

**A QUESTION OF BUILDING MATERIALS
AND CONSTRUCTION SOLUTIONS FOR
REVALORIZATION OF FRONTAGE TOWNHOUSES
IN THE CENTRE OF JEZIORANY**

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Key words: revalorization and conservation of historical buildings, building materials, foundations, wall structures, intermediate floor structures, rafter framings, Jeziorany.

Abstract

In this paper, Jeziorany, a small town in the Province of Warmia and Mazury, serves as an example for discussing questions on building materials and construction solutions used in rows of townhouses dating back to the turn of the 17th and 18th century as well as in buildings raised in the town centre in the 1980s. Types of rafter framings, walls and foundations have been presented alongside a description of the building materials used when Jeziorany was rebuilt after a great fire which ravaged the town in 1783.

**MATERIAŁOWO-KONSTRUKCYJNE ASPEKTY REWALORYZACJI ZABUDOWY
PIERZEJOWEJ ŚRÓDMIEŚCIA JEZIORAN**

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Słowa kluczowe: rewaloryzacja, konserwacja zabytków, materiały budowlane, fundamenty, konstrukcje mурowe, stropy, więźby dachowe, Jeziorany.

Abstrakt

Na przykładzie niewielkiego miasta Jeziorany (woj. warmińsko-mazurskie) wykazano rozwiązania materiałowe i konstrukcyjne w zabudowie pierzejowej z przełomu wieków XVII i XVIII oraz w budynkach z lat 80. XX wieku. Przedstawiono rodzaje więźb dachowych, konstrukcji murowych oraz fundamentów, a całość uzupełniono opisem materiałów stosowanych w trakcie odbudowy Jezioran po pożarze, który w roku 1783 strawił je niemal doszczętnie.

Introduction

Since the earliest times, people have been engaged in raising constructions of different types, frequently showing great determination and amazing results. Old architecture can be regarded as art. As one admires a combination of different architectural schools and craftsmanship solutions seen in historic buildings, an inevitable question arises – how such a building was constructed in the former time and – more importantly – exists in the present day.

Jeziorany is a small town, with a population of less than 3.5 thousand. It lies in the eastern part of Warmia, on the Symsarna River. Apart from the river, there are also a few lakes situated in the environs of Jeziorany. The town was founded by the Bishop of Warmia, Herman of Prague, in 1310, but it had to wait 28 years before it was granted a charter. There are several listed buildings in Jeziorany, a town endowed with a long and interesting history. The town used to have a timber fortress, which in the 14th century was replaced by a brick castle – an identical copy of the castle in Działdowo (CZUBIEL, DOMAGAŁA 1969).

Originally, all the buildings in Jeziorany were made of timber, which often caused fires. After one such fire, which ravaged most of the castle and much of the town, the castle was demolished and the recovered building materials were used to raise a new building, which today houses the Councils of the Town and the Commune of Jeziorany. The whole town was reconstructed as a brick one, which in those times was a rare solution as brick was not a plentiful material. However, the most severe damage was inflicted to the town during the Second World War. Today, the post-war reconstruction and modern buildings seem to dominate in Jeziorany so that in many cases the beauty of the old architecture has become a backdrop for the contemporary one (ACHREMCZYK 1997).

The spatial layout of the town relies on a chequered pattern of streets, running perpendicularly towards the centrally located market square – a pattern which until the present day is clearly distinguishable. The town centre contains the most important edifices, such as the Town Hall, the castle and St Bartholomew Church raised in the Gothic style.

The residential area consisted of compact blocks of townhouses, which – owing to their historic ornaments – make Jeziorany an attractive although partly dilapidated town (Fig. 1, 2). Nonetheless, much of the historic architecture of the town has survived until our days (ZAGROBA 2009).



Fig. 1. A compact row of houses along one side of the main market square
Source: the authors.



