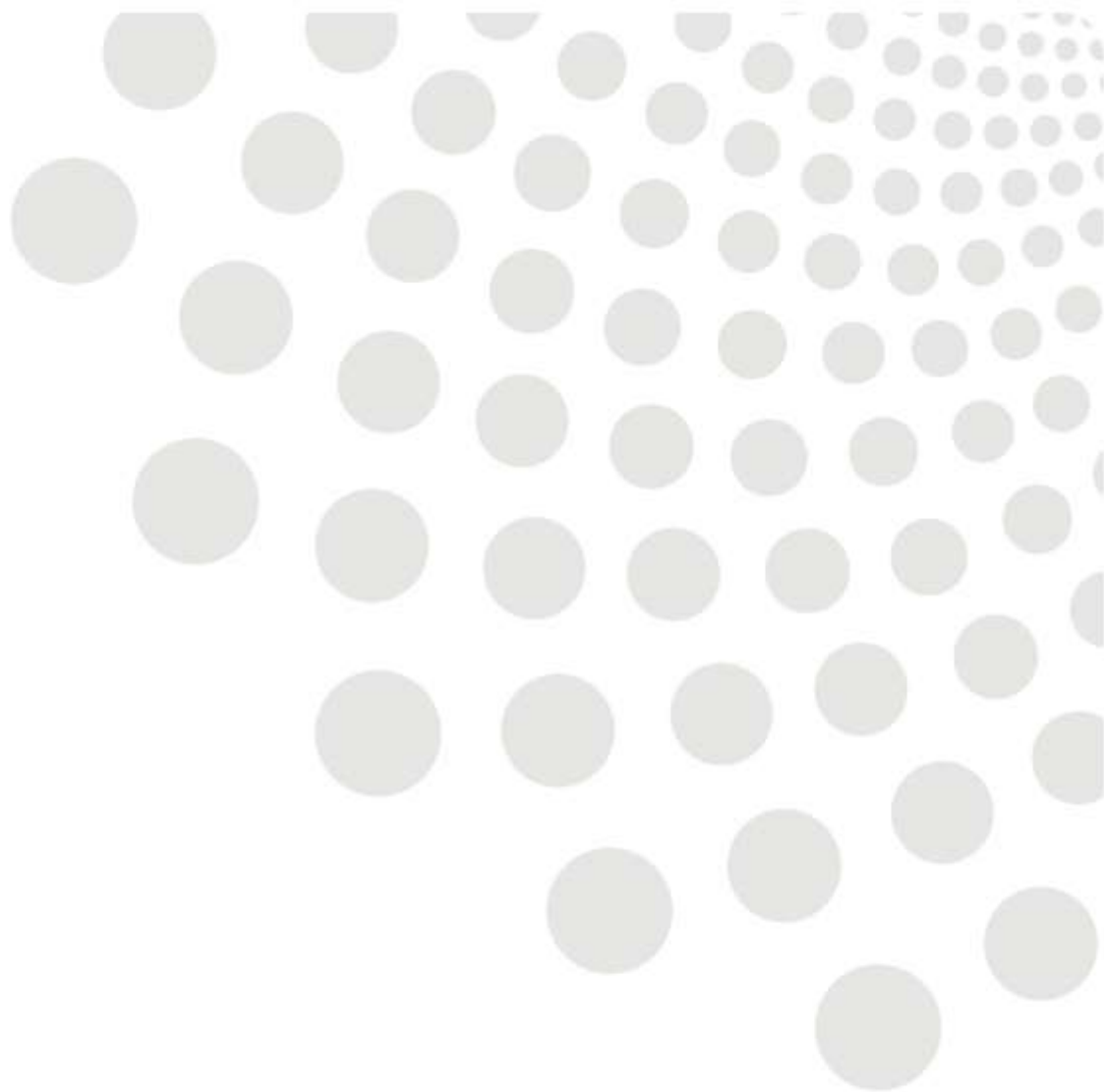




Old Tram Bridge - Preston

**Summary of Principal Bridge Inspection Report
6th February 2019**

Bridge history and background

Old Tram Bridge was built by the Lancaster Canal Company in 1802. Goods were carried by horse drawn waggons on a plate or 'tram' way across the River Ribble between Walton Summit and Preston.

The arrival of the railways led to the closure of the tramway in 1858 and in 1872 Preston Corporation acquired the bridge from the canal company.

The original bridge was built in timber. We don't know how many times the timber was partially or completely renewed prior to the bridge being badly damaged by high flood waters in December 1935.

Following the 1935 damage, the bridge was rebuilt with concrete supports to replicate the original timber ones and the timber deck was renewed.

In 1966 the timber deck was replaced with pre-stressed concrete beams and a new steel parapet was installed.

Today, the Old Tram Road that crosses the bridge is a popular leisure and commuting route for walkers and cyclists. The bridge carries a bridleway and National Cycle Route 55, and there is also a bridleway that passes beneath the bridge on the south bank of the river.

The concrete bridge deck is now over fifty years old and the supports are over eighty. The County Council has carried out regular inspections of the bridge for a number of years but its condition has steadily deteriorated in line with the type of construction and its increasing age.

Summary of the key findings of the inspection

Around two thirds of the 1960's pre-stressed concrete bridge beams have extensive horizontal cracking. This is particularly concerning for this type of beam for two main reasons. Firstly, the cracking indicates that the beams are suffering distress due to the effects of loading. Secondly the cracks allow water to penetrate into the concrete, leaching out minerals from the concrete and potentially corroding the steel pre-stressing wires within the beams. The beams could fail suddenly due to weakening of the concrete and weakening of the pre-stressing wires.

The connections between the beams appear to have failed. This means that the beams no longer support each other and share the loads. There is a risk that the beams could fail suddenly or could roll off their supports.

Many of the beams are not seated correctly on the supporting bridge piers. This means that the load from the beam is concentrated over a smaller area resulting in higher stresses in the beam end and in the supporting pier. This has been the situation since its construction. Areas of the supporting piers have already broken off, reducing the supporting area even further. In other areas there are large cracks where the supporting piers are failing. There is a significant risk that support to one or more beams will be completely lost and a beam will collapse.

The 1930's concrete piers and struts are in very poor condition. There are extensive areas where the concrete has fallen away leaving the reinforcement exposed and badly rusted. A number of struts have already fallen off causing damage to the piers. There is potential for more concrete, including complete struts, to fall off with a significant risk to anyone below.

The parapets are badly corroded, particularly at the supporting posts. There is a risk that the parapets could give way if there were crowds on the bridge leaning on them.

The photographs below are typical of the general condition of the bridge and demonstrate the key issues noted above.



Extensive cracking to the concrete beams with associated leached deposits



Poor seating of the beams leading to cracking in the support



Spalled concrete and exposed reinforcement in the supports with damage from falling struts



Surface cracking indicating beam movement and allowing water to penetrate the structure



Corrosion of the parapets where they are connected to the bridge