endangered, restricted or impeded. Restrictions on train traffic shall be permitted only in accordance with the Annex 7 “Procedure for applying for, ordering and allocating delay periods on the infrastructure of Eesti Raudtee AS.”
2. During construction work, it is necessary to ensure safe and proper movement of the 1520 mm gauge railway passengers (including passengers with reduced mobility) to (temporary) platforms from both northward and southward public streets (Suur-Sõjamäe Street and Ülemiste Street). Restriction of passengers' access to (temporary) platforms shall be allowed only in accordance with the duration of the delay periods received in accordance with the “Procedure for applying for, ordering and allocating delay periods on the infrastructure of Eesti Raudtee AS.”
3. Pedestrian and vehicular traffic on public streets, roads or road sections in the city of Tallinn must not be restricted or obstructed. Restrictions on the movement of pedestrians (including pedestrians with reduced mobility) and vehicles shall be permitted only in accordance with the Traffic Act and the relevant regulations of the City of Tallinn (“Rules for Temporary Closure of Roads and Streets”) or with the permission of the City of Tallinn. The Contractor shall organise the application for closure, including compiling and ordering of traffic plans and installation of signs, they shall carry out all other necessary activities in connection with in connection with the closures. The Contractor shall pay all closure charges and shall bear all costs of closing or restricting traffic on any public street, road or roadway; the Contracting Entity shall pay (instead of the Contractor or reimburses the Contractor for) the following closure charges and costs:
	1. Ülemiste Road closure 3 months (100% road closure permitted).

Costs and fees in excess of the rates set out in above mentioned sub-paragraph I shall not be reimbursed or paid by the Contracting Entity.

1. The westward (existing) passage of the light traffic tunnel must be usable throughout the construction period. Restrictions on pedestrian traffic shall be permitted only in accordance with the Traffic Act and the relevant regulations of the City of Tallinn (“Rules for Temporary Closure of Roads and Streets”) or with the permission of the City of Tallinn. The Contractor shall pay all costs, fees and charges associated with the closure of the tunnel or the restriction of traffic.
2. Temporary traffic management during construction shall be developed and provided by the Contractor. The traffic management solution related to the restrictions must be approved in advance by the Engineer. The Contractor shall independently seek the permission of third parties to impose restrictions by notifying the Engineer.

The Contractor shall construct all necessary temporary roads, squares, accesses and facilities in the event of a change of traffic. The Contractor shall ensure the safety of all relevant accesses and traffic solutions during construction. In all cases, the Contractor must ensure the safety of traffic participants during construction work.

## BUILDING PERMITS

Building permits obtained by the Client:

* + Contact network of the Lilleküla-Aegviidu railway section
	+ Electrical centralisation of Ülemiste railway station
	+ Kantsi pedestrian viaduct;
	+ Vesse platform;
	+ Railway track No. IV, Ülemiste
	+ Railway track No. V, Ülemiste
	+ Railway track No. I, Ülemiste
	+ Railway track No. 204, Ülemiste
	+ Railway track No. 202, Ülemiste
	+ Railway track No. 201, Ülemiste
	+ Railway track switch No. 200, Ülemiste
	+ Railway track No. 104, Ülemiste
	+ Railway track No. 103, Ülemiste
	+ Railway track No. 7-VP, Ülemiste
	+ Railway track No. 6-VP, Ülemiste
	+ Railway track No. 34–58, Ülemiste
	+ Railway track No. 22A, Ülemiste
	+ Railway track No. 18, Ülemiste
	+ Railway track No. 17, Ülemiste
	+ Railway track No. 16, Ülemiste
	+ Railway track No. 15, Ülemiste
	+ Railway track No. 14, Ülemiste
	+ Railway track No. 13, Ülemiste
	+ Railway track No. 12, Ülemiste
	+ Railway track No. 11, Ülemiste
	+ Railway track No. 3-VP, Ülemiste
	+ Railway track No. 2-VP, Ülemiste
	+ Railway track No. 1-VP, Ülemiste
	+ Railway track No. 3A, Ülemiste
	+ Railway track switch No. 18/20, Ülemiste
	+ Railway track switch No. 14/16, Ülemiste
	+ Railway track switch No. 6/8, Ülemiste
	+ Railway track No. 21, Ülemiste
	+ Railway track No. 26, Ülemiste
	+ Railway track switch No. 46/48, Ülemiste
	+ Railway track switch No. 70/86, Ülemiste
	+ Railway track No. 75–67, Ülemiste
	+ Railway track No. 105, Ülemiste
	+ Railway track 4
	+ Railway track 6
	+ Railway track 24
	+ Railway track 105S
	+ Railway track switch 4/6
	+ Railway track switch 8/10
	+ Railway track switch 14/16
	+ Railway track switch 24/26
	+ Railway track switch 28/30
	+ Track 1
	+ Track 2
	+ Track 3
	+ Track 1 CLA
	+ Track 2 CLA
	+ Track 3 CLA
	+ Railway track switch 15/16
	+ Railway track switch 13/14
	+ Railway track switch 11/12
	+ Railway track switch 9/10
	+ Railway track switch 7/8
	+ Railway track switch 3/4/5/6
	+ Walkway RD0003
	+ Walkway RD0011
	+ Walkway RD0012
	+ Parking lot
	+ Fences
	+ Low voltage external network
	+ Outdoor lighting
	+ Collision barrier
	+ Retaining wall
	+ Railway track 8
	+ Railway track 9
	+ Railway track 10
	+ Railway track 7
	+ Electricity networks, 0.4–20 kV
	+ Water supply
	+ Sewerage
	+ Rainwater drainage
	+ Rainwater pumping station 1
	+ Drainage
	+ Drainage pumping station 1
	+ Car loading station
	+ 1520 Electricity supply
	+ 1520 Outdoor lighting
	+ 1520 Alarm system
	+ 1520 Telecommunication
	+ 1520 Contact network
	+ Car loading area
	+ Vesse pedestrian tunnel
	+ Rainwater pumping station 2
	+ Maintenance road RD0004
	+ Maintenance road RD0005
	+ Maintenance road RD0006
	+ Maintenance road RD0007
	+ Maintenance road RD0008
	+ Maintenance road RD0009
	+ Maintenance road RD0010
	+ Liiva-Ülemiste inter-station railway track
	+ Drainage pumping station 2
	+ Drainage pumping station 3
	+ Drainage pumping station 4

## OCCUPANCY PERMITS (AUTHORISATIONS FOR USE)

It is the Contractor's responsibility to obtain all authorisations for use. The Contracting Authority shall pay the state fees for applying for the authorisations for use. The Contractor shall bear any other additional costs which may result from the authorisation procedure and which can be expected from the Contractor's professionalism (including, where appropriate, the obligation to carry out an expert assessment).

In addition, the Contractor shall be obliged to keep the technical documentation of the construction and to formalise the necessary permits, order and finance the expert assessments, and coordinate them with the necessary authorities, etc.

The Contractor shall maintain all temporary passages related to the terminal for passengers until the new passage facilities have been authorised for use.

The Contractor shall submit the application for authorisation for use to the appropriate authorities issuing the authorisations. It is the responsibility of the Contractor to carry out all necessary operations in connection with commissioning and authorisation for use.

The contractor's obligations shall be to organise the entries of the railways to be used in the railway register and to prepare the technical management statements of the station.

Instructions to the Contractor shall be attached as an annex to the technical specifications (Annex 5) on the procedure for placing railway installations in service in stages, from application for authorisation for use to issuance of such authorisation to be guided by.

