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CONSTRUCTIONAL FEATURES OF HEGUMEN HOUSE IN CHERNIHIV

Research results of the XVII century construction, Hegumen House in Chernihiv, are presented. It is a historically significant local landmark. Attention was paid to historical data on foundation of the monastery and structure erection. The construction was built to serve as a refectory church of Peter and Paul. The purpose of the building was found to have been changed repeatedly during its existence. Constructional features of the structure remains were analyzed. Practical recommendations on its restoration were developed. Underground unit drawing was made, which is accessible to viewing. Detailed research was conducted. Reinforcements and brick wall construction, dated at a later period, were discovered. The wall construction brick was analyzed. Much attention was paid to durability and stableness of the underground unit.

Keywords: study, research, underground unit, foundations, constructional features.

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КОНСТРУКТИВНІ ОСОБЛИВОСТІ БУДИНКУ ІГУМЕНА В ЧЕРНІГОВІ

Наведено результати дослідження споруди XVII ст. – будинку ігумена в Чернігові, пам'ятки архітектури місцевого значення. Приділено увагу історичним даним про заснування монастиря та зведення споруди, що будувалася як трапезна церква Петра і Павла. Виявлено, що за час існування призначення будівлі змінювалося неодноразово. Проаналізовано конструктивні особливості залишків каркаса будівлі з розробленням практичних рекомендацій щодо її відновлення. Виконано креслення підземелля, що доступні для огляду при виконанні робіт з детального обстеження. Виявлено місця підсилення й улаштування цегляних стін більш пізнього часу. Виконано дослідження цегли, що виявлена в конструкціях будівлі. Окрему увагу приділено надійності та стійкості підземної частини.

Ключові слова: обстеження, дослідження, підземелля, фундаменти, конструктивні особливості.

Introduction. In 2013 locally listed building renovation project implementation work—the Abbot's former house in Chernihiv where were only ruins has begun. The Abbot's house is one of the last unconstructed buildings destroyed during the Second World War.

In October 2012 the Chernihiv Regional State Administration held a meeting and discussed the issues of survey, carrying out of research works, preparation of the project documentation for renovation, and in March 2013 at the regional council session the deputies decided to transfer the ownership of locally listed building – the «remains of the Abbot's house» – to Holy Assumption nunnery of Chernihiv diocese of the Ukrainian Church.

In 2013 on the territory of the Yeletsky monastery an archaeological research was carried out and work on the implementation of monument renovation project has begun. The research expedition was attended by scientists of the National Architectural and Historical Sanctuary «Chernihiv Ancient».

Until now, not all works on the survey of the substructure, especially those rooms that can not be visited freely, have been completed.

Actual scientific researches and issues analysis. At the time of the survey only a part of the basement, which was used as a cellar for storing vegetables, was in operation and the rest of the building was almost completely destroyed. There are no publications related to the design features of the building or its performance characteristics, as well as any technical documents. The results of the survey are presented in the conferences of 2014 and 2015 [1 – 2].

Uninvestigated parts of general matters defining. Post-war remains of the building superstructure were neglected, no efforts to protect it from external factors were made. This resulted in the walls bearing capacity complete loss of the and overlap. The substructure began to be operated as a cellar, and, moreover, a cargo lift, which closed the passage to another part of the basement, was mounted in one of the basements.

The general condition of the building walls remains can be described as emergency one, in order to restore the building in its original form it is necessary to carry out complex research of the substructure, considering the increased pressure on the basis and foundations.

The objective of the article. The main objective of this research is to specify the reliability and firmness of the Abbot's house substructure, followed by development of recommendations for the superstructure renovation and, if necessary, for the strengthening of the building basis and foundations.

The statement of basic materials.

The architectural ensemble of **the Yeletsky monastery** is located on the elevated right bank of the Desna River, between the ancient Chernihiv citadel (the territory of the modern Val) and the monastery of Saint Elijah and the Holy Trinity. According to legend, in the middle of the 11th century Prince Svyatoslav Yaroslavich founded the Yeletsky monastery in connection with the appearance of God Mother icon on one of fir trees in this area. The date of this event is mentioned February 3, 1060 (Old Style). There is not much chronicle information about the monastery abode. It is known that in 1069 St. Anthony arrived in Chernihiv and founded the cave monastery of God Mother on the Boldyni Hills, in 1177 Ephraim the Abbot of the holy God Mother is mentioned.

