AMCO·GIFFEN

Aberdeen to Central Belt (A2CB) Case Study

Ironsmill and Lunnan Mill Bridge Demolition

Client:	Network Rail (Scotland's Railway)
Location	Inverkeilor - midway between Arbroath and Montrose
Duration	Four weeks during January and February 2023

The Aberdeen to Central Belt project (A2CB) is an eight-year programme of rail electrification involving 81 miles of twin track electrification and gauge clearance work to help provide significant carbon reduction for Scotland.

AmcoGiffen has completed its first scheme of the programme on behalf of Network Rail, which involved full demolition of two overbridges on the East Coast Main Line (Edinburgh to Aberdeen). The interventions on this line are being delivered collaboratively with Story Contracting.

Scope of work

Overbridge superstructure removals

- Design
- Statutory approvals
- Demolition
- General civil engineering
- Environmental reinstatements

Design

AmcoGiffen coordinated detailed design with support from supply partners AECOM who developed the original concept as part of a separate commission for the A2CB programme.

The works were permissible under Network Rail's permitted development rules and the original structures did not have a recognised built heritage value.

The Project

Both Ironshill Bridge and Lunan Mill Bridge were single-span masonry arch bridges sitting over the twin-track ECN4 line, with no specific or essential modern purpose. The spans were approximately 7.5m.

Enabling work - The area was cleared of vegetation to form access, laydown area and mobilise the site, with timber bog mats placed along the abutment and layered on track and 600 metres of lineside fencing were installed as per land agreement.

Demolition work - Following saw cuts to abutments on both structures two 35-tonne excavators were used to dismantle the structures under 29-hour disruptive track possession. Excavation material was moved to the laydown area next to the site compound and after demolition abutments were finished with precast concrete slabs.

Reinstatement - Re-grading of the embankments to the specified grade and associated earthworks.

BEFORE DEMOLITION

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Key Stakeholders and Collaboration

- Network Rail capital delivery team
- Network Rail operational functions
- Other Network Rail contractors
- Train operating companies
- NatureScot
- Historic Environment Scotland
- Angus Council – various functions
- Adjacent / impacted land owners
- Scottish & Southern Energy
- Scottish Gas Networks
- Scottish Water
- BT
- Linesearch

As part of a longer-term decarbonisation programme we carried out early contractor involvement with Story Contracting to review principle designs, budget, value engineering, mitigating risks, stakeholder analysis and supply chain availability to ensure delivery certainty for Network Rail.

In addition, we worked with Network Rail to secure the necessary legal agreements to access third-party land to facilitate the works. We jointly appointed (with Story Contracting) a specialist land and property surveyor to secure access agreements, compensation payments and reinstatement obligations.

Challenges and Risks

While planning the work we were concerned about protecting the foundations and substructure to be retained. Our solution was to lay timber bog mats throughout the extent of the structure. This also worked to protect the railway line, with layers of bog mats placed 5 metres on either side of the structure. The safety of our people is always front and centre and with the large plan movement anticipated in tight areas we controlled all the movement with banksman using det comms at all times.

Social Value and Sustainability

SUSTAINABILITY

During pre-start environmental checks, we carried out a bat inspection. While there were no bats on the site, we installed new bat boxes that we secured using a new cement product called TECHNO-CRETE. This sustainable concrete innovation provided numerous efficiencies; it needs less product, doesn't require water to mix is quick drying and provides carbon savings on transport.

In terms of managing our site carbon footprint, where possible and practical, we used micro-generators, HVO fuel, PV-enabled site accommodation and battery-powered tools.

SOCIAL VALUE

We made use of the opportunity to develop our trainees, providing practical site experience. And, where possible used local supply chain providers.

AFTER DEMOLITION

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