If the Contractor itself plans to make entries in the Railway Register, an authorisation must be requested from the EVR in due time. The authorisation form must be coordinated with the CPTRA. State fees for railway register operations shall be paid by the Contracting Authority.

The Contractor shall ensure that the operations of the Railway Register are carried out in a timely manner so as not to delay the putting into service of the new railway. The EVR's obligations to railway carrier operators due to the delay shall be reimbursed by the Contractor

The requirement to have an authorisation for use as a precondition for accepting a work section is reflected in the breakdown of work sections provided in clause **Error! Reference source not found.**.

The Contractor shall be obliged to carry out the conformity assessment of the railway section to be built in accordance with the conformity assessment instructions of the technical specification for interoperability (hereinafter referred to as the TSI).

## LAWS, STANDARDS, AND GUIDANCE DOCUMENTS

The obligations of the Contractor arising from law and legislation shall be performed by the Contractor, whether or not they are specified in the documents of the Contract.

The Contractor must carry out the works in accordance with the guidance documents, which are annexes to the technical specifications.

The Contractor shall be guided by the following standards and other relevant applicable standards when carrying out the works (this is a non-exhaustive list. The assessment of the application of the standards to works shall be based on the presumed mandatory (committed) nature, i.e. for each type of work within the scope of the contract, which is covered by the relevant standard in force which is mentioned below or by the standard in lieu of the latter, and for which any requirements are set, the respective standard shall apply regardless of whether the standard is explicitly referred to in the following list or other contract documents):

* ISO/TS 22163:2017 “Railway applications - Quality management system -Business management system requirements for rail organizations: ISO 9001:2015 and particular requirements for application in the rail sector”
* RAMS-related standards and normative documents:
	+ EN 50126:2017 Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS)
	+ EN 50126-1:2017 Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Basic Requirements and Generic Process
	+ EN 50126-2:2017 Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: System approach to safety
	+ EN 50128:2011 Railway applications – Communications, Signalling and Processing Systems - Software for railway control and protection systems.
	+ EN 50128:2011 Railway Applications - Communication, Signalling and Processing Systems - Software for Railway Control And Protection Systems
	+ EN 50129:2003 Railway Applications - Communication, Signalling and Processing Systems - Safety Related Electronic Systems for Signalling
	+ CLC/TS 50562:2018 Railway applications – Fixed installations – Process, measures and demonstration of safety for electric traction systems.
	+ EN 50159:2010 Railway applications - Communication, signalling and processing systems - Safety-related communication in transmission systems.
	+ EN 61508-1:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 1: General Requirements
	+ EN 61508-2:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 2: Requirements for Electrical/Electronic/Programmable Electronic Safety-Related Systems
	+ EN 61508-3:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 3: Software Requirements
	+ EN 61508-4:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 4: Definitions and Abbreviations
	+ EN 61508-5:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 5: Examples of Methods For The Determination Of Safety Integrity Levels
	+ EN 61508-6:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 6: Guidelines on The Application Of IEC 61508-2 And IEC 61508-3
	+ EN 61508-7:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems - Part 7: Overview of Techniques And Measures
	+ EN 61703:2016 Mathematical expressions for reliability, availability, maintainability and maintenance support terms.
	+ NFPA 130: 2014 Standard for Fixed Guideway Transit and Passenger Rail Systems
	+ NFPA 101:2015 Life Safety Code
	+ ISO/IEC 90003:2004 Software engineering - Guidelines for the application of ISO 9001:2000 to computer software
	+ ISO/IEC 60300 Dependability management
* Building Code RT I, 05/03/2015, 1;
* Railway Act, RT I, 30/10/2020, 1;
* Planning Act, RT I, 26/02/2015, 3;
* Minister of Economic Affairs and Infrastructure Regulation No. 97 “Requirements for a Construction Project” dated 17/07/2015;
* Minister of Economic Affairs and Infrastructure’s Regulation No. 2 “Requirements for Road Construction Projects” dated 09/01/2020;
* Minister of Economic Affairs and Infrastructure’s Regulation No. 61 “Procedure for auditing Construction Works” dated 12/10/2020;
* Minister of Economic Affairs and Infrastructure Regulation No. 34 “Requirements for Topographic Geodetic Exploration and As-Built Survey” dated 14/04/2016
* Minister of Economic Affairs and Infrastructure Regulation No. 32 “Requirements for Geotechnical Exploration” dated 24/04/2015
* Minister of Economic Affairs and Infrastructure’s Regulation No. 3 “Requirements for the Documentation of Building Work, Requirements for the Preservation and Delivery of Building Documents, and Requirements Concerning Maintenance Instructions, Their Preservation and Presentation” dated 14/02/2020;
* Code of conduct of AS Eesti Raudtee, with appendices (<http://www.evr.ee/et/arikliendile#eeskirjad-ja-tasud>);
* EVS 932:2017 “Construction design documents”
* EVS-ISO 13822:2011 “Bases for design of structures. Assessment of existing structures”
* EVS 885:2005 "Classification of construction costs";
* Eurocodes for design work
* Harmonised standards for construction, including railway construction
* Harmonised standards on construction products and materials
* SNiP 2.05.03-84\* „Мосты и трубы“;
* SNiP 3.06.07-86 „Мосты и трубы. Правила обследований и испытаний“
* BÜ2 2017 “Concrete and reinforced concrete. Specification, technology, quality, conformity assessment”
* BÜ3 “Concrete and reinforced concrete. Description and drawings of construction design”
* BÜ4 “Concrete and reinforced concrete. Concrete surfaces”
* BÜ6 “Winter concrete works”
* BÜ8 “Concrete and reinforced concrete. Specification, technology, quality, conformity assessment”
* Commission Regulation (EU) No. 1299/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the infrastructure sub-system of the trans-European high-speed rail system (<https://eur-lex.europa.eu/legal-content/ET/TXT/?uri=CELEX:32014R1299>);
* The guidelines “Technical Specifications for Interoperability“ (<https://www.era.europa.eu/activities/technical-specifications-interoperability_en>).
* Additional Requirements for Road Management Works (Tallinn Municipal Engineering Services Department Directive No. 97 of 19 November 2018)
* EVS-EN IEC 60812:2018 „Failure modes and effects analysis (FMEA and FMECA)“

In connection with Article number 5 of the Commission Implementing Regulation (EU) No. 402/2013 on the common safety method for risk assessment and the repeal of Regulation (EC) No. 352/2009 (together with Regulation 2015/1136), the Contractor is obliged to participate in the training carried out by the Employer and provided for in Annex I of the Regulation in the risk management procedure, first:

• Identify the hazards associated with the Contractor's duties and forecast and assess the associated risks

• Determine the safety measures necessary to achieve and/or maintain an acceptable level of risk

• Prove compliance with safety regulations.

# SPECIAL TERMS AND CONDITIONS OF THE CONTRACT BASED ON THE TECHNICAL SPECIFICATION

In the current section, the numbering in brackets is the section from General conditions of the contract that this special condition specifies.

## (2.1) Right of access to the construction site

In order to perform the works related to the infrastructure of AS Eesti Raudtee that are part of the works, the Contractor shall follow the procedure of AS Eesti Raudtee: "Procedure for granting rights to perform works on the railway infrastructure and railway land of AS EVR Infra."

The site shall be delivered in accordance with Annex 4 “Schedule for the delivery of the construction site”.

## (2.3) Cooperation with OTHER CONTRACTORS

The Contractor shall be obliged to co-operate with all other employees of the Contracting Authority and with all contractual partners of the Contracting Authority who need to perform the works on the construction site. The Contractor shall be obliged to perform the tasks of the general construction contractor in organising the cooperation.

