

## REVITALIZATION OF A RESIDENTIAL-COMMERCIAL TENEMENT HOUSE IN MYŚLIBÓRZ AT RATUSZOWA STREET 11

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### Abstract

The article discusses the current issues related to the revitalization of a building fully protected by conservation laws. The work covers a wide range of activities involved in the construction process aimed at fully restoring the functional qualities of historical architecture, while also ensuring the proper exhibition of preserved cultural heritage elements. The analyses, study materials, and design works carried out enabled the implementation of construction works for this unique building. To illustrate the research problem, the method of a selected case study was used, and design activities (Research Through Design) were incorporated into the research process. The subject of the study is a specific building – a monument, which also serves as a representation and an example of a neglected spatial structure within a historic inner-city complex. Based on the analysed case, general conclusions were formulated that are helpful in preparing diagnostics and design works related to the revitalization of historical buildings in poor technical condition.

Keywords: revitalization, historic tenement house, testing of external plasters, project, implementation

### 1. INTRODUCTION

The transformation of historic buildings is a broad spectrum of construction activities related to the need to adapt them to current needs in terms of functional and spatial solutions or to repair their technical condition. The problem of revitalization [1, 4, 6, 10, 17], but also adaptation, modernization and many other activities related to historic buildings is still an area of intensive scientific research covering an extensive context of historical [7, 20], architectural [21, 23, 26, 29], conservation [13], constructional, material, geotechnical, economic, etc. factors, as well as studies and analyses concerning specific buildings [9, 27, 3, 16, 18].

Considerations regarding the need to protect the authenticity of form, functional purpose, technological solutions, and exhibition—whether related to the entire building or just a part of it—

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represent a spectrum of fundamental issues [5, 15, 24, 25, 28] that must be addressed and resolved after a thorough diagnostic assessment when planning various types of transformations of a historic monument. Research in this area typically takes the form of an interdisciplinary evaluation of the object, which includes, among other things, historical, archaeological, conservation, and architectural studies that describe and assess the condition of the original building's volume, its details, or colour scheme, as well as its functional program. This is combined with structural analysis and the determination of the physical properties of the materials used. The research should be concluded with a conservation program defining the condition of the monument's substance and the permissible extent of interventions, including the selection of methods and technologies for reinforcing the historic material and performing repair works [2, 19], as well as evaluating the technical condition of the building's structural elements [22].

Diverse views and interests in the approach to the protection of historic monuments arouse controversy and are the subject of heated discussion mainly among conservators, investors, contractors, designers of the construction industry and architects. Such diversity often makes it difficult to simultaneously reconcile care for the preservation of the original form, function, structural and material solutions with ensuring the rationality of the investment (also economic) at the stage of implementation of the construction project. For these reasons, attempts to revitalize historic buildings have not been made for many years, even though their technical condition is sometimes classified as extremely poor. Although many of such monuments are under strict conservation protection, they have not been and are not being renovated and their process of destruction often leads to emergency conditions or even disasters [11, 12].

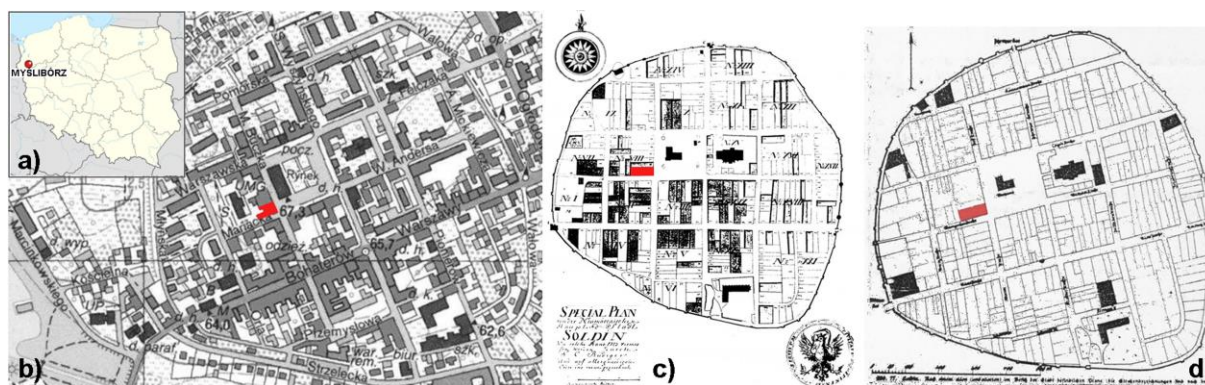


Fig. 1. Myślibórz – location on the map of Poland a), Location of the tenement house within the Old Town of Myślibórz (highlighted in red): b) Current location, c) 1723 cadastral map by Royal Surveyor S. C. Rudiger, d) early 19th-century cadastral map. Source: author's own work using the topographic map of Myślibórz in the authors' possession (b) as well as plans obtained from the archival resources of the Provincial Office for the Protection of Monuments in Szczecin (c - d)

The article presents the example of a historic building initially dated to the turn of the 19th and 20th centuries, located in a compact market square area within the Old Town of Myślibórz [Fig. 1a]. In accordance with the decision of the heritage conservator, the building was entered into the register of monuments of the West Pomeranian Voivodeship [36] and classified for revitalization as part of the Local Revitalization Program of the Myślibórz municipality [37]. The revitalization of the building included a comprehensive renovation, modernization, and a change in the use of its parts for residential (attic) and public (ground floor) functions. The article describes the complications that arose during the implementation of the construction works, which were primarily due to the imprecise dating of the

period during which the building was constructed, as well as the need to complete the technical assessment of the preserved structural elements. Once the new circumstances became apparent, the way forward for the continuation of the renovation work was defined, taking into account the position of the conservation services.

