



PROJECT CASE STUDY

Revitalising Black Bridge, Stonehaven: A Testament to Innovative Engineering Solutions

- ▶ Extended bridge lifespan
- ▶ Innovative engineering techniques
- ▶ Enhanced safety and maintenance
- ▶ Community and environmental considerations

How we helped our customer

Summary

DYWIDAG, in partnership with Story Contracting and Story Geotech, reinforced the historic Black Bridge in Stonehaven, Aberdeenshire. The project addressed complex engineering challenges while preserving the bridge's structural integrity and historical character. By strengthening the existing spandrel wall with advanced prestressing steel technology, the team ensured the bridge remains safe and functional for the next 120 years.

- **Location** Stonehaven, Aberdeenshire, Scotland
- **Client** Story Contracting
- **Timeline** January 2025
- **Partners** Story Geotech
- **Products** Double Corrosion Protection – DYWIDAG Prestressing Steel Threadbar @ 26.5mm Diameter – overall length 9m, supplied in 3m sections with couplers and end plates

Project wins

Extended bridge lifespan: The reinforcement solution ensures the Black Bridge remains safe and functional for the next 120 years.

Innovative engineering techniques: Advanced prestressing steel technology and specialised construction methods were used to strengthen the spandrel wall while minimising disruption.

Enhanced safety and maintenance: The installation of Double Corrosion Protection anchors allows for future inspections and maintenance, improving long-term reliability.

Community and environmental considerations: The project successfully preserved the bridge's historical significance while engaging with local stakeholders and minimising environmental impact.



The Problem

The Black Bridge in Stonehaven faced significant structural challenges due to ageing infrastructure and environmental wear. These issues compromised its stability and posed safety risks for users. As a key transport link in Aberdeenshire, the bridge required additional support to its spandrel wall to maintain long-term safety and functionality. The challenge was to develop a durable reinforcement solution that could be installed efficiently while minimising disruption to rail operations and preserving the bridge's historical significance.

The Solution

The DYWIDAG team worked closely with the client to develop and implement a comprehensive restoration plan that balanced structural integrity with historical preservation. This involved using high-strength materials to reinforce the bridge's structure, ensuring long-term durability. Specialised construction techniques were employed to maximise precision while minimising disruption, and collaboration with local stakeholders ensured the project aligned with community needs and heritage conservation goals.

As part of the solution, the team installed six Double Corrosion Protection anchors, each incorporating 26.5mm Prestressing Steel Threadbars with an overall length of 9m. These anchors were prefabricated in our production facility to ensure consistency and quality, meeting BS8081 and EN 1537 standards. Designed for durability, each anchor consists of two impermeable layers of protection, ensuring compliance with regulations and offering a design life of up to 120 years. Delivered in 3m sections, they were assembled on-site and carefully inserted into pre-drilled holes. Each anchor was fitted with a galvanized end cap, allowing for future inspection and maintenance. To further enhance stability, the void between the threadbars and the structure was filled with grout, reinforcing the bridge's integrity and ensuring its resilience for years to come.

The Result

The revitalisation of Black Bridge in Stonehaven has delivered a safer, more resilient structure while preserving its historical character. By incorporating advanced materials and innovative engineering techniques, the bridge's lifespan has been significantly extended, ensuring long-term durability. DYWIDAG's tie bar solution reinforces the spandrel wall, keeping it stable and resistant to environmental factors. The design also allows for easy inspection and maintenance, giving the asset owner confidence in its long-term reliability.

This project is a testament to DYWIDAG's expertise in delivering complex engineering solutions with precision and innovation. The restoration not only reduced structural risks and improved user safety but also demonstrated a strong commitment to community engagement and environmental responsibility. Positive feedback from local residents and stakeholders further highlights the project's success.



"From enquiry to completion every aspect of the project received meticulous attention, strengthening our bid proposal and the completion of works on time and to a high-quality standard. The technical knowledge and training shared prior to delivery was invaluable"

- Lee Healey, Head of Technical Services, Story Contracting



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