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| **I APPROVE:** |
| Director of the Transmission Network Department   |  | | --- | |  | | *(name, surname, signature)* | |  | | *(date)* | |

DESIGN TASK

“CABLING AND INSTALLATION OF A FIBRE OPTIC CABLE ON THE 110 KV DOUBLE-CIRCUIT OL ŠIAULIAI-GUBERNIJA II, ŠIAULIAI-MEŠKUIČIAI SECTION BETWEEN ŠIAULIAI TS AND ZOKNIAI TS”

INVESTMENT PROJECT NO. PRLS2170

**CONTENT**

[1. GENERAL INFORMATION 3](#_Toc160125368)

[2. COMPOSITION OF THE PROJECT TEAM: 3](#_Toc160125369)

[3. DESIGN TASK REQUIREMENTS: 4](#_Toc160125370)

[3.1 General requirements: 4](#_Toc160125371)

[3.2 Part on structures 8](#_Toc160125372)

[3.3 Part on electricity transmission lines: 9](#_Toc160125373)

[3.4 Communications and telecommunications: 12](#_Toc160125374)

[3.5 Environmental protection and occupational safety: 13](#_Toc160125375)

[4. Other requirements 14](#_Toc160125376)

[Annexes: 15](#_Toc160125377)

# GENERAL INFORMATION

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| **Title of the project** | “Cabling and installation of a fibre optic cable on the 110 kV double-circuit OL Šiauliai-Gubernija II, Šiauliai-Meškuičiai section between Šiauliai TS and Zokniai TS” |
| **Project number** | PLRS2170 |
| **Project preparation stage** | „Up to the key“ |
| **Project manager** |  |
| **Project owner** |  |
| **Type of construction** | Reconstruction |
| **Category of structures** | Special structure |
| **Address** | Šiauliai county, Šiauliai city municipality territory |

# 3. DESIGN TASK REQUIREMENTS:

**Type of construction:** Reconstruction.

**Characteristics of 110 kV OL Šiauliai-Gubernija II, Šiauliai-Meškuičiai:**

Nominal voltage - 110 kV.

Line length:

* + - 1. **Šiauliai-Gubernija II - 17.049 km (5.074 km under reconstruction)**
      2. **Šiauliai-Meškuičiai - 27,513 km (5,074 km under reconstruction)**

