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PRELIMINARY DESIGN STUDIES OF THE SCULPTURAL DECOR OF A RENAISSANCE HOUSE AT 23 RYNOK SQUARE IN LVIV

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Abstract

The Scholtz-Wolfowitz' house at 23 Rynok Square in Lviv is a characteristic monument of Renaissance architecture. The history of its construction is complex and has not yet been fully elucidated. Pre-project studies conducted in 2008, as well as a detailed literary and archival search, allowed us to clarify the periodization of the development of the building's sculptural decoration. Laboratory studies confirmed the stages of formation of the elements of the architectural decoration and polychromy of the tenement house, and their conclusions became the basis for forming the concept of restoration work. This article is devoted to the methodological aspects of pre-project analysis and the development of practical recommendations for the restoration of valuable Renaissance objects in Lviv.

Keywords*: Preliminary design studies; Technological studies; Scholtz-Wolfowiczs' house; Lviv; Architecture; Renaissance*

Introduction

Lviv is one of the oldest historical cities in Ukraine, where many buildings of great historical and architectural significance have been preserved. One of the most valuable objects are buildings belonging to the Renaissance period – the 16th –17th centuries. The ensemble of the Rynok Square in Lviv was formed at this time after the great fire of 1527, when almost all of Gothic Lviv burned to the ground [1]. The reconstruction began to be carried out following new trends in the style brought to Lviv by architects from Italy. The use of elements of the order system, horizontal composition, and rich sculptural decoration became characteristic for the decoration of the facades of buildings. The residential building at 23 Rynok Square in Lviv is one such object. The building has a security number 326/21, dating from the mid-17th century, and is part of the architectural and urban planning monument of national importance – the Rynok Square ensemble [2, 20]. This is a building that forms the corner of Rynok Square and Katedralna Square. The house is three stories high, has a three-part planning structure, and consists of the main building, which overlooks Rynok Square, and an extended one along Katedralna Square, side and rear outbuildings (Fig. 1).

The original layout and decor of the facades have not been preserved. The history of the construction and development of the house is long; it has been rebuilt many times. This made its appearance unique and extremely important for the formation of a holistic, harmonious image of the Rynok Square.

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In 2008, comprehensive scientific and chemical-technological research and subsequent restoration work were carried out. The research helped to clarify the periodization of the development of the house, the specifics of its architectural decor, and the features of the material and colour solutions of the facades. The purpose of this article is to clarify the stages of development of the house decor at 23 Rynok Square in Lviv and, based on laboratory research data, to determine the features of the facade decoration formation.

Experimental part

Materials

The source materials for writing this article were two types of materials: comprehensive scientific and chemical-technological research of the Scholtz-Wolfowitz' house at 23 Rynok Square in Lviv, as well as archival and literary sources. From the methodological aspect, the article uses methods of empirical and theoretical research. From the empirical methods: visual inspection, description, photo fixation, technological research. From the theoretical methods, the methods of synchronic and diachronic analysis, comparative method, method of working with primary sources, and iconographic methods were used.

Methods

Analysis of literary and archival sources. The history of construction and the specifics of the architectural decoration of the house on 23 Rynok Square in Lviv became the subject of interest of researchers as early as the 19th century. First of all, these are the scientific works of Polish researchers: historian *W. Łoziński*, such as "Patriciate and Lviv burghers in the 16th and 17th centuries" [4], "Lviv art from the 16th and 17th centuries: architecture and sculpture" [5], as well as historian and artist *M. Kowalczuk* "Construction workshop in Lviv during Polish times (until 1772)" [6]. The studies provided information about the house's owners and the history of its construction and decoration.

Some information about the history of the development of the townhouse can be obtained from general publications related to the development of Lviv architecture [7]. This includes publications before 1939, for example, *M. Orłowicz* from 1925 [8], as well as the guidebook by *V. Vuitsyk and R. Lypka* "Meeting Lviv" [1], and the fundamental collected work "Architecture of Lviv. Time and Styles: 13th – 21st Centuries" [9]. Useful information was obtained from the work of *V. Vuitsyk* "State Historical and Architectural Reserve in Lviv" [10], *V. Liubchenko* "Lviv Sculpture of the 16th – 17th Centuries" [11], *B. Melnyk* "Through the Streets of Old Lviv" [12]. An interesting source for clarifying the meaning of the inscriptions on the cartouches placed on the house facades was the work of *A. Sodomora, M. Dombrovskyi and A. Kis* "Anno Domini. Year of God: Latin inscriptions of Lviv", published in 2008 [13].

The basis for writing this article was also the authors' previous publications. This, in particular, is the article by *O. Kulynska* [14], in which the author analyzed the sculptural decoration of the house, as well as the articles by *S. Linda and O. Kulynska* [15, 16], which were devoted to the stages of development and semantics of the sculptural decoration of the tenement house at 23 Rynok Square. The article's authors also reviewed materials devoted to similar problems regarding the formation of facades and methodological recommendations for their restoration [17-19]. An important document was the archival file on the construction of a house at 23 Rynok Square, which is stored in the State Archives of Lviv Region [20].

Technological research. The most significant experimental information was obtained from the notes on the comprehensive scientific and chemical-technological research of the townhouse, which was conducted in 2008 at the Scientific and Restoration Institute "Ukrzakhidproektrestavratsiia", in which *O. Kulynska* directly participated [2, 3]. During the technological examination of the house in 2008, samples of building and finishing materials on the facades of the object were selected. All selected samples were subjected to comprehensive laboratory studies:

– macroscopic: visual examination of materials and establishment of basic characteristics (appearance, colour, relative strength);

– chemical-petrographic (study of the microstructure of materials);

– microchemical and stratigraphic (establishment of the qualitative composition of building and finishing materials, analysis of paint layers). Microscopic studies were performed using a stereomicroscope Sterni-DV4. The results of the studies were summarized in a table (presented below), which became the basis for generalization and development of recommendations for restoration work.

Results and discussion

Clarification of the house construction stages

There is still much that is unknown in the history of the uprising of this house. Thus, in various scientific and popular publications we observe different data on the date of construction of the house. *L. Kharevycheva* gives the year of construction as 1630, and *M. Orłowicz* repeats the same date. In the materials of the State Archive of Lviv Region from 1877, the date 1616 is given. Another date – 1570 – is given by *V. Liubchenko and V. Vuitsyk*, linking the beginning of the house reconstruction in its current form with the purchase of the entire plot (the remains of the house) by Jan Scholtz-Wolfovitz. Referring to *M. Gembarowicz, V. Liubchenko* calls the construction completion date 1605 [16, 20].