The Contractor shall be obliged to cooperate with all parties affected by the design. These are mainly technical network operators who have been asked for the technical conditions for carrying out the works and must comply with and, if necessary, be asked for additional technical conditions. If the design changes and significant circumstances are added, they must be informed of the circumstances, and additional solutions must be agreed.

The Contractor shall cooperate with all relevant authorities who carry out the ongoing or final conformity assessment of the works carried out. Such authorities may be the local authority, NoBo, AsBo, CPTRA, and other conformity assessment authorities. The contractor will participate in the quality and safety audits applicable to the scope of work, which will be carried out and conducted by AsBo according to the previously submitted audit plan. It is the Contractor's responsibility to provide access to its premises, including subcontractor premises, factories, building sites, warehouses and all workplaces that AsBo deems necessary to the extent necessary for the assessment of design, construction, installation and related evidence.

The Contractor shall take into account that during the performance of the Contract the following works will be carried out at the following indicative times on the site handed over to the Contractor by third parties:

* + Pedestrian tunnel no. 5 (the detailed spatial plan’s concept design work No. 20030 Pedestrian tunnel No. 5);
	+ Construction of structure of the terminal underneath the railway (starting from 2023)
	+ Construction of northward parking lots, roads, tramway, underground pipelines (starting from 2023)

~~The following shall apply to cooperation with AsBo: The Contractor shall document the risk management process so that all necessary evidence showing both the implementation and the results of the risk management process are available to AsBo. The Contractor shall ensure the development of the safety risk management documents described in the Rail Baltica’s RAMS guidelines necessary for the assessment of AsBo, and their transmission to the Contracting Authority. In the event of a change in the supporting documents, the Contractor shall ensure that the conformity assessment is carried out in accordance with the latest versions. All documents prepared by the Contractor as evidence of risk management must comply with the principles of document management and pass quality control. The Contractor shall attend meetings with the Contracting Authority and AsBo, and also provide feedback on risk management issues related to the scope of the Contractor's work. The Contractor shall participate in quality and safety audits applicable to the scope of the work, which shall be implemented and carried out by AsBo in accordance with a previously submitted audit plan. The Contractor shall ensure access to its premises, including the subcontractor's premises, factories, construction sites, storage facilities, and all workplaces deemed necessary by AsBo, to the extent necessary for the assessment of the design, construction, installation and related evidences.~~

## (2.5) Data and source data of the construction site

The work area shall be Ülemiste station (Annex 3 "Site plan").

More detailed construction site data and source data can be found in the design drawings.

## (2.6) Materials to be delivered by the employer and employer’s equipment

**Ülemiste railway infrastructure construction work. Work by Reaalprojekt OÜ No.** **P20037**

* Materials for the new 1520 mm gauge microprocessor-based traffic management system (cables, peripherals, track circuits, standard traffic lights with foundations, etc.) according to Annex 6. The Contracting Authority shall hand the materials over by the end of 2024 at the latest.
* Turnouts and materials to be dismantled and reused during the construction of side roads 7, 8, 9 in accordance with Annex 2. The materials shall be considered to have been handed over by the Contracting Authority at the beginning of their dismantling work. The Contracting Authority shall hand them over according to the work schedule and the actual need.

The Contracting Authority or the Contracting Authority's cooperation partner shall hand over the delivered materials at Ülemiste station at the place indicated by the Contractor in accordance with the site plan.

The Contracting Authority and the Contractor may agree on the exact time of delivery of the materials.

## (3.8) Meetings

The Contractor and the Engineer shall hold regular progress meetings (not less than once every two weeks) and separate design and BIM meetings. Minutes of the meetings shall be drawn up by the Contractor. The minutes of the meeting shall be recorded during the current meeting, showing the minutes visibly on the screen. The protocol also includes viewing the information in the latest version models and drawings in the Contracting Authority's CDE environment and adding comments and decisions to the models and drawings. The protocol shall be prepared in a digital environment provided by the Contracting Authority.

Special issues concerning the design and the work process may be raised at any construction site progress meeting.

The Engineer, the Contracting Authority's representative, the Contractor, the Owner's Supervisor, the Author's Supervisor, and the Contractor's design project manager shall be invited to the progress meeting on the construction site. The participation of third parties must be agreed in advance with the Engineer.

The timing and frequency of the progress meetings shall be agreed before work begins. Meetings may be cancelled or rescheduled by agreement between the Engineer and the Contractor.

The Engineer and the Owner's Supervisor shall be involved in the design meetings held by the Contractor. The timing and frequency of the design meetings shall be agreed before work begins. The Contractor shall decide on the involvement of third parties participating in the design meetings.

## (4.4) Contractor’s documents

### (4.4.1) PREPARATION AND INSPECTION

Designs shall be prepared using BIM technology and methodology at the level of the respective design stage, taking into account that, upon completion of the works, the as-built model must be submitted in accordance with requirements of the design and BIM technical specification. The BIM models shall be uploaded to the Contracting Authority's CDE (Common Data Environment) on an accrual basis at least once a month. The obligation to perform design time and cost planning in 4D and 5D shall apply from the moment the respective tools are provided in the Contracting Authority's CDE (the environment shall be provided by the Contracting Authority). In the course of drawing up the BIM construction working documents, the work schedule must also be added to the BIM construction working documents and it must be regularly updated during the work.

The submitted documents, other than the drawings and manufacturers’ publications shall be made in A4 format. All documents shall be in Estonian and English, and abbreviations shall be explained. If necessary, the Contractor must organise translation services (Estonian to English, English to Estonian). All calculation and technical information shall be presented in units of the international SI system.

All drawings shall show the respective scale. All measurements shall be provided in metres or millimetres, and weight shall be in metric tons or kilograms. The name of the contract, with the title of the respective drawing shall be provided at the bottom edge of each drawing.

The Contractor shall take into account the uploading of designs, BIM models and documentation to the Contracting Authority's CDE environment. The appropriate environment shall be established prior to the commencement of work, and the information provided by the environment shall be provided by the Engineer. The Contracting Authority shall provide the Contractor with access to the CDE environment, and the Contractor shall not be obliged to obtain separate licenses or other usage rights in connection with the use of the Contracting Authority's CDE environment.

The Contractor must submit all documents in an editable original format and in its most common regular user file format. For example:

* + Operational design models and as-built models, editable original file and IFC format.
	+ Drawings in DWG original file and PDF format.
	+ Letter files and table files in doc, xlsx original file and pdf format.

A similar principle shall apply to all document types.

### (4.4.2) AS-BUILT DOCUMENTS

It is the Contractor's responsibility to prepare the as-built model, as-built drawings and technical as-built documentation. The as-built drawings to be prepared by the Contractor shall conform to the standard specified by the Engineer in their scope and format. The Contractor must take into account that all the as-built documentation must be linked to the as-built model. The as-built drawings shall be based on the as-built model.

The as-built model, as-built drawings and as-built documentation must contain all the exact performance data of all the works done.

The technical of as-built documentation must contain the documents described in accordance with the regulations, the management and preparation of which are the Contractor’s responsibility.

~~According to standard EVS-EN 50126-1:2017, for the acceptance and inspection of works, the Contractor must go through the RAMS V-Cycle phases 9–10 “System acceptance and validation procedures”, and the corresponding documents (Deliverables) must be submitted for this purpose.~~

The requirements for execution documentation are described in the RKAS’ Technical Guideline "Technical requirements for non-residential buildings 2017", in standards EVS-EN 50126-1:2017 and ISO/TS 22163:2017, except the BIM requirements. The BIM requirements are set out in the Rail Baltica’s Design Guidelines and the Rail Baltic Estonia OÜ’s Design Guidelines (BIM). The list of execution documentation will be specified during the building process.