# General requirements:

* + 1. The technical design shall be prepared and formalized in accordance with this design brief, the Construction Law, STR 1.04.04:2017 "Building Design, Expert Examination of a Design", Lithuanian Standard LST 1516:2015 "Building Design. General requirements for formalization and the provisions of other normative documents and rules regulating construction and design in force in the Republic of Lithuania, as well as the connection/technical conditions and/or special requirements set by the relevant authorities.
    2. The standard specifications attached to this design task must be followed in the preparation of the technical design.
    3. The standard technical requirements for the composition of the technical design of LITGRID AB (hereinafter - TSO) must be followed for the preparation of the technical design (see Annex(1)).
    4. The scope of the submission of the technical documentation of the Main equipment for approval and the compilation and structure of the tables of the technical specifications for the technical design shall be in accordance with the requirements of the TSO Procedures for Justification of Conformity of the Main Equipment with the Customer's Requirements, and the Requirements for the Compilation of the Technical Specifications for the Technical Design (see Annex(2)and(3)).
    5. In all cases, the technical and work design must be prepared as separate projects.
    6. The Contractor shall carry out all necessary actions related to the preparation of the technical and work design, including, but not limited to, obtaining connection/technical conditions, special conditions from AB “Energijos skirstymo operatoraius” (hereinafter - AB ESO) and third parties, arranging for the carrying out of the engineering investigations (geodesic, geological, geotechnical, and other investigations and measurements), and the provision of the construction permits and construction completion certificates.
    7. The technical design must be agreed with the responsible semployee’s of the TSO. The technical design, prepared and agreed after the examination of the project, shall be submitted in 3 copies, 2 of which shall be in hard copy (one marked “Original” and bearing the original signatures of the heads of the parts of the project that prepared the technical design and the project manager, and authenticated by the original stamp) and 1 copy in a digital format, with all signatures, (on a CD, DVD, or USB media).
    8. The pages of each technical design file shall be numbered consecutively, with the page numbers of the design files (each design file shall contain the contents of the file) indicated in the project file composition sheet.
    9. The digital information of the design documentation shall be provided in \*.pdf format, where the composition of the design documentation (file names) must correspond to the composition of the paper version, as well as in Microsoft Word (\*.doc) and Excel (\*.xls) formats, and the graphical information (drawings) shall be provided in AutoCAD (\*.dwg) formats (with editing capability).
    10. The technical design of the PT part shall describe the sequence and stages of the project. The detail of the stages of the works and their durations and the sequencing of the works shall be at a level that makes clear the extent and estimated duration of the disconnection of the existing installations to be disconnected and the durations of the stages indicated. The scope of disconnections shall be coordinated with the TSO during the preparation of the technical design of the TSO part of the electricity transmission network.
    11. The Designer’s sequencing of works shall be based on the principle that the disconnection of existing electrical installations shall be carried out to the minimum extent and within the minimum time limits. In order to assess the timeframe, the Construction organisation section of the technical design must also include a schedule of human and technical capacities in order to assess the resources to be devoted to the works and the duration of disconnections. The Designer shall be guided by the following in the sequencing of works:
        1. In addition to the disconnection of the existing 110kV OL Šiauliai-Gubernija 2 and Šiauliai-Meškuičiai:
           1. the foundations of the new pylons are installed;
           2. new pylons are being assembled (nearby);
           3. installation of the cable insertion route, laying of the 110kV cable and the fibre optic cable (installation of fibre optic couplings and switching of the connection where possible);
           4. Part of the documentation for the acceptance of construction works and the organisation of the technical assessment committee;
           5. a programme for the connection of the reconstructed line, including phasing works, is prepared and submitted for further coordination.
        2. With disconnection of the existing 110kV OL Šiauliai-Gubernija 2 and Šiauliai-Meškuičiai (up to a maximum of 19 calendar days):
           1. new pylons are installed (old pylons are dismantled if foreseen);
           2. 110kV KL end couplings are installed;
           3. Parallel adjustment works are carried out on the OL wires and the lightning protection cable with the fibre optic cable in the newly formed anchor spans;
           4. installation of fibre optic couplers, connection switching (if not already done);
           5. taking the necessary measurements;
           6. All the necessary documentation for the acceptance of the construction work and the organisation of the technical assessment commission;
           7. the organisation of a technical assessment commission (the documentation and the request for convening the technical assessment commission shall be submitted taking into account a possible disconnection period of no more than 19 calendar days for the existing 110kV OL Šiauliai-Gubernija 2 and Šiauliai-Meškuičiai);
           8. After completion of the works, the normal scheme is restored.
        3. Simultaneous long term disconnection of 110kV OL Šiauliai-Gubernija 2 and Šiauliai-Meškuičiai (110/10kV Zokniai TS from the 110kV side) is not possible. If such a need is identified, the designer will have to apply to AB ESO to obtain additional design conditions.
        4. Provide for the separation of the existing 110kV OL Šiauliai - Meškuičiai interconnections and, after completion of the works, for the restoration of the integrity of the interconnections due to the replacement of the Zokniai TS in radial mode. The separation and restoration of integrity shall be carried out by the line reconstruction contractor at his own expense;
        5. The solutions and timing of the technical design of this project will have to be aligned with the solutions of the technical design of the reconstruction of the 110/10kV Zokniai TS. The designer is responsible for agreeing the design solutions and the contractor is responsible for agreeing the implementation deadlines.
    12. The contractor of the PT part of the works shall be responsible for the preparation and coordination of the reconstruction schedule and the disconnection schedule with the AB ESO Dispatch Management Department, Mode Planning Department and the TSO. The Contractor shall send the schedule of works-disconnections to AB ESO for coordination, only with the permission of the TSO. A detailed schedule for the reconstruction works-disconnections shall be agreed at least 90 calendar days before the start of the on-site works. The Contractor shall update the schedule of works-disconnections and re-negotiate any changes in the progress and/or timing of the works within more than 1 month. A standard form-sample of the Works-Disconnections Schedule is available at www.litgrid.eu: Network development > Standard technical requirements > Disconnections schedule forms.