What the corner building looked like before the purchase of the rest of the house in 1570 is unknown. We only know that the corner plot belonged to Melchior Haz. The house was given as a dowry to the bride of Wolfgang Scholtz's son, Jan Scholtz-Wolfovitz, from the Haz family. In 1570, Jan Scholtz-Wolfovitz bought the entire house and began its reconstruction and decoration of the facades, which continued until his death in 1605 [16, 20].

The next mention of the building appears two centuries later. At the end of Lviv's stay in the Polish-Lithuanian Commonwealth (mid-18th century), most of the tenement houses were in poor condition. *V. Vuitsyk* mentions the restoration of the house in the 18th century but does not indicate what changes it underwent. The next information about the house appears at the beginning of the 19th century. The adaptation of the house took place in 1800-1802. In 1840, the house was bought by Tytus Lewakowski. At that time, the house had a main entrance and a small porch with a staircase, which had no communication with the courtyard. In 1877, the question arose about the elimination of the entrances to 7 cellars, which, most likely, originated from the 16th century. Two of them opened onto Katedralna Square. A special commission was created to examine the cellars and demand the elimination of the entrances to them. In 1879, the magistrate demanded that the owner replace the shingle roof covering, and in 1883, after an inspection by a special commission, it was stated that the stairs, floors, toilets, and courtyard paving were in an unsatisfactory unsanitary condition, so the house needed to be reconstructed by 1884. These data give reason to conclude that after the reconstruction of 1800–1802, the house fell into disrepair again [16, 20].

The next period in the house's existence of theis important from the point of view of the current facades' appearance formation, so we will quote it almost verbatim from the historical note to the comprehensive scientific research of the Ukrzakhidproektrestavratsiia Institute: "On September 30, 1888, the house was bought by *Dawid Schwarzwald*, who immediately sought to reconstruct it. The new owner offered to give the figures on the corner free of charge to the city, "since they have archaeological value." The owner submitted a reconstruction project to the magistrate without the elimination of the sculptural elements but with the completion of a new wing in place of the one that was to be dismantled (1889). After a meeting of the magistrate's commission together with the Union of Conservators, it was decided that it was necessary to make certain changes to the submitted project. In particular, it was not possible to allow the installation of a balcony on the facade facing Rynok Square. The facade must retain its

authenticity, while the facade facing Katedralna Square must be reconstructed in the style of the market facade. The first reconstruction project, executed by architect *M. Fechter*, was submitted in April 1889. A new, additional project, which took into account the comments of the commission, such as: the arrangement of a mezzanine from the market facade, a portal from Rynok Square, the construction of a new wing, as well as the elimination of oval windows, since "the condition of the internal vaults does not allow this," was approved in August 1889. The work was already underway at that time, and on February 13, 1890, the owner received permission to live in the house. The historical note of 1889 – 1890 highlights the third construction period, during which the facade from Katedralna Square was completely renovated; on the recommendation of the Union of Conservators, it was decorated with stucco decoration, which repeated the nature of the decoration of the Rynok Square facade. The authors note that the restoration also affected the Rynok Square facade to a very small extent, but overall, the reconstruction did not violate the authentic appearance established at the end of the 16th century" [16, 20].

At the beginning of the 20th century, the house changed its owners again. The property was acquired by Mr. Schutzman. He reconstructed the corner portal (firm of *J. Dashek*, 1911), cellars, and premises on the ground floor. At the same time, the Union of Conservators had no objections to these innovations. The house acquired its final appearance in 1931 – 1936 (reconstruction by *J. Awin*), then shop windows appeared on the ground floor, and new reinforced concrete lintels were installed in some window and door openings [16, 20].

The authors of the historical note, as part of the comprehensive scientific research of the Ukrzakhidproektrestavratsiia Institute in 2008, identified three construction stages in the history of the building, related primarily to the history of the formation of the original sculptural decor:

– the first stage falls on 1570 – 1596, sometimes it is brought to the middle of the 17th century;

– the second stage falls on the end of the 18th century – around 1802;

– the third stage falls on 1889 – 1890.

In previous studies, the authors of this article determined that the first stage of the house construction can be divided into two more periods related to the formation of sculptural decoration [15].

First stage: 1570 – 1605. The oldest decoration of the first period of the first stage includes the stone architectural decoration of the facade, which is made in line with the main traditions of the late Renaissance design of the city's houses of that time.

Among the decorative elements, we distinguish:

– attic – lost, dismantled at the end of the 18th century during the second period of reconstruction. Its height and richness of decoration are evidenced by only one pylon, which remained at the boundary wall from the neighbouring house;

– a protruding roof cornice with brackets;

– first and second floor cornices. In the tympanums of the second-floor cornices, there are high reliefs: God the Father above the middle window and two cherubs above the windows on both sides (Fig. 2a);

– the composition "Baptism" of the corner aedicule (Fig. 2b). The flanking pilasters, which are compositionally and proportionally tied to the general arrangement of the facade, speak in favour of the simultaneous execution of the aedicule with the rest of the architectural decor of the facade. This is also evidenced by the nature of the execution of the sculptures of the aedicule, which are similar to the sculptures in the cornices above the windows. The slab on which the allegory of Faith is placed is supported by an aedicule pedestal, which indicates that it was built during the house's construction;

– lion mascarons in the pedestals of the pilasters of the ground floor. The fact that they were installed at the same time as the pilasters themselves – during the construction of the house is evidenced by the even edges of the recesses made in the limestone blocks of the

pilasters to a clearly defined size. Blocks with high reliefs of lions were made to this size. The masks are made of limestone and have a formidable and laconic character, their protruding parts are destroyed more than other decorations. There are three old masks, although there were 5, according to the number of pilasters;

– decor on the pilaster pedestals of the second floor (rosettes, or abstract mascarons);

– carved frames of the entrance and windows of the ground floor, which were lost during the reconstruction of the second period.

