



## THE COPENHAGEN KISSING BRIDGE – A BASHFUL LANDMARK

### Ian FIRTH

Chief Operating Officer,  
Flint & Neill Limited,  
London, UK  
[i.firth@flintneill.com](mailto:i.firth@flintneill.com)

Ian Firth, born 1956, received his civil engineering degree from the Univ. of Bristol, 1979, and Masters degree in Structural Steel Design from Imperial College in 1982. He joined Flint & Neill in 1979, became a Partner in 1990 and Chief Operating Officer in 2008. His main areas of expertise are in the design of steel and concrete structures, particularly in relation to major bridges and special structures, and the application of new materials.



### Amar BAHRA

Senior Engineer  
Flint & Neill Limited,  
London, UK  
[a.bahra@flintneill.com](mailto:a.bahra@flintneill.com)

Amar Bahra, born 1981, received his civil engineering degree from the Univ. College London, 2002. He carried out his Ph.D. research into updating static load in finite element models of space frames using measured vibration data at UCL. Prior to joining Flint & Neill in 2008 he was a lecturer in structural mechanics and skeletal structures at UCL. His expertise is in modelling the dynamic behaviour of stressed frame structures.



### Summary

This opening bridge was the winner in an international design competition held by Copenhagen City Council during 2009. The elegant but subtly understated bridge has an opening span of 55m, a total length of 240m carries pedestrians and cyclists across the harbour between the heart of the city and the Opera House.

The central steel opening part is 7m wide and has a unique sliding mechanism, rolling back between the two fixed approaches, each 4m wide, with one for cyclists and one for pedestrians. This unique opening system creates an experience which is expected to become a popular city centre attraction as well as an important new transport corridor for cyclists and pedestrians.

This paper describes the design concept and evolution, and addresses the integration of architectural ideals and engineering requirements to produce a solution sensitive to its urban context.

**Keywords:** Footbridge, cycle bridge, opening bridge, integrated design, low energy operation.

### 1. Concept Design

The bridge stands at the heart of the city, with important historic buildings all round. The harbour is a wide and open cityscape with long views, and the context demands a design of subtlety and simple elegance; one of timeless quality in the great tradition of the best Scandinavian architecture, furniture, fashion and jewellery design. This is a setting for an urban bridge offering an opportunity to create a new public space from which to enjoy the harbour views, and not merely a crossing.

The design deliberately avoids grand theatrical gestures and extravagant structural forms which would be out of place here. Such designs shout loudly and clamour for attention, but here the bridge provides a gentle, clean and elegant platform from which to enjoy views of the city, becoming part of the cityscape and not detracting from it. Avoiding masts, towers, arches or other overt structural forms which would intrude and draw attention to themselves, the bridge is instead an exercise in simplicity and restraint, relying on an elegant form and fine detailing to make the experience of using and observing the bridge one of delight and enjoyment.

The bridge adopts a unique sliding principle for opening. No complex hydraulics and structural gymnastics here; only refined simplicity and graceful motion, which is also very energy efficient. The opening section appears to float in the air as the two parts gently kiss when they meet together at the centre – a new meeting point for the bridge and visitor alike. The main problem with most