In the middle of the 12th century on the spot, where the holy icon had appeared, a brick temple was erected in honor of God Mother Assumption.

In 1239 the Mongol–Tatars stormed Chernihiv. The city was burned down and robbed. The Yeletsky monastery suffered the same fate. It has been in desolation for a long time.

At the beginning of 16th century, Chernihiv fell under the power of Moscow. There is evidence that the ancient monastery was restored at that time. It was strengthened, and Moscow monks were settled in there. In 1611 the voivod Gornostay burned Chernihiv. After that the monks returned to Moscow. After 7 years the city fell under Poland.

The damaged and abandoned Assumption cathedral does not withstand the pressure of time. At first, the side chapters fell, and then the central dome fell too. After 1623 the Yeletsky monastery was renovated and handed over to the Uniates. In 1649 Chernihiv was liberated from the Poles and the Yeletsky monastery soon became Orthodox again.

Nowadays, the architectural ensemble of the Yeletsky monastery includes the Assumption Cathedral of the 12th century, the gate bell tower of the 17th century, refectory St. Peter and Paul church and the cells of the same period. Masonry fence and wooden residential house were built in 1688. Also, on the territory of the Yeletsky monastery a unique building of the 17th century, which in the documents of the Soviet era was called «Abbot's house», was partially remained. It was built as a refectory church of St. Peter and Paul in 1676 at the expense of colonel Dunin–Borkovskiy. In 1861 the temple was moved to another premise, while the building accommodated the Chernihiv clerical consistory. During the time of its existence, the building function has changed several times. Herewith there was a redevelopment and architectural decoration was changed.

Built during the Hetmanate, the architectural structure was unique for its time – the largest refectory church on the Left Bank territory (Fig. 1). Its length without extensions and vestibules is more than 46 m and the width is at least 18 m. The wall thickness is more than half a meter, the height of one of the remained premises is about 5 m [3–4].

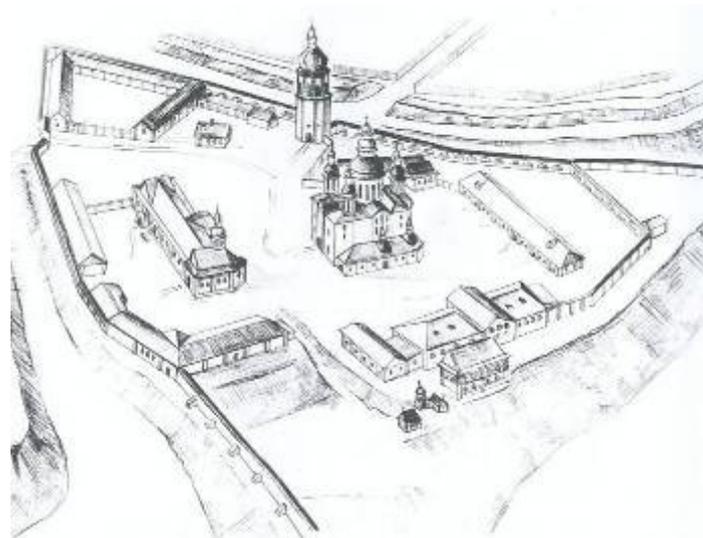


Figure 1 – Renovation of Yeletsky monastery (mid–eighteenth century) by O. Bondar

During the Second World War, the architectural structure was strongly damaged, and later the bricks were dismantled by the people for their own needs. Due to the intervention of the architect P.D. Baranovskiy, it was possible to preserve the remains.

The research of the Abbot's house was conducted with the assistance of the National Architectural and Historical Reserve «Chernihiv Ancient».

According to the brickwork method the construction lasted at least 150 years – there was expansion, extension, and redevelopment [5–6]. This is also evidenced by the brick technological features, recorded in at least five cases of research of the building remains of that era (17th–18th centuries).