Fig. 2. Image of God the Father in the pediment of the middle window of the second floor (a) and the "Baptism" of the corner aedicula (b)

The lost decoration of the ground floor deserves a separate mention. *W. Łoziński* writes in his work: "Attic and portals were the main decoration of Lviv houses… With their decoration, nobility of forms, and sometimes richness of carving, they testify to the sense of aesthetics not only of those who created them, but also, and perhaps to a greater extent, to the admiration for beauty and a worthy understanding of their position of those burghers who ordered them at a very high cost. These portals testified monumentally not only to the dignity and nobility of the owner and his family, but at the same time they were also a manifestation of respect for the guest who crossed the threshold and for their city" [4].

Considering the general composition of the house, we assume that the portal of its main entrance must have had rich and interesting decoration. Looking at the of the house façade's image from 1890, illustrated in the *W. Łoziński's* work, we observe that from the decoration of the first level of the facade, only a sandric from the framing of the window above the door and a carved draft with metopes and triglyphs, which repeats the motive of the draft of the massive cornice above the ground floor, remained.

The location of the head molding on the façade's central axis indicates a possible symmetry of the composition of the parterre with an accent in the center. The carved thrust in the drawing is located much lower than today. In this gap, there was a small window above the entrance – *svitlyk*, in a stone framing, of which only the head molding remains. Under the thrust were the portal of the entrance door and window framings. It should be noted that the use of another, identical horizontal thrust at the ground floor level is not found in any of the Lviv houses. Perhaps in this way, the builder tried to unite the composition of the parterre broken by massive pilasters. With these assumptions, we can complete the list of elements of the facade

decor that correspond to the first period at the first stage of the facade formation. This period lasted from 1570 to 1595 [16].

The facade facing the current Katedralna Square remained relatively modestly decorated. The only decorative elements were the window frames, cornice, and side pilasters in a storey order.

The following elements can be attributed to the second period of the first stage of the formation of the facade, which are only elegant sculptural decorations and carry only a semantic and aesthetic load (Fig. 4):

– coats of arms of the Haz and Scholtz-Wolfowitz families on the pedestal of the aedicule;

– portrait mascarons on the pedestals of the pilasters at the same level;

– cartouches with sayings under the windows of the first floor.

Coats of arms and portrait mascarons could appear on the facade only after 1595. The reason for the arrangement of new decor on the facade was the imperial ennoblement.

Fig. 4. The facade of the Scholtz-Wolfovitz house at 23 Rynok Square in Lviv.
Corresponds to the second stage of development of the façade's sculptural decoration [4]

On October 14, 1595, Emperor of the Holy Roman Empire Rudolf II granted hereditary nobility to one of the branches of the Scholtz family, which descended directly from Wolfgang Scholtz, and, to distinguish this dynastic branch from other Scholtzs, added the prefix "Wolfowitz" to the family name. This ennoblement diploma included three brothers: Jan, Melchior, and Josef Scholtz, as well as three sons of the fourth brother, Stanisław, who had died – Wolfgang, Balthasar, and Erasmus. Interestingly, the Haz family also received nobility and a coat of arms in the same year. Probably, having received a noble title, the house's owner could afford to place the coat of arms granted to him and portraits of his family members on the facade of the family house. That is why, in the plinth of the aedicule, on the south side (from Cathedral Square), the coat of arms of the Scholtz-Wolfowitz family was inserted.

Unfortunately, it has hardly survived. Only the family coat of arms of the Haz family has survived in the decoration of the plinth of the aedicule on the Rynok Square facade. The work is made of alabaster and is distinguished by the fine, perfect carving of complex figures. Near the Scholtz-Wolfowitz coat of arms, in the pedestal of the pilaster, there is a sculptural portrait of a young man in a beret. Correct noble features, a thoughtful, calm look indicate a certain status and education of this man. *V. Liubchenko* suggests that this is Jan Scholtz-Wolfowitz himself, and the portrait of the young woman, located in the same row but on the Rynok Square facade, is a portrait of his wife, *Anna Haz* [11]. As for the cartouches with sayings under the windows of the first floor, they could have appeared between 1570 and 1595 since they are not connected with the ennoblement of the family [13].

Thus, during the first stage, the entire Renaissance decoration was formed, which determined the character of the townhouse. The boundaries of the first stage should be extended to 1605, the death of Jan Scholtz-Wolfowitz, since the execution and installation of such a large amount of complex and sophisticated decoration could have required more time.

The second stage: the end of the 18th century – around 1802. The sculptural decoration of the facade undergoes significant changes, which significantly simplify its overall structure:

– replacement of window framings (it can be assumed that these framings with decorative castle stones, characteristic of Baroque, were received by the facade during a thorough reconstruction of the 18th century);

– dismantling of the attic that crowned the house;

– dismantling of the portal and Renaissance frames at the ground floor level;

– appearance of an oval window on the Rynok Square facade, to the left of the entrance.

The second stage of development can be characterized as destructive for the house facade. During this period, the main elements of the house decoration were destroyed – the attic and the portals of the ground floor, which are irretrievably lost. The facade from the side of Katedralna Square, apparently, was not changed at this time [16].

The third stage of the house's development was from 1889 to 1890. The sculptural decoration is significantly supplemented, and the facade structure acquires its current appearance. An important factor that influenced the formation of the new structure of the facade was the new functional purpose of the ground floor for trade. Characteristic features of this period:

– reproduction of the lost lion mascarons on the Rynok Square facade;

– restoration of the extreme portrait mascaron from alabaster, badly damaged by the leaking gutter (after restoration, the mascaron acquires a grotesque character);

– the side facade from Katedralna Square receives stucco decoration in the style of the Rynok Square facade decoration;

– a balcony appears on the side facade;

– new openings appear on the main and side facades.

The entire decor of the side facade and the restored lion mascarons on the Rynok Square facade are made of mortar on a gypsum binder with the addition of a filler of ground grains of crystalline gypsum (alabaster).

The third stage of the facade development completes the formation of the sculptural structure of the house. This stage takes place under the control of the Union of Conservators, and its formation was undoubtedly influenced by the restoration concepts of its time, in particular, the theory of "stylistic restoration", which was widespread in the second half of the 19th century. The complete reconstruction of the facade from the side of Katedralna Square, the restoration of the mascarons on the main facade fully corresponds to the contemporary ideas about restoration practice, according to which the important thing was not the historical truth about the object, but the idealized appearance of the object, "as it could be". Today's restoration theory does not recognize the practice of interfering with the authentic structure of the preserved object and changing it in favour of current aesthetic ideals. However, in the 19th

century, such a practice was considered completely scientific and the only possible way to bring the object to a state of stylistic integrity [21]. The specificity of the restoration work also reflected the fact that the architects did not have enough knowledge to recreate the decor. The layout of the house acquired a holistic appearance, but the opportunity to restore its original character was lost.

