

Expert Review of Project Documentation for Projects in the Chernihiv Region

Tasks of the documentation review:

1. **Verification of compliance with regulations.** During the analysis of each project, primary attention was paid to those solutions that may contradict the applicable building codes, standards, and fire safety requirements.
2. **Identification of logical inconsistencies and risks of increasing the scope of works.** All key aspects of the documentation that may lead to additional works or necessitate adjustments during the project implementation process were obligatorily identified and highlighted.
3. **Assessment of weak or low-quality solutions.** Particular attention was paid to solutions that may potentially require changes during the construction process and may complicate project implementation at various stages.

Capital Repair of the Catering Unit of the Municipal Institution of General Secondary Education Levels I–III “Varva Lyceum No. 2”

General.

1. The project has been prepared with a sufficient number of project documentation sections to undergo expert review.
2. The project is compiled in accordance with DBN A.2.2-3:2014 “*Composition and Content of Project Documentation for Construction.*”
3. The drawings are executed in accordance with DSTU 9243.4:2023, DSTU 9243.7:2023, DSTU B A.2.4-13:2009, and DSTU B A.2.4-11:2009.
4. The project corresponds to the RP stage.
5. The project pays very little attention to construction details during execution of works. For example, the finishing of all porches has not been considered; only porch No. 4 has been addressed. At the same time, the development of the structural part is very weak (reinforcement is missing, and the base under the steps is not provided).
6. In the technical description, a contradiction has been identified between the graphical part and the textual explanation: some premises are marked as sanitary facilities, but in the explanatory note they are either not mentioned or described as other functional zones.
7. Uncertainty has been identified regarding the method of connection to existing engineering networks, in particular water supply, sewerage, and ventilation systems. This may result in unforeseen additional works, especially during the dismantling of existing structures.
8. The drawings do not detail the junction nodes between new and existing structures, which makes it impossible to reliably assess the scope of installation works.

9. The project provides for capital repair of an existing building; however, a technical conclusion on the condition of existing structures is absent, which is mandatory for further actions in accordance with DBN A.2.2-3:2014.
10. Ventilation systems are described in a generalized manner, without an aerodynamic calculation, which poses a risk in production premises due to possible insufficient air exchange rates (violation of DBN B.2.5-67:2013).
11. Some solutions (for example, equipment placement) do not take into account ergonomic requirements and the logistics of movement of personnel and products (intersecting routes), which reduces operational efficiency.
12. The water supply and sewerage (VK) section does not sufficiently present design solutions for routing of networks. Connection to existing networks is neither considered nor shown.
13. Verification of calculated water consumption is absent in the explanatory note, which is a basic requirement of DBN B.2.5-64:2012 (clauses 5.1, 5.2). Without this, it is impossible to confirm the correctness of pipeline diameters.
14. Thermal expansion of hot water pipelines has not been taken into account, as required by clause 8.9 of DBN B.2.5-64:2012. Compensators or compensating loops are absent, which is especially critical for concealed installation.
15. Cleanout and flushing devices are not indicated on horizontal sections of the sewerage system, which contradicts DSTU-N B V.2.5-74:2013 (clause 8.7.2).
16. The project provides for routing of pipelines along existing structures; however, there is no clarification regarding the need to dismantle old pipelines or inspect the condition of existing routes, which does not allow for a correct assessment of the scope of works.
17. Routing of pipelines and their connections is complicated by the absence of installation nodes or sections (especially in sanitary facilities).
18. Coordination of the VK section with other sections (especially with architectural solutions) is weak; there are no coordination plans with reference to load-bearing walls or technological equipment.
19. The OV section provides only an exhaust ventilation system. A supply ventilation system is not provided, which may affect the energy efficiency indicators of the facility.
20. All structural nodes in the OV album are either only described (without drawings) or completely ignored. For example, wall penetration details.
21. The OV section lacks an axonometric diagram, which will complicate installation.
22. Non-compliance with regulatory requirements (DBN B.2.5-67:2013 and DBN B.1.1-7:2016). Fire dampers are absent on air ducts passing between rooms or through floors, although this is a mandatory requirement according to clause 7.6 of DBN B.1.1-7:2016.
23. There are no instructions regarding noise attenuation of ventilation systems, which is necessary to ensure acoustic comfort in accordance with DSTU-N B V.2.5-76:2014, clause 8.5.
24. Design air exchange parameters (air change rates, air flow rates per room) are not specified. Without this, it is impossible to verify compliance with Table 8.1 of DBN B.2.5-67:2013.

