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Cast Iron Staircase in Aleksandrów Kujawski (Poland) - History, Construction, Architectural Form

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Abstract

The text presents historic cast iron staircase, which is situated inside the railway station building in Aleksandrów Kujawski. Since the moment of creation in the 19th century for a long time that station, located at the border of Prussia and Kingdom of Poland, was an important transit point. Nowadays it is situated in the central of Poland. The staircase was built in 1870's as a result of an extension of the railway station building which happened because of the planned visit of the tsar of Russia. Due to that reason stairs have extremely prestigious design. It consists of repeatable elements casted in iron. This has provided easy mounting and interesting, rare artistic form. The staircase in Aleksandrów Kujawski was broadly analysed. Modular, openwork, prefabricated structure is presented. Photographs, architectural stocktaking drawings and 3D models reveal that unique object, which combines functionality and high aesthetic qualities. Stratigraphy examination of paint coats shows, that the stairs were renovated many times. Presented remedial actions indicate negative results of incorrect, unthinking approach to monuments. This unique in Poland cast iron staircase is a glaring example of monument, which despite of compelling reasons of creation, remains neglected nowadays. It became an impulse to discussion on the fate of the cultural heritage which is the element of building's equipment. Often on grounds of service-based nature of it they are not fully appreciated, thus adequately protected.

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1. Introduction

The full bloom of railways in Europe occurred in the 19th century, despite early doubts about the economic reasonableness. The political changes in Central Eastern Europe led to the creation of new borders between the Kingdom of Prussia and the Kingdom of Poland which was dependent on Russia. Communication link between them was provided by the railway line Warsaw-Bydgoszcz, completed in 1862 [1, 3]. The border station was built in Aleksandrów Kujawski. For this reason, the created building received decorative form. Moreover, it was equipped with additional functions, such as the guest rooms, the post office and the restaurant. Around 1879 it was expanded due to the location the meeting of the rulers of Prussia and Russia was planned to be organized there [1]. The ruler of Russia was supposed to temporary stay in a newly built, north-west part of the building. Thus, there was placed the elaborate and impressive cast-iron staircase. The purpose of this article is to carry out its analysis and present architectural and structural advantages.

The railway station complex is entered in the register of monuments and remains under the protection of Kujawsko-Pomorskie Voivodship Regional Heritage Conservator. However the current condition of the stairs should be assessed as bad. Most parts of the barriers are damaged. Lack of some vertical bars, cast iron ornaments are broken off, or complete lack of them. The condition of some treads was so poor that, in order to further use of the steps it was necessary to mount on them additional items of flat sheet. Wooden stairs' walls which are partially damaged were repaired temporarily by the residents of the building by placing fibre panels. Interim actions allow to use that vintage construction, but it is still deteriorating (Fig. 1).

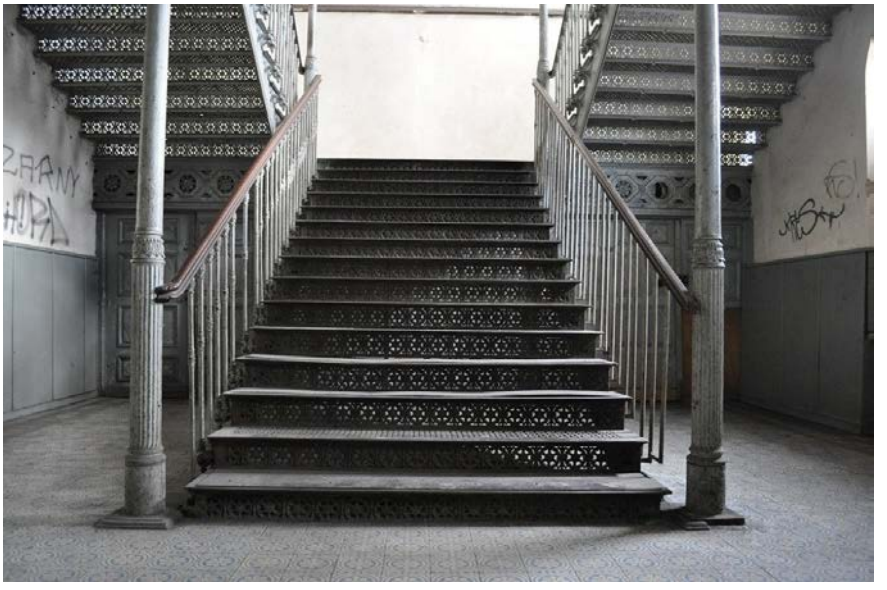

Fig. 1. Cast iron staircase: general view.