Results of chemical and technological research

Based on the results of field surveys, a cartogram of losses and materials was formed, which is presented in figures 5 and 6.

For a detailed study of the monument's building materials using the method of mineralogical and petrographic analysis, samples of mortars from stone and facade decoration were taken, the localization of which is shown in figure 7.

Transparent slides were made from the samples and examined using a Polam P312 polarizing microscope (Table 1).

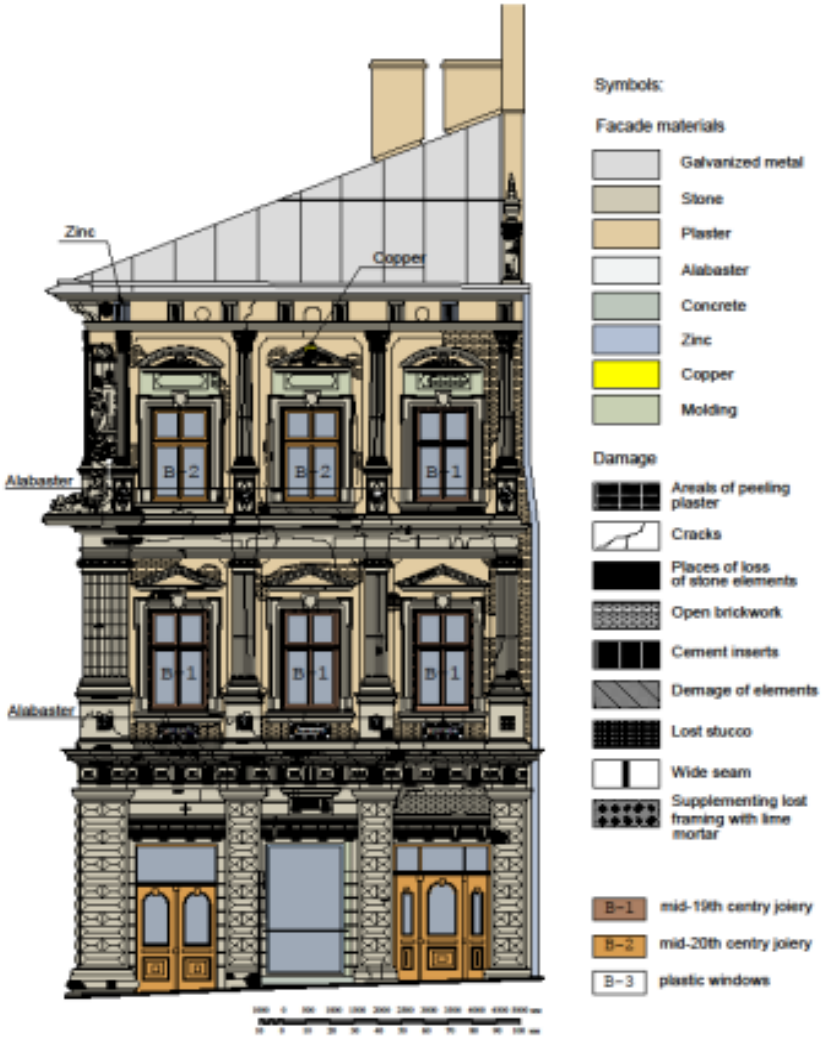

Fig. 5. Cartogram of losses and materials of the Scholtz-Wolfowitz' house at 23 Rynok Square. Facade from the side of Rynok Square

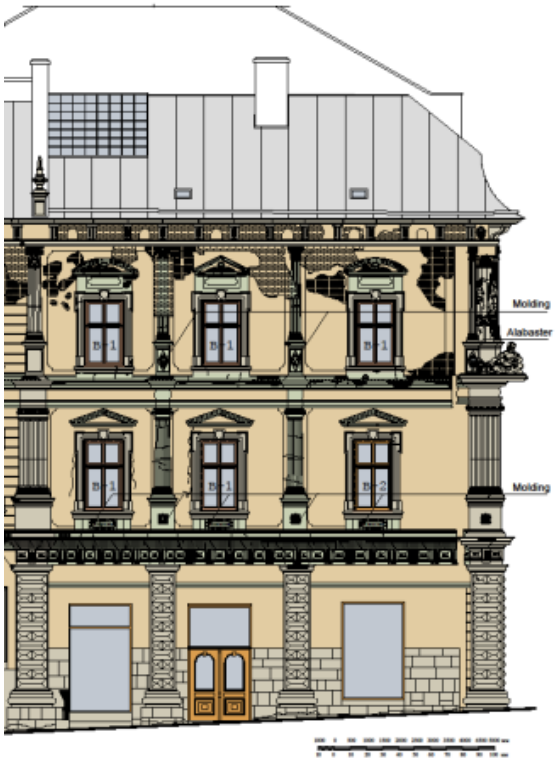

Fig. 6. Cartogram of losses and materials of the Scholtz-Wolfowitz' house at 23 Rynok Square. Facade from the side of Katedralna Square

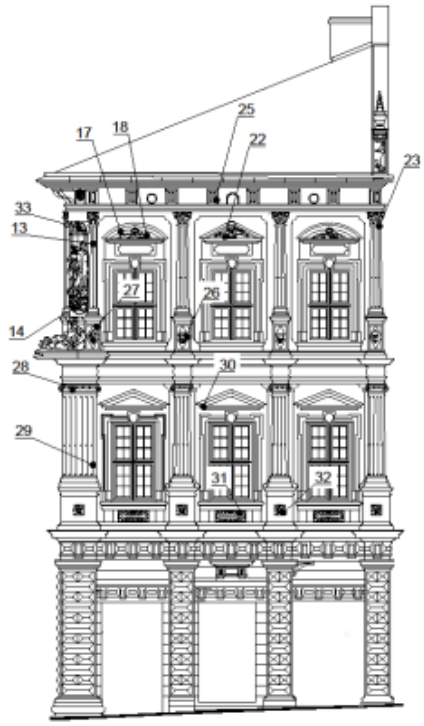

Fig. 7. Schemes of localization of samples of mortars from stone and facade decoration for research by the mineral-petrographic analysis method.

