



ROYSTON STATION FOOTBRIDGE RECONSTRUCTION

PROJECT OVERVIEW

Royston Station is located in Hertfordshire. The station footbridge crossed two tracks providing stepped access between the two station platforms. The parapet system had failed and the footbridge had been closed to passengers at short notice.

AmcoGiffen was commissioned to undertake a combined approval in principle and detailed design for a new footbridge with lifts and stairs, followed by approved for construction and as-built packages.

BACKGROUND

An initial approval in principle had been prepared by a third party which proposed replacement of the existing parapet system in conjunction with other repairs.

AmcoGiffen commissioned additional intrusive surveys to understand the underlying condition of the reinforced concrete elements of the structure. The surveys concluded that the concrete was contaminated with chloride and carbonation leaving the reinforcement prone to hidden corrosion which could result in unforeseen failure. To meet requirements of The Equality Act there was also a long-term aspiration to provide better access for those with reduced mobility at this station. A high level costing exercise was undertaken leading to a decision to replace the bridge and provide step free access in the form of lifts.



CLIENT:

Network Rail

REGION:

North

DISCIPLINE:

Civils

DESIGN STAGES:

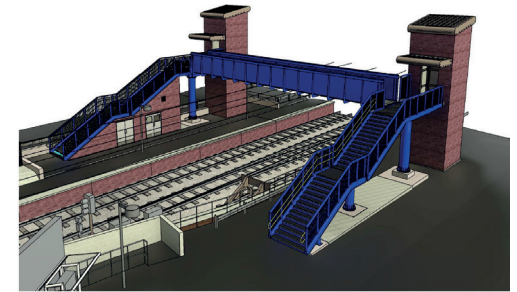
From feasibility to as-built drawings

BIM:

BIM Stage 2

SPECIALIST SOFTWARE:

Revit for modelling and drawings



INNOVATION

The design was submitted as a combined approval in principle and detailed design which is unusual for designs with this level of complexity.

This approach saved significant time in the programme whilst not compromising the overall design solution.

The 3D model was utilised during the various approval stages to facilitate the approvals process to maintain programme'

SOLUTION

The design consists of a new single-span, 22 metre long, steel footbridge with a lift and stairs at each end providing full access to each platform. The main bridge is formed from a standard Network Rail 'LM style' deck with 1.85m high solid parapets and a 2m clear width. The new stairs are formed from outer stringers with steel treads spanning between. The stairs and main span are supported by a series of circular steel columns. The lift towers are formed from steel frames, clad with brick and blockwork up to the footbridge deck level and ribbed steel panels above deck level. The lift towers and columns are supported by reinforced concrete piled and pad foundations.

The structure was analysed using AxisVM and hand calculations by creating a 3D frame of the structure. The structure was modelled in 3D using Revit. Drawings were generated from the model to assist fabrication and construction. Utilising the principles of BIM, other disciplines integrated with the federated model.

CHALLENGES OVERCOME

Working to tight timescales to lessen the impact on the travelling public

Multiple design disciplines working together including electrical and power, telecoms and overhead electrification

Uncovering a solution to relocate cables that could have clashed with the location of the new footbridge saving significant costs