The BIM as-built model shall be uploaded to the CDE environment on an accrual basis at least once a month. The creation of the as-built model must take place in parallel with the construction work, and the existing as-built model must not deviate from the construction process for more than 4 weeks at any given time. The execution documentation, including the report on the performed works, the BIM as-built model, drawings, documentation and scope extracts shall be completed and submitted to the Contracting Entity's representative for review through the CDE environment at least once a month. The Contracting Authority shall perform its own inspection regarding the compliance of the submitted execution documentation with the requirements and the scope analysis.

Construction logs must be completed on a daily basis.

Execution documentation and as-built drawings shall be additionally submitted to the Contracting Entity in 1 hard copy (at the request of the Contracting Authority) and 3 soft copies on a USB data carrier, i.e. a memory stick, upon the handover of the work section.

### (4.4.3) INSTRUCTIONS FOR USE AND MAINTENANCE

According to the Rail Baltic Estonia OÜ’s Design Guidelines (BIM), the Contractor shall provide specific product references in the data content of the BIM as-built model elements to the maintenance instructions and their respective locations in the execution documentation’s catalog tree and provide information on maintenance frequency (activities according to the BIM execution plan). The Contractor must draw up a table in a clear and comprehensible maintenance manual (the maintenance log) for all the parts and equipment of the construction that require maintenance and their frequency of maintenance. The maintenance manual’s table must contain a reference to the maintenance manual of the corresponding part and its location in the catalogue tree of the as-built documentation.

The operating and maintenance instructions must be prepared using the results of FMEA (Failure Modes and Effects Analysis) analysis according to standard EVS-EN IEC 60812:2018..

### (4.4.4) CONSTRUCTION DESIGN DOCUMENTS

All designs shall be formalised both in a hard copy (one copy) and a soft copy (digital one).

For digital formalisation, the following file formats shall be used:

* + model files must be in their original format (.dwg or .rvt or .xml or .tekla or .pln, etc.) and in .ifc format;
	+ drawings must be in their original format (.dgn or .dwg or .rvt) and in .pdf format;
	+ table files shall be formalised in .xls or .xlsx and .pdf format;
	+ text files shall be formalised in .doc or .docx and .pdf format;
	+ when using other design software, their original files shall be used.

In addition to the design files, the electronic media must contain the files needed for printing and .shx files for all types of lines used.

If the Contractor needs to submit a document not mentioned in the above list, the file format shall be specified by the Engineer.

When formalising drawings, it must be kept in mind that the lines must be distinguishable and the drawings must be intelligible even on a black-and-white copy.

## (4.5) Training

The Contractor shall provide training both to the Contracting Authority and to other contractual partners of the latter designated for that purpose by the Contracting Authority. The minimum amount of training shall include:

* + 1520 relay-based CCS systems

The exact time of the training shall be agreed between the Engineer and the Contractor.

The requirement to perform the training as a precondition for accepting a work section is reflected in the breakdown of work sections provided in clause 2.1.

## (4.8) Health and safety requirements

The Contractor shall comply with the "Occupational Health and Safety Requirements in Construction1" and the "HS Tender Requirements" and "HS Coordination" documents prepared by RB Rail AS (Annex 9). In addition, the Contractor must always take the necessary precautions to ensure the health and safety of its employees.

The Contractor shall draw up a health and safety plan aimed at promoting a responsible attitude towards health and safety at work.

When implemented, the health and safety plan must:

* + ensure the systematic identification of existing and new hazards at the work site(s);
	+ ensure that significant hazards are minimised where their elimination and containment is impractical;
	+ ensure that appropriate safeguards are put in place and used;
	+ include an emergency plan to respond to accidental spillage, pollution or imminent danger;
	+ ensure that all identified hazards and exposure of employees are regularly reviewed and assessed;
	+ ensure that safety incidents at the workplace are reported, investigated and documented so that health and safety issues can be solved quickly and regularly. The Contract requires that the Contracting Authority be notified of such an incident immediately.

The Contractor shall be fully responsible for ensuring that the working conditions and methods are not harmful or hazardous to health, and for the implementation of healthy and safe work practices on the Construction Site (the Contractor shall undertake to ensure safe working conditions in the Work Area and other possible Contracting Authority' territories). Nothing in this document releases the Contractor from this obligation or liability (the Contractor shall ensure compliance with all health and safety requirements relating to the Work Area and shall be fully and solely responsible for any failure to comply with such obligations. The Contracting Authority shall have no such obligation or responsibility).

In order to avoid dangerous situations, the Contractor shall undertakes to organise cooperation in the field of occupational health and safety, as well as practical work in the field of occupational health and safety, and shall arrange for the proper instruction of all its employees to ensure the safe performance of the works. The Contracting Authority shall have the right to request the relevant instruction documents at any time.

The Contractor’s Construction Superintendent shall be obliged to be in the Work Area and to supervise and control the activities of its employees.

Pursuant to Government of the Republic’s Regulation No. 75 dated 03/04/2008 “Procedure for Registration, Notification and Investigation of Accidents at Work and Occupational Diseases” (RT I, 26/02/2021, 9), the Contractor shall register an accident at work occurred with its employee. The Contractor with whose employee the accident occurred shall be liable and formalise the accident.

In the event of an accident at work and other incidents, the Contracting Authority must also be notified as soon as possible (after first aid has been provided or the situation has been resolved) in order to prevent the Contracting Authority from finding out about the situation through unauthorised parties (e.g. the press).

All employees of the Parties shall be obliged to take the necessary measures to promptly eliminate the reasons that complicate or hinder normal work, and dangerous conditions. If these causes cannot be eliminated by their own efforts, the employee’s employer and the Contracting Authority must be notified immediately.

The Contractor shall undertake to keep the Work Area tidy and clean. After finishing the works, the workplace must be tidied up so that employees in the area can work safely. Tools and materials shall be stored in a pre-arranged place. Waste and rubbish shall be cleaned, placed in containers and disposed of in the shortest possible time.

The Contractor shall ensure that all employees are provided with and are required to wear (suitable) protective clothing, (clearly visible) life jackets, safety footwear, safety helmets, waterproof clothing, goggles, hearing (ear) protection, protective gloves, and other protective equipment required for the respective Work. Subcontractors must be present in the uniform of their company, which must clearly bear the name of the company performing the works. Prior to entering the work area, the Contractor shall undertake to instruct the staff on the need to use these facilities and to check their use.

As part of the safety measures, the Contractor shall appoint an occupational safety commissioner who shall be responsible for compliance with the safety rules and regulations. The commissioner must carry out regular inspections of all parts of the Construction Site where the Work takes place. Also the commissioner shall submit to the Contracting Authority the statements of the inspection visits performed.

The commissioner must pay particular attention to factors such as guards, especially guards around dangerous trenches, access stairs, safety of (unauthorised) persons, removal of construction debris, environmentally safe storage, and stacking of construction equipment and materials, and general cleanliness and order on the Construction Site.

The Contractor shall construct a fixed fence at a height of 2 m (adjacent to the public area) to prevent the fence from moving due to construction activities or weather conditions.

The Contractor shall regularly check for spillages and leaks in the areas where the Contractor's equipment, trucks and hazardous materials are stored or parked. The Contractor shall take all necessary measures to prevent the leakage of these spilled toxic substances into natural waters or areas outside the Construction Site.

All electrical and lighting circuits must be equipped with an anti-leakage (protection) electrical system. Circuits whose anti-leakage (protective) electrical system is not working must be repaired immediately using thermal couplings or taken out of service (the work area).