Table 1. Samples grouped by materials according to differences in material composition and textural and structural features.

No.	Sample number	Place of sampling	Decorative element
		Organogenic-detrital, mixed, recrystallized limestone	
1	17	On the side of Rynok Square, 2nd floor	Putti above the window
2	18	On the side of Rynok Square, 2nd floor	Angel's wing
3	22	On the side of Rynok Square, 2nd floor	Jesus figure
4	25	On the side of Rynok Square, 2nd floor	Bracket of the crown cornice
5	27	Central composition, 2nd floor	Field behind mascaron
		Organogenic-detrital lithothamnium limestone	
6	28	On the side of Rynok Square, 1st floor	Capital of the pilaster
7	29	On the side of Rynok Square, 1st floor	Pilaster shaft with flutes
8	30	On the side of Rynok Square, 1st floor	Head molding above the window
9	20	On the side of Katedralna Square, 2nd floor	Window framing
10	33	Central composition, 2nd floor	Shell
11	13	Central composition, 2nd floor	Column shaft with flutes
		Alabaster	
12	31	On the side of Rynok Square, 1st floor	Coat of arms under the window
13	26	On the side of Rynok Square, 2nd floor	Mascarones near the window
14	14	Central composition, 2nd floor	Pedestal overlay details
		Mortar	
15	32	On the side of Rynok Square, 1st floor	Lion's face
16	19	On the side of Katedralna Square, 2nd floor	Putti above the window
17	21a	On the side of Katedralna Square, 2nd floor	Pilaster shaft
18	21b	On the side of Katedralna Square, 2nd floor	Pilaster base
19	23	On the side of Rynok Square, 2nd floor	Belt of the pilaster capital

Thus, the study of organogenic-detrital, mixed, recrystallized limestone demonstrated its mineral composition, which was practically the same in all studied samples. The material consisted of shell fragments (45%), quartz fragments (15%), and micrograined calcite, which cemented them.

The study of organogenic-detrital lithothamnium limestone also showed a similar composition in the studied samples. For the most part, it consisted of lithothamnium algae skeletons (up to 80%), which were present in the form of dense microcrystalline aggregates and preserved the original cellular structure. The gaps between the fragments were filled with fine-crystalline calcium carbonate (up to 15%), and pores were 7–9%. However, some samples differed in their material composition. In particular, sample 30, in its mineral composition, consisted of shell fragments 65–70%, which were cemented with microgranular calcite – 30–35%. Among the shells, lithothamnium algae fragments were present, which accounted for 15–20%.

The study of parts made of natural gypsum stone – alabaster – showed the following picture. The samples consisted of natural gypsum crystals (up to 95%), with a hardness of 2 or 3 on the Mohs scale (depending on the sample).

An examination of the mortar showed that it consisted of a gypsum binder that formed a microlaminal aggregate. The filler was represented by fragments of crystalline natural gypsum with a size of 1.0 – 0.5mm. The ratio of binder to filler was 1:0.5. In sample 21a, a small amount of limestone was present in the mortar (up to 10%). The structure of the binder in sample 23 was different, where it was two-component and consisted of lime with gypsum admixtures (ratio 2:1). The filler was represented by sorted river quartz sand and an admixture of coal (up to 5%).

Thus, several types of limestone and alabaster were found among the facade decoration. Some differences in material composition within one group were due to the use of limestone from different layers of the same deposit, which was explained by the peculiarities of limestone formation. Thus, lithothamnium limestone had a heterogeneous structure but high integrity and was used for the manufacture of architectural decorative elements that had strict geometric shapes: cornices, pilasters, and head molds. Less dense and more homogeneous organogenic-detrital recrystallized limestone was used for figured carved elements of the facade: mascarons, angels, and brackets. Some elements of the sculptural decor (coats of arms, putti) were made of alabaster, which was distinguished by high optical and aesthetic characteristics but low weather resistance (because of this, its use on the facade was very limited). In addition, the decorative design of the facades included elements made of gypsum and lime-gypsum-sand mortars.

The results of microchemical and stratigraphic analyses are presented in Table 2.

Table 2. Results of microchemical and stratigraphic analyses.

No.	Sample number	Place of sampling	Characteristic	Analysis results
		On the side of Rynok Square		
		Organogenic-detrital lithothamnium limestone		
1	29	Shaft of pilaster with flutes 1st floor	Natural stone with painting	1. The partially cleared surface of the stone is impregnated with a dark red (darkened) layer containing drying oil. 2. A light green painted layer containing zinc white and a small amount of ultramarine particles. 3. A leveling layer with beige calcite
2	28	Pilaster capital 1st floor	Natural stone with painting	1. The surface of the stone is gray, stained with soot. 2. A fawn-coloured leveling layer with lime and glue. 3. A dark gray painted layer (asphalt), black pigment + red pigment – ocher. 4. A protective layer, hydrophobic, yellowish like varnish
3	30	Head molding 1st floor	Natural stone with painting	On the stone surface there are layers of colours: gray, dark gray, gray, and white on top. The layers are strong, dense, and silicate. Pigments:

No.	Sample number	Place of sampling	Characteristic	Analysis results
				– black organic + red iron; – black organic + white zinc
4	25	Bracket 2nd floor	Natural stone with painting	1. The surface of the stone is impregnated with a translucent layer of brownish color (drying oil + glue). 2. The painted layer is light greenish in color, whitened (chalk), green pigment, binder – drying oil + glue. 3. The painted layer is light gray in colour, contains zinc whites, carbon black (glauconite) and emulsions (oil + glue)
5	18	Angel's wing 2nd floor	Natural stone with painting	The surface of the stone is crystallized, dirty. 1. The painted layer is white, contains zinc white, oil and glue. 2. The painted layer is bright green, contains green crystalline pigment, chalk, glue. The surface is dirty. 3. The painted layer is pink, contains zinc white, red pigment and oil binder. 4. The painted layer is white, zinc white on an emulsion binder, oil and glue.
6	17	Head molding ground floor Putti above the wings	Natural stone with painting	1. The surface of the stone is impregnated with drying oil. 2. A layer of blue paint. 3. A light green layer. 4. A layer of drying oil. 5. A white layer – zinc white and drying oil
7	22	Waist figure of Jesus, 2nd floor Head molding at the façade centre	Natural stone with painting	1. Painted layer of bright red (cinnabar) with chalk, glue is dirty. 2. Thin layer of gray facade paint.
			Alabaster	
8	26	Mascaron on the pilaster base	Natural stone with painting	On the surface of natural stone in some areas there is a strong contaminated film of secondary gypsum; in some places, the surface is cleaned and strengthened. The first layer is emerald green, contains yarrow-copper on an adhesive-oil binder. The second layer is white and strong, contains zinc white on an oil binder. The surface is blackened, contaminated to the colour of asphalt. On top are remains of a sandy-ocher colour.
9	31	Coat of arms under the window 1st floor	Natural stone with painting	The surface of the stone was cleaned, there are traces of dirt. 1. A layer of resin in places with chalk. 2. On the surface - a layer of warm light gray color, containing zinc white, ocher, and coal pigment. Binder - glue-oil, emulsion. 3. Painted layer of yellow colour, zinc white and oil.
			Mortars	
10	32	Lion's face 1st floor	Stucco decor with painting	Gypsum mortar with the addition of fragments of crystalline natural gypsum with a small amount of coal particles as a filler. 1. Gray-brown layer, contains ocher, coal (graphite), zinc whites on a resin binder. 2. Remains of the red layer, contains lime. Red artificial pigment (cadmium), quartz.
11	23	Belt of the pilaster capital 2nd floor	Decorative mortar with painting	Lime-gypsum-sand mortar. Remains of light green paint. Cleaned, a 2 mm thick sand-cement composition was applied to the cleaned surface in a leveling manner. Thin painted layer of dark gray colour "like the asphalt". Remains of a light gray layer with ocher and zinc whites.
			Central composition (2nd floor)	
			Organogenic-detrital lithothamnium limestone	

No.	Sample number	Place of sampling	Characteristic	Analysis results
12	23	Fluted column	Natural stone with painting	The surface of the stone (lithatnam limestone) is dirty and "over-silicated", has a dark gray colour. 1. There is a leveling primer on the surface, which contains gypsum with admixtures of chalk and sand in a ratio of 1:1:3. 2. There is a thin white layer on the surface of the primer, which consists of zinc white on an oil binder.
13	33	Shell above the sculptural group	Natural stone with painting	1. The painted layer is white, contains zinc white, oil, glue. 2. The layer is warm white, contains zinc white, oil, glue. 3. The painted layer is cold white, contains zinc white on an emulsion binder (oil + glue), a little fine blue pigment. 4. The painted layer is warm white, contains zinc white, glue, a little red pigment, lead red.
			Organogenic-detrital, mixed, recrystallized limestone	
14	27	Field with mascaron behind a mermaid	Natural stone with painting	1. Stone, close to the degree of recrystallization. Some quartz with a fine fraction is present. 2. The surface of the stone is dirty, it was cleaned mechanically, scratches are observed. In the recesses of the relief there are insignificant remains of brownish-red paint containing ocher.
			Alabaster	
15	14	Overlay details	Natural stone with painting	The base is natural stone, alabaster. 1. On the surface is a layer of white paint, which contains zinc white and oil. 2. A layer of brown polymer, like a synthetic polymer, possibly latex, will look like silicone, a form of plastic, but more fragile.
			Mortars	
16	14a	Putty	Mortar	1. The putty consists of chalk with gypsum admixtures. The binder is a synthetic polymer. The composition worked as a complementary mass that imitates the surface of the stone. The surface is dirty. 2. On the surface – a layer of grayish paint containing zinc white, a small amount of black and red pigment on an emulsion binder. 3. The layer is thinner, white, dense, contains zinc white on a synthetic binder with an admixture of oil. 4. A thin yellowed film of synthetic polymer, possibly hydrobifization or reinforcement.
17	16	Acanthus leaves of a Corinthian capital	Putty	1. Light green paint, containing chalk and green copper pigment on an oil binder. 2. Burnt-colored leveling coat, containing chalk, sand, synthetic polymer. 3. Grayish-white painted layer, containing tin white, synthetic polymer, some oil, and pigments in small amounts of black and red. 4. Among the samples, there is a developed plaster, consisting of lime (45%), a small amount of gypsum (5%) with the addition of glue. The filler is poorly sorted quartz and glauconite sand (50%).
			From the side of Katedralna Square (2nd floor)	
			Organogenic-detrital lithothamnium limestone	
18	20	Window framing	Natural stone with painting	On the surface of the stone, there are remnants of a loose grayish-white paint layer with a warm tint, consisting of zinc white and a small amount of red and black pigments.
19	24	Crown cornice	Natural stone with painting	Natural stone is strong and dense. The surface of the stone is cleaned, and on the surface, there is a thin layer of lime-sand mortar, the surface of which is leveled. On top there are paint layers of light gray, almost white, and

No.	Sample number	Place of sampling	Characteristic	Analysis results
				light pink colours.
			Mortars	
20	19	Putti above the window	Mortar	The basis of the sample is a gypsum mortar with a filler in the form of ground gypsum natural stone. 1. On the surface of the base there is a painted layer of saturated gray color 0.5 mm thick; the surface is dirty. 2. A layer of white colour of uneven thickness – 0.3 – 2 mm, the surface is dirty. It consists of quartz sand and glue on a lime binder. 3. The painted layer is gray, thin, cement-based facade paint.
21	21a	Fluted pilaster, shaft	Mortar	A layer of gray paint containing chalk is observed on the surface of the gypsum-lime mortar.
22	21b	Fluted pilaster, base	Mortar	Lime-sand mortar with the addition of gypsum. The surface is leveled with a 1 mm thick gypsum coating. A thin layer of white paint on top. A light grayish-white leveling layer with quartz is a cement-sand mortar. A thin layer of light gray facade paint.
23	17a	Wall surface. Bottom layer of plaster with painting	Plaster	An uneven layer of lime-sand plaster with occasional inclusions of plant fibers and carbonaceous matter. On the surface, the layers of paint are predominantly light shades: light gray, almost white, and yellow-green.
24	18a	Wall surface. Bottom layer of plaster with painting	Plaster	An uneven layer of lime-sand plaster with occasional inclusions of plant fibers and carbonaceous matter. On the surface, the layers of paint are predominantly light shades: light gray, almost white, and yellow-green.

