

A curved footbridge with hidden extras

Magnús ARASON

Manager – Bridges

EFLA Consulting Engineers

Reykjavik, Iceland

magnus.arason@efla.is

Magnús Arason is a structural engineer with 20 years postgraduate experience. He leads the bridge section at the Reykjavik offices of EFLA

Ólafur S. HARALDSSON

Bridge Engineer, Ph. D.

Icelandic Road and Coastal Administration (IRCA)

Reykjavík, Iceland

olafur.s.haraldsson@vegagerdin.is

Olafur Haraldsson is a bridge engineer at the IRCA's Division of Construction and Affiliated Professor at Washington State University

Steve CHRISTER

Architect

Studio Granda

Reykjavik, Iceland

steve@studiogranda.is

Studied at the University of Newcastle upon Tyne and the AA London. Established Studio Granda in 1987 with Margrét Harðardóttir. Lectured, served on juries and taught in Europe and the US.

Contact: magnus.arason@efla.is

1 Abstract

For improved safety and ease of travel for pedestrians and cyclists across the busy 4-lane main road Breidholtsbraut in the suburb of Breidholt in Reykjavik, Iceland, the Icelandic Road and Coastal Administration and Reykjavik City Council engaged EFLA Consulting Engineers and Studio Granda Architects for the design of a footbridge over the road. The bridge is an 86-m long, post-tensioned concrete girder in four spans and follows a curved alignment that plays on the landscaped surroundings. The attractive shape of the underside of the concrete girder is formed by a series of arcs; the cross-section having been used before by the design team to good effect. Aiming for minimized inspection and maintenance costs, the end abutments of the bridge are supported through a concealed concrete hinge, eliminating the need for bearings and construction joints. The stainless-steel wire mesh handrail was embedded into the concrete deck post casting, using a carefully planned core drilling procedure. The bridge does not have a support in the road central reserve, and this has allowed the bridge construction to proceed with only a few, short closures of the busy underlying road. The result is a well-received addition to the collection of Reykjavik footbridges.

Keywords: footbridge, post-tensioned concrete, Reykjavik, hinged end configuration, handrail, execution.

2 Introduction

The highway Breidholtsbraut 413 in the eastern part of Reykjavik divides the suburb of Breidholt. Residents, not least school children, must cross this busy (~28.000 vehicles/day) road as part of their daily routine, such as attending schools, sports, and leisure facilities. The need for a non-planar crossing of the road in the area has long since been recognized, but has not been realized due to infrastructure budget cuts after the Icelandic financial crisis in 2008.

Finally, in 2017, the Icelandic Road and Coastal Administration (IRCA) and Reykjavik City Council initiated the tender design and the construction process for a footbridge at the site. This joint owner configuration is brought about by Breidholtsbraut being a national road within an urban area, and the bridge forms a part of the Reykjavik City cycle and pedestrian networks.

The owners engaged EFLA Consulting Engineers and Studio Granda Architects for the design of the bridge. At the owners' request, the bridge was to have the same configuration as the three award-winning footbridges at Hringbraut in Reykjavik from