**PUBLIC COMPANY ORLEN LIETUVA**

**BUILDER'S REQUIREMENTS FOR DESIGNING**

1. **SCOPE OF APPLICATION**
   1. The present Builder's Requirements for Designing (hereinafter – the Requirements) establish technical requirements for execution of designing works for facilities belonging to Public Company ORLEN Lietuva (hereinafter – the Company).
2. **TERMS, DEFINITIONS AND ABBREVIATIONS**
   1. Terms and abbreviations used herein are defined in Law on Construction.
      1. **Facility** – identification code (number) and name of structure, engineering network or group of structures used in design documentation for identification purposes. Identification codes (numbers) and names of facilities shall be presented to Contractor by the Client.
      2. **Client** – Company's employee who supervises and coordinates designing work, organizes agreement and acceptance of design documentation at the Company.
      3. **Designer** – a party that provides designing services to the Company on the basis of contract.
      4. **Technical task for designing (TTD)** –document issued by the Client specifying the scope of all designing services and main functional, architectural, technical, quality and economic parameters of structure to be designed as well as other requirements to be followed by the designer.
      5. **Standard specifications** – builder's technical specifications presented by the Company.
3. **EXPOSITORY PART**
   1. **General requirements**
      1. Designing shall be executed in accordance with design work schedule, scope of work description, TTD, these Requirements, Company's standard specifications and other legal acts effective in the Republic of Lithuania.
      2. Design documentation shall be made in Lithuanian language and can be translated in English language
      3. All design drawings and text documents shall be made in black font/lines on white background. Any other colors or tones of grey are not allowed.
      4. Designer shall prepare design deliverable list specifying from which parts, books, volumes the entire design package will consist of. Design deliverable list must be enclosed to every part, book, volume of design provided.
      5. Design part shall consist of documents recommended in STR1.04.04 annex 8.
      6. Every part, book, volume must consist of:
         1. Title page with information on the design (its part) listed in LST 1516:2015 and category of structure, design documentation identification number given by the Client;
         2. List of documents in the file in accordance with LST 1516:2015. In addition to other data, the following details must be provided in the list: drawing/document identification code, name, number and date of revision, number of pages;
         3. Design deliverable list;
         4. Other design part documents and drawings.
      7. Management of status and revisions of design documentation and drawings:
         1. Revision and status must be specified for every design text document or drawing.
         2. The status may be:
            1. For information. This status is used when drawings are issued before finalization when they are needed for intermediate agreements, presentation of main design solutions;
            2. For ordering. This status is used before finalization when the status of provided design documentation is sufficient to order long-lead materials or other materials and equipment critical in terms of delivery;
            3. For approval. This status is used for intermediary approval of documents;
            4. For construction. This status is used for final and Client approved design documentation revision which can be proceeded with construction. All revision clouds and revision numbers must be deleted;
            5. As built. This status is used for design documentation issued at the last stage of designing after completion of construction which incorporates all changes of design solutions agreed by the designer.
         3. Construction is allowed on the basis of design documents ‘For construction’ only.
         4. Any amendments, additions, corrections of design documentation are made in the form of new revision of design solutions with new revision number assigned. In case of multiple amendments, additions, corrections of design documentation, each time new revision of such documentation shall be assigned. Amendments, additions, corrections of design documentation are formalized as prescribed by LST 1516:2015. Areas of drawings that have been recently revised must be shown with revision cloud placing triangle with the number of revision next to it. Previous revision clouds and revision numbers must be deleted.
         5. Minor changes of design solutions during construction may be made by hand in construction contractor's documentation. Changes made by hand must be agreed with the designer against its signature in the drawing. Agreement may be made in writing using electronic means of communication.
         6. Revisions of all documents issued prior to the status 'For construction' shall be designated in figures 0, 1, 2, etc. Revisions of documents issued with the status 'For construction' or 'As built' shall be designated in Latin alphabet letters A, B, C, etc.
   2. **Execution of designing work.**
      1. Prior to proceeding with designing, designer shall provide the Client with Design Manager (DM) and/or Design Part Manager (DPM) assignment documentation copies.