25. The use of an exhaust-only system without air supply will lead to negative pressure and uncontrolled air infiltration.
26. The EP section does not consider or describe the existing load in the power supply system. It is unclear how the additional load from equipment and appliances in the catering unit has been taken into account.
27. Routing of cables within load-bearing structures is not detailed; penetration nodes through floors and walls are absent, which may lead to significant complications during installation.
28. The power supply plan does not contain elevation marks for the installation of switchboards, sockets, and lighting fixtures, which does not allow for full control of system ergonomics.
29. Large cable cross-sections have been used without explanation or justification, which may lead to excessive costs during installation.
30. Busbar systems or power risers do not have fire-resistant limiting devices, which is mandatory when installed in publicly accessible areas (DBN B.1.1-7:2016).
31. The schemes do not provide for dispatching or consumption monitoring systems, which is important for modern facilities (violation of energy efficiency principles).
32. The cost estimate documentation has not been approved by the Client.
33. It is necessary to provide for shutdown of the ventilation system upon receipt of a "Fire" signal. Refer to the working design.
34. As a recommendation, it is advised to additionally include, or provide references to, installation of lighting fixtures in suspended ceilings, suspension heights, or references to the design project. The project should specify the method of routing E30-rated cables or provide references to applicable regulations. In addition, the project should include, or reference, a design project with layout references for the placement of equipment and power sockets in the premises.

№	Identified violations, inconsistencies, errors in the project	Link	Recommendations for eliminating deficiencies
	Explanatory Note (PZ). Sheet 1.	4.6.3 In three-stage design, the following are developed:	Correct reference: clause 4.6.1.

	<ol style="list-style-type: none"> 1. An incorrect reference is provided to clause 4.6.3 of DBN A.2.2-3:2014, since according to the design brief the project has been developed in a single stage. 2. The number of volumes indicated in the specification is 8 (sheets 1–3), which does not correspond to the number actually developed in the project — 10 volumes. 3. The PZ volume is missing the following documents: the title page, a copy of the qualification certificate of the Chief Project Engineer (GIP), a copy of the certificate of advanced training, a copy of the qualification certificate of the design engineer in the cost estimate documentation section, and a copy of the certificate of advanced training. 	<p>the EP stage – for non-production facilities, or the FS (Feasibility Study) stage – for production facilities and linear engineering and transport infrastructure facilities.</p>	
	<p>AB. Sheet 1</p> <ol style="list-style-type: none"> 1. Incorrect reference to DBN B.2.2-3:2018. This type of construction, as indicated in the project title (<i>Capital Repair</i>), is not covered by this DBN (see page 1, Section 1 “Scope of Application”). 2. The list of main working drawings does not reflect the total number of volumes developed in this project. Six volumes are indicated in the list, whereas ten volumes have actually been developed in the project. 3. The stamp of the Chief Project Engineer (GIP) is illegible. The signatures in the title block are also illegible. 4. The title page signed by the Client is missing. 		

	<p>5. The list of documents for execution of acts for concealed works is missing.</p> <p>AB. Sheet 3</p> <p>1. The floor level designation shall be indicated in the plan title.</p> <p>AB. Sheet 6</p> <ol style="list-style-type: none"> 1. Walls are finished with floor tiles. 2. For wall plaster, the grade of cement–sand mortar and the thickness shall be specified; reinforcement mesh shall also be indicated. 3. Paint CT-42 is specified as the finishing material. The manufacturer name (Ceresit) is not indicated. Moreover, this paint is intended for façade painting and is not used in catering facilities. 4. The grade/type of adhesive for wall tiles is not specified. 5. The grade/type of grout for tile joints is not specified. 6. Priming or other preparatory works for dismantled surfaces are not indicated at all in the scope of works. 7. Ceiling finishing предусматривает plastering with cement–sand mortar. This type of finishing is very inefficient in execution; moreover, the quality of such 		
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	<p>plastering depends on the layer thickness, which is not specified in the project. The grade of mortar is also not indicated. It is proposed to replace the cement–sand mortar with gypsum plaster.</p> <p>AB. Sheet 7</p> <ol style="list-style-type: none"> 1. The notes state that external finishing around the window and door reveals shall be executed with cement–sand mortar. Painting is not specified. <p>AB. Sheet 10</p> <ol style="list-style-type: none"> 1. It is proposed to use timber instead of metal profiles for the canopy lathing in order to compensate for temperature deformations. 2. A drainage system is not provided on the canopies, which will complicate operation. <p>AB. Sheet 9</p> <ol style="list-style-type: none"> 1. The order of sheet numbering is violated: after Sheet 10, Sheet 9 follows. 		
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	<ol style="list-style-type: none"> 2. Restoration of the asphalt concrete pavement is not provided in the scope of works. 3. Waterproofing of the porch plinth is not provided in the scope of works. 4. Reinforcement of masonry is not specified. 5. A damping (expansion) joint at the connection to the building is missing. 6. Compaction of the sand base is not specified. 7. Installation details (nodes) of the railing are missing. 8. Separate drawings of the railing are not provided. 9. Instructions regarding the finishing of the railing are not provided. 10. It is proposed to replace the brick porch walls with concrete walls and connect them structurally to the slab. 11. It is proposed to design the railing partially removable to allow unloading of products from vehicles. 12. Technical solutions for other porches have not been considered, although they must comply with evacuation route requirements in accordance with DBN B.2.2-25:2009 and operational conditions. 		
	<p>VK. Sheets 1–5</p> <ol style="list-style-type: none"> 1. Explanatory note. Cold and hot water supply networks are designed to be installed in the floor within steel sleeves. This solution is considered impractical, as 	<p>DBN B.2.5-67:2013 “Heating, Ventilation and Air Conditioning”</p> <p>Clause 8.2.3:</p> <p>“Pipelines of hot water supply systems that are installed within building structures (screeds, floor slabs) shall be</p>	