Access to the construction site by unauthorised persons must be completely prevented, and the Contractor must make every effort to prevent unauthorised persons from entering the construction site. If an unauthorised person has entered the construction site, he or she must be directed out of the construction site or, if the person does not agree to leave, immediately remove the person from the construction site with the assistance of a security company or the police.

The Contractor must provide guests of the construction site with vests, footwear and helmets. In addition, a room must be provided where the visitor of the construction site has the opportunity to dress.

The Contractor must ensure 24-hour security of the construction site of the Ülemiste terminal and prevent unauthorised access to the site. The Contractor must keep a list of people with access rights to the Ülemiste terminal construction site and use the turnstile so that it is possible to make a selection of persons present on the construction site at any time.

The Contractor shall ensure that the construction site is accessible through guarded sliding gates or turnstiles. The Contractor must have procedures in place to let the persons who do not have the right to access on a daily basis into the construction site and out of it.

The Contractor shall be obliged to follow all national epidemiological obligations and recommendations issued by the Government or the Health Board of the Republic of Estonia. In the event of a deterioration in the epidemiological situation, the Contractor shall take the most effective measures possible to enable the work to continue in full.

In addition, the health and safety requirements specified in the design must be observed.

A person providing first aid on the construction site must prove his or her qualification with a basic first aid training certificate. The Contractor shall designate a person in charge of first aid from its team. In addition, the Contractor must have at least one other person providing first aid on the site. In the absence of a responsible first aid provider, he or she shall be the responsible person.

The Contractor shall procure and maintain the necessary first aid equipment for all personnel on the Construction Site and, if necessary, ensure immediate access to first aid equipment for all personnel on the Construction Site.

## (4.9) QUALITY ASSURANCE OF WORK

**(4.9.1) QUALITY MANAGEMENT (QM) SYSTEM**

The Contractor shall establish and implement a quality management (QM) system, including the BIM execution plan (BEP), to demonstrate compliance with the requirements of the Contract.

The requirements of the quality management system and the improvement plan are further specified in the Contract, and the design explanatory notes and work arrangement schedule taking place between the parts of the design.

~~Quality management and improvement is a requirement to ensure the implementation of the RAMS process. The Contractor's quality management system shall comply with the requirements of ISO TS22163 (2017). The RAMS requirements are set out in the RB’s RAMS documents and the European Railway Standards Framework (Figure 1).~~

The Contractor's quality management system must comply with ISO 9001:2015; ISO 14001:2015; ISO 45001:2018 and implement the requirements of ISO/TS 22163:2017.

The Contractor shall prepare and submit a draft quality control system (including three additional plans: health and safety management, emergency and contingency plan, and traffic management) to the Contracting Authority for approval. In addition to the QM Plan, the names of the persons who will monitor the Contractor's compliance with the QM Plan must be provided.

If the quality management system is updated or changed, a copy of it must be immediately agreed with the Contracting Authority, stating the content of the change. The system must comply with the details and requirements / specifications and technical design set out in the Contract and the technical design.

The QM system shall clearly describe the Contractor's systems, procedures and methods (including improvement methods) used to perform and monitor the Contract, in particular to verify that the work complies with the requirements of this specifications and the specific conditions of the Contract:

* + to ensure that all communications, the Contractor’s documents, execution documents, operating and maintenance instructions, and as-built documentation on the basis of the notifications can be reliably traced back to the works, the goods, the work, the quality of the work or the test;
	+ to ensure proper coordination and management of the work stages and interfaces between subcontractors;
	+ to submit the Contractor's documents to the Contracting Authority / Owner's Supervisor for review;
	+ The Employer and / or the Engineer shall have the right to inspect all aspects of the QM system;

The QM system shall include a detailed description of the systems, procedures and methods used to perform the work and the Contractor's documented procedures for at least the following:

* + QM system implementation and internal audits;
	+ a compliance system to demonstrate the conformity of the materials, facilities, works and quality of work to the entire Contract;
	+ procedures for inspection and / or testing of the work to ensure compliance with quality requirements;
	+ certificates of any recently calibrated test or measurement equipment;
	+ material delivery and transportation processes;
	+ presentation, monitoring and updating of the plan;
	+ data storage, transmission and analysis;
	+ document control and management of the Contract’s administrative documents;
	+ emergency procedures and incident response plan;
	+ a document on non-conformities, their causes and mitigation measures to correct non-conformities and prevent future non-conformities;
	+ internal audits and commitments to address non-compliances;
	+ staff training;
	+ compliance with environmental, social, health and safety requirements, including traffic management;
	+ compliance with legal, labour, public health and safety requirements.

When creating the quality system, the standards of the respective field must be taken into account.

The QM system shall combine the requirements of the Contract’s works with the Contractor's quality, health and safety, environmental and social management systems to perform the works.

For the direct management, coordination and control of the construction process, the Contractor shall involve the competent persons:

The specific persons who have been requested and submitted in the tender and who meet the conditions for the qualification of the procurement must be included. Replacement of specific persons must be justified and only allowed for good reasons. The persons to be replaced must be approved in advance by the Contracting Authority. The rest of the project team will be presented and approved by the Contracting Authority before the start of the respective work section on the site.

The responsible site manager(s) must be present on the construction site at all times throughout the working day and, if necessary, at other time when the works are being performed outside the working hours.

During the construction, the General Contractor shall have an on-line phone number for emergency responses, where the Contractor's representative shall be available 24 hours a day. After receiving the emergency notice, the General Contractor's representative must arrive at the construction site within 1 hour to inspect the situation and begin to liquidate the emergency.

The contractor shall establish and implement a quality improvement plan based on the scope of the design. Improving quality is a requirement to ensure ~~that the RAMS process is implemented so~~ that the Rail Baltic project can be carried out with high quality, on time and on budget.

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~~Figure 1. European standards framework~~

(4.9.2) COMPLIANCE CONTROL (QA/QC) SYSTEM

The Contractor shall draw up and maintain a QA/QC plan to ensure compliance with the requirements of the Contract, the design quality requirements of which shall be extended to all subcontractors and suppliers. Compliance with QA/QC requirements does not relieve the Contractor of any duties, obligations or responsibilities arising from its Contract. The QA / QC plan shall be created at the same time as the quality management (QM) system.

The Contractor shall implement the QA/QC system to demonstrate compliance with the requirements of the Contract. The Engineer shall have the right to inspect all aspects of the QA / QC system. "Quality assurance system" means the activities, operations and procedures carried out before and during the execution of the Contract to ensure that prevention of defects and deficiencies is assured, and to justify the proposed construction.

“Quality control system” means the tests, inspections, procedures and related activities performed during and after the completion of the works to assess the conformity of the actual products involved in the works and the completed works. The QA / QC plan shall comply with ISO 9001/2015; ISO14001/2015; ISO45001/2018, and ISO/TS 22163:2017 standards.

The quality control plan shall cover at least the following items:

* 1. sampling and testing procedures, including:
		+ test piece locations;
		+ test methodology and standards;
		+ frequency of testing;
		+ information on the data to be collected;
		+ approval methods and criteria
	2. an organisational structure that identifies all relevant personnel and key functions, in particular those responsible for quality in general and for individual elements such as testing.
	3. procedures for the examination of samples, certificates, etc .;
	4. continuous visual inspection and control;
	5. document control procedures;
	6. non-compliance recording procedures and corrective measures;
	7. submission procedure.

The contractor shall establish and implement a quality improvement plan based on nature of the works of the design. ~~Quality improvement is a requirement to ensure the implementation of the RAMS process.~~

The Contractor shall keep a record of test and inspection reports, including validated and rejected results. The following information shall be recorded and retained for each non-compliance found:

* 1. description;
	2. the measures taken to identify the cause(s) of the non-compliance;
	3. a description of the corrective measures to be taken to prevent recurrence;
	4. the corrective measures taken to bring substandard work into conformity.

