RIVER USK BRIDGE, WALES

This bowstring arch bridge spans 190m over the River Usk in South Wales, and forms part of the Southern Distributor Road constructed to relieve traffic around Newport. The box section arches are inclined towards each other and are constructed of externally painted weathering steel to avoid the need for internal painting. Hangers at 10m centres support the deck which is of composite construction with a steel plate girder ladder frame in-filled by precast concrete panels with in-situ joints. The bridge carries a dual carriageway with cantilevered footway/cycleways on either side of the two main longitudinal girders.

The bridge was erected by launching the ladder deck onto temporary piers in the river, prior to erecting each arch in three segments, extending the temporary piers to support the arch pieces. The hangers were then connected, and the concrete deck panels placed before all infill joints were cast in one operation. This sequence was developed to minimize shrinkage stresses in the deck and to prevent the build up of tensile forces in the deck concrete.

Flint & Neill's assessment included a detailed examination of the construction sequence including the effects of the deck launching system and the construction equipment on the permanent works.

The bridge was completed in 2004.

Client:
Morgan Vinci

Location:
Newport, Wales

Service Dates:
2003

Services:
Category III Check

Awards:
Structural Steel Design Award, 2005