Australian Masonry Conference 2004

Abstract for Paper.

An Capacity Analysis of and Commentary on the Pont-Y-Prydd Arch, Wales.

John M Nichols  
Dept of Construction Science  
TAMU  

The Pont-Y-Prydd Bridge was built by Mr Edwards in 1755 for wagon traffic. The first bridge was washed away in a flood, the reconstructed bridge failed at the second attempt at construction when the centring was removed, whilst standing successfully at the third attempt with lighter haunches. Baker (1909) wrote that the work was constructed by an un-educated mason, although the Welsh consider the builder one of their early architects. The construction is unusual in the steepness of the roadway, the relatively thin arch elements and the circular elements used to reduce the mass of the haunches. The paper presents a capacity analysis of the Pont-Y-Prydd Bridge using the data presented by Baker and other researchers. The finite element analysis using Abacus on the TAMU supercomputer provided the data to determine the capacity of the bridge and the likely deflection from the design wagonload. A comparison of the results and a commentary is provided between the second and the third bridges. The third bridge still stands.