All the works shall be inspected, tested and monitored as necessary, and records shall be fully documented throughout the construction period and, where appropriate, after completion of the works. These documents shall be submitted on an ongoing basis to the Contracting Authority's CDE environment and later as part of the as-built documentation.

Testing is divided into three categories: control test, internal control, and acceptance test. The Contractor shall be responsible for all tests.

Sampling and testing shall be performed in accordance with applicable standards and methods. Sampling equipment and personnel shall be provided by the Contractor if required by the Engineer. At the request of the Engineer, sampling shall be arranged by the Contractor.

The contractor shall inform the Engineer at least 24 hours before sampling.

The number of samples shall be determined in the Contractor's quality control system. Sampling and reduction of samples shall be performed in accordance with EN 932-1, EN 932-2 and EN 13286-1. The sample size shall depend on the scope of the test and must be sufficient for the intended test.

Testing shall be performed by laboratories accredited in accordance with EN ISO/IEC 17025.

Data on samples and materials taken daily shall be stored on an ongoing basis at the construction site’s CDE environment. The data to be provided must provide information on the description of the materials, their origin and sampling location, as well as the sampling methodology.

Analysis reports on tests must be submitted to the Owner's Supervisor for approval before proceeding.

The contractor shall carry out a verification test to demonstrate that the materials are fit for their intended use (i.e. meet the requirements of the technical design). The tests shall be carried out and the results submitted to the Engineer for approval before work begins, together with a declaration of performance and / or conformity and the factory’s production control certificates. The Works may not be carried out without the approval of the Engineer / Contracting Authority.

All costs related to the verification test shall be calculated by the Contractor in the unit prices of its tender.

Internal quality controls shall be performed by the Contractor to ensure that materials and work meet pre-determined requirements. The Contractor shall carry out internal inspections at the intervals specified.

A consignment note must be provided for each batch of material delivered. The consignment note for material shall contain at least the following information:

* 1. Consignment note number;
	2. source of material (manufacturer, quarry, etc.);
	3. destination (object);
	4. type of material, name;
	5. amount;
	6. date of dispatch.

The consignment note shall ensure that each consignment is linked to the manufacturer. The consignment notes shall be submitted to the Engineer and inspected by the Engineer.

The Contractor shall have a system and a register to record the progressive inspection status of materials, components, subassemblies and equipment with a view to their acceptance, rejection or non-inspection. The system must ensure that the required inspections and tests are carried out and that the status of product inspections and test results is known throughout production, installation and testing period.

Non-compliant items shall be identified by physical separation and status indicators such as labels, series, markings, stamps and inspection documents. The identification system shall ensure that only items and equipment that have passed the required inspections and tests are used or installed.

The Contractor shall establish, maintain and document procedures to ensure that conditions unfavourable to quality, such as defects, malfunctions, deficiencies, anomalies and defects in materials and equipment, are identified and rectified without delay. In the event of adverse conditions, the measure must ensure that the causes of the condition are identified and that immediate corrective measures are taken to prevent recurrence. Corrective measures and related information shall be documented and available in the CDE environment of the construction site. The corrective measures shall extend to all subcontractors.

All sample data shall be retained in accordance with the engineer's instructions.

Unless otherwise provided in the technical specifications, the Contract’s clause 7.5 [Defects and Rejection] shall be implemented if the test of the installed material is negative.

In the quality plan, the Contractor must identify the works producing excessive noise and describe the measures to be taken to reduce the spread of noise. In the event of unavoidable excessive noise, the Contracting Authority, the construction supervision by owner, and the necessary third parties must be notified.

The rules of the completed internal order, quality plan, and environmental plan of the completed construction site must be introduced to all parties present on the construction site.

For the inspection of special parts (including structural part, high-voltage part, low-voltage part, security and fire alarm part, building automation part, heating, ventilation, cooling, railway part, etc.), the Contractor must involve specialists with professional education and work experience in the relevant field.

In its tender, the Contractor must take into account the quality control specialist of the site team, whose task is to draw the Contractor's attention to quality and occupational safety problems outside the team. The minimum number of inspections at the site shall be twice a month during the contract period. The report must be submitted to the Contracting Authority and the Owner's Supervisor.

The contractor must also take into account the procedures resulting from the quality control plan in the schedule of its works and procedures. In the quality control plan, the Contractor must indicate the schedule of the works requiring testing or inspection, including:

* tests and inspections to be carried out by the Contractor, including tests and inspections to be carried out by subcontractors. Including required tests and inspections, and tests and inspections chosen by the Contractor;
* Tests and inspections specified in the procurement documents carried out by the Contracting Authority.

For certain materials and products, the Contractor may use certificates of conformity obtained from subcontractors instead of sampling and testing procedures, subject to the approval by the Contracting Authority. The Contractor shall provide certificates attesting the conformity of the materials used in the works. The batch certified by the relevant certificate must be clearly indicated when submitting the certificate. The certificates shall be signed by an authorised representative of the manufacturer who shall certify that the material fully complies with the terms of the contract.

The Contractor shall approve all materials used either in accordance with section 3.1.1 d) or, if desired, in advance. Test results must not be older than 6 months. The Contractor shall not use materials from sources not approved by the Engineer. Uncoordinated materials must be removed immediately at the Contractor's expense.

## (4.16) Transportation of goods

Transportation of materials shall be the full responsibility of the Contractor. The material brought to the construction site must be stored safely, compactly and must not interfere with the (temporary) traffic management of the site or its nearby territories.

Detailed requirements for the transportation and storage of the material must be set out in the site plan.

## (4.18) Environmental protection

The Contractor shall comply with the requirements, recommendations and guidelines set out in the preliminary environmental impact assessment, Annex 8 “Basic research” to the Ülemiste infrastructure reconstruction design.

During the construction period, the Contractor shall also be responsible for the protection of the environment (within the limits of its construction activities and other consequential effects) in the construction site and adjacent areas in accordance with the laws and requirements in force in the Republic of Estonia, and the Contracting Authority's instructions.

The Contractor shall undertake to draw up an environmental management plan before commencing with construction work and have it approved by the Contracting Entity. The environmental management plan must be updated at least every three months and/or when significant new environmental aspects arise. The environmental management plan must comply with the principle of plan-do-check-act.

The environmental management plan must include the following:

* + status of the environmental permits applied for or being applied for and the environmental conditions attached to the permit;
	+ operations related to the storage sites for materials and equipment (principles of site selection, description of use);
	+ operations related to parking, storage, refuelling and cleaning of machinery (principles of location selection, description of use);
	+ principles of the selection of the location for production and/or handling of materials (soil, asphalt, mine waste, stone, etc.) and a description of use;
	+ environmental risk assessment, risk management with reference to source data, renewal period and operational information exchange;
	+ types of waste generated during construction, and the procedures and measures for the reduction and recycling of waste;
	+ water drainage action plan;
	+ description of the process for resolving environmental issues (unexpected situations);
	+ action in the event of an environmental accident/threat;
	+ description of significant environmental aspects together with a description of the action plan;
	+ description of the environmental management system;
	+ archiving of the documents related to the environment;
	+ how to ensure that subcontractors comply with the environmental action plan;
	+ contact details of the person dealing with environmental issues.

The Contractor must acquaint all its employees with the regulations in force in Estonia concerning their activities and apply all the required control measures in all the work areas. The Contractor must, by its actions or omissions, avoid any damage to the environment which could lead to possible pollution.

