

Object	Connecting two buildings.				Ämari hamlet, Lääne-Harju rural municipality, Harju county	Page	1
Document	Explanatory note					Leaves	6
	Part of the project	Electricity/Power/External network	Project characteristics	251700007	Stage	EP	
	Designer	A. Sand	Project number	02-25	Version	v01	
	Responsible specialist	A. Sand	Document sign	ELV-3-01	Date	18.08.2025	

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TABLE OF CONTENTS

1	ELECTRICAL INSTALLATION.....	3
1.1	GENERAL SECTION	3
1.1.1	Design work scope	3
1.1.2	Basic electrical data of the building.....	3
1.1.3	Source data.....	3
1.1.4	Designers	4
1.1.5	Construction studies	4
1.1.6	Normative documents	4
1.2	EXTERNAL POWER GRID.....	5
1.2.1	Current situation.....	5
1.2.2	Electrical supply	6
1.2.2.1	Connection point.....	6
1.2.3	Low-voltage main distribution systems	6
1.2.3.1	Low-voltage cable lines (0.4 kV cable lines)	6
1.2.3.2	Principles of restoration of cable line pavements.....	6
1.2.3.3	Relocation and liquidation of existing routes	6

Object	Connecting two buildings. Ämari hamlet, Lääne-Harju rural municipality, Harju county		Page	2
Document	Explanatory note		Leaves	6
	Part of the project	Electricity/Power/External network	Project characteristics	251700007
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PROJECT COMPOSITION

Volume 0	Common part
Volume 1-1	Position plan
Volume 1-2	External electricity network
Volume 2	Architecture, fire safety
Volume 3	Foundations
Volume 4	Heating, ventilation
Volume 5	High current
Volume 6	ATS

Object	Connecting two buildings.	Ämari hamlet, Lääne-Harju rural municipality, Harju county	Page	3
Document	Explanatory note		Leaves	6
	Part of the project	Electricity/Power/External network	Project characteristics	251700007
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1 ELECTRICAL INSTALLATION

1.1 GENERAL

1.1.1 Design work scope

This work involves the connection of two identical temporary warehouses at the preliminary design stage. The buildings are designated 01 and 02. The warehouses are standard products developed by the Polish company BANAIR Inc. Sp. z oo and are not designed. The foundations, access road, and electrical and communication lines to the connection points are designed for the building.

The design process aims to produce a functional and economical solution that meets the requirements, taking into account all relevant laws, regulations and standards.

This part of the preliminary design describes the electrical installation of the external high-current networks of the site. The interior of the buildings is presented in separate project volumes, Volume 5. The graphic part of the external networks is presented in Volume 1-1 of the project, together with the restoration of the pavements.

The project does not address outdoor lighting because it is not designed.

1.1.2 Basic electrical data of the building

	Building 1	Building 2
Type of electrical installation	2	
Connection point	Consumer substation 0.4kV switchboard	
Power grid wiring system	TN-C	
Guidance system	TN-S	
Designable voltage system	~3N 3x230/400V, 50Hz	
Installed capacity	148 kW	148 kW
Power consumption	140 kW	140 kW
Power factor	0.95	0.95
Building main fuse size	250A	250A
Size of the main fuse of the object	630 A	
Backup power supply	diesel generator	diesel generator
Cable fire reaction class	Dca-s2,d2,a2	

For more information on the electrical capacities of the planned area, see the building interior folder, Volume 5, document EL-9-01.

1.1.3 Source data

The starting points and source data for the project preparation are the following materials:

1) Client's initial task:

The main basis for the design work is the client's terms of reference:
PROTAN ELMARK Design No. 25/0369/SE Steszew, June 2025 STRUCTURAL
DESIGN STEEL HALL AXIAL DIMENSIONS 23x40x5.7m Banair Inc

Slupy 42, 10-381 Olsztyn, Poland

Project no. 457W EST

2) Architectural plans;

3) Position plan.

