Transylvanian Historic Roof Structures Database

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Abstract Historic roof structures are load-bearing structures made of timber according to an empirical and intuitive design, without structural engineering theory support. They rest exclusively on supporting subunits, usually arranged on the external outline of the buildings, without resting on slabs or vaults. In Transylvania – i.e. the Romanian region where Western built culture is predominant – historic roof structures are of "Continental" type. Built heritage in Transylvania comprises thousands of Romanesque, Gothic or Baroque (type) roof structures, as well as tens of thousands of Eclectic roof structures. This article presents the main types of regional historic roof structures, as well as data selection criteria for the database.

Keywords historic roof structure, database, Romanesque, Gothic, Baroque, Eclectic roof structure

1. INTRODUCTION

European roof structures pertaining to the Western built culture (except for those belonging to Byzantine built culture) refer mainly to two building methods, sustained by completely different mechanical behaviours. These two categories are called "Mediterranean" and "Continental", respectively.

1.1. Mediterranean Roof Structures

We know that Mediterranean roof structures originate in Ancient times. The most well known Ancient roof structures are the Roman ones: built on purlins, with hanging or straining-hanging trusses, encountered especially over the territories that were under Roman rule but also further on, over the Mediterranean regions, until the 19th century.

1.2. Continental Roof Structures

On the continent: on the territory of Germany, continental France, Sweden, the Czech Republic, Austria, Slovakia, today's Hungary and that region of Romania where Western built culture is prevailing – the roof structures on collars appear and are used almost exclusively.
Romanesque roof structures are made without hanging or straining-hanging trusses and longitudinal bracing systems. Hanging trusses appear with Gothic roof framings, while the straining-hanging trusses appear with Baroque roof framings. When Eclectic roof structures appear, the Mediterranean roof framing system – on purlins – is widespread in Europe.

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1.3. Transylvanian roof structures

The historic roof structures preserved since the 14th century on the territory of Transylvania are Continental roof structures: Romanesque, Gothic, Baroque and Eclectic (type). Most of them are on collars, except the Eclectic roof framing, which is on purlins. It is important to note that in Transylvania roof structures are almost exclusively of Continental type. Only few military buildings – dating back to the Habsburg dominion – are provided with Mediterranean roof structures.

2. HERITAGE VALUES OF TRANSYLVANIAN HISTORIC ROOF STRUCTURES

Built heritage values are essential pieces of information to any accurate historic roof structure database. These values must be correctly identified, knowing that databases contain, among others, a hierarchization of roof structures depending on their heritage value.
Built heritage values are technical, aesthetic and functional values, referring to the historic roof structure subunits pertaining to built heritage. They are classified in two main categories: (i) built heritage values of the historic roof structure subunit itself and (ii) built heritage values carried by the historic roof structure subunit (the non-load-bearing elements).

3. TRANSYLVANIAN ROOF STRUCTURES DATABASE

A roof structure database must contain datasheets with various appendices (written documents, drawings, photographs, laboratory analyses, etc.), and have an appropriate data storage system and display interface. The database of Transylvanian historic roof structures contains all four types of Continental historic roof structures: Romanesque, Gothic, Baroque and Eclectic roof structures.
Stored data is fully detailed, being collected according to the initial template forms. Datasheets comprise information relating to the building whose roof structure is analysed, as well as to the connected subunits: propping system, smokestack, slabs attached to the roof structure, etc.
Sheets are filled on site and have several chapters, such as: (i) roof structure description; (ii) inventory of structural deficiencies and their causes; (iii) interventions necessary to thwart deficiencies. Various existing interventions stages are also comprised.
Built heritage values are identified in a separate chapter. Datasheets also describe non-load-bearing structures connected to the roof structure, such as: roof covering, sheet-metal works, etc.
The database is updated periodically, especially following rehabilitation interventions.

4. CONCLUSIONS

Historic roof structures are load-bearing structure subunits with relevant heritage values. Coming in a great variety throughout the history of construction and engineering, these structures are carriers of unaltered historic values, conveying information about design, materials or technology used hundreds of years ago. Examples of historic roof structures preserved in the region of Transylvania have distinctive features and qualities, combining general principles – valid for Continental roof structures, as well – with local specificities. Inventory, scientific study, conservation, protection and enhancement of these roof structures are a duty of the utmost importance, that we should be able to fulfil to the best in the near future.

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