Fig. 2. A compact row of houses along one side of the main market square
Source: the authors

Foundations

As the town was set up in the Middle Ages, the foundations were laid from the material popular in that time, such as insaturable stone and cement-lime mortar. These foundations have remained in good condition until the present time. However, their simple construction meant that they could bear only small buildings, such as simple townhouses, which are a dominant type of houses in the town. Figure 3 shows an example of stone foundations. Such foundations were made in a simple way, namely stones were laid at the bottom of a foundation trench and compacted with a wooden peg; afterwards, a layer of breakstone was placed over the stones and poured over with cement and lime mortar. Layer after layer were made until a desired height of the foundation base is reached (Architektura Sakralna Pomorza Zachodniego, 17.02.2011).

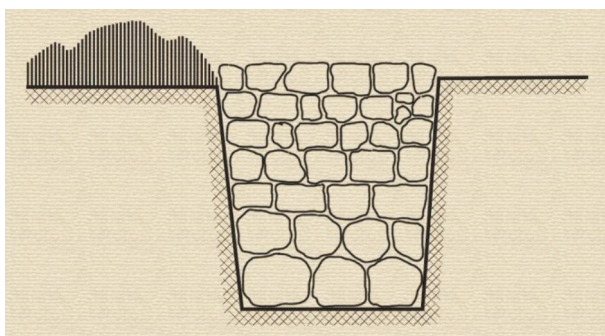


Fig. 3. A stone foundation

Source: Architektura Sakralna Pomorza Zachodniego, 17.02.2011.

Walls

The walls of the buildings in Jeziorany were made according to the then dominant construction technology. Solid clay brick was used, and outer walls were at least 1.5 brick thickness, which was both because of the construction requirements and lack of other insulation materials.

Among many possible brickwork bonds, the most common were the English (Fig. 4) and the Flemish bond (Fig. 5). Gypsum or lime mortar was used for making joints between bricks.

By laying the first course of bricks as headers and starting the second one with a queen brick (3/4 of a brick) followed by stretchers, a characteristic pattern called an anvil was obtained (Fig. 4). When the first course consisted of headers, the second started with a queen brick (3/4 of a brick), followed by a header and next a stretcher, a characteristic pattern of a cross appeared (Fig. 5).

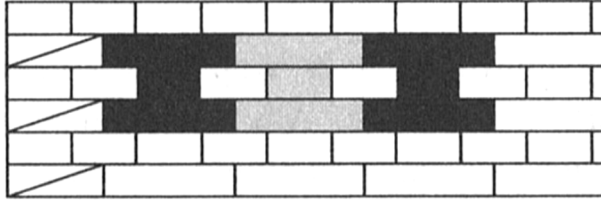


Fig. 4. The English brick bond Source: LICHOLA (2008).

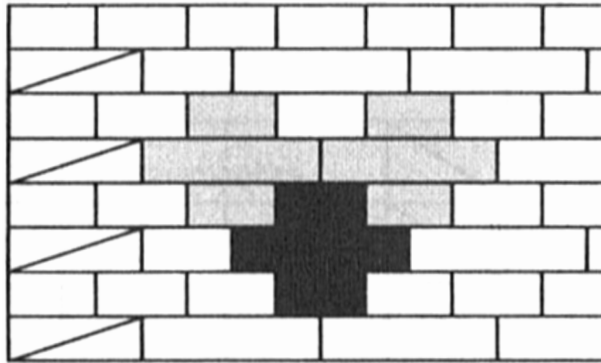


Fig. 5. The Flemish brick bond

Source: LICHOLA (2008).

Floors

Floors were constructed from the basic materials then available, such as timber. Floor constructions comprised timber floors with sound boarding (Fig. 6) or beam-frame floors (Fig. 7). Timber floors are easy to make, even in the wintertime, and provide high thermal insulation. The span of such floors should not exceed 6 meters and the joists should be spaced at a maximum distance of 1.2 meter. The floors were between 18 and 30 cm thick.

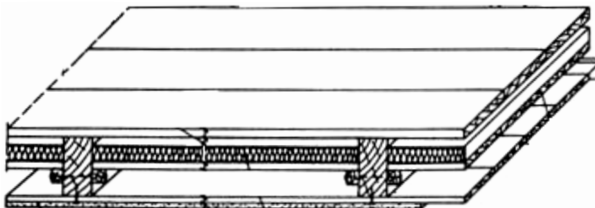


Fig. 6. A floor with sound boarding

Source: LICHOLA (2008).