2. Cast iron staircase presentation

2.1. General description

The exact date of building the stairs is unknown. According to archival documentation most likely they were built in the late 1870's [1]. It is known that in 1879, during the meeting at the station in Aleksandrów Kujawski between emperor of Prussia Wilhelm I and the Russian tsar Alexander II stairs were already in the building.

Stairs are located in the former residential part of the station. The dimensions of the room with stairs are 9.8 x 6.7 m on the ground floor, but due to the reduced thickness of the walls on the first floor, dimensions at this height increase

to 10 x 7 m (Fig. 2). The stairs go from the ground floor (± 0.00 m) to the first floor (+4.95 m), where former living quarters and the great hall are located. These are the "imperial staircase". Going upstairs it was used the middle flight of stairs (2.1 m wide) to the platform (+2.48 m). From this place we can use one of the returning, side flights of stairs to get to the second platform and the rooms on the first floor. Each flight has 15 steps, each 16.5 cm high. Middle flight is 0.48m wider than the side ones. This may result from building the lateral structural elements of flight of stairs in the walls. Therefore, cast-iron steps are the same everywhere. There is a gap of 30 cm between the flights of stairs. This is the distance between stair treads, slightly reduced by the railings. They are attached to the side edge of load-bearing beam of the flight of stairs (notch board). The first floor's platform is an integral part of the stairs. They occupy an entire staircase. All platforms are based on two columns with Corinthian heads each and beams, most of which have decorative forms.

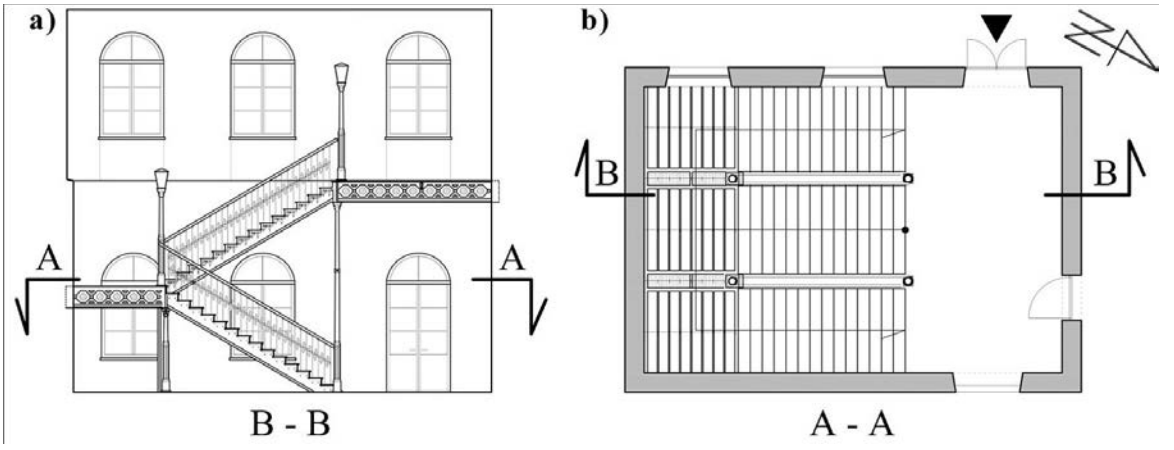

Fig.2. Cast iron staircase, stocktaking:(a) longitudinal cross section; (b) floor plan at the height of first platform.

The space under the lower platform is so high that it was closed with decorative wooden wall. Separated in such way room formerly served as a luggage storage and currently it is used as 2 residential storages. The room with a staircase is illuminated by several windows, which are located on the ground floor and on the first floor. Additional sources of lights are the lanterns placed 2 on each platform. Unfortunately, their original luminaires were not preserved to date. It should be noted that ceramic floor of the room has some plant motives, what integrates metal stairs with the surrounding.

Described architectural form of the staircase is made of cast-iron. It consists of prefabricated elements, which were attached to each other during installation.

