

RC ROOF STRUCTURES FROM POST-WAR TIME

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SUMMARY

Reinforced concrete roof structures represent a historical construction method that was particularly widespread in Central and Eastern Germany in the post-war period. The lack of wood at that time mainly led to the invention of constructions based on typical wooden roof constructions. Particularly in the first two post-war decades, precast concrete companies developed various system solutions for reinforced concrete roofs with different span widths. Initially only implemented in a slightly technical form, it was later possible to systematise such roof structures more strongly and to convert them to extensive prefabrication. Due to the high planning and assembly costs, however, the construction method was not successful in the long run. The results of the analysis in this article show that the RC structures, which are over 50 years old, show comparatively little damage. Due to their rarity, which is quite rare in the meantime, it is worth considering the preservation of this construction as a historical testimony.

Keywords: *Precast Reinforced Concrete Elements, Roof Structure, Pitched Roof, Menzel.*

1. INTRODUCTION

Following the destruction of the wooden roof truss of Notre Dame cathedral in Reims by fire during the First World War, Henry Deneux, the architect in charge, developed a concept for the reconstruction of the cathedral using non-combustible prefabricated concrete elements for the first time, as shown in Fig. 1. Here, the principle of standardisation and prefabrication of the then still young building material Reinforced Concrete (RC) was implemented on a grand scale [1]. The roof truss of Notre Dame Cathedral was completed in 1927. Already in 1921, the burnt down roof truss of the church Saint-Jacques in Reims was rebuilt in concrete, which according to the system was the model for the cathedral. The Basilica Saint-Remi followed. The roof construction of Reims Cathedral can thus be seen as the source for the further development of precast RC roof trusses in industrialised residential construction.

Roof structures made of RC are also among the most striking post-war structures in Central and Eastern Germany. The main reason for the conception and construction of such structures was the lack of timber at that time. Precast concrete factories developed in the 1950s and 1960s system solutions for roofs of different spans. Such constructions were initially implemented in only a slightly technical form. However, it was very quickly possible to systematise such roof structures more strongly, to convert them to extensive prefabrication and to improve their quality. An example of this is the Menzel company, which developed its own system solution for pitched roof made of precast RC elements (see section 3, Fig. 3). This kind of construction was particularly widespread in Central and Eastern Germany (former German Democratic Republic (GDR), see section 3).

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