



Bridge of the Month No64, April 2016 Bittaford, Multi-Bridges



Lots of travel in the coming weeks so perhaps I will find some new delights. Last week I did a talk in Plymouth and stopped to look at Ivybridge Railway viaduct, for which my only photographs were taken pre-digital. On the way I found Bittaford (which I had seen before but forgotten) and that's where we will go this month.

In the meantime, the travel takes me to **Dublin** on 5th May to do a day course for various local authorities there. Then an Archie Seminar in **Hertford** on 25th May, Central Scotland, at the Scottish Lime Centre, **Charlestown, Fife** on 16th June. Followed by their own **Arch Bridge Masterclass** on 17th. Another seminar hosted at **Leeds University**. On 30th June we will be hosted by South Gloucester council in **Yate**. We are charging £200 for the Archie Seminars. If you are interested in attending please contact philip@obvis.com. And then I have the Henderson Colloquium in Cambridge on 6/7/8 July and the International Bridges Group in Brague on 8/9/10th. Regular readers will remember my trip round mediaeval bridges with them last year.

The railway South West of Exeter has some fascinating structures. Much of it was originally built single track, Broad Gauge, and with "Atmospheric" propulsion. Most of the viaducts were built with stone piers and timber trusses, though the latter were more like cantilevers and suspended spans. It was always intended that those should be replaced as they became unserviceable. When that came to, the track was doubled and a new alignment made so the new viaducts could be built alongside the old. At Bittaford, things got yet more complex as we shall see. The viaduct is [here](#).



The road runs very close to the viaduct, and there hangs at least part of our tale.



Let's begin by walking up to the end arch seen here. Look underneath and we see another.



Through and around that and things become clearer. This is the end span and abutment of the older timber viaduct. Here is the corbel that supported the diagonal timber struts, with an anchor for a wrought iron tie. The masonry piers were very slender too.



Continue walking and there is a path under the bridge following the stream down. Underneath the new viaduct are some bits that threw me for a while, beginning with this:



To the left of the pier is a wall, which is close to the near edge. Oh and the white van from a previous photo visible on the road beyond. To the right, and visibly further away is and arch under the road. To the right is a rather nice stone culvert.



Look around and there is more.



Brightly lit, to the left is the pier of the Railway viaduct. The arches (both brick and concrete) support the road.

A couple of steps forward down the path and we find more



There is a retaining wall butting up against the railway pier, which is more clearly discerned here.

Down through this arch and look back to the left and we find more.



Three arches, one of which is clearly under the viaduct.

The rear (upstream one) is clearer here, and is obviously rather older



So, get back to the upstream side and we find that the other side of this older arch butts on to the viaduct pier.



In the span where the path goes, there is a double wall. The perspective here doesn't show well, but the rear, rubble wall is the parapet of the present road and off the line of the viaduct and the dressed stone wall is the causeway approaching the stone arch of the old, much narrower road. Here we have two older versions of what is now the A38 road to Plymouth. The newer one is a dual carriageway and runs about 300m away lower down the valley.

So, having located one stone span of a very old A38 bridge and a stone culvert probably also under that road. Then two spans of a brick, widened in concrete, bridge carrying the present road, a flat, semi-elliptical span of Brunel's original GWR and 6 spans of a replacement arch, it is perhaps time to look in a bit more detail.

Let's begin with that elliptical arch, disused and neglected it remains in remarkably good condition.



There has been a lot of mortar washed out, but the joints were thin and there has been little enough displacement of the stones. The extent of the string-course up there to the left is quite impressive. Look back to the one on last month's bridge, which was also a Brunel design. Both by the man himself or the same able assistant?

It's not obvious that this is the crown, but there is a definite open joint there, not really surprising in so flat and short an arch.



And really, that's rather a lot for one month, perhaps I will save the railway viaduct for next month.