Paignton Road Overbridge

Mike Contopoulos, Project Director (Buildings and Civils)

Mike Smith, Regional Asset Manager (Structures)
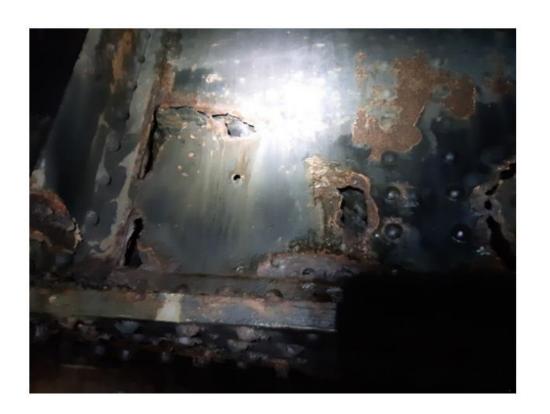
NetworkRail

Wales and Western

Project Overview

Paignton Road A379 – TOR 220m 49.5ch

- 3 yearly detailed exam & assessment programme identified accelerated corrosion in the main girders

- Repair solution - Form of construction

- Replacement – Whole Life Cost Solution

- Budget available for Control Period 6 (2019- 2024)

- Remit for delivery issued

Programme Challenges

Initial Development and Design Delays

Design was originally programmed to complete by the 19 Feb 2021 this was delayed due to COVID and was submitted to NR on the 10 Sept 2021

This was further delayed to the 8 October due to the kerb height analysis requirement from the local authority.

Assumed that the BT Cables could be diverted prior to the new deck being installed

Formal C2-C4 process commenced in June 2020 with a formal site survey in Nov 2021 where it was established that a diversion could only be completed 5weeks after the planned railway closure and would have cost in excess of £1m which didn't represent value for money for the taxpayer.

There was no further planned railway closures available to complete the works.

Working around the critical BT cables

The BT cables were encased in concrete and needed to be excavated by hand which took in excess of four weeks to complete.

The cables required a temporary support structure to suspend them from which made the installation of the new bridge beams far more difficult than originally planned

Due to the cables still being in the road the demolition sequence had to change which prolonged the programme and the team were unable to demolish the bridge in the original railway closure requiring further access to complete

Programme Challenges

Design changes required due to the BT cables

As the cables needed to remain in-situ with minimal movement we were required to make design changes to the cill units that the bridge beams are landed on. These were already cast and required specialist hydro demolition techniques and subsequent reinforcement changes

Changes to the lifting sequences needed to be made for the cill beams to install beneath the BT cables

Storms During January and February

The storms throughout January and February further delayed works as the high winds prevented our cranes from operating and installing the bridge beams resulting in us having to install them in 5 hour windows overnight during the week.
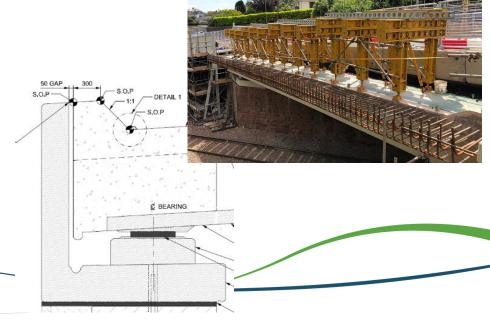
Installation of the bridge beams

The bridge beams needed to be installed over nights during the week due to missed railway access this further compounded the delays as there is only a 5hr working window most nights.

Road Opening

The requirement to open the road on the 23 May changed the construction sequence of the bridge deck requiring us to make further design changes to the parapet units moving from a precast solution to an in-situ solution. This required further design changes to the reinforcement detail and delayed the completion of the works

Key Lessons

- Earlier escalation of our design consultant not being able to maintain their design programme for the replacement scheme.

- Fragmented contracting strategy – NR procuring sub contractors and suppliers has led to ambiguity relating to risk. Improved procurement strategy for awarding of contractors.

- Earlier constructability and buildability discussions between Principal Contractor and Designer. This could have improved construction programme sequencing

- Improved engagement between Network Rail, Principal Contractor and NR appointed Sub Contractors and Suppliers

- Designer availability for modifications and on site attendance during critical works.

- Constructability review of the design – beams on cant, weight of cill units, difficulty in getting appropriate lifting equipment to site, heavily congested areas of reinforcement within the bridge deck, significant temporary works required throughout

Questions?