

## The Realisation of the Samuel Beckett Bridge – Dublin, Ireland

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### Summary

The Samuel Beckett Bridge, Dublin City's newest bridge, is now established as a landmark structure spanning the maritime gateway to the City. The bridge is located East of the City's centre and within the 'heart' of the newly developed docklands' area, facilitating an important urban transport link for private car use, public transport, cyclists and pedestrians; and contributing towards the improved environmental, commercial and social development of the urban area in which it is located.



*Fig. 1: The Samuel Beckett Bridge*

The bridge is a Calatrava designed, cable-stayed, steel box girder structure, with a span, across the river Liffey, of 123 metres. The bridge, which rotates horizontally through 90 degrees, has an asymmetric shape, with the base to the cable-stayed steel pylon set, outside of the river's navigational channel - 28 metres from the river's South quay wall; the pylon curves northwards to a point 48 metres above the water level with 25 forestay cables set in a 'harp' formation.

This paper describes the basis of the bridge's design - necessary for the fulfilment of the aesthetic, environmental and social requirements

of the restricted urban regeneration area, and provides feedback on the experience of the bridge's construction. An account of the development of the bridge's concept design, contract documentation, and procurement process, is given, together with a comparison of the methods of construction envisaged at the design stage and the methods ultimately adopted during the construction stage. The paper concludes by examining the lessons learned and notable aspects concerning the execution of the bridge project.

**Keywords:** bridge; steel; box-girder; cable-stayed; landmark; structure; moving-bridge.

### 1. The Identification of the Requirement

Numerous transportation plans developed for Dublin City during the 1990s identified the need for a bridge just East of the City's centre, spanning the City's main river, the river Liffey. The plans were focused on developing an integrated transport infrastructure for the City with an emphasis on sustainable development and an improved environment, providing balanced, accessible and safe transportation systems for the City. An environmental traffic cell strategy was proposed to address the adverse environmental impacts of the transport system. Traffic management measures set up as part of the traffic cell network encouraged traffic to cascade outwards from the cells to orbital routes, relieving the inner City area of through traffic, providing more space on the street network for public transport, cyclist and pedestrian modes of transport and consequently improving the environment of the City centre.

Two orbital routes, as shown in Figure 2, were proposed as part of the environmental traffic cell strategy:

- a. The Inner Orbital around the central business district of the City and;
- b. the Outer Orbital around the outer edge of the City Centre following the City's canal routes.