      2. The designer shall on a weekly basis, unless otherwise provided in the description of works or TTD, present progress report to the Client. Designer shall present full list of drawings and text documents under development by it specifying progress for each of them in percentage. Percentage shall be assigned as follows:
         1. Design documentation issued for information – 30%;
         2. Design documentation issued for ordering– 40%;
         3. Design documentation issued for approval– 50%;
         4. Design documentation issued for construction – 90%;
         5. Design documentation issued As Build revision - 100%.
      3. Changes of TTD, output data or other parameters, deviations from standard specifications during designing may be validated only upon written agreement of such changes/deviations with the Client;
      4. In case of any material changes of design solution, new TTD must be agreed, formalized and approved;
      5. In case of any ambiguities concerning the scope of or technical requirements for designing designer must address the Client for clarification in writing. The Client does not present any explanations on the application of legal acts or technical regulations for construction effective in the Republic of Lithuania.
   3. **Agreement of design documentation and transfer to the Company.**
      1. Documents shall be transferred to the Client with transmittal.
      2. Design documentation transferred for agreement must be compiled into design part file. Separate documents or design part, as long as it is not fully completed, are not accepted for agreement.
      3. The Client shall accept the following separate preliminary documents for agreement:
         1. PFD, P&ID;
         2. Process equipment layout plan;
         3. Single line diagrams (SLD);
         4. Plot plan.
      4. When new revision ‘For Construction’ of design part is issued and only part of design documentation was amended, only documents which were amended may be presented for agreement. In this case, updated design part deliverable list must be always presented.
      5. Prior to presentation of design part for agreement the designer must perform all internal agreements of this part with other parts of the design and present a proof that such agreement was actually made (e.g. internal form of agreement with signatures of other DPM collected on this form or signatures of other DPM on the documents of design part presented).
      6. Where it is reasonable to break design part into separate subparts according to the location of designed area or other attributes, then design part shall be made in books/volumes and only fully completed book/volume shall be presented for agreement.
      7. Designer shall present design (design part/book/volume) to the Client for agreement in soft copies.
      8. Client's approval or non-approval to the design (design part/book/volume) shall be reported to the designer by e-mail with transmittal and in case of non-approval the reasons and non-conformities shall be specified.
      9. After the Client reports its approval to the design (design part/book/volume), the designer shall make the number of hard copies specified in TTD, soft copy signed by DM and DPM in CD/DVD or any other electronic storage media and shall transfer the same with transmittal to the Client.
      10. If the number of hard copies is not indicated in TTD, designer shall prepare and provide 3 (three) signed hard copies and 1 (one) soft copy of design documents.
   4. **Standard designer supervision of execution of design.**
      1. Designer's representative must visit construction site and make respective entries in construction logbook once a week, unless TTD or contract provides otherwise;
      2. Designer must explain design solutions to concerned persons if anything unclear to them in design documentation;
      3. Correct any design mistakes and inaccuracies, agree any changes in design solutions and materials and include such into design documentation;
      4. Issue ‘As built’ design revision.
      5. Give explanations during preparation of construction completion documents, explanations to members of the construction completion committee.
   5. **Design documents.**
      1. Composition of design documents, including for simple repairs and engineering utilities, shall meet requirements of Annexes 8, 9, 10 to technical regulation for construction STR 1.04.04 and Builder's standard specifications.
      2. Each drawing and text document of design shall feature identification number assigned by the Company (e.g. OLP00001) in a clearly visible place or main title.
      3. **Composition (non-exhaustive) of pressure piping part of design.** These are minimum requirements for composition of documents to be observed by the designer for pressure piping part of the design. Designer may add any other documents which, in its opinion, are required to make design solutions clear. Minimum requirements for composition of documents may be changed upon written agreement with the Company. Design documents must be prepared according to requirements set forth in LST 1516:2015.
         1. Design part deliverable list.
         2. Design part explanatory note. In addition to other information, in explanatory note the following must be provided:
            1. Risk assessment of designed pressure equipment;
            2. Justification for selection of elements and materials under pressure;
            3. Assessment of failure mechanisms and corrosion;
            4. References to codes and standards the design is based on;
            5. Justification for selection of piping strength calculation (assessment) technique or method;
         3. Piping layout on plot plan. Piping layout must be shown on geodetic survey or excerpt of master plan received from the Company. Scale 1:500 or 1:200;
         4. Vertical and horizontal projections, cross-sectional, 3D views of more complex elements must be provided;
         5. Numbers of load-bearing structure supports must be provided in piping layout plan;
         6. Piping layout plan must show piping battery limits based on information provided by the Company;
         7. Piping isometric drawings. Example prepared in accordance with good engineering practice is provided in Annex 1. Isogen or any other equivalent piping isometric drawing production solution is recommended. Detailed list of elements shown must be provided in each isometric drawing.
