

Super-Low-Carbon Footbridge Design

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Abstract

Through the lens of embodied carbon, this paper compares two recent projects by a single team, for the same client, with similar physical constraints. One has been built, the second is in detailed design stage, and the cumulative lessons for future projects are considered.

Keywords: Footbridges; embodied carbon.

1 Introduction

Moxon Architects and COWI have a track record of successful bridge collaborations. This paper discusses two recent footbridge projects with a particular emphasis on the embodied carbon, and how lessons learnt from the first project informed the second design. Ideas for further improvements are also discussed.

2 Hams Way Footbridge

Completed in 2020, Hams Way Footbridge carries pedestrians and cyclists over the busy Powick Roundabout in Worcester, UK.

The bridge is 220m in length, comprising a 42m trussed-arch main span and long approach ramps with repeated 12m continuous spans. The main span is structural steel supported on leaning reinforced concrete piers on piled foundations. The approach ramps are also steel, supported on single columns on reinforced concrete plinths and shallow foundations.

Figure 1. Hams Way Footbridge, Worcester, UK



Hams Way Footbridge was designed in 2018, before COWI and Moxon routinely quantified embodied carbon in their bridge designs. COWI has since established a carbon management process which includes estimating the embodied carbon associated with each new project and selected historic projects.