Landscaping and maintenance must be restored in the extent damaged during construction. Restoration of landscaping must also be carried out outside the property if it has been damaged by the activities of the Contractor or any of the subcontractors.

All construction work must be carried out in accordance with the established environmental protection requirements. Upon completion of construction work, all temporary facilities must be liquidated (demolished or excavated), and waste generated during demolition work must be removed from the site. All construction debris must be collected and disposed of in accordance with current regulations. In addition, construction waste must not be allowed to end up outside of the site, for example by wind. If construction waste has ended up outside of the site, it must be disposed of immediately. The storage sites for fills (aggregates), earth and soil shall be approved by the local authority.

The designed temporary road solution and the selected temporary facilities must not worsen the environmental situation in the area.

The Contractor must water the stored surface regularly to prevent wind from spreading the dust outside the construction site.

If necessary, the Contractor must arrange for car wheels to be washed to prevent dirt from tracking onto the city street.

If the dust spreads from the construction site outside by the wind, or if the dirt is transferred to the city street, the Contractor shall remove it immediately at its own expense.

## (4.19) Temporary utilities

The Contracting Authority does not guarantee the Contractor access to public utilities (electricity, gas, water supply, sewerage, etc.) on the construction site. The Contractor must take into account the procurement of all (temporary) utilities required for construction and the payment of temporary technical systems and associated costs. These shall include, for instance:

* + Construction of electrical pipelines, electrical switchboards and other communications (including temporary ones) necessary for the performance of construction work (including temporary heating) and covering related costs including connection charges for temporary communications, installation of mobile generators in the absence of sufficient electricity, if necessary, and related costs, etc.
	+ Disposal of groundwater during construction.
	+ Coverage of utility costs during construction (including electricity, water, sewerage, heating, etc.).

In the event that other contractors mentioned in clause 4.2 of the Technical Specifications wish to use the utilities available on the Contractor's construction site, the Contractor shall undertake to ensure that the other associations pay the Contractor the direct costs of the relevant utilities, including the cost of setting up the corresponding additional connections, without commission or other additional charges.

## (6.6) Civil engineering works for employees and workforce

For the client’s office, the contractor shall prepare the following in the agreed location:

* + One (1) Contracting Authority's office, at least 15 m2, equipped with a printer, wireless and wired Internet connection, four (4) desks, four (4) shelves, and eight (8) chairs,
	+ One (1) separate toilet with heating, water supply and sewerage,
	+ The Contracting Authority's office must have a standard operating temperature (i.e. heating and cooling), lighting and electricity throughout the year.
	+ The Contracting Authority's office must be cleaned regularly,
	+ The Contracting Authority's office must have a separate entrance,
	+ The Contracting Authority's office must be lockable and protected,
	+ Car access and parking spaces must be provided within ~~50 m of~~ the Contracting Authority's office,
	+ Drinking water must be available at the Contracting Authority's office at all times.

The site office of the Contracting Authority's representative must be established no later than within 60 days from the date of concluding the Contract (unless otherwise agreed with the Contracting Authority's representative) or handing over the respective (suitable) part of the construction site to the Contractor, whichever is later. The Contracting Authority’s representative shall vacate the site office immediately after signing the acceptance certificate for the last work section.

There shall be at least one meeting room in the Contractor's office where regular meetings between the Contractor and the Contracting Authority may be held. There are no other special requirements for the Contractor's own office.

The Contractor must provide the representative of the Owner's Supervisor with two separate site offices with the possibility of workplaces with an Internet connection (min. 2 places in one hut) and storing materials necessary for work by the Owner's Supervisor.

The contractor is obliged to implement temporary welfare spaces (winter shelters, toilets, rest rooms, etc.) for the workers. The site must be provided with an opportunity to wash for the employees. The locations of the Contracting Authority's, Contractor's and Contractor's facilities for their employees on the construction site shall be indicated on the site plan.

## (6.12) KEY PERSONNEL

**Requirements for the project team during the construction of the Ülemiste infrastructure (****to submit 15 working days after the signing of the contract):**

* + Track construction Project Manager – a railway engineer of level 7 (specialism in track construction and operation, competence in construction management of track construction).
	+ Track construction Site Manager (infrastructure) – a railway engineer of level 6 (specialism in track construction and operation, competence in construction management of track construction).
	+ Traffic management construction Project Manager – a railway engineer, level 6 (specialism in construction and operation of railway automation and communication equipment; competence in construction management in the construction of automation and communication equipment)
	+ Traffic management construction Site Manager – a railway engineer, level 6 (specialism in construction and operation of railway automation and communication equipment; competence in construction management in the construction of automation and communication equipment)
	+ Contact network construction Project Manager – a railway engineer, level 6 (specialism in construction and operation of railway contact network; competence in construction management of contact network construction), or a railway engineer, level 6 (specialism in construction and operation of railway track; competence in construction management of railway track construction), or an electrical engineer, level 6 (specialism in electricity networks and systems; competence in construction, operation and supervision)
	+ Contact network construction Site Manager – a railway engineer, level 6 (specialism in construction and operation of railway contact network, competence in construction management of contact-network construction)
	+ Responsible Superintendent on the site – in order to perform the works on the site, the Contractor must involve a responsible Site Manager, level 5 (or equivalent in the country where the foreign tenderer is located), who must have a professional qualification as a railway engineer in accordance with the professional law and professional standards.
	+ Safety specialist – a person shall be familiar with the EU regulation 402/2013 and its principles on the risk assessment and is able to use the methods used in the common risk assessment in railway sector.
	+ Quality Manager
	+ Occupational Safety Commissioner
	+ Occupational Safety Specialist (railway).
	+ Technical Secretary – he or she shall have experience in document management (engineering education)

**Persons competent in design (to submit 5 working days after the signing of the contract)**

Ülemiste infrastructure design work

* + Railway track designer – a certified railway engineer, level 7 (specialism in railway tracks construction and operation, competence in designing and design management)
	+ Site designer – a certified road engineer, level 7 (specialism in bridge construction and upkeep, competence in designing) of the professional qualification
	+ Traffic control designer – a certified railway engineer, level 7 (specialism in construction and operation of railway automation and communication equipment, competence in designing and design management)
	+ Railway contact network designer – a certified railway engineer, level 7 (specialism in railway contact network construction and operation, competence in designing and design management)
	+ Safety specialist – a person shall be familiar with the EU regulation 402/2013 and its principles on the risk assessment and is able to use the methods used in the common risk assessment in railway sector.

In addition to the specialists described above, the Contractor shall involve the specialists in other fields whose involvement is necessary for the performance of the service, such as specialists in fire safety, etc. The Contractor may not invoke the failure to mention a specialist in the relevant field in the tender source documents as an excuse for not performing the critical review in any of its parts.

## (7.3) Inspections

At the request of the Contracting Authority's representative and the Owner's Supervisor, the ability of the personnel to perform work requiring special skills, such as welding, electrical work, etc., must be demonstrated to the Contracting Authority's representative by means of tests organised by the Contractor. If the competence of any member of the Contractor's staff is called into question during the performance of the Work, the Contracting Authority's representative may arrange for any new tests he or she deems necessary.

## (**7.4**) **TESTS TO BE CARRIED OUT BY THE CONTRACTOR**

During the execution of the works, the Contractor shall carry out testing of materials and work to the extent and in the manner specified in the legislation, standards, contract, design, and quality control plan in accordance with all relevant requirements. Successful completion of the mandatory tests is a prerequisite for the acceptance of the respective work section.

The samples shall be transported to a designated laboratory that must be accredited in accordance with ISO/IEC 17025, if required by the relevant standard.