    13. When it is necessary to completely disconnect a 110 kV transformer substation feeding the AB ESO power network for the repair or reconstruction of the TSO electrical equipment or OL, a schedule of disconnections must be mutually agreed upon at least 20 calendar days before the commencement of the works to be performed. A separate schedule is not required if the works have been foreseen in the monthly or reconstruction disconnection schedules and there is no restriction or disconnection of customers connected to the AB ESO network.
    14. When a 110 kV transformer substation needs to be fully unloaded for a short period of time for the execution of the TSO switching, the switching shall be carried out during the load minimum. In cases where the unscheduled unloading of a TS requires the preparation of a separate programme and/or informing the customers and power producers, AB ESO shall inform the TSO about the need for preparatory works and the acceptable disconnection date.
    15. The Contractor shall be obliged to submit to the TSO the disconnection requirements for the following calendar year in the scope and within the deadlines set out in the Regulations on Dispatching of the Management of the Electricity System and LITGRID AB Internal Procedures (for the 330 kV part of the facilities - by 1 August of the current year for the following year, for the 110 kV part of the facilities - by 30 October of the current year for the following year).
    16. The Contractor is obliged to submit to the TSO the disconnection requirements for the next calendar month in the scope and within the deadlines set out in the Regulations on Dispatching of the Management of the Electricity System and LITGRID AB internal procedures (for the 330 kV part of the facilities - by the 1st day of the current month for the next month, for the 110 kV part of the facilities - by the 10th day of the current month for the next month).
    17. Any failure to coordinate the timing of unscheduled disconnections (i.e., disconnections that do not correspond to the dates of the approved Reconstruction Work-Disconnection Schedule, or disconnections that were not provided for in the Reconstruction Work-Disconnection Schedule, or the Contractor's failure to provide information to the TSO in accordance with the requirements of Sections 3.1.15 and 3.1.16 of this Chapter), failure to coordinate the timing of the TSO, or failure to disconnect the Electrical equipment at the time requested, shall not be deemed to be a disruption of the project for the TSO. Such unscheduled disconnections will not take priority over other work in the TSO annual and monthly schedules.
    18. When organising works on 110-400 kV overhead lines, where disconnection and earthing of 0.4-35 kV overhead lines is required, the TSO (contractor's) personnel carrying out the works shall draw up a schedule of the works to be carried out, which shall be submitted to the TSO and the AB ESO persons in charge for approval, in an Excel format, 20 calendar days prior to the commencement of the works. The schedule shall be approved by the heads of STO and AB ESO or their authorised persons 15 calendar days prior to the commencement of works. The 0.4-35 kV crossing OL disconnection schedule form is available at www.litgrid.eu: Network development > Standard technical requirements > Disconnections schedule forms
    19. The operational employees of AB ESO shall coordinate the disconnection time (if necessary) with the consumers upon receipt of the approved crossing lines schedule from the TSO.
    20. If the ambient temperature drops from -5 °C to -10 °C, only planned works shall be carried out on the AB ESO network during which the electricity supply to AB ESO customers shall not be interrupted or shall not be interrupted for more than 5 hours.
    21. If the ambient temperature drops below -10 °C, no planned works will be carried out on the AB ESO network to interrupt the supply of electricity to AB ESO customers.
    22. When TSO contractors carry out work on TSO overhead lines (hereinafter - OL), earthing of 0.4-35 kV overhead lines may be performed by:
        1. AB ESO contractors authorised to carry out work at STO facilities
        2. Operational employees of AB ESO
        3. TSO contractors authorised to carry out operational switching at AB ESO facilities (authorised by STO)
    23. For works carried out by TSO contractors, the removal and installation of overhead lines of 0.4-35 kV may be carried out by:
        1. TSO contractors authorised to carry out works on AB ESO electrical installations (authorised by AB ESO)
        2. AB ESO contractors authorised to carry out works on AB ESO installations
        3. Operational employees of AB ESO
    24. The technical design of part on PT (part of the organisation of construction works) shall be agreed in writing with the AB ESO Dispatch Management Department, Mode Planning Division.
    25. The commissioning of reconstructed or newly installed equipment may only be carried out in accordance with an approved one-off commissioning programme, in the presence of representatives of the Contractor and LITGRID AB RPA, and only on working days and during working hours (allow 1 working day for commissioning prior to the commencement of the test operation). The Contractor shall determine the composition of the technical design (design files/volumes) after assessing the scope of the design works to be the basis for obtaining the construction permit and in agreement with the TSO and other interested parties. A separate file must be kept in the technical design:
    26. Technical specifications for equipment/materials must be in both Lithuanian and English (each item/line must have a corresponding translation from Lithuanian to English on the same page of the document);
    27. The cost sheets shall be compiled in a single file in accordance with the cost sheets prepared for the relevant parts of the project. The cost sheets contained in the relevant parts of the project files shall be completed in accordance with the format of Main table D.1A. of Annex D "Form of cost sheet" of LST 1516:2015 and the cost sheets contained in a separate cost sheet file shall be completed in accordance with the format of Main table D.1B. of Annex D "Form of cost sheet" of LST 1516:2015. The cost sheets shall be submitted to the Customer on paper and in a digital and editable \*.xls (Excel) format. This file and the relevant parts of the project files should indicate that the cost quantity sheets are contained in the individual parts of the project files and that the cost sheet file contains the aggregated cost data for the project.
    28. Each part/file of the technical design (other than the cost estimate, technical specification and cost sheet files) shall contain a copy of the design task.
    29. Each part (file) of the prepared technical design (except for the cost estimate, technical specification and cost sheet files) must contain copies of the document of coordination between the responsible persons of LITGRID AB.
    30. The explanatory note of the technical design shall stipulate that the detailed lists of documentation to be submitted for the technical assessment and construction completion of the 110 kV overhead and cable line reconstruction/construction works in accordance with the requirements of the Transmission Network Facility Construction/Reconstruction Documentation Schedule approved by the TSO on 03/12/2021, No. 460 (see Annex (4)) shall be included in each project part/file of the work project. Detailed documentation lists must be agreed with TSO.