2.2. Construction of cast iron stairs

Columns supporting main, load-bearing beams differ in height, but architectural forms of their parts (capital, base) are identical (Fig. 3). Lanterns mentioned before are also the same. From columns they are distinguish only by their height. Every element consists of two parts. The bottom ones have identical dimensions in all cases. The top ones, which are also repeatable elements, vary only in length. The diameter measured just under the capital is the same in all elements. It is 8.2 cm and increase with lengthen of the element toward the bottom of the column. The diameter of the longest element increase by 2.7 cm, while the shortest one only by 0.6. Difference shown is visible in the spot of connection of bottom part of the columns and the top part, which is placed on the bottom one. Load-bearing beams used in the staircase are prefabricated. It is possible to distinguish 3 different kinds of them (Fig. 4). The main beams are decorated the most. These are cellular beams and have floral ornaments (Fig. 5). All beams are irregular double-T bars. They are connected in way that provides the same level of the higher edge of all of them. Together they serve as grid for mounting panels of the platforms. Metal screws are used to secure the connection.

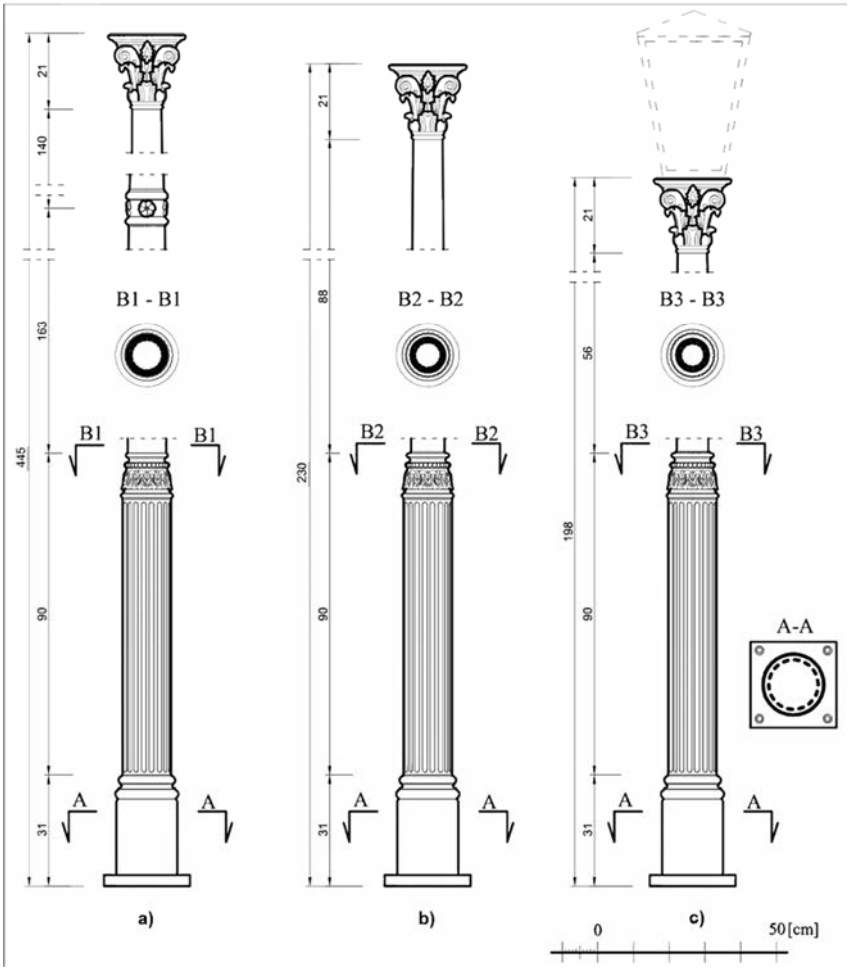

Fig. 3. Cast iron staircase, stocktaking: (a, b) columns; (c) lantern.

