

RESTAURATION OF THE PONT TRENCAT (BROKEN BRIDGE)

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Summary

In 1811, during the Napoleonic Wars, the main arch of the "Pont Trencat" was destroyed. At the beginning of 1999 Alfa Polaris was commissioned to develop the bridge restoration project. Archaeological works and documentary research were first commissioned to obtain the information available about the history and the construction sequence of the bridge. Since the bridge was destroyed a long time ago, nobody knew what it really looked like before it collapsed. If we had tried to give the bridge its original shape back we would have had to invent all the information we lacked. Also, people were used to seeing its broken shape. Therefore we proposed to restore it in a way that reflects the contrast between the new work and the existing remains, using a modern material—steel, which is, along with concrete, the most representative structural material of our time— and contemporary constructions techniques. The work began in July 2000 and was divided in three phases: The first part consisted of reinforcing the old remains, made of stone, as well as building the new foundations in concrete. The second phase consisted of constructing the steel structure that was erected in four pieces. The arch was lifted in two pieces welded to each other in the crown. The beam was also lifted in two pieces. The third phase consisted of constructing the pavement and installing the street and monumental lighting. The bridge was opened to public in September 2003.

Keywords: footbridges, bridges, steel, corten, arch, construction, aesthetic, restoration, history, Middle Ages.

In 1811, during the Napoleonic Wars, the main arch of the "Pont Trencat" was destroyed. No one tried to repair it for almost one hundred and ninety years until 1996, when people from the two villages the bridge links, Sant Celoni and Santa Maria de Palautordera, situated fifty kilometers north-east of Barcelona, decided to raise funds to carry out its restoration. Archaeological works and documentary research were first commissioned to obtain the information available about the history and the construction sequence of the bridge. Remains of the disappeared arch were found as well as part of the old pavement on both banks. Despite it is said to be a Roman bridge—it is placed on the Roman Via Augustea—we didn't find any remains of that time. We are not sure when the existing part was constructed but documents were found showing that in 1453 important works were made. It is quite likely that the current shape, with its pointed arch, dates from then.



Figure 1 – General views of the bridge

The main issue we had to deal with was about what kind of action we should carry out. Since our goal was to recover its functionality—only for pedestrians—we had to choose between giving the damaged monument its original shape back or rebuilding the missing part in a new way, different from what it looked like before. It was a difficult decision and we knew that both options would be controversial. Since the bridge was destroyed long time ago, nobody knew what it actually looked like before it collapsed. If we had tried to give the bridge its original shape back we would have had to make up all the information we lack. Also, people were used to seeing its broken shape, its name, "El Pont Trencat", means The Broken Bridge.

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Following the ideas of some famous restoration theoreticians, such as the Austrian Alois Riegl (1858-1905) and the Italian Camillo Boito (1835-1914), we thought it would be better to reerect the missing part with a modern structure in a way that reflected the contrast between the new work and the existing remains rather than trying to make a mimetic reproduction. The structure we constructed consists of a two span box girder deck, 3.00 meters in depth, supported by three pairs of bearings, two at both ends and the intermediate one placed over the crown of a hollow box pointed arch, spanning 24 meters. To emphasize the old silhouette, the parapets of the deck are extended along the remaining structure. The top line of the new deck and the intrados of the steel arch follow the shape we think the old bridge had so the new structure tries to evoke the missing silhouette of the original bridge.

The works were divided into three phases. In the first one we consolidated and repaired the existing remains trying to follow a non-interventional attitude. We avoided anything that could change its traditional appearance and, when it wasn't possible, for instance when we reinforced the bottom of the lateral walls because of some underminings, we underlined our intervention using a completely different material, in our case, concrete. We also carried out the new foundation of the arch, on the right bank. In the second phase the abutments of the deck were made; one on the existing remains, and the other one on the left bank. The steel structure was constructed seventy kilometres away from the work side, and transported in five pieces; three for the deck and two for the arch. We first lifted the two parts of the arch which were welded to each other in the crown. For the deck, before it was erected, we welded two of its parts and then we installed it in two pieces welded to each other on site. In the third phase the pavement was made. Over the bridge we choose a timber pavement in order to provide pedestrians a warmer and more tactile material in contrast with the coldness of the steel. On both approaches the pavement was a combination made of rosé granite stone and washed concrete pieces. The street lighting over the bridge was placed into the parapets of the deck. On the ends, on each side, we installed some modern lampposts. The monumental lighting was placed on the lateral slopes, over the maximum flood level.



Figure 1 - Some details of the arch

The contribution of the present project —as far as we know it is the first time a restoration like this is proposed for a bridge— lies in the originality of the taken solution and the way it fits with the existing remains of the old bridge.

We think that with our proposal we recovered the bridge's use, but, in some way, the bridge keeps on being broken.