The reasons that led to further building destruction in the postwar period may be the following: irresponsible attitude to the historical heritage, untimely response to deformation and initial destruction of bearing structures, significant moisture and weathering of the superstructure brickwork, which led to loss of building stability.

During the preliminary survey, structures measurements and building basement drawing were made (Fig. 2). In the course of measuring works, the location, bearing elements thickness, conditions and quality of structural elements joining, structures deformation, destruction, places of moisture and other defects were determined.

The amount of physical deterioration of the house elements was determined by visual inspection using the necessary devices. The physical deterioration of individual constructions was determined using tables by comparing the indicated attributes with those detected during the survey (Fig. 3) [7].

The general characteristic of the basement technical condition, which was available for inspection, can be estimated as «satisfactory» – the elements of the building in general are suitable for operation, but require renovation, which is most expedient at this stage. In some places cracks and fallout bricks are found. Walls are damp. At the entrance to the basement room, place of excessive moisture and water accumulation was found, which leads to the soaking of the basis.

The general characteristic of the superstructure technical condition can be estimated as «emergency» – the state of bearing structural elements remains needs to be restored. The overlap is destroyed; the wall brickwork has undergone significant destruction (brick and mortar removal, lintel fallout).

Over the period of its existence the extensions, fireplaces, renovations, reinforcement of structures, and other works were carried out in the house. Therefore, examined brick is varied in material and size. The clay brick of the sizes 35×19×6 cm and 26,5×12,6×6,0 cm is more often found.