# PART ON STRUCTURES

* + 1. Design building structures in accordance with the standard specifications available at www.litgrid.eu: Network development>Standard technical requirements>Part on Construction.
    2. Design and install the foundations for the supporting metal structures and the structures themselves, if replacement of existing transmission equipment is required.
    3. Design separate supporting steel metal structures for each primary switching unit. The design of different types of installations on a common load-bearing metal structure with common foundations shall only be permitted if it is not possible to design otherwise.
    4. Design the replacement of the pylons with metal-anchored double-girder pylons.
    5. The anchor supports shall be selected in accordance with the standard designs available at www.litgrid.eu: Network development > Standard technical requirements > Part on Construction > Typical technical design.
    6. All external dimensions of the pylons shall be the same as before the reconstruction.
    7. Summary tables of the characteristics of the newly designed pylons shall be provided, showing: climatic conditions (wind, frost areas), permissible maximum gauge, wind and weight spacings, number of wires to be installed per phase, diameter, mass, lightning protection cable diameter, mass and their permissible tensions (Ϭmax. load, Ϭt=-40oC, Ϭt=+5oC), mass of the pylon, etc.
    8. Other metal structures shall be designed in accordance with STR 2.05.08:2005 “Design of steel structures. General provisions" and the standard technical requirements in the Annex (5).
    9. The design of corrosion protection for steel structures of overhead lines and other steel metallic structures shall be in accordance with the standard specifications for hot-dip zinc coating of steel structures in the Annex (6). All bolts, washers and nuts are hot-dip galvanised.
    10. Carry out hydrogeological investigations at the locations of the pylons and present the results.
    11. The foundations for the metal pylons are to be of reinforced concrete of the standard factory precast type. In exceptional cases, borehole or pile foundations may be designed depending on hydrological conditions. The height of the reinforced concrete part of the foundation must be 20-40 cm above ground level. The standard technical requirements for foundations are given in the Annex (7).
    12. Foundation anchor bolts, washers and nuts shall be coated with an anti-corrosion coating selected in accordance with ISO 12944-5 or equivalent. The embedded part of the foundation anchor bolts shall not be galvanised.
    13. In the areas of the dismantled pylons, the ground surface shall be levelled, the excavations shall be backfilled with local or imported soil to restore the integrity of the pavement and compacted where necessary. The works shall be carried out in accordance with STR 1.06.01:2016 “Construction works. Supervision of construction” and ST 121895674.06:2009 “Excavation and site preparation works”.
    14. Provide for the restoration of the roads, access roads and adjacent land used during the project to their original design situation.
    15. According to the “List of Regulated Construction Products” approved by the Ministry of Environment of the Republic of Lithuania, the construction products used in the construction of the facility must have certificates issued by the notified bodies designated by the Order of the Minister of the Environment of the Republic of Lithuania No. D1-601 of 27 June 2018.
    16. Manage waste generated during construction in accordance with the requirements set out in the section “Part on Environmental Protection”.

