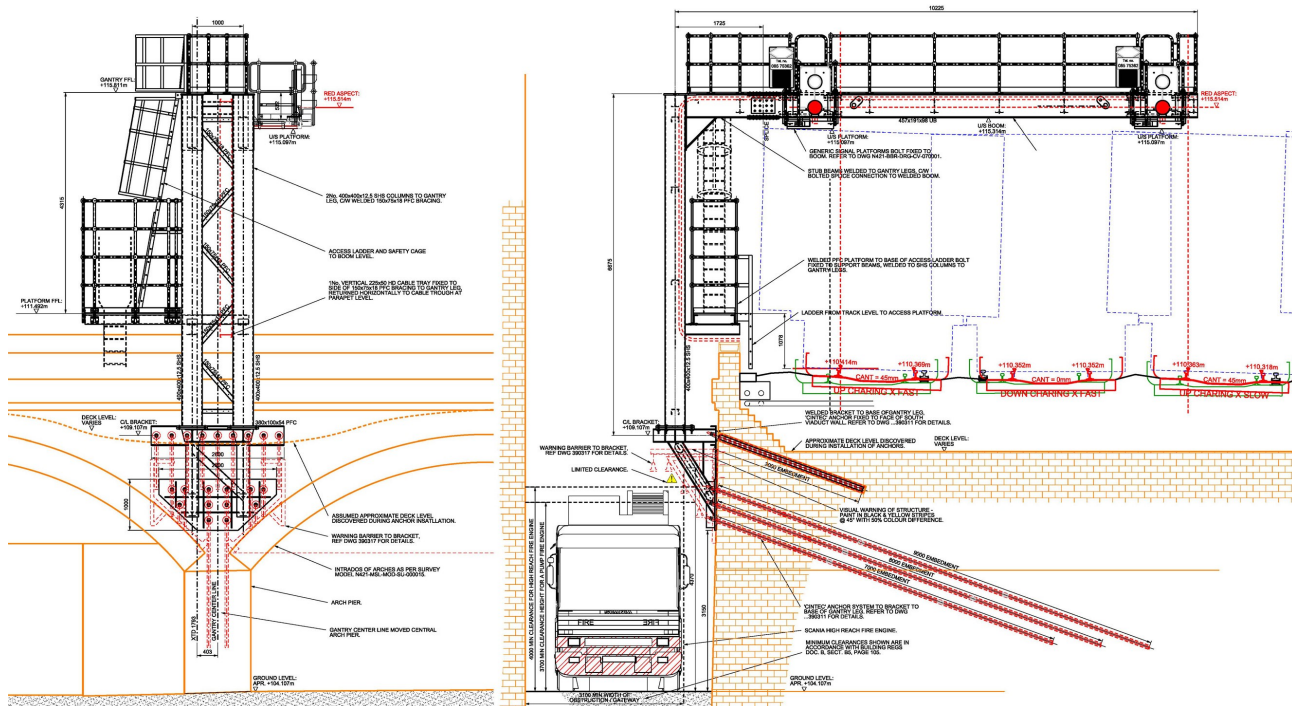


THAMESLINK GANTRIES, SOUTHWARK, LONDON

As part of the new Thameslink network two additional signal gantries were necessary close to London Bridge station with both being cantilevered and fixed to brick built viaducts.

This necessitated designing and installing Cintec anchors to provide suitable support to the new signal gantries. The anchor design principle to support signal gantries is deemed to be unique and not the usual form of anchorage. Due to its unusual characteristics it was essential that an assessment was undertaken which analysed all aspects of the design and construction methodology.

Working closely with Lundy Projects the gantry supplier, Cintec along with structural engineers Epoc, developed an anchor solution which gave Network Rail's Engineering Team and the Route Asset manager confidence that the installation was consistent with the design, as well as conforming to Lundy Projects/ Cintec International quality control procedures.



The gantry was designed to span in excess of 10.00m across the tracks and the loading was therefore high for a cantilever. The Victorian brick built viaduct with arches below was an unknown quantity as far as load capacity in the brickwork. Test cores were taken to determine what lay behind the facework and to sample the types of brick making up the piers between the arches. Test anchors were installed and proof loaded to enable design load calculations appropriate for the particular brickwork construction.



THAMESLINK GANTRIES, SOUTHWARK, LONDON

As part of the new Thameslink network two additional signal gantries were necessary close to London Bridge station with both being cantilevered and fixed to brick built viaducts.

The anchors were designed to be cored into the masonry in longitudinal alignment to the arch pier. It was known that a 3m minimum was solid brickwork and was assumed that past 3m the viaduct structure was solid brickwork.

The designed solution was to have a top row of 9 No. anchors which are in compression, below these are 12 No. tensional anchors which were in 3 No. rows in a triangular formation, set inboard of the arch ring. The middle 6 anchors were the longest and embed into the arch pier line, the outer 6 anchors were of varying lengths from 1.1m to 2.2m as they stopped short of the arch ring, this varying lengths of anchors prevents the potential for a stress line, which may occur if the anchors terminate in a line. All anchors were 33mm diameter stainless steel grade 316 grip bar full thread. The compression anchors are all cored at 146mm diameter and have an 88.9mm diameter x4.6 stainless steel CHS compression tube and were fully socked. The tension anchors were cored at 76mm diameter, the outer 6 anchors are fully socked and the middle 6 anchors are partially socked, being 6m, 5m, and 4m sock lengths for the 9m, 8m and 7m long anchors respectively. This ensures the load is distributed in the main body of the arch pier.



Above: Drilling was carried out by precise setting out of angles with a digital level at points determined by the engineers.



Above: A double template was adopted to ensure the precise alignment of the anchors in line and level and at the correct angle of inclination.



Above: the anchors installed awaiting the installation of the steelwork of the gantry base.



Above: The gantry base steelwork fitted perfectly without any need for adjustment due to the precision of setting out, alignment and installation of the anchors.