Object	Connecting two buildings. Ämari hamlet, Lääne-Harju rural municipality, Harju county				Page	4
Document	Explanatory note				Leaves	6
	Part of the project	Electricity/Power/External network	Project characteristics	251700007	Stage	EP
	Designer	A. Sand	Project number	02-25	Version	v01
	Responsible specialist	A. Sand	Document sign	ELV-3-01	Date	18.08.2025

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Note made 18.08.2025 Access
restriction valid until 18.08.2035
Basis: Civil Procedure Code §35 (1) p6

1.1.4 Designers

General design contractor

Registration code:
Address: , Tallinn
Project manager:
Phone: , e-mail:

Structures, Fire safety, Heating, Ventilation

Registration code:
MTR reg no. Address:
, Tallinn Structures:

Heating, Ventilation: Tel:
, e-mail:

External electrical network, high-voltage installation

Registration code:
Address: , Tallinn
MTR reg: 22.09.2009
Responsible specialist:
Phone: , e-mail:

Communication, Automatic fire alarm

Telegroup AS
Registration code: 10201478
Address: Töökoja 3, 11313, Tallinn
Project manager: Kari Lorvi
Phone: 680 0888, e-mail: telegrupp@telegrupp.ee

1.1.5 Construction studies

No separate construction surveys have been carried out for the design of the electrical installation for the design of this building. The design is based on construction geodetic surveys. Other surveys are outlined in the general part of the project, Volume 0.

1.1.6 Normative documents

When designing electrical installations, the laws, regulations and relevant standards in force in the Republic of Estonia must be taken into account, to the extent that they are necessary for the implementation of this project. The main documents to be taken into account are the following:

1) Building Code;

2) Regulation No. 97 of the Minister of Economic Affairs and Infrastructure "Requirements for Building Projects";

3) EVS 932:2017 "Construction project";

4) Fire Safety Act;

5) Equipment Safety Act;

6) EVS 843 "City streets";

7) EVS-HD 60364-1:2008+A11:2017 "Low-voltage electrical installations. Part 1: Fundamentals, general characteristics, definitions";

8) EVS-HD 60364-4-41:2017+A12:2019 "Low-voltage electrical installations. Part 4-41: Protection methods. Protection against electric shock";

Object	Connecting two buildings. Ämari hamlet, Lääne-Harju rural municipality, Harju county		Page	5
Document	Explanatory note		Leaves	6
	Part of the project	Electricity/Power/External network	Project characteristics	251700007
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- 9) EVS-HD 60364-4-42:2011+A1+A11:2021 "Low-voltage electrical installations. Part 4-42: Protection methods. Protection against thermal effects";
- 10) EVS-HD 60364-4-43:2023 "Low-voltage electrical installations. Part 4-43: Protection methods. Overcurrent protection";
- 11) EVS-HD 60364-4-444:2010 "Low-voltage electrical installations. Protection methods. Protection against voltage disturbances and electromagnetic disturbances";
- 12) EVS-HD 60364-5-51:2009/A12:2017 "Electrical installations of buildings. Part 5-51: Selection and installation of electrical equipment. General guidelines";
- 13) EVS-HD 60364-5-52:2011+A11:2017 "Low-voltage electrical installations. Part 5-52: Selection and installation of electrical equipment. Guidelines";
- 14) EVS-HD 60364-5-53:2022 "Low-voltage electrical installations. Part 5-53: Selection and installation of electrical equipment. Switchgear and controlgear";
- 15) EVS-HD 60364-5-54:2011+A11:2017 "Low-voltage electrical installations. Part 5-54: Selection and installation of electrical equipment. Earthing and protective conductors";
- 16) EVS-HD 60364-5-56:2019 "Low-voltage electrical installations. Part 5-56: Selection and installation of electrical equipment. Safety systems";
- 17) EVS-EN 61140:2016 "Protection against electric shock. Common requirements for installations and equipment";
- 18) EVS-EN 61439 "Low-voltage switchgear and controlgear assemblies";
- 19) EVS-EN 60529:2001/AC:2014/AC:2019 "Degrees of protection provided by enclosures (IP code)";
- 20) EVS-HD 60364-6:2016+A11+A12 "Low-voltage electrical installations. Part 6: Inspection procedures";
- 21) EVS-EN 60898-1:2019 "Electrical accessories. Residual current circuit-breakers for household and similar installations. Part 1: Alternating current circuit-breakers";
- 22) EVS-EN IEC 60947-2:2025 "Low-voltage switchgear and controlgear. Part 2: Circuit breakers";
- 23) EVS-EN 50525 "Wires and cables. High voltage wires and cables with rated voltages up to and including 450/750 V (U₀/U). ";
- 24) Elektrilevi OÜ 0.4...20 kV network standard, document P338/1, 01.02.2013;
- 25) Land RYL 2010 – General quality requirements for construction works.