# Part on electricity transmission lines:

* + 1. Design works for the reconstruction of part of the double-circuit 110 kV overhead line (hereinafter - OL) Šiauliai - Gubernija II, Šiauliai - Meškuičiai, in the section from Šiauliai TS to the pylon No. 28, into cable lines (hereinafter - CL).
    2. Starting and ending points for cable lines:
* 110 kV KL Šiauliai - Zokniai starting point TS Šiauliai, end point TS Zokniai;
* Starting point of the cable insertion in the 110 kV overhead line Šiauliai-Gubernija II - TS Šiauliai, ending point - pylon No. 28.
  + 1. The preliminary route of the cable line is set out in Annex No. (8). If, during the design process, it becomes apparent that it is not possible to pass through some of the locations indicated in the preliminary route due to the written disagreement(s) of third parties (landowners), the organisations operating the existing engineering networks, or the public bodies assessing the design solutions, adjustments may be made to the selected route in agreement with the TSO. Adjustments to the alignment may only be made at the location(s) where written objections have been received from the aforementioned third parties, the organisations operating the existing engineering networks or the public bodies assessing the design solutions. The routing of the cable lines in Annex No. (8) is conditional, i.e. the geographical position of the cables to be laid in relation to the streets must be maintained, and the sides of the streets on which the cables are to be laid are to be chosen at the time of the preparation of the technical design.
    2. Design the CL with an electrical power capacity in terms of current magnitude, taking into account all the correction factors of the CL installation conditions, of at least 650 A per phase.
    3. Provide calculations and results for the selection of cable conductor and shield cross-sections, cable shield earthing methods and shield surge arresters (if required).
    4. Provide calculations of the permeability of a specific feeder cable according to the calculation principles of IEC 60287 or equivalent standard.
    5. Design cable length allowances of at least 3 m at the terminals and couplings. The design shall be guided by the principle that no more than one connection coupling shall be installed per kilometre of CL.
    6. Provide plans and longitudinal profiles of CL routes. The profiles shall show all intersections with and distances to existing utilities and the distances from the cable lines and their structures (slabs) to the ground. Provide cross-sections of CL trenches. The CL route plans shall be provided in .pdf and .dwg formats.
    7. Design the protection of the CL against external mechanical influences in accordance with the requirements set out in Annex No. (9). At intersections with traffic routes and existing engineering networks, where protection against external mechanical influences cannot be provided in accordance with standard technical requirements, cabling shall be laid in high-density polyethylene (abbreviated HDPE) pipes. Where there is a need for trenchless (enclosed or directional drilling) cabling at intersections with roads, streets and intersections with existing utilities, the technical design shall include a justification for such a solution and/or photographs of the route to justify the need for the trenchless cabling method.
    8. CL and their couplings shall be protected at both ends by surge arresters.
    9. Each surge arrester shall be provided with a separate connection conductor (between the metallic pad of the surge arrester and the surge meter and the earthing device) of suitable cross-section, the conductors shall be solid (without splices), and the length of the conductors shall be chosen so as to comply with the technical characteristics specified by the manufacturer of the surge arrester;
    10. Design the terminals for the connection of surge arresters and cable glands.
    11. Provide documentation of the main technical parameters of the constructed cable line and cable, including impedance values per kilometre of direct and zero-sequence cable. Carry out measurements of the direct and zero-sequence impedances of the cable line and provide measurement reports.
    12. Design the replacement of pylon No. 28 with a new metal-anchored double-row pylon, changing the location of the pylon by moving it to the territory of TS Zokniai. The specific location of the pylon is to be agreed during the preparation of the technical design.
    13. Provide spatial drawings of the design of the pylon, showing the solutions for the completion of the routing of the wires to the end sleeves, including the distances from the wires to the grounded parts of the pylon, the distances between the wires of the different phases of the pylon, and the distances from the ground to the fixing points of the end sleeves. The end sleeves shall be positioned horizontally on the pylons at a height of not less than 6 m above the ground.
    14. Design the installation of new isolator garlands, linear reinforcement and vibration dampers in the replacement pylon. Provide drawings of the components of insulator garlands. All linear reinforcement, unless otherwise specified in the standard specifications, shall be galvanised. The linear reinforcement supplied shall comply with and be tested in accordance with the requirements of IEC, LST EN or equivalent standards. Design the installation of new vibration dampers in the anchor span No. 28-33. Provide calculations and results for the selection of specific mounting locations for vibration dampers.
    15. Design the installation of wiring and lightning protection cable in anchor span No. 28-33. The wires and the lightning protection cable shall be continuous (without splices) in the specified span. Wire and cable to be used from dismantled sections.
    16. Provide calculations and results for the selection of the electromechanical characteristics of the designed insulators and linear reinforcements. Provide calculations and results for the selection of specific mounting locations for vibration dampers.
    17. Design the adjustment works for the OL wiring and the lightning protection cable (LPC) on the reconstructed anchor span (pylon No. 28-33). Provide the results of the calculation of tensile forces and deflections of the designed wires and LPC in installation and steady-state modes.
    18. Longitudinal profiles of the reconstructed anchor span (pylons No. 28-33). The profiles shall include, but not be limited to, the deflections of the LPC and wires, the distances between the wires and cables, the distances between the wires and the ground and the distances from the cables to the ground surface and to the existing civil engineering structures under normal and critical operation of the OL. The design distances from the various elements of the existing OL to the ground and other engineering structures shall be maintained at a minimum. The numerical value of the deflection of the lower air line conductor at an ambient temperature of +35 °C without frost and wind, -5 °C with frost and wind, and -35 °C without frost and wind shall be indicated at each interval of the longitudinal profile. Longitudinal profiles shall be provided in .pdf and .dwg formats.
    19. The technical design shall take into account the increase in the length of the span 28-29 following the rebuilding of Pier 28. Where necessary, the technical design shall include measures to ensure that the normative vertical clearance from the wires to the ground is maintained in spans No. 28-29.
    20. Carry out measurements of the actual tensile forces of the reconstructed anchor spacing wires and the LPC and the minimum distances from the lower cables of the LPC to the ground surfaces and at the intersections with other engineering infrastructure. Submit the protocols of the results to the Customer.
