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Modular Bridge from Acrow Repurposed for Permanent Railway Application in Scotland

After prior use as temporary bypass, steel components were disassembled and reinstalled at final location

When an assessment found structural issues with an ageing railway bridge at Knagshill Farm near the town of Auchinleck in East Ayrshire, Scotland, the bridge was restricted to a 5t weight limit, which meant heavy farm vehicles could no longer cross. A Mabey Compact 200® (C200®) solution from Acrow was selected for the project to improve safety and reliability.

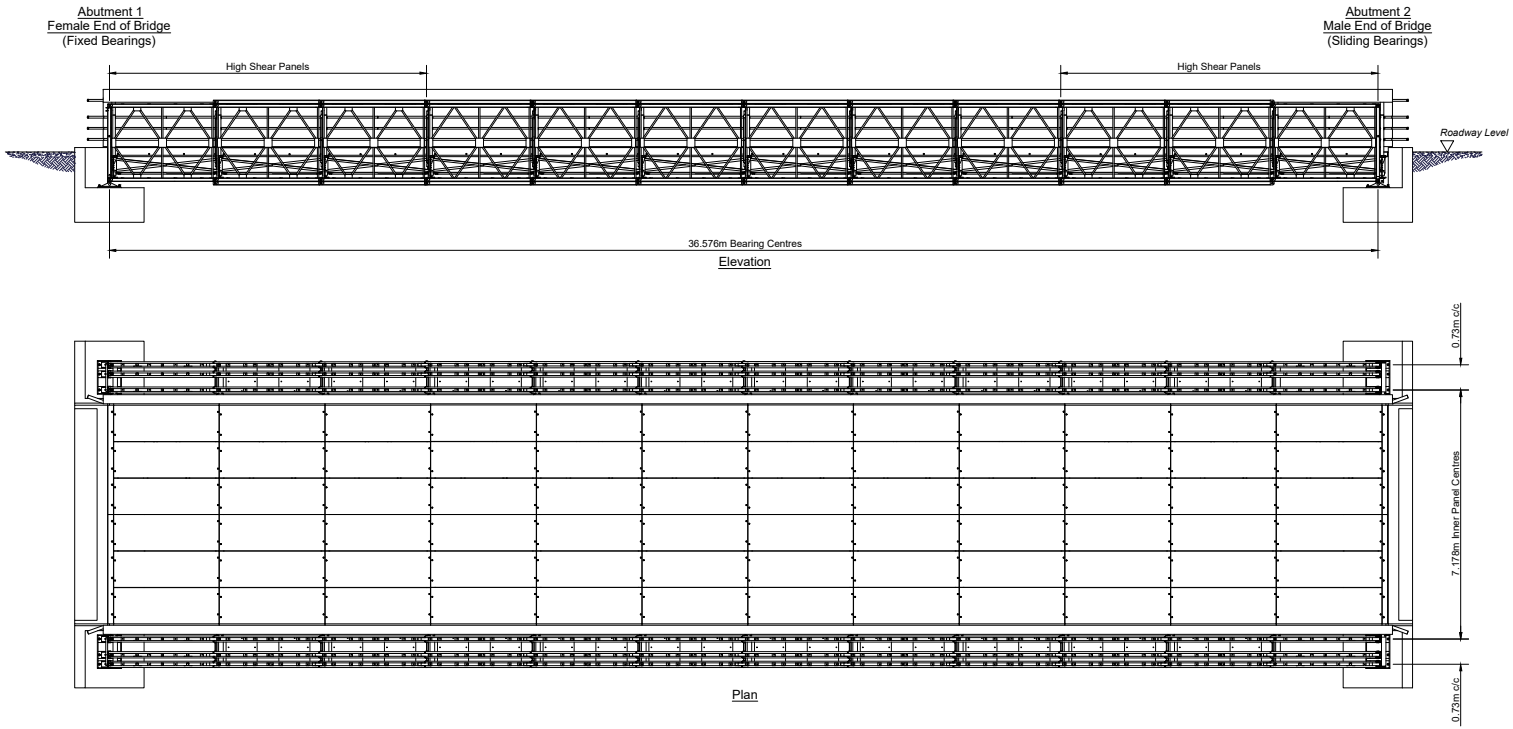
The C200® chosen for the installation was previously purchased for use as a temporary bypass to minimise traffic interruptions during a lengthy bridge reconstruction project. After disassembly, components of the bridge were stored at a warehouse for future reuse. When the bridge was needed for the new, permanent application, Acrow completed an inspection and assessment of the stock and identified additional components required for the new structure. Once obtained, the parts were transported to the site.

The modular steel bridge is 36.58 meters long, has a carriageway width of 6.3 meters, and is designed to carry HA and 30 units of HB loading to BS5400. The deck surface of the bridge has an epoxy aggregate anti-skid finish. The bridge was supplied with parapets, which the client, Story Contracting, modified to raise the barrier's containment height including the installation of Network Rail-compliant bespoke steel coverings. To provide for future electrification of the line, the structure was designed with increased headroom.

Upon arrival of the components, assembly began in late September 2023. The bridge was installed using a crane during a single overnight rail possession on 21 October. The modular solution enabled a rapid installation and ensured nearby gas pipes and electrical cables remained undisturbed.

Galvanized to protect against corrosion, the structure is designed for 100 years with minimal maintenance requirements. Repurposed from a temporary to a permanent application, the innovative steel solution selected for this project has restored full access for rural traffic and provided a more stable and sustainable structure over the rail lines to maintain critical connectivity for the local community.

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Specifications

Bridge length:

36.58m

Roadway width:

6.3m

Parapets:

Bespoke containment barriers (client-modified parapets)

Deck surface:

Anti-skid epoxy aggregate

Bridge erection method:

Crane lift in

Design load:

HA and 30 units of HB loading to BS5400

Mabey C200® bridge finish:

- All major components galvanized to BS EN ISO 14713 and BS EN ISO 1461
- All bolts are spun galvanized to BS EN 1461
- All pins are electro-plated in accordance with BS EN ISO 2081

Mabey C200® bridge specification:

(A) Panel components to BS EN 10025 Grade S450J0 and Grade S355J2

(B) Transoms to BS EN 10025 Grade S460M or Grade S355J2

(C) Deck components to BS EN 10025 Grade S355JR and BS EN 10149 Grade S460MC

(D) Ancillaries to BS EN 10025 Grade S275JR minimum

(E) Panel pins to BS970 Grade 709M40 or 708M40

(F) Bolts to BS 3692, BS14399, DIN 912, DIN 267, DIN 931, BS1083, EN8, EN3, EN15 and ISO898

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