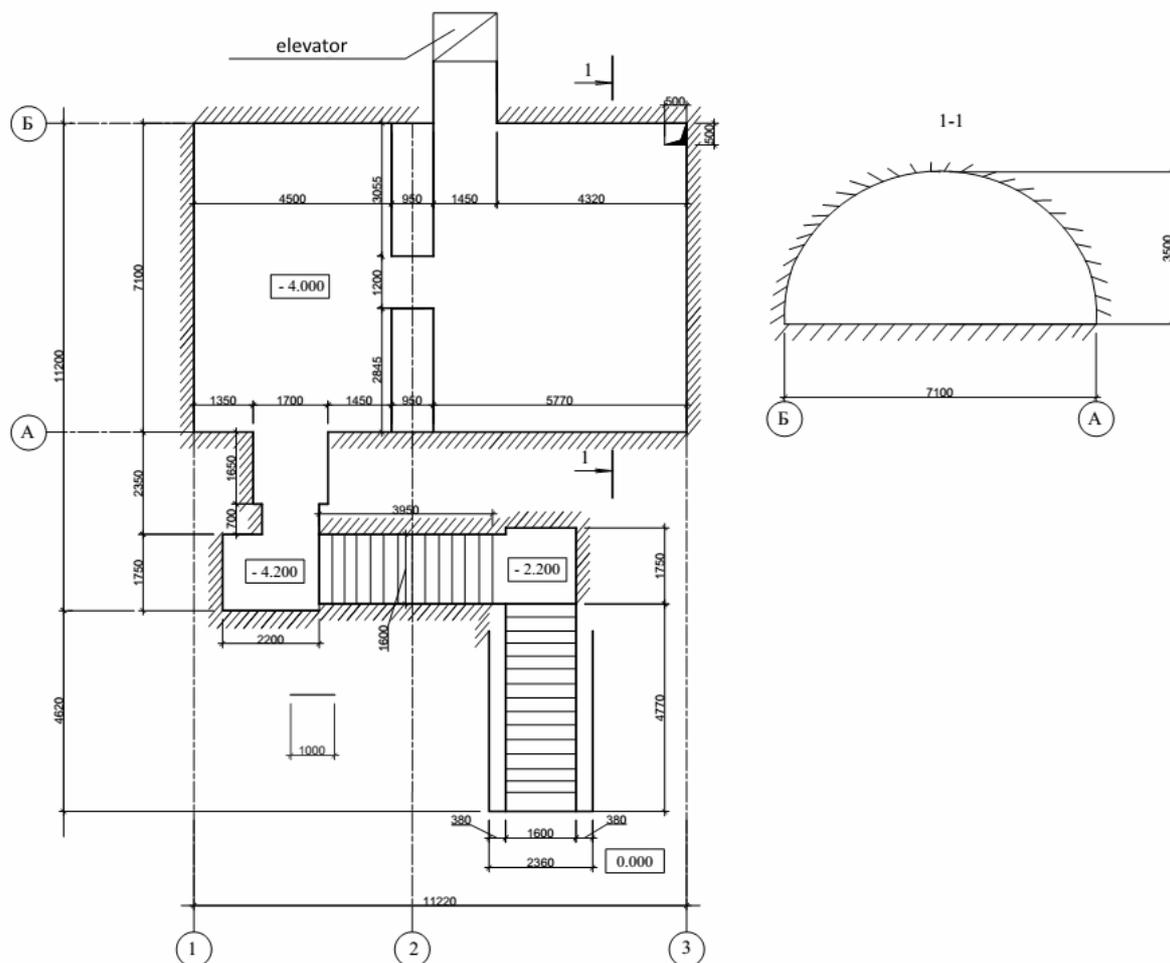


Figure 2 – Plan of the basement section, which was available for inspection



a)



b)



c)



d)



e)

Figure 3 – House destruction:

- a) – general view of the building superstructure remains;
- b) – destruction of masonry lintel at the basement entrance;
- c) – destruction of the house socle;
- d) – temporary fastening of the overlap remains;
- e) – destruction of the brick lintel and entrance posts.

Conclusions and suggestions.

1. There is no significant damage in the basement, but at the same time superstructure was vastly ruined. It is necessary to conduct detailed survey of basements that are not available for inspection, in connection with the installation of a cargo lift at the entrance to a part of the basement and to investigate the vault filled with earths that and limited to access.

2. Superstructure needs major renovation.
3. The primary objectives are:
 - protection of existing structures from external influences (weathering, excessive humidification, freezing of structures) by arrangement of pavement around the building, installation of drainage and waterproofing systems, plastering and application of waterproofing solutions on the wall and socle elements, temporary roof installation;
 - reinforcement of separate structure elements by metal overlays arrangement, tightening and concreting of weakened elements;
 - execution of architectural drawings of the house facades aimed to renovate the house in its original form;
 - execution of integrated project on historical building restoration.

References

1. Horb O. N. Survey of the foundations of the historical building «House of the Abbot» in Chernigov / O. N. Horb, N. N. Korzachenko, N. V. Kornienko // *Actual problems of geotechnics, ecology and population protection in emergency situations: materials 70–th Student Scientific and Technical Conference, Minsk, April 24, 2014.* – Minsk: BNTU, 2015. – P. 19 – 22.
2. Horb O. M. Examination of the dugout of the Igumen's house on the territory of the Elets monastery in the city of Chernihiv / O. M. Horb, M. M. Korzachenko // *Collection of materials of the International Student Scientific and Practical Conference «Youth of Science–2014».* – Part 5. – Chernihiv: CSIEM, 2014. – P. 167 – 168.
3. Adruh A. Architecture of Chernihiv of the second half of the 17th century – the beginning of the 18th century / A. Adruh. – Chernihiv: CSIEM, 2008. – 224 p.
4. Lepiavko S. Chernihiv. History of the city / S. Lepiavko. – K. : Tempora, 2012. – 432 p.
5. Bondar O. M. Chernihiv: city and fortress in the 14th and 18th centuries / Bondar O. M. – K. : Publish by Oleg Filyuk, 2014. – 178 p.
6. Rudenok V. Ya. Chernihiv. A trip 100 years back / V. Ya. Rudenko. – Chernihiv: Ranok, 2009. – 84 p.
7. Guidelines for inspection of buildings and structures for the determination and assessment of their technical condition: DSTU–N B V.1.2–18:2016. – [Effective as of 01.04.2017]. – K. : SE «UkrNDNTs», 2017. – 44 p. – (National standards of Ukraine).

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