    21. Provide a summary table of calculations of the vertical distances between the conductor and the LPC in each OL spacing frame, indicating the length of the spacing frame, the normative and calculated values of the distances.
    22. Provide plans of the routes of the anchors between pylons to be reconstructed. The route plans shall be able to identify the existing and planned position of the OL edge wires. Route plans shall be provided in .pdf and .dwg formats.
    23. The earth resistance of the newly constructed support for the installation of the cable end sleeves and the earthing boxes for the cable shields shall not exceed 2,5 Ω. Provide drawings for the installation of earthing circuits for pylons;
    24. Submit updated OL/CL passports and cadastral files.
    25. Design works for the renumbering (marking) of the 110 kV ETL Zokniai-Meškuičiai (to be formed with the Zokniai TS reconstruction project) and the 110 kV OL Šiauliai-Gubernija II pylons, in accordance with the requirements specified in the Annex No. (10). Provide a description of the installation of the pylon markings and detailed drawings.
    26. Design the installation of the operational names of the installed cable lines, terminal couplings, surge arresters, etc., in accordance with the requirements given in Annex No. (11).
    27. Design and select the OL/CL elements in accordance with the requirements set out in Annex No. (12), (13), (14), (15), (16), (17), (18), (19), (20), (21), (22), (23), (24), (25), (26), (27), (28), (29), (30), (31), (32), (33).
    28. OL pylons, wires, insulators and metal structures in support section 1-28 shall be dismantled and disposed of in accordance with the requirements set out in the section "Environmental protection and occupational safety".
    29. Design the dismantling of pylon No. 1A and the foundation set, the marking of the metal corners (indicating the corner number according to the assembly drawing of the pylon), the assembly of the fasteners (bolts, nuts, washers, etc.), the loading, transportation and unloading of the disassembled materials. The works must be accompanied by a project for the technology of the works.
    30. Lightning cables with a continuous length of more than 1.5 km shall be dismantled, wrapped on individual drums and handed over to the company's emergency reserve. Lightning cables with a continuous length of less than 1.5 km shall be dismantled and disposed of in accordance with the requirements set out in the section "Environmental protection and occupational safety" and shall be used in accordance with the requirements set out in 3.3.18.
    31. The new pylon shall be sited and constructed without extending the protection zones of the existing transmission lines. If it appears that the proposed technical solutions extend the boundaries of the existing protection zones, do the following:
        1. establish and register in the Real Estate Register the easement(s) granting the right to construct, maintain, use underground/overground communications. Carry out all the actions necessary to establish and register the easement(s) in the Real Estate Register (drawing up the land plot plan(s) with the easement(s) to be established, organising the signing of the easement agreements, payment of compensation, etc.). Provide an extract(s) from the Central Data Bank of the Real Estate Register of the land plot(s) confirming the registration of the easement(s) in the Real Estate Register, and any other necessary third-party consents, at the time of coordination of the technical design.
        2. Submit the consent of the owner(s) of the land plot(s) or the state or municipal land trustee for the establishment of a protection zone for electricity grids in accordance with Article 7 of the Law on Special Land Use Conditions of the Republic of Lithuania. Indicate on the drawings the existing and projected protection zones for electricity networks.
        3. Identify and register in the Real Estate Cadastre and in the Real Estate Register the areas subject to special land use conditions (electricity network protection zones). Carry out all the necessary steps for the registration of these areas in the Real Estate Cadastre and the Real Estate Register. Provide extracts from the Central Data Bank of the Real Estate Register of the land plots, confirming the registration of the areas subject to special land use conditions (electricity network protection zones).
    32. According to the Law on Special Land Use Conditions of the Republic of Lithuania, Resolution of the Government of the Republic of Lithuania No. 1248 of 11 December 2019 "On the Implementation of the Law on Special Land Use Conditions of the Republic of Lithuania" and the description of the procedure for the preparation and approval of the spatial plans for the Electricity networks, trunk gas and oil pipelines (product pipelines), distribution gas pipelines, protection zones of heat transmission networks, and the spatial classes of the trunk gas pipelines (without the preparation of the spatial planning document or land holding project), approved by the Order of the Minister of Energy of the Republic of Lithuania of 13 October 2020 No. 1-339 “On approval of the description of the procedure for preparation and approval of territorial plans for electricity networks, main gas and oil pipelines (product pipelines), distribution gas pipelines, protection zones of heat transmission networks, and territorial plans of the locality classes of main gas pipelines (without preparation of a territorial planning document or a land management project)”, prepare a territorial plan for the protection zones of the CL (and, if necessary, for the fibre optic cable). Assess the amendments to the Law on Special Land Use Conditions of the Republic of Lithuania and related sub-legislative acts that will come into force from 2023 and ensure that the newly established and/or changed/abolished territories in the territory under consideration, which are subject to the special land use conditions - protection zones for electricity networks, are registered/de-registered in the Register of Real Estate. If necessary, to amend the territorial plan for the protection zones of electricity transmission networks and to register/de-register the newly established and/or changed/abolished areas in the territory under consideration, where special land use conditions apply - the protection zones of electricity networks.
    33. The CL route shall be designed rationally and to the maximum extent possible, making use of the land plots (street plots) and the areas of vacant undeveloped state land within the territory of the use type of the territory of the corridors of communication and engineering networks, avoiding the CL route on private land plots. Having regard to point 3.3.3. if the CL is to be installed on private and/or public land where there are no registered easement(s) granting the right to construct, maintain, use underground/overground communications, all steps shall be taken, to establish and register the easement(s) in the Real Estate Register (to draw up a plan(s) of the land plot with the easement to be established, to organise the signing of easement agreements, to inform the owner(s) or manager(s) of the land plot(s) that compensation for the establishment of the easement will be paid in accordance with the Resolution of the Government of the Republic of Lithuania No. 725 of 25/07/2018, approved by the Methodology for Determining the Maximum Amount of Lump Sum Compensation to be Paid for the Use of a Land Easement Established by Law or by Agreement for the Benefit of Network Operators, etc.).