An analysis of the revitalization process of the building in question, which is representative of many historic buildings originally built in timber frame construction, has demonstrated the considerable complexity and unpredictability of an investment of this nature. This unpredictability is due to the lack of opportunity to fully recognize the historic structure and the changes it has undergone over more than 120 years of use prior to redevelopment. In view of the risks inherent in this type of project, a slight modification to the development preparation process has been proposed to improve the revitalization work. As part of the rationale, the analysis and characteristics of the revitalization, following the changes following the revelation of the hitherto unknown state of knowledge regarding the full extent of the preservation of the historic structure of the building, are presented and the consequences of these changes are described.

## 2. MATERIALS AND METHODS

### 2.1. Materials - characteristics of the research subject

The year of completion of the tenement, according to documents in the possession of the property manager [30], was dated to the second half of the 19th century. At the turn of the 19th and 20th centuries, the building underwent renovations. The roof shape was changed; the gable on the southern elevation was removed, and the front part of the tenement house facing the market square (the main block) was given a hipped roof. Additionally, the rear wall of the main block was rebuilt with ceramic brick, and a new skeletal structure was constructed for the northern annex. New plastering was applied to the elevations facing Mariacka Street and the market square, using a metal lath with window surrounds, cornices, window panels, and imitation bossage. The renovation also included the creation of new partitions within the residential and commercial units. Part of the ground floor facing the market square was adapted into a shop, featuring new window and door joinery [35]. The appearance of the tenement house from the early 20th century was documented on a postcard dated 1913 (Fig. 2a), and its location within the structure of the Myślubórz Old Town is visible in an aerial photograph taken before 1945 (Fig. 2b).



Fig. 2. Corner of the building facing the market square on a postcard from 1913.: a), Location of the building within the urban fabric of Myślubórz (highlighted in red) in 1945.: b), Condition of the building in an archival photograph from the 1960s. Source: postcard (a) and photograph (b - c) from the authors' archives

The tenement house was not damaged during World War II. After 1945, the property was taken over by the State Treasury, then municipalized and transferred to the ownership of the city of Myślubórz. The

new owner maintained the building's existing functional use (i.e., residential and commercial). The post-war years saw minimal renovation and adaptation work. Externally, the roof covering was replaced, and the gateway located in the western part of the annex facing Mariacka Street was bricked up, with the resulting space adapted into an additional commercial unit. Some of the window and door joinery, as well as internal installations, were replaced. Interior layouts were also adjusted to better accommodate the needs of new occupants. Minor repairs to the apartments were also regularly carried out by individual tenants [35]. The external appearance of the building, as documented in archival photographs from the 1960s (Fig. 2c), did not differ from its condition before 1945 and remained largely unchanged until the commencement of the construction and conservation work described in this study.

The entire tenement house is laid out in the shape of an irregular horseshoe, open to the west. The main block is built on a rectangular plan measuring 18.00 m by 12.50 m, oriented on an NW-SE axis. The front of the block faces east, toward the market square. An annex, in the shape of an elongated rectangle (dimensions: 15.50 m by 6.70 m), has been added to the rear wall of the main block at the southeast gable. On the opposite side, a second, also rectangular but much shorter and slightly narrower, annex (dimensions: 7.90 m by 5.50 m) is situated. The longer annex forms part of the street frontage along Mariacka Street, while the shorter one to the north closes off the semi-open courtyard. A small, contemporary outbuilding (storage shed) adjoins the northern annex. The main building currently has four entrances, three of which are at ground level. Two of these are located along the short axis (in the middle of the block), and one is on the southern part of the front wall (the shop entrance). The fourth door is on the gabled wall facing south, providing direct access to the basement. The location and outline of the building are shown on the site plan (Fig. 3a).

The building complex consists of three volumes with irregular shapes and varying heights. Each segment has two above-ground floors. The main block is a rectangular prism covered with a high, three-pitched roof that at the gable end facing Mariacka Street connects with the roof of the southern annex. The total height to the ridge is 12.06 meters, with a wall-to-roof ratio of 1:1. The above-ground floors have varying heights (ground floor - 2.56 meters, upper floor - 2.32 meters). The building has partial basement coverage (approximately 65%) embedded in the ground to a depth of 2.40 - 2.60 meters (Fig. 3b). The attic is spacious and used for utility purposes (e.g., drying). The southern annex is in the form of a rectangular prism, covered with a steep, gabled roof with a total height to the ridge of 9.79 meters. The northern annex is also rectangular but covered with a shed roof, and its total height is 7.51 meters. The floors of the annexes have similar heights to the above-ground floors of the main block.