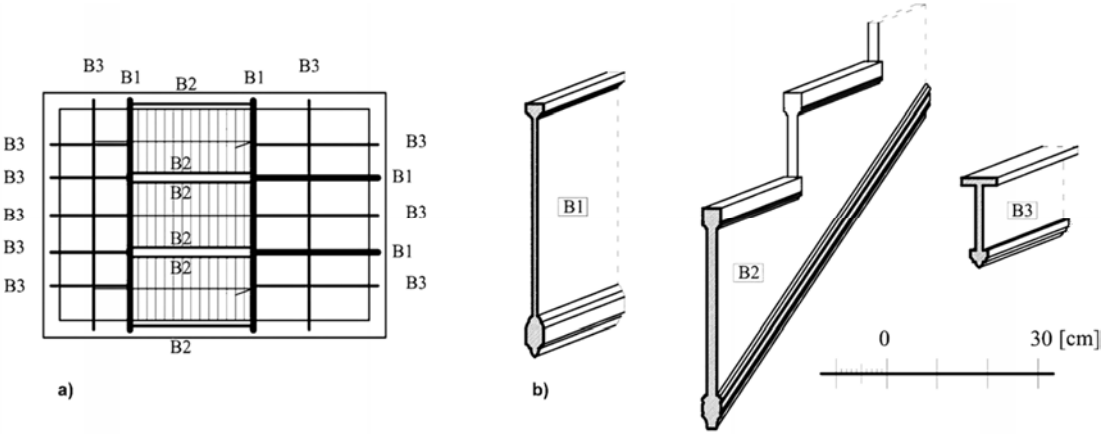

Fig. 4. Cast iron staircase, stocktaking: (a) scheme of construction layout, B1, B2, B3 – types of beams; (b) types of beams.

No metal fasteners are required for joining beams together. That connection is assured by properly shaped construction nodes and works only by the force of gravity. The main load-bearing beam of flight of stairs, called the notch board has a specific shape. The lower edge is diagonal, parallel to the barrier. The top edges are alternately horizontal and vertical (Fig. 4). Such edges underpin stair tread and stair riser.

Platforms are built of modular panels (1,2 x 1,2 m). Both panels and stair tread have identical plant motifs with four-leaf shape. That elements have standard dimensions adjusted to span set up by distance between beams. Openwork stair riser is next to the main load-bearing beam the most decorative element of the staircase (Fig. 5). It stands on horizontal stair tread and underpin another stair tread. Both elements of the flight of stairs are attached to the notch board.

Fig. 5. Cast iron staircase, ornament: (a) the stair riser and the stair tread; (b) the main load bearing beam (B1).

The height of the sloping railing is 90 cm and the height of the horizontal railing on higher platform is 85 cm. Both of them consists of casted in iron, vertical elements (pipes) with external diameter of 2 cm. They are mounted to the side of notch boards (B2). The lower part of that railing is unusual and extremely decorative feature (Fig. 6). Simultaneously it is a threaded element, used for screwing railing to the load-bearing beams of the flight of stairs. The decorated top part of cast iron railing has special diagonal metal blade. It is parallel to the wooden handrail, mounted to the metal element by nails. All joints are invisible, because of being dipped in wood. The handrail is fastening to each vertical element of railing and also in the similar way to the column or the lantern. It consists of few parts, connected together and forming in one long element. Approximately in the middle of height of railing casted in iron ornaments are situated. Beside decorative aspects they are additional stiffening of the barrier. For joining them no extra connector is necessary. It also has some rectangular metal blades, which can be placed inside fitting hole in vertical element of railing. Mounting all elements of the barrier must have been undertaken at the same moment. To already installed vertical bar, the decorative stiffening was putted in and only then the next bar was mounted. All elements trig themselves together. In result, removal of one of it would require uninstalling at least few neighbouring ones.

3. Conservatory proceeding

As it was shown, the staircase in railway station building in Aleksandrów Kujawski has unique value. It results from the history of creation, architectural layout, construction and ornamental form. Not negligible is also the usage of material, nowadays so rarely used. All that reasons have not changed the situation of the staircase, which is not protected from deteriorating in any way. Based on the conversation with current users it is known that for at least 24 years' stairs were not subjected to any overhauls, including repainting. The ownership situation changed in 2008 [2]. The station building became the property of the local government of Aleksandrów Kujawski. To save the building conservation and restoration works were undertaken. According to the documentation of the Regional Heritage Conservator in Wloclawek the residential part of the building, along with cast-iron staircase, is also supposed to be subjected to maintenance.

Because the substantial construction of the stairs is in quite good condition, it is necessary to repair small components in the first place. There are several reasons that will make it easy. First of them is facilitated finding

of prototype for restoration. The staircase is built of repetitive elements and some of them are still well-preserved. It is therefore justified to claim that new elements will be very similar to the origin ones. The second reason involve material of elements. Reconstructed parts should be made of material as close as possible to that used for creation of historical elements. It does not cause any problem considering fact that also nowadays it is possible to cast architectural details in iron. However, it is recommended to examine and then to change the chemical composition of used cast iron in comparison with the 19th century material. It is due to retain difference between authentic and reconstructed elements.