# Communications and telecommunications:

* + 1. Design and installation of a fibre optic cable (hereinafter - FOC) in the 110 kV OL Šiauliai - Gubernija II, Šiauliai - Meškuičiai cable section from the Šiauliai TS telecommunication hardware cabinet 109 S1.2 to the telecommunication cabinet of the control panel of Zokniai TS.
       1. The fibre content of the FOC - 24.
       2. The fibre type of the FOC cable - SM G.652.D.
       3. The route of the installation of the FOC shall coincide with the route of the 110 kV CL.
    2. The ends of the Šiauliai TP and Zokniai FOC are completed with fibre distribution facilities (ODF). ODF connector type E2000/APC.
    3. The FOC shall be continuous along the entire route, without intermediate joints and couplings.
    4. Use a 1250N compressive strength Ø40mm safety pipe along the entire route of the FOC.
    5. Design additional Ø110mm protection pipes at intersections with roads.
    6. For the construction of the FOC using the horizontal directional drilling method, design additional Ø110mm protection pipes.
    7. Provide communication cable duct systems (CCDS) underground manholes at the bends and intermediate manholes depending on the tensile force of the FOC.
    8. Design communication manholes for the wrapping of fibre optic communication cable supplies at Šiauliai TS and Zokniai TS.
    9. Šiauliai TS and Zokniai TS to form FOC reserves of 40m each in the designed communication manholes.
    10. The technical design shall include plans and longitudinal profiles of the routes of the FOC. The profiles shall show all intersections with and distances to existing utilities and the distances from the cable lines and their structures (slabs) to the ground.
    11. The requirements for the FOC are set out in the Annex (34).
    12. The requirements for communication protection pipes are given in the Annex No. (35).
    13. The requirements for communication wells are given in the Annex No. (36).
    14. The requirements for the fibre distribution equipment are given in the Annex No. (37).
    15. All telecommunications equipment shall be designated in accordance with the Schedule of Procedures for the Establishment and Designation of Operational and Technical Names for the Transmission Network set out in the Annex No. (11).
    16. After the installation of the fibre optic cable, the following is provided:
        1. a fibre passport for the entire route and the original fibre reflectograms in \*.sor format in accordance with the requirements set out in the Annex No. (4);
        2. FOC route plans in .pdf and .dwg formats.

# Environmental protection and occupational safety:

* + 1. In the technical design of the TSO transmission network part, provide information on the potential environmental impact of the facilities under construction, as well as the requirements for environmental protection, occupational safety, fire safety, and ensuring adequate occupational hygiene conditions at the construction site and in the structure under construction, in accordance with the provisions of STR 1.04.04:2017 "Construction Design, Expert Examination of a Design", including, but not limited to, the provisions of the present Chapter.
    2. Provide estimates of the waste to be generated during construction, including names, codes and quantities.
    3. Estimate the area, thickness and volume of topsoil to be removed during construction, and provide for the temporary storage and use of the removed topsoil
    4. The technical design shall provide for environmentally safe places for the temporary storage of machinery, materials and waste according to their types during construction, and, if necessary, for the construction of temporary roads. Provide for the conditions for agreeing on the use of land and compensation for damages to landowners.
    5. Specify the obligations for the Contractor:
       1. organise and carry out, at its own expense and without prejudice to environmental requirements, the accounting, collection, sorting, separation, temporary storage, labelling and transfer to the appropriate waste handlers according to the type of waste, of waste generated during the construction process and packaging waste from new installations;
       2. collect and store the generated metal waste on site until it is transferred to a company contracted by the TSO, with TSO representatives being present during the transfer;
       3. waste management and accounting shall be carried out in accordance with the procedures set out in the "Rules for Waste Management", "Rules for Accounting and Reporting of Waste Generation and Management", approved by the Minister of the Environment; the documents confirming the transfer of the waste (transfer-acceptance acts, waste transportation cover letters) shall name the Contractor as the waste holder (the producer of waste) (with the exception of metallic waste, which is handed over to the TSO), the name and address of the object to be built shall be specified in the documents, and copies of the documents shall be provided to the persons carrying out the technical supervision;
       4. Maintain records of imported taxable packaging and taxable products in accordance with the "Law on Management of Packaging and Packaging Waste" and the "Rules on Management of Packaging and Packaging Waste", prepare tax returns and pay taxes in accordance with the "Law on Pollution Tax".
       5. when carrying out works in settlements, to fence construction sites in accordance with the requirements of the description of the procedure for the safe organisation and performance of work by contractors at LITGRID AB Facilities, and to fence excavated pits in other areas if the works are not completed within 1 day;
    6. The project must provide for specific design solutions defining technical measures, methods of work organisation ensuring safety and health of employees, in accordance with the requirements of the Rules of Safety in the Operation of Electrical Installations, the Rules of Safety and Health in Construction, the requirements of the Description of the Procedures for the Safe Organisation and Conduct of Contractors' Work in the Facilities of LITGRID AB.