Recommendations for restoration work

Of course, the cleaning and restoration of stone exposed to adverse atmospheric conditions is a major scientific and practical problem, which was complicated at a specific site by the importance of preserving polychromy. Based on the results of laboratory research, three main historical stages were identified with different technological and aesthetic approaches to decoration. The most sophisticated was the original decoration of the facade using the optical characteristics of various stone materials and mortar. However, it was practically impossible to restore it, given the condition of the stone carving elements. In addition, it was necessary to take into account that the Scholtz-Wolfowitz' house was (and is) an integral part of the valuable ensemble of Rynok Square and is compositionally and aesthetically connected with the building in the form that has survived to this day. At the next stage of the house decoration development, polychromy appeared (most likely, it appeared as a protective layer, for example, for alabaster, which began to collapse). However, according to researchers, the paintings were not very carefully done and technologically incorrect: there were no preparatory layers (putty), chalk was used as a filler (a typical filler for facade paints), and the paint layer was mixed on an adhesive binder, which was not sufficiently weatherproof. On the third, a later polychrome painting was applied with more thorough surface preparation (the presence of putty on an oil or oil-adhesive binder) and the selection of pigments. This last polychromy is distinguished by active colours, and when restoring it, it should be taken into account that it may be dissonant with the current development of Rynok Square.

Thus, when developing the restoration methodology, it was necessary to take into account the following:

– originally, the stone elements of the decoration were unpainted, and polychromy appeared later in two stages;

– the state of preservation of the polychrome painting of the details of the sculptural decoration was extremely unsatisfactory not only due to adverse climatic conditions, but also due to restoration and repair work: the surfaces were repeatedly cleaned, puttyed and painted using oil compositions, compositions on an oil and silicate basis and putties on a cement binder;

– the polychrome painting was preserved very fragmentarily, which was not enough for a complete reconstruction;

– the surface under the layers of paint was in poor condition;

– to form the correct restoration methodology, it was necessary to perform trial probing and clearing (up to the first painted layer) for their further examination and determination of the possibility of preservation and development of the conservation methodology of the original polychrome painted layers;

– it is recommended to reconstruct the polychromy according to traditional technologies, taking into account analogues typical for Renaissance buildings in Lviv. In case of the discovery of fragments with well-preserved polychrome painting, it is recommended to create exhibition areas with the conservation of authentic paint layers.

The recommendations also concerned the conservation and restoration of stone elements with polychrome. Thus, for limestone and alabaster it was recommended to clean dry using soft brushes, sticks, and spatulas. At the next stage, clean using compresses with distilled water. If necessary, carry out chemical cleaning, then restore lost elements, and if authentic polychrome is detected, carry out tinting, supplement the loss of polychrome painting (if possible), glaze and to consolidate the effect, carry out hydrophobization.

Conclusions

The house at 23 Rynok Square in Lviv is one of the most valuable Renaissance monuments in the city. Its sculptural decor has undergone many changes over the almost 500 years of the building's existence, and the history of its development remains incompletely understood to this day.

1. The current state of scientific research allows us to identify the following three stages of the house sculptural decoration development: the first stage falls on 1570 – 1605, which is divided into two periods. At this time, the most valuable elements of the sculptural decoration were created, such as the composition of the corner aedicule "Baptism", which included the coats of arms of the Scholtz-Wolfowitz and Haz families, portrait mascarons, and architectural details. The second stage falls on the end of the 18th century – around 1802. In this period of relatively weak construction movement and dominant cultural and aesthetic beliefs, the sculptural decoration of the house undergoes significant changes and is reduced. The third stage falls on 1889 – 1890. At this stage, the structure of the facade of the building acquires its current appearance. The lost decor of the facade from the side of Rynok Square is supplemented, and the solution of the facade from the side of Katedralna Square is fully formed. The expansion of the openings of the ground floor corresponded to the new functional requirements for the tenement house. In general, the so-called "restoration" of the facades took place in the light of the dominant concept of "stylistic restoration" at that time.

2. Studies show that different types of stone were used for different parts of the sculptural decoration. Thus, elements of the architectural order of decoration (pilasters, bases, head moldings) were made from lithothamnium limestone, which is characterized by high density but a heterogeneous structure. Organogenic-detrital limestone is characterized by a homogeneous structure, medium hardness, and fawn colour. Figured decoration elements (brackets, mascarons) were made from it. Some carving elements (coats of arms, putti) are made from alabaster, which has high optical (translucent) properties; however, due to low weathering resistance, it has already lost its original aesthetic appearance.

3. The results of laboratory studies confirm that the formation of the sculptural decor of the house occurred gradually. Initially, the elements of the stone decor were not polychrome. The colour scheme of the facade was based on the natural polychromy of the materials: elements made of lithothamnium limestone were of a pleasant beige colour, figured elements were fawn-coloured, "translucent", "honey" elements were made of alabaster. At the second stage, polychromy appears (mostly pastel, soft colours), but the quality of the work and surface

preparation are at an unsatisfactory level. The third stage is characterized by a higher quality of work and brighter polychromy. Unfortunately, the preserved polychromy is not enough to reproduce the colour scheme of the facade.

4. The results of laboratory studies allow us to understand the methodological approach in the execution of the decoration. Thus, more weather-resistant limestone was impregnated with oil and alabaster with a tar (varnish) composition, which was supposed to protect the stone from destruction. Polychromy was performed after impregnation. In the first period, it was performed on an adhesive binder and chalk filler, and in the next period, it was performed using an oil binder and zinc whites as a filler. Since zinc whites appeared only at the turn of the 18th-19th centuries, this also confirms the thesis that polychromy appeared later.

5. The study of the material composition of the facade decor indicates the presence of different stages of its creation and the high skill of the performers in working with natural and artificial stones, the use of complex technologies, and artistic taste.

The sculptural decoration of the house at 23 Rynok Square in Lviv is not only a valuable example of Renaissance art but also reflects the complex cultural, historical and political vicissitudes of its time. The house's decor also developed under the influence of changing the functional purpose of parts of the building, and its formation reflected the artistic and restoration canons prevailing at the time.