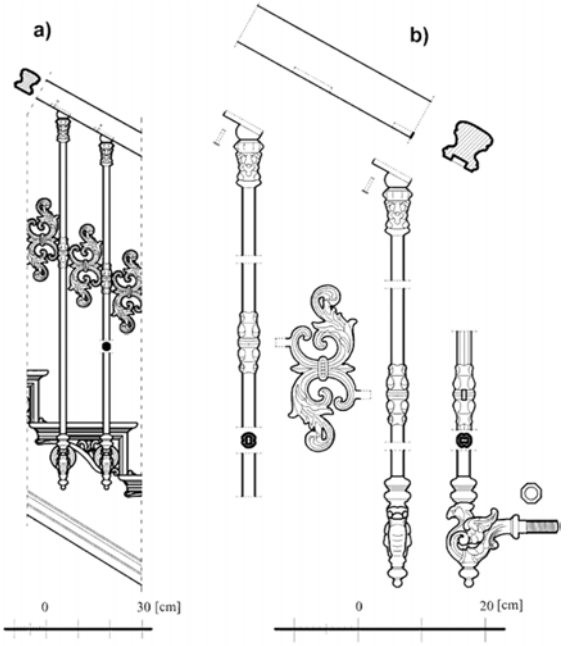

Fig. 6. Cast iron staircase barrier, stocktaking: (a) general view; (b) vertical bars with both decorative and technical elements.

Fig. 7. The surface of decorative metal element of railing bar. The layers of painting coats are numbered consecutively.

There will be a problem during restoration of former light luminaries, as no iconography of their original shape preserved until today. That obligates to do the research of examples used in 3rd and 4th quarter of 19th century and to design the most characteristic ones.

The separate issue meriting specific action is painting decoration. The primary colour should be restored if possible. The first author of the article has carried out the stratigraphy examination on decorative, bird-shaped part of the vertical railing bar (Fig. 7). Bellow the results of the examination are revealed. Based on them it is possible to determine the history of coating. Examination has shown that original colour of the stairs was gold. Till nowadays it has been repainted four times. Current paint coat is grey.

Table 1. Results of the stratigraphy examination of decorative metal element of railing bar.

Number of layer	Chronological order	Dating	Characteristic	Colour of layer
1.	I	70's of 19th century	cast iron base	black
2.	I	70's of 19th century	ground coat	grey
3.	I	70's of 19th century	first painting coat	gold
4.	II	20th century	secondary painting coat	grey steel
5.	III	20th century	secondary painting coat	steel blue
6.	IV	20th century	secondary painting coat	Steel sky blue
7.	V	20th century	secondary painting coat	grey

4. Summary

In 1920, as a result of the Treaty of Versailles the borders were changed. Aleksandrów Kujawski stopped to be the border station, it became a part of Poland. As a regular station it was not treated in a special way. The former hotel part was divided into residential premises, which are still occupied.

The cast iron staircase, situated inside that building, must be assessed differently. Despite the passage of time it is still significant monument, showing rare technical solutions, no longer performed. It is refined in general layout, architectural details and technical solutions. It consists of casted in iron, prefabricated elements. Due to that reason it was easy in transport and relatively easy in mounting. Recognized primary gold painting coat on stairs (without recognition of wall painting coats yet) emphasize its importance. In strong contrast with this seems to be material used. Much more impressive would be more long-lasting brick or natural stone.

It is not known what, despite that fact, was the cause of setting into the building the staircase casted in iron. Perhaps it was decided to use it because of the urgency of the construction. The fastest realization together with interesting and decorative form was guaranteed only by that material. The use of casted in iron prefabricated elements warrants to believe that this is not the only example of such stairs. Further research should therefore take into account searching links with other objects.

Staircase in Aleksandrów Kujawskidue to its historical and architectural value is unique in Poland. Used forms emphasize its importance, and the original gold colour added splendour because of the unique user. It should be also noted that the most commonly used in buildings are stairs consisted of 2 counter-running flight of stair or spiral stairs. The spatial arrangement in this specific case was used only in the objects of high rank, such as the Louvre, the Opera Garnier (Paris, France), the University of Wroclaw (Wroclaw, Poland). For this reason, it is good that there are plans to stop the process of its destruction. The building that was forgotten for a long time, valuable due to its past and architectural form may recover its bygone splendour.

Nowadays, partially damaged, is possible to be preserved. As demonstrated above it is worth it. Due to the technical and material solutions it is neither difficult nor much complicated. The restoration of it, then making it available for visitors is a priority for its preservation. Cast iron stairs are inseparable element of the interior. The whole room should be restored as well. It would be advisable to conduct conservatory examinations on walls and ceiling which may reveal some paintings. Together with decorative ceramic floor it will provide an example of interior designed in a consistent way.

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