

Steel Repair, Painting and Jacking

Muller Road, Filton Bank Four Tracking

Client
Network Rail

Contractor
Taylor Woodrow

Engineer
ARUP

Works Commenced
July 2017



During the earlier refurbishment of Muller Road rail bridge, the ends of the main girders were found to have serious local corrosion where the bridge sat on the abutment. Before being brought back into use as part of Bristol's Filton Bank four tracking project, it was necessary to restore full strength. Principal Contractor, Taylor Woodrow, appointed Freyssinet to do this work in July 2017.

After Taylor Woodrow had excavated and demolished the ballast wall, Freyssinet removed the girder end plate and installed temporary jacking steel. This comprised of a fin plate with splice plates, stiffeners and a crossbeam, beneath which two HFL-1001 Longstroke (109 tonne) jacks were fitted. There were two main girders like this plus an intermediate crossbeam all to be jacked simultaneously at the north end of the bridge.

Once lifted by 145mm the corroded bottom plate, bearing plate and stiffeners were removed using rivet busting and angle grinders. Burning of steel was avoided altogether in accordance with Network Rail requirements. New plates up to 120kg each were installed using carefully risk-assessed manual handling techniques assisted by lifting with an excavator. New plates were bolted up with tension-control bolts after preparing the faying surfaces. Following application of the three-coat paint system the north end was de-jacked, the temporary jacking steel removed and the girder end plate replaced.

The whole operation was then repeated at the south end.

Impressed with Freyssinet's proactive approach to the steelwork replacement package, Taylor Woodrow offered Freyssinet the general civils package to complete the bridge works. This added the following scope:

- Re-concreting the ballast wall including resin fixing of dowels.
- Construction of concrete bases to excavations to aid removal of sheet piles in rail possessions.
- Installation of deck drainage.
- Asphalt works to deck steelwork including concrete haunching.
- Construction of foundations to cess walkway bridge extension.
- Painting.