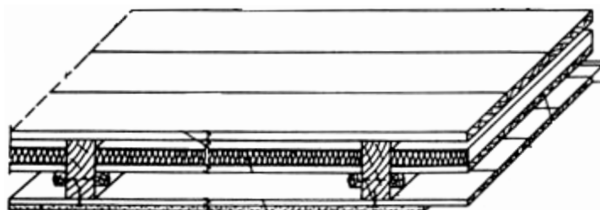


Fig. 7. A beam-frame floor

Source: LICHOLA (2008).

The floor with sound boarding has intermediate boards on which an insulation layer, which in the past meant pugging in the past, is placed. In the beam-frame floor, the insulation layer is laid directly on the sub-ceiling.

Roof structures

Most of the historic buildings in Jeziorany have pitched roofs. Pitched roofs were preferred for practical reasons (utilizable space in attics) and the climate (shedding rainwater and snow).

The small size of the townhouses and short spans of the outer walls enforced carpenters to make simple roofs. Most of the roofs are therefore gable, jerkin head gable (Fig. 8) or mansard structures (Fig. 9).

Most roofs are covered with clay tiles, which were very popular in East Prussia owing to rich resources of the raw material (clay). The most common roof structures (able to bear a heavy load of clay roof tiles) were collar beam roofs or strutted (Fig. 10) collar beam roofs (Fig. 11) with or without angle struts.



Fig. 8. A Jerkin head gable roof

Source: the authors.



Fig. 9. A mansard roof

Source: the authors.

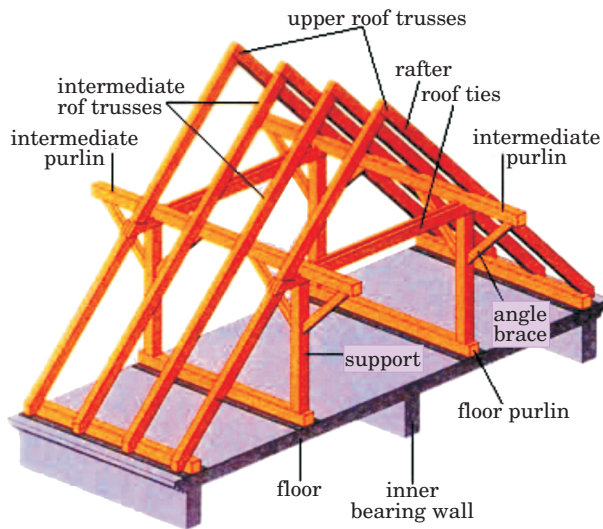


Fig. 10. A strutted collar beam roof

Source: Dachowy.pl, 15.07.2010.

In the later times, such as the 19th and 20th century, other, more complex roof construction were built. The townhouses were designed under the influence of such styles as the Neoclassicism, Pseudo-Classicism or Neo-Gothic (Fig. 12, 13) (Architektura Mieszkalna. Gmina Jeziorany, 14.02.2011).

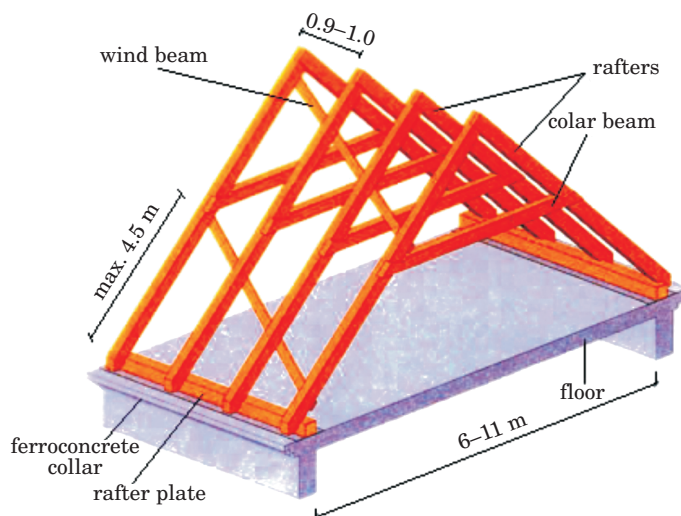


Fig. 11. A collar beam roof

Source: Dachowy.pl, 15.07.2010.