         8. Piping technical specifications. Piping technical specifications must be based on standard technical specifications provided by the Company;
         9. Summary list of designed piping to be provided as separate document of the design and in MS Excel format. The list must include the following details:
            1. Piping number assigned by the designer (if not assigned by the Client);
            2. Piping Ps and Ts, also piping test pressure;
            3. Steel grade and/or specification number piping design is based on;
            4. Piping heat tracing method and parameters (if applicable);
            5. Piping PED classification;
            6. Name of substance/medium transmitted;
            7. Requirements for heat treatment (if applicable);
            8. Other special requirements, if any;
         10. Material take off (MTO);
         11. Example prepared in accordance with good engineering practice is provided in Annex 2.
         12. Stress analysis reports. Calculations must be made in International System of Units (SI). Designer shall evaluate flexibility of equipment or pressure vessels the piping is connected to. Stress analysis shall be done using dedicated pipe stress analysis software (e.g., Bentley Autopipe, Intergraph Ceasar II, etc.) in cases given in Item 5 of Specification OL-TR-MPR-001.
         13. Designer shall prepare all necessary design documentation required for PED assessment and certification (when applicable). At least shall be provided: Result of the hazard analyses; Design and fabrication drawings and other relevant technical documentation; Particular Material Appraisal; List of applied harmonized standards; Design calculations / results of examination related to the design.
      4. **Composition (non-exhaustive) of process part of design.** These are minimum requirements for composition of documents to be observed by the designer for process part of the design. Designer may add any other documents which, in its opinion, are required to make design solutions clear. Minimum requirements for composition of documents may be changed upon written agreement with the Company. Design documents must be prepared according to requirements set forth in LST 1516:2015.
         1. Design part deliverable list;
         2. Design part explanatory note. In addition to other information, in explanatory note the following must be provided:
            1. Process description;
            2. Process startup and shutdown description;
            3. Process safety philosophy and principles, operation of interlocks;
         3. P&ID;
         4. Summary list of designed piping. Example prepared in accordance with good engineering practice is provided in Annex 2.
         5. List of tie-ins or connections to existing piping or equipment. Example prepared in accordance with good engineering practice is provided in Annex 3.
         6. Process equipment layout plan;
         7. Control system design task;
         8. Instrument data sheets with process data filled in;
         9. New pump data sheets with process data filled in;
         10. New or modified heat exchanger, air cooler, water cooler and other process unit data sheets with process data filled in;
         11. Relief valve flow capacity calculations, data sheets for selection of new relief valves. List of relief valves and pressure set values;
         12. Data sheets for new el. Heat tracing with process data filled in;
         13. Sketches and task for mechanical design of new process vessels;
         14. Sketches and task for mechanical design of modified process vessels;
         15. Sketches and task for connection of level gauges and other instruments to existing vessels or tanks.
   6. **Technical requirements for submission of soft copies of design documentation.**
      1. Designer shall submit duly signed, scanned design documentation in PDF files (MTOs and scope sheets shall also be presented in MS Excel files).
      2. Designer shall present drawings in dwg files if so prescribed by the contract.
      3. Drawings and text documents shall be scanned for minimum 200 dpi resolution.
      4. Each drawing shall be presented in a separate PDF file. The name of file shall consist of identification code (number) of drawing and number of revision.
      5. Text documents shall be presented in PDF file. The name of file shall consist of the name of document or acronym.
4. **FINAL PROVISIONS**
   1. Design documentation developed without observation of Requirements set forth herein shall be considered of poor quality and shall serve the grounds for refusal to sign work handover and acceptance statement (HAS).
   2. Refusal by the Client to accept design documentation as a result of failure by the designer to observe Requirements set forth herein shall not serve the grounds for the designer to extent the time of designing work and shall not release the designer from contractual penalties for delays.