



This cable stayed steel box girder bridge crosses the River Wye on the border between England and Wales. It forms part of the original Severn Crossing which includes the Severn Suspension Bridge and Aust and Beachley viaducts. The bridge was constructed by the Associated Bridge Builders Consortium and opened to traffic in 1966.

Flint & Neill was first involved with this bridge as part of the investigation into the collapse of steel box girders in the early 1970's leading to the subsequent Merrison Strengthening in 1976. F&N then carried out an inspection and assessment to new traffic loading criteria in 1983. As part of the assessment and design of strengthening, F&N developed bridge-specific assessment criteria to deal with aspects of the stiffened steel panel behaviour not properly covered by standard design rules. By so doing, the costs of box strengthening were reduced and maximum benefit obtained from the existing structure.

The 235m main span was originally supported by a single stay at the third points, each comprising a bundle of 20 spiral strands clamped together and passing over tower top saddles. The assessment identified significant problems in the deck level splay clamps and cable anchorages within the box. Furthermore, the original cable arrangement prohibited any future strand replacement. We therefore devised a scheme to replace the entire cable system with a new twin paired cable system, thereby substantially reducing the amount of strengthening to other parts of the box girder and enabling future strand replacement.

The two steel box towers were extended and strengthened, and other works included installing new internal webs within the box girder at the piers. All works were carried out in a carefully controlled sequence with traffic running on the bridge throughout. Following completion in 1989, the steel bridge deck was resurfaced throughout to a specification specially developed by F&N. Other works include the design and installation of improved facilities for access into the deck box girder.

Client:
Highways Agency

Location:
River Wye, England-Wales

Service Dates:
1976, 1983-1990

Services:
Structural strengthening
Structural assessment
Cable system replacement
Resurfacing

