

Traffic Structures in Eastern Germany – A historical Review

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Summary

This paper sheds light on the milestones of the development of design and construction of bridges and station halls in Eastern Germany. A link will be made from the oldest stone bridge in Creuzburg/Werra built in 1223 to the long span archbridges in Göhren and Plauen (span 90 m) built in 1905. The same will be done for concrete and steel bridges on the basis of regional examples. There are various characteristic types of structures which could not establish themselves over time, but still exist though. The bridges designed by M. Möller and F. Visintini or the timber arches of P. de l'Orme or Emy are such situations. The characteristic design principles are presented with a special emphasis on the particular “state of the art” in technology and structural knowledge at the time. This can be shown particularly well for the development of long-span station halls. The span of the main station hall in Leipzig grew from approximately 20 m in 1839 to 294 m in 1915.

Keywords: Bridges; Station halls; Eastern Germany; History

1. Introduction

In times of increasing industrialisation, beginning around 1850, Berlin and Saxony became commercial centres of Eastern Germany. This growth was predicated on a remarkable upgrading of the railway network. Newly gained knowledge in material science and a better understanding of structural principles enabled engineers to build bridge structures that could span even greater lengths than previously. Some outstanding examples of the construction of bridges and station halls from the 19th and 20th century can be found in the study area. A selection of characteristic structures which were erected until the middle of the 20th century will be described below.

2. Development of bridges on the basis of regional examples

2.1 Stone bridges



Fig. 1 Werrabridge Creuzburg, 1223 [1]

flooding and ice drifts. Therefore, segmental and basket arches were implemented into the structural

Almost every stone bridge that was built between the 13th and 16th centuries featured round arches. The arch had to be designed relatively voluminous so that the ideal parabolic thrust line could be maintained. The oldest preserved bridge in Eastern Germany crosses the Werra River in Creuzburg/Thuringia. It was erected in 1223 and shows seven round arches. The longest individual span measures about 9.40 m [1] (Fig. 1). A characteristic feature of Medieval river bridges is the use of wide piers which protrude beyond the section of bridge to protect against undercutting and ice pressure.

Bridges with increasing spans were built in an attempt to minimize damages resulting from