



A465 Nant Ffwrdd Bridge

Provision of a fully decked suspended temporary access solution to carry out preliminary inspection work and support extensive concrete repairs to the bridge abutments, soffits, and deck.

Location: Merthyr Tydfil



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Constructed in the 1960s, the A465 Heads of the Valleys road is an important transport route connecting communities between Abergavenny and Neath while providing an alternative parallel route to the M4 motorway.

Improvement upgrades along the route between sections one to six represent the largest road infrastructure project ever commissioned by the Welsh Government, which culminated in the final sections, five and six, a 11-mile stretch of road between Dowlais Top and Hirwaun, being converted to a dual carriageway. As part of these works, the Nant Ffwrdd Bridge, located west of the A465/A470 junction near Merthyr Tydfil, underwent rigorous testing to check the concrete structure's integrity before remedial refurbishment works began. Now finished, the improved road infrastructure is helping attract inward investment back into the surrounding area that was once a thriving industrial landscape.





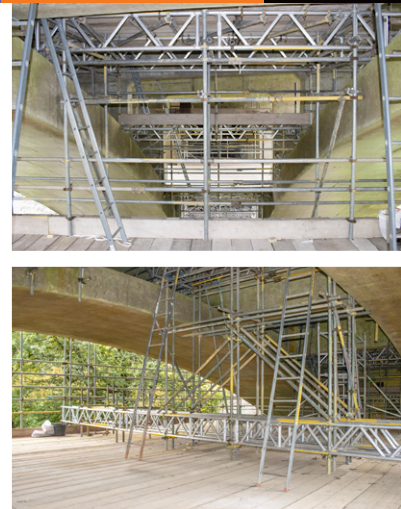
Project Summary

To support the road improvements, the existing Nant Ffrwd bridge, constructed in the 1960s, has been refurbished to now carry only westbound traffic. A new bridge has been built parallel to the current structure to accommodate eastbound traffic.

Erecting a scaffold around the existing bridge to provide temporary access for our client to conduct testing and repairs posed significant challenges for the scaffolding team. The bridge spans a steep gorge with the fast-flowing Nant Ffrwd River below, and the embankments on both sides are densely covered with trees and bushes, creating rough terrain that is difficult to access or use for equipment delivery or storage.

To address these challenges, the operational team implemented similar techniques previously used when erecting a scaffold on the nearby Taf Fechan Viaduct along the same A465 route. We established designated scaffold storage areas at each abutment, with a lay-down area at the bridge centre to facilitate safe access to equipment during erection and dismantling, particularly when working around Piers 5 to 9. The scaffold design incorporated a combination of fully boarded and unboarded independent and birdcage scaffolds reaching heights of up to 10 metres. These were erected in phases from Pier 1 on the east embankment to Pier 16 on the west embankment.

Enigma's in-house design and engineering team collaborated closely with the client to develop a cost-effective solution, and we actively engaged with specialist third-party consultants who performed all Category 3 engineering checks. Our proposed temporary access system solution enabled the contractor to efficiently carry out extensive concrete repairs to the abutments, soffits, and deck. Also, during the works, defective concrete was mechanically removed, and corroded rebar was replaced and treated with carbon-neutral materials to ensure long-term durability.



Value Engineering

With limited space for a material laydown area and challenging terrain, our operations team engaged early with all stakeholders before mobilising personnel and equipment on site. Working together, we developed a robust coordination plan that included meticulous planning of equipment transportation to align with the client's programme timeline. Our logistics team based at Enigma's South Wales Distribution Centre in Kenfig collaborated with the lead scaffolder on site to schedule deliveries and collections.

Delivery arrangements were carefully tailored to meet precise project requirements, enabling the progressive erection of the multi-level suspended scaffold beneath the central curved arch rib. The installed scaffold provided unobstructed access into the multiple cavities between the vertical spandrel supports for inspection and repair work, and maintained continuous access across the bridge span, connecting the facing abutments on either embankment.

Our bespoke temporary access solution enabled the client to complete all necessary work ahead of schedule, helping to keep the overall project on track. At Enigma, health and safety are paramount, with all scaffold erection, alteration, and dismantling carried out safely and in full compliance with NASC (National Access and Scaffolding Confederation) TG20 guidance.

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