



A case study in design collaboration: design development for the bridges of the Ordsall Chord

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Abstract

Due for completion in December 2017, the Ordsall Chord connects Manchester's Piccadilly and Victoria railway stations for the first time, improving rail connectivity, reducing rail service congestion, allowing new railway services to be introduced, and creating over £1bn of economic benefit.

The Chord comprises a new elevated viaduct, with substantial alterations and widening to existing brick railway viaducts. The project is being constructed in a heavily developed city centre environment, interfacing with several important heritage assets including the historic 1830 Liverpool to Manchester railway. In combination with the location's major regeneration potential, the built heritage has required a high quality, contextually appropriate design.

The viaduct structures are united visually by an architectural "ribbon" concept to create an elegant and holistic appearance, which by melding the two structural principles creates a slender profile when viewed in elevation. The ribbon tapers to a point at both ends in deference to adjacent heritage buildings. The material, form and structural concept were inspired by the unique historic context of the area and the physical characteristics of neighbouring structures.

Consent for the general design concept was obtained through the Transport and Works Act process. Subsequently, several design developments were introduced by the appointed construction and design teams, to enhance buildability and maintainability while still ensuring a high quality visual outcome.

Real-world design processes involve compromise between different project participants, including clients, stakeholders, designers and contractors, and the Ordsall Chord was no exception. The paper discusses some of the key interactions between the project team, something which is often invisible or obscured in any completed project. The works as built are the result of a highly constrained and contingent history of development.

Keywords: Collaboration; conceptual design; architecture; structural engineering; bridges; BIM; parametric modelling.