The functional purpose of the tenement house can be considered typical for buildings located around market squares. Formally, it was a multi-family residential building with services incorporated into the ground floor. In total, the building contained four residential units, two on the ground floor and two on the upper floor. One of the ground floor apartments (likely a former servant's quarters) had an independent entrance from the side of the service courtyard. Small-sized commercial units (25 - 46 m<sup>2</sup>) had individual entrances from the sidewalk level. Two smaller shops (a grocery store and a clothing store) were located in the southern wing, while the third, slightly larger one (a pet store) occupied the corner of the main building at the intersection of the streets. The layout of the commercial premises is shown on the floor plans of the ground and upper floors. (Fig. 3c-d). The primary functions were complemented by utility rooms located in the basement and attic (the attic above the main building and the southern wing), as well as a single-car garage on the ground floor. The total area of the tenement house's usable spaces (ground and first floors) was 471.09 m<sup>2</sup>, with the basement and attic having areas of 88.90 m<sup>2</sup> and 154.35 m<sup>2</sup>, respectively.

The building was founded on stone footings. The basement walls were made as massive stone walls with brick wefts, finished with weak lime plaster with traces of whitewash. The plinth of the building was architecturally distinguished and made of natural stone with a height of approx. 60 cm and plastered.



Fig. 3. The location of the building is shown on the site plan: a), Floor plans - existing condition: b) Basement, c) Ground floor, d) Upper floor, Elevations – existing condition: e) Southern elevation – facing Mariacka Street, f) Eastern elevation – facing the market square (Ratuszowa Street), Section through the main block – existing condition: g). Source: original research

The perimeter (external) walls have a varied construction, reflecting the phases of the building's expansion and reconstruction. Originally, the main body of the building had a timber-frame structure with brick and wattle-and-daub infill (clay applied to a reed wickerwork). Currently, the front and gable walls have been preserved, both fully plastered (Fig. 3e-f). The base of the wall structure consists of wooden columns placed rhythmically, set into the sill and connected at the top by a collar beam in combination with transverse braces. The rear wall of the main body, on the courtyard side, was rebuilt with ceramic brick (cross bond) and remained unplastered. The walls of the wings were designed as brick-and-timber construction. The southern wing, at ground level, was constructed with solid ceramic walls (thickness 65 cm) made of non-machine-made bricks (9 x 13 x 29 cm), except for a section of the gable wall, which was reconstructed as a timber-frame wall. The upper floor walls were constructed exclusively in a timber-frame design with brick or wattle-and-daub infill.

The individual walls have varied external finishes: smooth plaster on the elevation facing Mariacka Street (Fig. 4b-c); weak clay-lime plaster on the entire elevation facing the courtyard, and asbestos cement on a section of the gabled elevation of the southern outbuilding (Fig. 4b). The external

walls of the northern outbuilding are constructed similarly, but the gable end of the outbuilding is entirely finished with a cement-lime render, while the longer wall facing the courtyard was originally left unplastered (Fig. 4a).

The internal walls of the main block are mostly timber-framed with various infill materials (raw brick, ceramic bricks, or wattle-and-daub), finished with smooth plaster and painted with lime-based or oil paints. In both outbuildings, the walls on the ground and upper floors are constructed as masonry and timber-framed, respectively.

Two types of ceilings are used in the building. The majority of the basement and the ground floor of the southern outbuilding are covered with massive ceramic barrel vault ceilings with arch ribs. In the main block and above the floors of the outbuildings, timber beam ceilings prevail, featuring clay infill wrapped in straw braids, along with boarded ceilings and soffits on reed mats. A timber ceiling is also used over a smaller section of the basement between the stairwell and the adjacent building.



Fig. 4. Condition of the Building's Structural Elements: a) Northern Wing annex– Visible Deformations of the Timber Frame Structure, Secondary White Window Joinery, b - c) Southern Wing annex – Cracked, Moist, and Discolored (Salt-Damaged) Exterior Plaster, Secondary Asbestos Sheet Finish on the Gable, Secondary Extension Adjacent to the Internal Stairs Leading to the Basement (Marked with a Red Arrow ), d) Main Building Basement – Moist Stone-Brick Walls, Wooden Ceiling with Visible Signs of Insect Infestation, e) Ground Floor of the Southern Annex – Separation of the Timber-Framed Wall Construction, f) First Floor of the Northern Annex – Emergency Shoring of the Wooden Ceiling with Props, g) Ground Floor Plan – Sample Collection Points for Analysis. Source: Author's Documentation and Photos

The original wooden roof truss has largely been preserved. Above the main block, the structure is a king post truss system with intermediate purlins supported by double supports (lower and upper). The rafters are set into oblique mortises in the ceiling beams. The rafters are fitted with purlins (approx. 2.50 m)

that create a slight break in the roof pitch. Individual trusses are stabilized with long tie beams, struts, and braces fixed to the purlin and post axes. All truss components have been hand-hewn ("axe-hewn") and are joined using pegged carpentry connections. The construction used beams with the following dimensions: 19 x 24 cm (purlins), 22 x 24 cm (rafters), and 23 x 28 cm (post supports). The southern outbuilding features a simple king post truss system without additional supports. In contrast, the northern outbuilding has a shed roof with rafters set on the ridge beams of the frame walls. The roof surfaces are mostly covered with ceramic interlocking tiles. A section of the rear roof of the main block is covered with old-style (thick) "fish scale" tiles. Ridge and corner tiles are secured with ceramic ridge tiles. The shed roof of the northern outbuilding is covered with asphalt felt on a full boarding.

The building was earmarked for comprehensive renovation, in accordance with the provincial conservator's guidelines. During the project development, a comprehensive diagnostic was carried out and its results were presented in an expert report on the technical condition [32]. According to the expert report, the technical wear and tear of the building was estimated at over 75%, which from an economic point of view qualifies the building for demolition. On the other hand, the advisability of undertaking revitalization works was supported by the argument about the need to preserve the historical architectural form of the building contained in the conservation guidelines [38].

