Mary Elmes Bridge. An urban pedestrian bridge, from concept to opening

Marcos Sanchez Sanchez, Robert Ryan

ARUP Ireland

Simon Roberts

Wilkinson Eyre

Contact: marcos.sanchez@arup.com , sroberts@wilkinsoneyre.com, Robert.ryan@arup.com

Abstract

Mary Elmes bridge is a new 66m single span pedestrian and cyclist bridge opened in Cork in July 2019. In September 2016, Cork City Council launched a design competition for a single span low level bridge as part of its key objective to encourage greater sustainable travel in the form of walking and cycling within the city Centre. The overriding challenge was to deliver a considered design - sympathetic to the existing fabric of the city and easy to install within the confined urban environment.

The solution was a visually appealing design; a slender, 66-metre steel shallow arch, establishing a connective dialogue with its surrounds and compliant with challenging flooding and visual requirements. The structural system is a fully integral, single span with variable depth, central steel box girder and variable width cantilevered walkways. The concept adopts a clever strategy to integrate at grade landings with existing footpath levels while making the structure compatible with future city flood defenses.

Keywords pedestrian bridge, flooding, urban bridges, climate change, dynamic analysis, steel structure, slenderness

1 Introduction

The competition launched by Cork City council in September 2016 requested a low level, single span pedestrian/cycle bridge crossing the River Lee between the historic St.Patrick's and Brian Boru bridges (Figure 1 and 2). The requirements were for a single span, sympathetic with the local architecture while providing a minimum walking width of 4.5m. This proved challenging, particularly in the context of a constrained site, with heavily trafficked roads on both quays.

Figure 1: St. Patricks bridge from Brian Boru's Bridge.

The new bridge is located between the city's oldest crossing, a three-span stone arch bridge constructed in 1789 and Brian Boru Bridge, a 1911 rolling bascule that was later refurbished as a fixed bridge leaving the old above deck steel truss in place.

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