	<p>installation of these pipelines with thermal insulation alone is sufficient.</p> <ol style="list-style-type: none"> 2. Axonometric diagrams of the water supply (W) and sewerage (K1) networks are missing from the project. 3. There are no instructions regarding the routing of pipelines through walls and partitions. Details of floor penetrations and installation of sanitary equipment are also missing. 4. Pipe slopes and lengths of pipeline sections are not indicated on the diagrams. 5. Connection details for tying the pipelines into existing networks have not been developed. 6. The specification does not indicate the manufacturers of materials and equipment. 7. Materials for fastening and pipe insulation are missing from the project documentation. 	<p>provided with a thermal protective shell made of elastic or rigid thermal insulation material resistant to moisture and to the temperature of the heat carrier.”</p> <p>DSTU-N B V.2.5-40:2008 “Guidelines for the Design of Water Supply and Sewerage Systems” Clause 7.2.5: “When routing pipelines within building structures, measures shall be taken to compensate for thermal deformations and to ensure the possibility of dismantling during repair.”</p>	
	<p>OV. Sheet 1</p> <ol style="list-style-type: none"> 1. The project does not contain air exchange values with indications at each ventilation opening of the supplied and exhaust air volumes in cubic meters. 		

Conclusion Based on the Results of the Analysis of the Design Documentation

Object:

“Capital Renovation of the Catering Unit of the Municipal General Secondary Education Institution of Grades I–III
‘Varva Lyceum No. 2’”

Within the framework of carrying out an expert review of the design documentation for the capital renovation of the catering unit, a comprehensive analysis of the architectural, structural, and engineering solutions (AB, VK, OV, EP, PZ) was performed, as well as a verification of the compliance of the documentation with the current state building codes and standards.

General Assessment of the Documentation

The design documentation as a whole is compiled in a sufficient scope to undergo expert review and formally complies with the requirements of DBN A.2.2-3:2014 and the declared design stage RP. The overall formatting of the drawings generally complies with the applicable DSTU standards.

At the same time, based on the results of a detailed analysis, it was established that the documentation contains a significant number of comments that are systemic in nature and relate to:

- an insufficient level of detailing of design solutions;
- the presence of inconsistencies between the graphical and textual parts;
- the absence of mandatory details, diagrams, and calculations;
- incomplete consideration of the requirements of the current regulatory documents.

Architectural, Building, and Structural Part

In the architectural and building section (AB), deficiencies in formatting and completeness were identified (incorrect regulatory references, absence of title pages, illegible signatures), as well as insufficient elaboration of structural solutions, in particular:

- absence of reinforcement, details, and sections for entrance porches;

- absence of solutions for waterproofing, expansion joints, and base compaction;
- absence of drawings and details for railings and fencing;
- inconsistency in the numbering of drawing sheets.

The above-mentioned deficiencies make it impossible to correctly assess the scope of works and create risks of additional works arising during the implementation of the project.

Engineering Systems (VK, OV, EP)

The deficiencies identified in the engineering sections are of critical importance for the operation of the catering unit:

- in the VK section, axonometric diagrams, penetration details, pipe slopes and lengths, connection details to existing networks, as well as water consumption calculations are absent, which does not allow confirmation of the correctness of the adopted technical solutions;
- thermal deformations of hot water pipelines and the requirements for compensation and dismantling, as defined by DBN and DSTU, have not been taken into account;
- in the OV section, calculated air exchange parameters, axonometric diagrams, fire dampers, noise attenuation solutions, and supply ventilation solutions are absent, which does not comply with the requirements of DBN B.2.5-67:2013 and DBN B.1.1-7:2016;
- in the EP section, the actual and additional electrical load from the catering unit equipment has not been taken into account, cable penetration details are absent, installation height marks for equipment are missing, and there are no solutions for fire protection of cable routes.

Risks of Project Implementation

In its current form, the design documentation:

- complicates a reliable assessment of the scope of construction and installation works;
- creates a risk of additional works and adjustments to the estimated cost during execution;
- may lead to different interpretations of technical solutions by contracting organizations;
- complicates technical supervision and quality control of works.

Final Conclusion

The design documentation requires revision by the designer in order to:

- eliminate the identified non-compliances and inconsistencies;
- supplement the documentation with the necessary details, diagrams, and calculations;
- bring engineering solutions into full compliance with the requirements of the applicable DBN and DSTU;
- increase the level of detailing to a level sufficient for safe and economically justified implementation of the project.

Expert Recommendation:

to return the design documentation for revision. Until the identified comments are eliminated, it is not recommended to use the project as a final basis for the execution of construction works, due to the risks of increased costs and complications in the operation of the facility.