The identified emergency state of the building was largely due to numerous damages associated with uneven settlement. Key causes included unfavorable ground-water conditions and increased vehicular traffic in the immediate vicinity of the building, which caused vibrations transmitted throughout the entire structural system. Additionally, the lack of proper moisture-proof insulation significantly contributed to the deterioration of the timber foundations, posts, beams, and purlins (Fig. 4a). There was significant moisture damage and mold growth in the basement walls (Fig. 4d). As a result, there were very noticeable damages and deformations to both the internal and external timber-framed walls (Fig. 4e). The damaged plaster finishes on the walls, with visible cracks, fissures, and changes in color, reflected the condition of the wooden structural elements (Fig. 4b-c). Large areas of the façade exhibited moisture damage, atmospheric staining, and material loss (plaster, brick, wood). Inside, the ceiling structures showed significant deformations and sagging (Fig. 4f). The variations in the support levels of the ceiling beams were substantial, reaching nearly 30 cm. Most of the roof truss connections were loosened, and its elements locally exhibited signs of biological decay as well as minor cracks and looseness typical of aged wooden components.

The renovation of the historic building began with the removal of the wooden floors and the slate from the ceilings. This was followed by the dismantling of partition walls and the removal of plaster from load-bearing elements such as walls, beams and ceilings. Once the demolition work was completed, the conservation committee proceeded to inspect the building. Particular attention was paid to the surviving materials used in the hand-moulded brick wall fragments and the cradle vaulting of the cellars. An earlier assessment related to the dating of the building's construction was called into question and additional conservation research, including historical and laboratory testing of the original material, was ordered. Based on supplementary conservation research, the architectural and construction design solutions previously adopted had to be revised.

## **2.2. Methods - complementary conservation study**

### **2.2.1. Historical Study**

Based on historical supplementary research, it was established that the building is a relic of the 18th-century development of Myślibórz. Iconographic material from 1723 and the beginning of the 19th

century, which shows the outline of a building on the site of the present tenement (Fig. 1c-d), testifies to a much earlier location than assumed.

In terms of historical aesthetics, the building has deteriorated significantly. This decline is primarily due to the building's multi-phase construction history, which has undergone numerous uncontrolled alterations and renovations from a conservation perspective, particularly after 1945. The older origins of the described building, dating back at least 150 years, are evidenced by the barrel vaults of the cellar and the ground floor of the southern annex, the timber-framed construction of the load-bearing walls and roof trusses, and the hand-formed bricks used in the cellar walls. Additionally, the well-preserved layout of the historic cellars and part of the ground floor (the entrance hall), along with remnants of ceramic flooring made from stoneware tiles, may suggest an even earlier origin for the building.

The building's renovation at the turn of the 19th and 20th centuries is well-documented. From this period, the rear wall of the main building, reconstructed using masonry, the timber-framed construction of the northern annex, some of the external door and window joinery, and the decorative finishing of the façades facing Ratuszowa and Mariacka Streets with pseudo-rustication originate. A remnant of this renovation is likely the covering of the rear roof slope of the main block, made of thick interlocking tiles arranged in a "fish scale" pattern. Regarding interior decoration, notable features include the preserved original flooring in the main entrance hall and the wooden staircase with a Tuscan column supporting the balustrade, leading from the ground floor to the first floor. Fragmentary wooden wall paneling (wainscoting) has survived in the ground-floor corridor (hall).

Although the tenement house along the market square and Mariacka Street has undergone modifications over time, these have been relatively minor. The primary change involved the removal of the gabled upper section of the elevation on Mariacka Street, which led to a redesign of the roof. The roof was modified to a hipped form, aligning with the pitch of the roof over the southern annex (Fig. 6b). The construction works carried out have not significantly impacted the urban values of the described property, which continues to integrate well into the historic spatial layout of the city. The building retains the characteristic features of corner tenement houses along the market square typical of Myślubórz's old town.

### 2.2.2. Laboratory Testing

Samples of plaster and paint layers were analyzed, with the collection points indicated on the ground floor plan (Fig. 4g). Salinity and dampness tests were performed on plaster samples taken from eight locations. For each sample, the percentage of water-soluble salts was determined by the weight method from the difference between the dry weight of the initial sample and the dry weight of the sample after salt extraction with distilled water. The anions were identified by microchemical reactions (qualitative method). Testing of the mass dampness content of the plasters was carried out using the dryer-weight method, considered in the literature to be the basic method and to give the most reliable results [14]. Samples were taken at varying heights from 50 to 150 cm above ground level.

The paint layer samples (7 in total) were subjected to stratigraphic and microscopic examination using a USB microscope (Levenhuk DXT 90, magnification 10 – 300x). Additionally, petrographic analysis was carried out on one sample to preliminarily determine the composition of the original mortar used.



### Assessment of Salinity and Dampness Levels

The obtained results from the conducted tests of salinity were compared with the current salinity assessment standards according to the German Scientific and Technical Working Group for Building Preservation and Restoration (WTA), Document No. WTA-4-5-99/D. The salinity levels are presented in Table 1.