References

[1] V. Vuitsyk, R. Lypka, **Meeting with Lviv: A Guide,** Kameniar, Lviv, 1987. (Original language: В. Вуйцик, Р. Липка, **Зустріч зі Львовом: путівник,** Каменяр, Львів, 1987.).

[2] * * *, **Architectural monument of the 16th – 18th centuries, (protected No. 326/21). Scholtz-Wolfowitz' House at 23 Rynok Square in Lviv. Repair and restoration works. Comprehensive scientific research. Historical note,** Ukrainian Regional Specialized Scientific and Restoration Institute "Ukrzakhidproektrestaratsiia", 2008. (Original language: **Пам'ятка архітектури XVI-XVIII ст., (охор. № 326/21). Кам'яниця Шольц-Вольфовичів на пл. Ринок, 23 у м. Львові. Ремонтно-реставраційні роботи. Комплексні наукові дослідження. Історична записка,** Український регіональний спеціалізований науково-реставраційнй інститут «Укрзахідпроектреставрація», 2008.)

[3] * * *, **Architectural monument of the 16th – 18th centuries, (protected No. 326/21). Scholtz-Wolfowitz' House at 23 Rynok Square in Lviv. Repair and restoration works. Chemical and technological research and technological schemes for the restoration of sculptures.** Ukrainian Regional Specialized Scientific and Restoration Institute "Ukrzakhidproektrestaratsiia", 2008. (Original language: **Пам'ятка архітектури XVI-XVIII ст., (охор. № 326/21 Кам'яниця Шольц-Вольфовичів на пл. Ринок, 23 у м. Львові. Ремонтно-реставраційні роботи. Хіміко-технологічні дослідження та технологічні схеми реставрації скульптур.** Український регіональний спеціалізований науково-реставраційнй інститут «Укрзахідпроектреставрація», 2008.).

[4] W. Łoziński, **Patryciat i mieszaństwo Lwowa w historii sztuki i obyczajów,** Nakladem Ksiegarni H. Altenberga, Lwów, 1890.

[5] W. Łoziński, **Sztuka lwowska w XVI i XVII wieku: architektura i rzeźba,** Nakladem Ksiegarni H. Altenberga, Lwów, 1898.

[6] S. Łoza, **Architekci i budowniczowie w Polsce,** Arkady, Warszawa, 1954.

[7] M. Kowalczuk, **Cech budowniczy we Lwowie za czasów polskich (do roku 1772),** Drukarnia „Dziennika Polskiego", Lwów, 1927.

[8] M. Orłowicz, **Przewodnik po Lwowie,** Lwów-Warszawa,1925.

[9] * * *, **Архітектура Львова. Час і стилі: XIII – XXI ст.,** Центр Європи, Львів, 2008.

[10] V. Vuitsyk, **State Historical and Architectural Reserve in Lviv,** Second edition, supplemented, Kameniar, Lviv, 1991. (Original language: В. Вуйцик, **Державний історико-архітектурний заповідник у Львові,** Видання друге, доповнене, Каменяр, Львів, 1991).
[11] V. Liubchenko, **Lviv Sculpture of the 16th – 17th Centuries,** Naukova Dumka, Kyiv, 1981. (Original language: В. Любченко, **Львівська скульптура XVI – XVII століть,** Наукова думка, Київ, 1981.).
[12] B. Melnyk, **Through the Streets of Old Lviv,** Svit, Lviv, 2002. (Original language: Б. Мельник, **Вулицями старовинного Львова,** Світ, Львів, 2002.).
[13] A. Sodomora, M. Dombrovskyi, A. Kis, **Anno Domini. Year of God: Latin inscriptions of Lviv,** LA "Pyramid", Lviv, 2008. (Original language: А. Содомора, М. Домбровський, А. Кісь, **Anno Domini. Року Божого: Латинські написи Львова,** ЛА «Піраміда», Львів, 2008.).
[14] O. Kulynska, *Sculptural décor of façades of Lviv tenement houses of the Renaissance period (on the example of Scholtz-Wolfowitz tenement house No. 23 in Market Square in the city of Lviv),* **Architect, 28**(2), 2010, pp. 37-44.
[15] S. Linda, O. Kulynska, *Semantics of the sculptural decoration of Renaissance tenement houses in Lviv,* **Problems of theory and history of architecture of Ukraine, 12,** 2012, pp. 70-78. (Original language: С. Лінда, О. Кулинська, *Семантика скульптурного декору кам'яниць доби Ренесансу у Львові,* **Проблемы теории и истории архитектуры Украины, 12,** 2012, сс.70-78).
[16] S. Linda, O. Kulynska, *Stages of development of sculptural decoration of a Renaissance tenement house at Rynok Square, 23 in Lviv,* **Bulletin of the National University "Lviv Polytechnic". Series: "Architecture", 1 (9),** 2023, pp. 122-137. (Original language: С. Лінда, О. Кулинська, *Етапи розвитку скульптурного декору ренесансової кам'яниці на пл. Ринок, 23 у Львові,* **Вісник Національного університету «Львівська політехніка». Серія: «Архітектура», 1 (9),** 2023, сс.122-137.).
[17] M. Chorowska, A. Legendziewicz, *The Colors of Renaissance Architecture in Silesia from the 16th to the Mid-17th Century on the Basis of Selected Examples,* **International Journal of Conservation Science, 14**(1), 2023, pp. 159-186, DOI: 10.36868/IJCS.2023.01.11.
[18] M. Orlenko, Y. Ivashko, J. Kobylarczyk, D. Kuśnierz-Krupa, *The influence of ideology on the preservation, restoration and reconstruction of temples in the urban structure of posttotalitarian states,* **Wiadomości Konserwatorskie – Journal of Heritage Conservation, 61,** 2020, pp. 67-79, DOI: 10.48234/WK61INFLUENCE.
[19] M. Orlenko, Y. Ivashko, I. Buzin, A. Dmytrenko, M. Krupa, *Modern technologies in restoration of architectural monuments (on the example of St. Volodymyr's Cathedral in Chersonesos),* **International Journal of Conservation Science, 13**(3), 2022, pp. 841-854.
[20] *** * *, Будівельна справа будинку № 3 на пл. Катедральній**. Державний архів Львівської області, ф.2, оп. 1, спр. № 6283.
[21] J. Jokilehto, **A History of Conservation,** Butterworth Heinemann, Oxford, 1999.

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