

Bridge of the Month 116. Aug 2020 Trenance Viaduct, Newquay

Here is something quite unusual. This is the third incarnation of [Trenance viaduct](#). First there was the 1849 timber trestle on stone piers. Then in 1874 the piers were built up in stone to carry iron girders. The current bridge was opened in March 1939. A more general shot wasn't available so we start with this view of a pier. I was brought here by a picture like this sent by my friend Andy Richards.



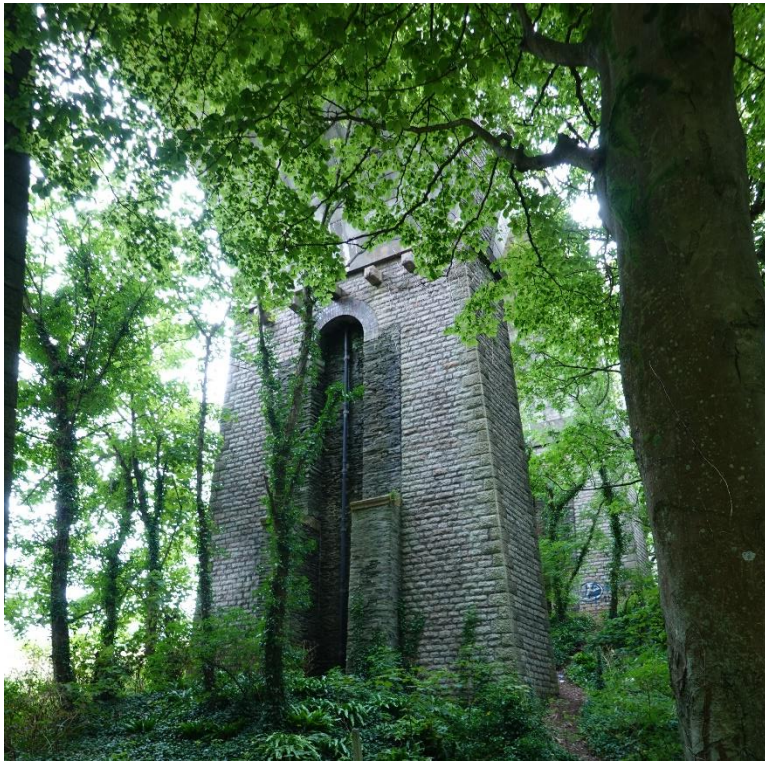
There are so many odd details even in this one picture. Notice how the near edge of the pier slopes uniformly from springing to ground while the one behind turns vertical and has a corbel. Look to the left and the near pier is also vertical on the left. Also, there is a little arch, almost like a relieving arch near the top with water marks and cracks coming downwards from it.



Here is a clearer view of the corbel. Perhaps the vehicle indicates why it is there. The visible stonework is granite, but the corbel pieces are precast concrete.

Below we move to the back of one of the other piers and a little more is revealed. The very different stone in the middle is the pier of Brunel's original viaduct. The "relieving" arch may belong to that, though I think they often stood on independent legs.

The spans have been adjusted from Brunel's original layout. Varying spans are easy in Timber or steel but rather more expensive in stone, though in this case the arches are of precast concrete voussoirs. Making different moulds for different spans would have been even more expensive.



Here, the upper part of the original pier is flush with the face of the new.



From a slightly different angle we can see that the next pier is similarly flush. So the new spans are slight shorter than the originals and offset to one side of the original piers.



The spandrel wall is vertical, so the water marks there relate to the level of backing inside. The overhanging string course at springing level means that dripping water reaches the inclined face of the pier some way down and creates a stain there too.

There is lots more in this picture but let's take a patch out of it to make that clearer.



The first thing is that (sensibly) the precast voussoirs come in full and half lengths. The half goes at alternate sides. Then there is the fact that the inner part (at least) of the string course is almost certainly cast in-situ as is that first course of arch above over much of its length. There is just one voussoir at the near side and one and a half at the other.

There is a nosing above the voussoirs which also turns across the top of the pier. Bricks were often made for this purpose and these are probably of that material.

Finally, we should note those fine granite corbels to carry the centring. Interesting how far from the edge the outer one is.



Not all the spandrels have that dark stain. Here, there is a trace of a line with lime runs. It looks as though it is level with the crown extrados. There is a less obvious line further down and a change in general colour which suggests to me that there are internal walls, closed with arches, sitting on solid backing at a lower level.

I didn't have much time, slotting this viewing between more detailed inspections of two other bridges. Another day I would look more closely for evidence of internal construction.

Oh but look! The quoins are precast concrete too, with a face tooled to look like the granite unless you get close.





Here we see the old piers projecting on both inner faces. The new piers are thicker than the originals so the span to the left was almost certainly bigger originally. To the right, up the banks, it is much less likely to be so.



Looking up, there is a crack along the arch centre line. An explanation for that would also require a further visit.



This is the back face of the pier at the road. We know that the original pier does not protrude on the road side either but it must be close to the surface here because there is a very clear movement at the outer edge of the original buttresses. The inner edge is demarked by the springing of the little brick arch but there is no crack below.

There is damage above the arch to the left though, so it seems there may be some modest movement.

I think that is it for this month. I will try to get a little further ahead in September. The pressure of work we have on at the moment is quite remarkable. Luckily we found a new half time staff member and are getting help from a friend with a consultancy in Bath.