Table 1. Classification of Salt Loading Based on WTA Merkblatt 2-9-04 Instructions- Sanierputzsysteme

Type of Salt		Salt Content (%)		
		low	medium	high
chlorides	Cl <sup>-</sup>	< 0,2	0,2 – 0,5	> 0,5
sulfates	SO <sub>4</sub> <sup>-2</sup>	< 0,5	0,5 – 1,5	> 1,5
nitrates	NO <sub>3</sub> <sup>-2</sup>	< 0,1	0,1 – 0,3	> 0,3

In result, the salinity levels for the tested samples are presented in Table 2.

Table 2. Salinity Levels at Control Points Based on Laboratory Tests. Source: [33]

Type of Salt	control point and salinity level							
	1	2	3	4	5	6	7	8
chlorides (Cl <sup>-</sup> )	high	high	high	high	high	-	high	high
sulfates (SO <sub>4</sub> <sup>-2</sup> )	high	medium	high	-	-	high	-	high
nitrates (NO <sub>3</sub> <sup>-2</sup> )	-	-	-	-	-	-	-	-

In result, the dampness levels for the tested samples are presented in Table 3.

Table 3. Dampness Levels at Control Points Based on Laboratory Tests. Source: [33]

control point	1	2	3	4	5	6	7	8
mass moisture content Um [%]	5,6	4,8	7,2	5,4	4,5	3,7	4,8	6,2

The overall salinity of the building's plasters was assessed as alarming. In the analyzed samples, the percentage of salts exceeded the permissible limits set by WTA. No nitrates (NO<sub>3</sub><sup>-</sup>) were found in the collected material. However, samples from the facade and the main hall showed very high levels of salinity with chlorides (Cl<sup>-</sup>) and sulfates (SO<sub>4</sub><sup>-2</sup>). In extreme cases, chloride levels (sample no. 7) and sulfate levels (sample no. 8) exceeded normative values by up to 9 times (4.5%) and 4 times (6%). The primary cause of such severe salinization of the material was the secondary use of strong cement mortars during repairs and renovation work. Conservation work must include desalting the building, repeating the salinity test, and eliminating all cement mortars from the building.

For repairing the facade, it was recommended to use binding materials based on hydraulic lime with the addition of natural volcanic tuff (Rhenish trass), which are fully resistant to acidic environments and free of harmful soluble salts. The mortar's strength should be comparable to or lower than that of the originally built bricks, approximately 5–6 N/mm<sup>2</sup> (class M5 according to PN-EN 998-2:2021), in accordance with the guidelines from the Institute for the Conservation of Architectural Elements and Details at UMK in Toruń [8]. Additionally, mortars with trass (active silica) are characterized by low shrinkage and increased porosity, which ensures the quick transport of water and prevents the formation of tight bridges within the wall. Given the extensive scope of work, the use of pre-mixed mortars or binders available on the construction market was permitted. However, due to the broad range of commercial offerings and significant gaps in current national requirements (Polish building standards)

concerning historic buildings, it was stipulated that the proposed mortars must have approval from external conservation agencies allowing their use in historic walls, considering the aforementioned characteristics. Equivalent to approval, documented experience of at least several years in using factory-ready products for similar conservation projects was also acceptable.

The results of the external plaster tests confirmed the *in-situ* observations, which indicated significant dampness. In the tested samples, the mass moisture content ranged from 3.7% to 7.2%. These results pertain to the surface layer of the perimeter walls. Considering the typical distribution of mass moisture content, based on similar studies for masonry walls [14], the overall dampness of the building's external walls can be assessed as even higher, falling within the categories of walls with high dampness (8-12%) and possibly even wet walls (>12%).

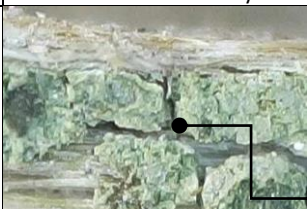

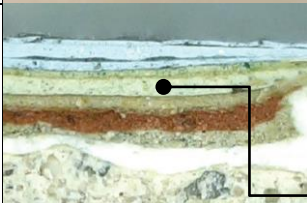
The condition of the plaster finishes did not allow for renovation work to be undertaken, not only due to their significant dampness but also because of the high salinity. As a result, all existing plasters were classified for removal. It was also necessary to remove the existing wattle-and-daub infill (clay) from the timber-frame walls.

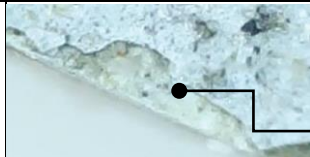

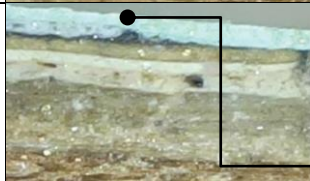
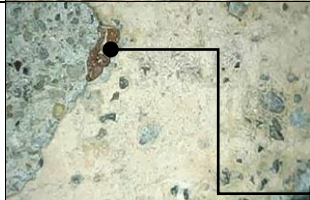
### Stratigraphic and microscopic analyses

The conducted studies aimed primarily to obtain information regarding the original color schemes related to the façade and interior finishing elements of the tenement house. Samples were taken from layers of paint coatings on external plaster, external door joinery, as well as internal stairs and elements of the main entrance hall. The results of the conducted analyses are summarized in Table 4.

Based on the results obtained from stratigraphic studies, the color scheme for the external façades of the tenement house (Fig. 5a-e) and the interior of the main entrance hall, including the existing stairs, was developed. The color selection referenced the historical color scheme.

