

Luton DART Gateway Bridge, Independent Design Check

CLIENT: Volker Fitzpatrick – Kier Joint Venture

LOCATION: England

YEAR OF COMPLETION: 2021

The new Direct Air Rail Transit runs from the existing Network Rail Luton Mainline Station to the new Central Terminal underground station which is adjacent to the Airport South Apron area. The Gateway Bridge has a 72m span and carries the twin track light rail system at 200m plan radius curve over the A1081 Airport Way as the main access to the airport.

We were appointed by the JV contractor to undertake the independent Category 3 design check of the 72m single span steel composite box girder gateway bridge. The design incorporates an architecturally driven tapered truss as a feature of the bridge that carries some load but has limited restraint. We therefore undertook non-linear buckling analysis of the bridge to confirm the design resistance of the truss top chord in accordance with the Eurocodes. The large bridge abutments have piled foundations into the chalk.

In addition to checking the bridge for the in-service condition we were also commissioned to check the design of the permanent works during assembly, transport and installation for the bridge move in November 2019

KEY FACTS:

- Independent detailed check
- Steel composite curved box girder deck
- Complex buckling analysis
- Complex 1km bridge move