## (9) Tests on completion

Tests on completion are the complex special tests set by the Contracting Authority in this clause, which are performed as a precondition for the acceptance of the respective work section after the complete completion of the work section. Tests on completion shall not include the mandatory tests specified in the applicable standards and guidance documents, which must be performed and passed in accordance with the standard and guidance document and on an ongoing basis, i.e. during construction work before the full completion of the work section, and the relevant tests shall be deemed to be performed by the Contractor.

Passing the corresponding test on completion as a precondition for accepting a work section is reflected in the breakdown of work sections provided in clause 2.1.

Tests on completion shall be:

**Utility systems of infrastructure construction and related with it:**

* **Tests of railway traffic control and telecommunications systems:** in accordance with the applicable regulatory requirements and AS Eesti Raudtee requirements.
* **Tests of operation of contact network:** in accordance with the applicable regulatory requirements and AS Eesti Raudtee requirements.
* **Load-bearing capacity tests of facilities:** in accordance with the applicable regulatory requirements and AS Eesti Raudtee requirements.
* **Load-bearing capacity tests of embankment:** in accordance with the applicable regulatory requirements and AS Eesti Raudtee requirements.

More detailed lists and descriptions of tests can be found in the design and AS Eesti Raudtee requirements (annex 11).

## (11.11) Maintenance of the construction site

The scope of the builder's work includes maintenance and administration of the site and coverage of related costs, including debris and snow removal, garbage disposal, waste handling, emptying of toilets, etc. until the site is vacated.

After the completion of each work section, all damaged areas must be restored to the condition of the adjacent natural areas to the extent that is reasonable in view of outstanding work sections. During the works, this must be done within 14 days after the completion of the works in the work section. Temporary roads and facilities must be removed within 14 days if they are no longer needed. All material from temporary facilities and roads that is not used must be disposed of and transported from the construction site to appropriate disposal centres, depending on the type of material.

Prevention of spreading of dust on the construction site must be ensured by collecting or soaking it. Account must also be taken of cooperation (ensuring a clean room and handing it over to another contractor, protecting the installed furnishings and equipment, etc.) with other contractors arising from direct procurements by the Contracting Authority.

The Contractor must arrange daily washing of the wheels of the construction vehicle on the site and, in addition, if necessary, clean the polluted city streets.

In addition to post-construction cleaning, the construction site must be kept in good condition during construction. This means that the waste must be disposed of immediately and the filled waste containers must be removed from the site immediately. If fills (aggregates) end up in places where they should not be stored and this is not their later location, the materials must be disposed of from that location.

The Engineer shall have the right to comment on the condition of the site, and it shall be the Contractor's responsibility to rectify the problem as soon as possible. If the deficiencies are not remedied within three days, the Employer shall have the right to remedy the problems, and the related costs shall be borne by the Contractor.

## (12) MEASUREMENTS and assessment

The Contractor shall develop 3D data models for evaluation. Such models shall be drawn up by the contractor, unless the parties have agreed otherwise. Any part of the permanent work to be priced on the basis of the models shall be agreed between the Engineer and the Contractor.

To enable activation as part of the operational design, the list of costs must be performed for each item line in the annex to the contract, specifying the cost breakdown lists according to the DG requirements and the RBE cost list’s source file.

The creation of the as-built model must take place in parallel with the construction work, and the existing as-built model must not deviate from the construction process for more than 4 weeks at any given time. The execution documentation, including the report on the performed works, the BIM as-built model, drawings, documentation and scope extracts shall be completed and submitted to the Contracting Entity's representative for review through the CDE environment at least once a month. The Contracting Authority shall perform its own inspection regarding the compliance of the submitted execution documentation with the requirements and the scope analysis. At the request of the Engineer, the Contractor shall carry out additional as-built surveys.

## Necessary materials and settings for performing works

The client makes it possible to declare and get reimbursed for railway superstructure materials. Materials will be paid for when transported to the site on the following conditions:

Rails, sleepers, ballast, metal parts of turnouts, concrete parts of turnouts

Costs 11101, 11102,11103, 11104, 11105, 11106, 11107, 11108, 11109, 11110, 11111, 11112, 1121, 1122, 1123, 1131, 1132, 1133, 1134 and 3221 are paid for after transportation to the site. If the material for which the client has paid for is not used for works (for example decrease of quantity, material defects or other reason) then the contractor will return the amount equivalent to the decreased quantity.

# LIST OF ANNEXES

Annexes that are not applicable in the current tender, are not given in the base documents of the procurement.

1. Description of work sections;
2. List by Eesti Raudtee AS of 1520 mm gauge turnouts and materials to be dismantled and reused;
3. Site plan;
4. Schedule for the delivery of the construction site;
5. Applying for permits for use of railway facilities and putting them into service in the event of traffic disruption;
6. 1520 mm gauge traffic management system equipment of Eesti Raudtee AS to be supplied by Siemens;
7. Procedure for applying for, ordering and allocating delay periods on the infrastructure of Eesti Raudtee AS;
8. Preliminary environmental impact assessment of the reconstruction design of Ülemiste infrastructure;
9. Safety requirements “HS Tender requirements” and “HS Coordination” by RB Rail AS;
10. Guideline for RAMS by Rail Baltica;
11. Eesti Raudtee AS instruction documents;
12. Quality standards (publicly available, not included in the procurement source documents):
	* BÜ4 “Concrete and reinforced concrete. Concrete surfaces”
13. Technical specification of infrastructure works and materials;
14. Design Guidelines (BIM) by Rail Baltic Estonia OÜ:
	* BIM requirements for infrastructure
	* BIM requirements for local objects
15. Rail Baltica NOBO guidelines for Contractors
16. Vibration and structure-born noise measurements at Ülemiste railway station.
17. Basic research for the railway infrastructure design.
18. Geodetic requirements

All annexes are available:

<https://www.dropbox.com/sh/grfwc9orzi4rxd2/AAA1t__o_t-8M6c4g8JvqLKJa?dl=0>

Files shared under the link:

Annexes 1-18. File “Lisad 1-18” Signed digitally, signature message abbreviation: 30 31 30 0D 06 09 60 86 48 01 65 03 04 02 01 05 00 04 20 19 9A 99 A7 D1 13 22 CE 65 F8 A5 63 0A 52 B8 13 C9 95 1B A3 AA 64 C5 0F 6D 7E 38 10 F6 6B 5D 7A

# Drawings (construction designs)

All drawings (construction designs) are available:

<https://www.dropbox.com/sh/7x235ywj27qvt5o/AACjXzx6J3MR8pPckeTY9_BBa?dl=0>

Files shared under the link:

* Master design of the reconstruction of Ülemiste railway infrastructure prepared by Reaalprojekt OÜ / Allspark OÜ, work No. P20037. File “„PP\_ReaalprojektAllSpark” Signed digitally, signature message abbreviation: 30 31 30 0D 06 09 60 86 48 01 65 03 04 02 01 05 00 04 20 2C F7 A6 A7 AD BF 82 93 D5 33 D2 D6 37 05 0C 84 B2 D1 7E C6 AA F6 FD DE BB E3 50 6A 6D 95 C4 C5
* Detailed technical design of the reconstruction of Ülemiste railway infrastructure prepared by Allspark OÜ, work No. P20037. File “TP\_AllSpark” Signed digitally, signature message abbreviation: 30 31 30 0D 06 09 60 86 48 01 65 03 04 02 01 05 00 04 20 9C 3C 8F 63 66 5B 94 E9 AD 77 7E C1 61 85 2A A4 57 FC 18 43 72 CB C 9 EF FB 23 6B D7 44 5B B5 B8