Table 4. Stratigraphic Analysis of Paint Layers. Source: [33]

Sample	Cross-section of the layers	Stratygraphy-description
1		Half-timbering under the plaster (eastern front elevation)  On the examined fragment of the half-timbering, small patches of a light green paint layer were visible over the whitewash.  <b>Accepted color: light green NCS S 3020-G20Y</b>
2		Front elevation doors (east front elevation)  Under the reddish-brown layer, remnants of a dark brown layer penetrating the wood structure are visible, possibly a mordant.  <b>Accepted color: dark brown NCS S 8010-R50B</b>
3		Interior of the main hall – plaster 1. Paint layer: light gray, gray-blue, 2. Light gray layer, 3. Dusty bluish-gray 4. Light green layer, 5. Yellowish hue, 6. Beige 7. Reddish-brown, 8. Light gray ochre, 9. Whitewash, 10. Plaster  <b>The accepted color: light green NCS S 1505-G80Y</b>

4		<p>The interior of the main hall – lower wall, skirting board</p> <ol style="list-style-type: none"> <li>1. thin layer of light gray</li> <li>2. olive green shade (the oldest), 3. Wood</li> </ol> <p><b>Accepted color: olive NCS S 3005-G80</b></p>
5		<p>Interior of the main hall – handrail of the staircase</p> <p>The stratigraphy is unreadable. On the examined wooden element, fragments of black and dark brown colors are visible.</p> <p><b>Color adopted: dark brown NCS S 8010-R70B</b></p>
6		<p>Main hall interior – balustrade</p> <ol style="list-style-type: none"> <li>1. light green layer, 2. traces of a light gray layer</li> <li>3. a thin dark brown layer, 4. a light yellow-brown layer, 5. layer light beige, 6. layer grayish-beige</li> <li>7. layer is light gray (probably a primer), 8. wood</li> </ol> <p><b>Accepted color: olive NCS S 3005-G80Y</b></p>
7		<p>Plaster (eastern front elevation)</p> <ol style="list-style-type: none"> <li>1. Gray trowel finish</li> <li>2. Thin paint layer light beige ochre</li> </ol> <p><b>Colour used: Keim 9132 ochre</b></p>

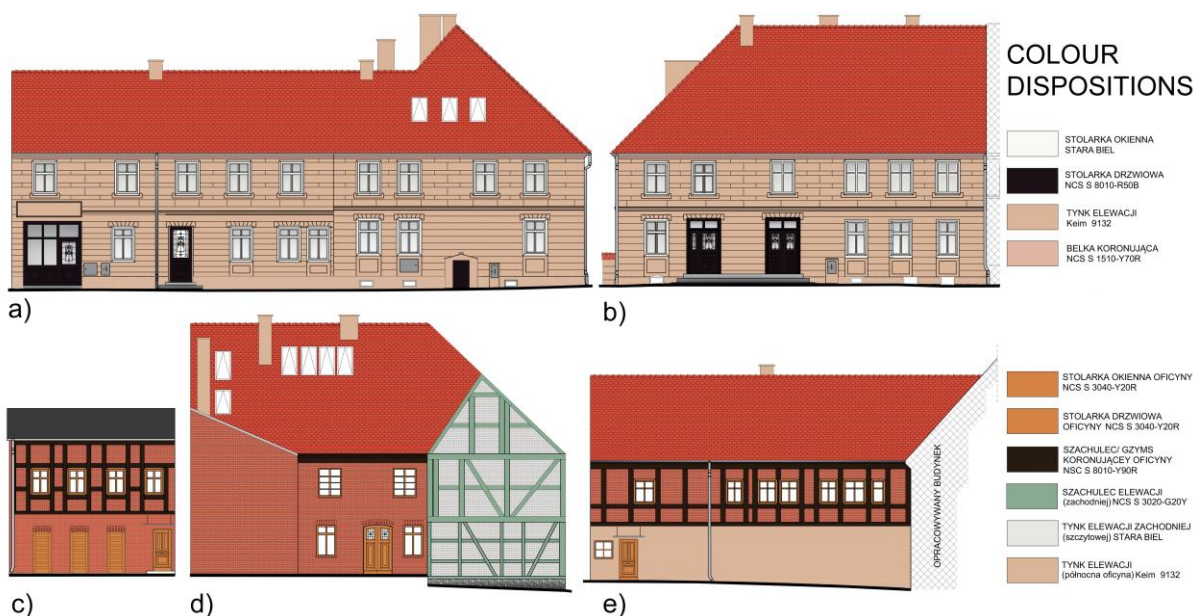


Fig. 5. Facade – Color Scheme Design: a) the southern side facing Mariacka Street (southern annex and main building), b) eastern side facing Ratuszowa Street (main building), c) southern side of the northern annex, d) western side of the main building and the annex gables, e) northern side of the southern annex. Source: authors' own work based on project documentation [34]

### 3. RESULTS

The method of revitalization was ultimately to preserve and expose the original elements of the building and its spatial structure in harmony with the rest of the development along the market frontage. At the same time, the existing functional and utility program of the building was modernized, rebuilt and enlarged in accordance with the expectations of the investor and users. The revitalization described is an example of a comprehensive multi-discipline study, from the urban to the architectural scale, supplemented by historical and preservationist research and multi-faceted technical analyses of the existing state. The complementary results of the research and analyses carried out, at the request of the conservation services in the first (demolition) phase of implementation, allowed additional conclusions and conservation guidelines to be formulated, which served as the basis for detailing the revitalization project.