# OTHER REQUIREMENTS

4.1. The goods (including their components and the manufacturers of the goods and components), services or works offered by the supplier must not constitute a threat to national security. The requirements for the compatibility of the subject of the procurement with national security interests are set out in the Annex No.(38).

# Annexes:

**1**. **LITGRID AB requirements for the composition of the Technical design, 12 pages.**

**2. *LITGRID AB requirements for drafting technical design specifications, 18 pages.***

**3. *Procedure for justifying compliance of main equipment with the Customer's requirements, 9 pages.***

**4. *Description of documentation for the construction/reconstruction of a transmission network facility, 40 pages.***

**5. *Standard technical requirements for steel structures supporting electrical equipment for open switchyards of 330-110 kV, 3 pages.***

**6. *Standard technical requirements for hot-dip galvanizing of steel structures of 110-400 kV substations, switchyards and overhead lines, 4 pages.***

**7. *Standard technical requirements for reinforced concrete precast foundations for overhead line pylons for overhead lines of 330-110 kV, 2 pages.***

**8. *Cable line routing options, 3 pages.***

**9. *Standard technical requirements for protective pipes for 330-110kV voltage cable lines, 3 pages.***

**10. *REQUIREMENTS FOR THE MARKING OF 400-110 kV VOLTAGE OVERHEAD LINES, 3 pages.***

**11. *AB Litgrid operational and technical naming and labelling procedures for the transmission network, 43 pages.***

**12. *Standard technical requirements for 110 kV OL vibration dampers (Stockbridge type), 3 pages.***

**13. *Standard technical requirements for glass plate insulators for overhead lines of 330-110 kV, 2 pages.***

**14. *Standard technical requirements for the installation of the earthing circuit of 400-110 kV OL pylons, 4 pages.***

**15. *Standard technical requirements for earthing circuit elements of 400-110 kV overhead line pylons, 3 pages.***

**16. *Standard technical requirements for bolted type tension clamps for 400-110 kV OL wires and lightning protection cables without FOC, 3 pages.***

**17. *Standard technical requirements for 110 kV surge arresters for line discharge class 2, 5 pages.***

**18. *Standard technical requirements for 110 kV surge arresters for line discharge class 3, 5 pages.***

**19. *Standard technical requirements for 110 kV plastic insulated cables, 4 pages.***

**20. *Standard technical requirements for end sleeves for plastic insulated 110 kV cable lines, 3 pages.***

**21. *Standard technical requirements for couplings for plastic-insulated 110 kV cable lines, 3 pages.***

**22. *Standard technical requirements for the protection of 110 kV cable lines against external mechanical influences when laying cables at intersections with streets and roads in open trenches, 1 page.***

**23. *Standard technical requirements for the protection of 110 kV cable lines against external mechanical influences by open trench laying, 1 page.***

**24. *Generalised requirements for the installation of surge arresters in 110 kV transformer substations, 6 pages.***

**25. *Standard technical requirements for the laying of 110 kV cable lines by closed horizontal directional drilling, 1 page.***

**26. *Standard technical requirements for clamps for supporting aluminium conductors with steel stranded cores for 400-110 kV overhead lines, 3 pages.***

**27. *Standard technical requirements for wedge-type tension clamps for 400-110 kV OL wires and lightning arresting cables without FOC, 3 pages.***

**28. *Standard technical requirements for tension clamps of the compression type for 400-110 kV OL wires and lightning protection cables without FOC, 3 pages.***

**29. *Standard technical requirements for non-insulated aluminium wires with steel stranded cores for overhead lines of 400-110 kV, 4 pages.***

**30. *Standard technical requirements for lightning protection cables for 400-110 kV overhead lines (without fibre optic cable), 3 pages.***

**31. *STANDARD TECHNICAL REQUIREMENTS FOR GIRLIAND COMPOUNDS OF GLASS INSULATORS FOR 400-110 kV VOLTAGE OVERHEAD LINES, 4 pages.***

**32. *Standard technical requirements for 400-330-110 kV primary equipment connection terminals, 6 pages.***

**33. *Standard technical requirements for tables of technical data for primary installations, 31 pages.***

**34. *Typical requirements for the design of a fibre optic cable, 3 pages.***

**35. *Typical requirements for communication protection pipes, 3 pages.***

**36. *Typical requirements for communication manholes, 2 pages.***

**37. *Typical requirements for the design of a fibre spreading device, 2 pages.***

**38. *Requirements for the compatibility of the subject of the procurement with national security interests, 2 pages.***

**39. *Requirements for documentation to be submitted to the Commission for the technical assessment of the construction/renovation works of an energy facility, 47 pages.***

**40. *Requirements for documentation to be submitted to the commission for the completion of the construction/renovation of an energy facility, 3 pages.***

**41. *Description of the documentation for the construction/reconstruction of a transmission network facility.***