Fig. 12. A neo-Gothic "castle"

Source: the authors.



Fig. 13. Neoclassicism

Source: the authors.

Building materials

The buildings raised in Jeziorany, like in other historic town, were constructed from locally available materials. Brick, timber and stone were the basic building materials in the former days of Jeziorany.

Stone was used to make foundations. The outer walls, partition walls and stairs were built of brick. Timber was needed for constructing wooden-framed structures such as intermediate floors, stairs and roofs.

When renovating old buildings, apart from the building materials, the right colours of facades that should be selected. Using delicate, pastel colours, sometimes in contrasting combinations, as well as a rich variety of plants that should be an indispensable element of an urban landscape (PAWŁOWICZ 2006), will have a positive influence on the spatial management of Jeziorany, a town with a long and rich history.

Some examples of outstanding historic buildings in Jeziorany

Among some more interesting listed buildings in the town, noteworthy is the one that today houses the Councils of the Town and the Commune of Jeziorany (Fig. 14). It stands on a site where – prior to the fire of 1783 – stood a fortified castle (Fig. 15). Its stone foundations are the only remaining trace of the castle of the Bishops of Warmia. The walls are made from solid clay bricks and the roof construction – because of quite big spans between the walls – is a strutted collar beam roof with angle struts.



Fig. 14. The Councils of the Town and Commune in Jeziorany

Source: the authors.



Fig. 15. A sketch of the Castle of the Bishops of Warmia

Source: Jeziorany online 21.07.2010.

Another interesting building, dating back to the mid-14th century is the Gothic Church of St Bartholomew (Fig. 16). It was erected in the second half of the 14th century and is a classic example of a hall church with a one-storey high vestry built in medieval Warmia. The walls of the church are built of solid brick, laid in the Polish bond, on a low wall base made of field boulders. It is a five-bay church with two side aisles. The church has late-Gothic stellar vaults, which make up a pattern consisting of sixteen fields and over the nave and six ones over the side aisles. The vaults are supported by eight-sided pillars. The two sides of the gable wall facing the west are topped with pinnacles, while the gable walls of the vestry and the porch are crow-stepped ones with pinnacles on top of each crow step and decorated with lancet arched blind arcades. Analogously, lancet arched blind arcades divide the church spire into four storeys. The church door at the bottom of the spire is crowned by a lancet arch and has a recessed portal. Likewise, the portal leading from the nave to the vestry is lancet arched, recessed and fitted with a door featuring transverse slats crossing diagonally

and a 19th century door knocker in the shape of the head of a dog, which is a remaining element of the former decoration of the church and a rare example of the medieval fine art foundry. The church is classified as a second-class historic building (Jeziorany online, 21.07.2010).



Fig. 16. St Bartholomew's Church

Source: the authors.

Final remarks

The goal of revalorisation of historic buildings and conservation areas is to restore their practical and aesthetic values and to adjust the new buildings to the context of the historic surroundings. One should also bear in mind the traditional materials used in a given area. However, economic considerations are

another aspect of revalorisation of historic buildings when selecting some materials rather than others (ORŁOWICZ, SZAFRANKO 2004, SZAFRANKO 2000).

In Jeziorany, the dominant building materials are stone, different types of ceramic products, timber and plaster based on lime and sand mortar. In any action undertaken for the sake of regaining the former grandeur of the town, one should emphasize the use of traditional materials and wherever the so-called infill building has to be added, it should be designed in such a way as to complement the existing architecture. The right choice of building materials and colours for facades of buildings is an important component of revalorisation. The proposed colours should be subdued and matching the existing surroundings (ZAGROBA 2010).

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