The investment<sup>2</sup> was carried out from September 2021 to January 2023. The work was mostly completed in accordance with the assumptions of the construction project [34] and the conservation work program [31]. Changes to the adopted architectural and conservation solutions made during the implementation stage primarily concerned decisions regarding finishing works (materials and colors) and the method of exposing historical elements of the building. All corrections were consulted with the conservation supervision, the Provincial Office for the Protection of Monuments in Szczecin. The scope of the main changes is presented below in Table 5.

Table 5. Scope of Major Changes Compared to the Construction Project and Conservation Work Program

nr	Change
1	Change in the finishing method of the facade on the Ratuszowa and Mariacka street sides – the originally planned restoration of the bossage resulting from the building's reconstruction at the turn of the 19th/20th century was abandoned in favor of the original appearance with exposed half-timbering and a light green color scheme (according to the stratigraphy study - sample no. 1) (Fig. 6a-b). The originally proposed façade color scheme is shown in Fig. 5a-b.
2	Omission of the planned drywall covering of the wooden ceiling above the cellar after its cleaning, sandblasting, impregnation, and painting; the ceiling remained exposed from below and intended for exposure (Fig. 6g).
3	Abandonment of plastering the interior of the cellars, leaving the brick and stone masonry threads of the walls and ceilings fully exposed (Fig. 6f-g).
4	Preservation, on the ground floor in the main hall, of a witness in the form of a fragment of the existing ceramic tile floor – the tiles were reversed, cleaned, and re-grouted, with chipped elements replaced by identical ones sourced from the dismantling of the floor finishing on the first floor in the southern wing (above the former carriage gate) (Fig. 6h).
5	Relocation and restoration of one of the three preserved tile stoves – the stove from the living room on the first floor was moved to the hall on the ground floor, while the remaining two stoves were dismantled and handed over to the Investor (the original conservation work program had planned to preserve all three stoves) (Fig. 6h).
6	Abandonment of the complete fire protection enclosure for the public staircase on the ground floor (main hall) and the structural elements of the roof truss in the attic of the main building, for their exposure (Fig. 7a-b)
7	Removal of the secondary extension with door (Fig. 4b) at the basement exit from Mariacka Street.

<sup>2</sup> The project was carried out under the name: "Renovation and Reconstruction of the Residential and Commercial Building at 11 Ratuszowa Street in Myślubórz." The investor was the Housing Community at 11 Ratuszowa Street, 74-300 Myślubórz.



Fig. 6. The tenement house after the revitalization: a) the elevation on Ratuszowa Street and a fragment of the elevation on Mariacka Street, b) the elevation on Mariacka Street c) information board with a description of the building's history d) View of the annexes from the west side, e) View of the semi-open inner courtyard, with the red arrow indicating the trace of the deep well, f) Cellars under the southern part of the main body, g) Cellars under the northern part of the main body, vaulted with a wooden ceiling, h) Preserved ceramic stove set on a floor finished with original ceramic tiles. Source: authors' research and photographs

In addition, based on the conclusions of complementary research, it was decided to commemorate the former owner of the tenement and to preserve one of the original pieces of technical infrastructure. It was established that the initials "HB" on the preserved metal grille of the external door on the ul. Rynkowa side belonged to the building's owner, Herman Böhme, who operated his shop there from the early 20th century (Fig. 7c). The grilles with the former owner's initials were also placed on two other newly created doors, modeled after the originals, installed on the facades facing the streets. In turn, an information board with the history of the monument has been installed on the gable wall of the south outbuilding (Fig. 6c). During the construction work, archaeological research uncovered a historic dug well with a brick casing. The decision was made to preserve the well as a historical witness, and it was conserved and protected with a concrete slab at ground level (Fig. 6e).

Significant for the presentation of the building were the works related to the development of the area surrounding the tenement house, which markedly improved the visual perception of the monument, especially from the internal courtyard side. Non-functional temporary structures (a kiosk, single-story

utility buildings) were removed. New pedestrian pathways and external lighting were installed, and the existing greenery was organized.