The hierarchy of competence for legislation and regulatory information is generally as follows:

- 1) European directives
- 2) International agreements
- 3) Estonian laws
- 4) Ministerial regulations
- 5) Standards
 - globally international (IEC)
 - Mandatory in the European Economic Community (EN)
 - European Harmonization Documents (HD)
 - Transcribed in Estonia (EVS-EN; EVS-HD)
 - Estonian nationals (EVS)
- 6) Guidelines and regulations
 - domestic
 - official
 - internal
 - manufacturers' instructions, user manuals, information books

1.2 EXTERNAL POWER NETWORK

1.2.1 Current situation

The area where the warehouses will be erected is an undeveloped area, partially covered with brush. There are no existing networks. The existing substation, which is the connection point for the electricity supply, is located approximately 200 m to the northeast. The construction of the new route intersects with existing water, communication and electricity routes. The cable route must be routed under the existing road, if possible next to the existing route. It must be specified at the substation from which side the entrance can actually be made.

Object	Connecting two buildings. Ämari hamlet, Lääne-Harju rural municipality, Harju county				Page	6
Document	Explanatory note				Leaves	6
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1.2.2 Electrical supply

1.2.2.1 Connection point

The connection point of the buildings is a nearby consumer substation. The connection point will be located at the output terminals of the substation's low-voltage feeder. A distribution board (JK) with one input and two outputs is provided at the boundary of the construction area to distribute the total power between the two buildings. From the connection point to the distribution board JK and from there to the building's main distribution centers PJK, the necessary volume of power lines with underground cables will be provided.

1.2.3 Low-voltage main distribution systems

One connection point is provided for the two buildings. A separate distribution board JK with one input and two outputs is provided at the boundary of the construction area to distribute the total power between the two buildings. From the connection point to the distribution board JK and from there to the building's main distribution centers PJK, the necessary volume of power lines with underground cables is provided. The building's main distribution centers are provided within the perimeter of the warehouses.

The main electrical network shall be constructed according to the TN-C (4-wire) system. The diesel generator is discussed in the external networks section of Volume 1-2.

Distribution board JK

The JK switchboard is single-section. The input must be equipped with switching devices ensuring protective separation. The circuits of the lines leaving the JK switchboard are protected by adjustable automatic modular circuit breakers MCCB.

The JK distribution board is surface-mounted and is installed on the ground with a base.

1.2.3.1 Low voltage cable lines (0.4 kV cable lines)

The project provides for new cable routes between the connection point, the intermediate distribution board JK and the main distribution centers PJK1 and PJK2 of the buildings. In addition, cable lines are provided between the main distribution centers of the buildings and the generator equipment.

The installation depth of the cable line and distances from other routes should be determined based on the Elektrilevi OÜ 0.4 kV cable line network standard. The depth of the cables in green areas is 0.7 m and under roads is 1.0 m. The cables are installed in cable protection pipes along the entire route. When installing in a cable pipe, the strength class of the pipe is selected according to the installation location - 450 N in green areas and 1250N under roads and squares. A stretchable yellow warning film should be installed above the cables at a height of 0.3 m from the top of the cable. The locations of the cable routes are selected according to the layout plan, as straight and short as possible. Avoid intersections with other communications if possible.

1.2.3.2 Principles of restoration of cable line pavements

In the design area, the pavements will be restored as part of the general construction work in accordance with the pavement design section (see Volume 1-1). The pavements of the routes will be restored on the principle that they will be restored to at least the same condition as before.

1.2.3.3 Relocation and elimination of existing routes

There are no existing power lines that need to be relocated or eliminated in the project area.