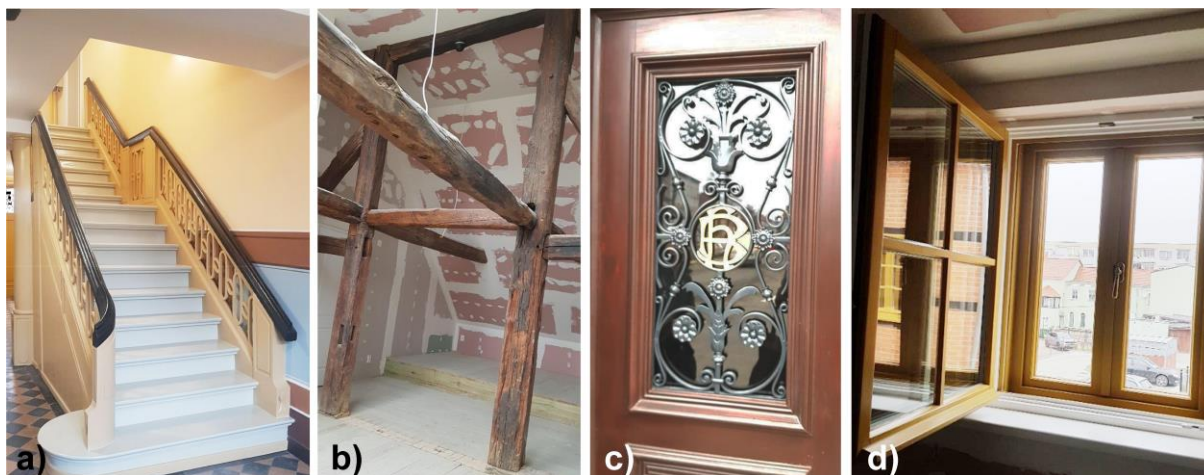


Fig. 7. The tenement house after the revitalization: a) Internal staircase in the main hall, b) Attic above the main body with exposed roof truss structure, c) Metalwork on the entrance doors with the initials of the former building owner, d) Original box window - first floor of the southern annex. Source: preparation and photographs by the authors

#### 4. DISCUSSIONS AND CONCLUSIONS

Construction work on buildings under conservation protection, such as revitalization, revalorization, restoration, reconstruction, adaptation or reconstruction, etc., must be carried out considering conservation requirements as well as technical, utilitarian and economic requirements. Often, it is necessary to develop comprehensive expert opinions that form the basis for further measures. The results of conservation studies, including conclusions and postulates, influence the design of architectural, functional and structural solutions. Given the significant destruction of historic buildings in Poland, especially during World War II, taking care of the preservation of the relics of our national heritage is a key priority. It is important that future generations have the opportunity to experience authentic monuments, both in terms of building form, materials or construction. For these reasons, buildings of exceptional historical, architectural and cultural value, even when in poor condition, are subject to the protection of conservation services.

In the case under review, based on the conservation reconnaissance and the value of the monument, the conservation officer recommended the revitalization of the building. The need to restore and expose the historic values, including the original technical, aesthetic and functional values, was emphasized. The basic structural elements of the building (fragments of half-timbered walls, roof trusses) selected decorative elements of the façade and interior design, and maintenance of the commercial character of the ground floor of the building with limited transformation of the historical façade composition were selected for protection.

Construction work, carried out in accordance with a design that considered the specified guidelines, was halted in the initial phase of implementation (during demolition work) due to the discovery of previously unrecognized elements of the building that could indicate an older origin than initially assumed.

Following a site council consultation with a representative of the Provincial Office for Historic Preservation, the need to supplement the conservation work program was identified.

Based on historical complementary research, additional conservation conclusions were formulated. It was absolutely recommended that the authentic layout of the historic cellars dating back to the second half of the 18th century should be preserved. It was considered reasonable, after recognizing the degree of preservation of the half-timbered structure of the perimeter walls, to restore the full finish of the façade on the side of Ratuszowa and Mariacka Streets in the form from before the reconstruction of the building at the turn of the 19th and 20th centuries in favour of the original appearance with the exposure of the half-timbering and the original colouring. It was suggested that the original layout and colour scheme of the ground floor vestibule should be retained, and that the relic in the form of a dug well discovered in the inner courtyard should be preserved and maintained.

Conservation conclusions extending the range of authentic elements of the building to be left and exposed required the implementation of a correction to the original design solutions, considering a detailed technical assessment of the walls and ceilings (cellars), laboratory tests to assess the level of salinity and moisture in the building envelope and stratigraphic tests of the paint coatings. Implementation in accordance with the project and its additions made it possible to fully (100%) preserve the authenticity of the basement rooms and all the external walls of the building. For the entrance hall on the ground floor, on the other hand, it was only possible to preserve the authenticity of approximately 75 % due to the large loss of historic material that could be used to restore the floor finishes and wall lamellas. The consequence of the design changes was an increase in the initially planned construction time of around 40%, as well as an increase in construction costs of around 30%. The results of the analysis of the revitalization process of the historic building in question, which is a representative example of many historic buildings erected in half-timbered construction, confirm the exceptional complexity of this type of investment. They also point to the considerable uncertainty resulting from the impossibility of fully recognizing the historic structure before work started, as well as the difficulty of identifying transformations made during the building's use.

Due to the risks associated with this type of investment, it is advisable to develop alternative action options during the preparation phase of projects for the revitalization of historic buildings. They should consider the results of the ongoing interdisciplinary examination of the technical condition of the objects, which is carried out during the project. Each revitalization case should be treated individually, considering the specific conditions of the object in question, including its multi-phase building history. It seems crucial that, after preliminary archaeological, historical, architectural and structural assessments of the monument have been made, interdisciplinary consultations on the specifics of the planned revitalization works should be obligatory among all participants in the construction process - even before the design work begins. The aim of the consultations should be to identify potential risks, consequences and to assess the feasibility of implementing the project in accordance with the planned investment assumptions. Such an initiative will enable a broad discussion to take place, resulting in the development of appropriate procedures to minimize the risk of failure at the stage of the construction project.

The project is part of the next phase of comprehensive cultural heritage protection initiated in Myślibórz in the 21st century. After the completion of the conservation of the medieval city fortifications, carried out from 2014 to 2020, work began on the revitalization of the Old Town Market and the adjacent buildings. Revitalization of this tenement house marked the beginning of this process and has undoubtedly set high standards for the preservation of historic buildings for future Myślibórz projects. The work not only contributed to the preservation and proper display of historical building elements but also significantly enhanced the functional value of the tenement, fulfilling the conservation goals defined as revitalization. The building is currently in use.

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## LEGAL ACTS

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