

Title

Matters of Engineering Design

Author

AKT II

Domains

Engineering Scale
Engineering Variability
Engineering Attitude
Reverse Engineering
Engineering Craftsmanship

Editors

Hanif Kara and Paul Scott

Publisher

ArchiTangle

Name

Golda-Meir-Steg

Location

Berlin, Germany

Client

**Senate Department for
Urban Development
and Environment, Berlin**

Architect

ACME

Domain

Engineering Variability





This pedestrian and cycle bridge is an important circulatory connection and urban landmark in Europacity, a new development in north-west Berlin. Our work balanced several high-tech solutions to deliver the apparently simple, 'floating' form.

A single clear span was imperative to preserve shipping operations below. The design is essentially a parametrically optimized, shallow-arched U girder, which achieves a central span of over 60 metres while arching through just 1.3 metres. It has a total height of 1.7 metres and a deck thickness of only 40 centimetres. It's made of steel.

The bridge is an integral structure; every element of the construction plays a role in its overall stability. The patterning of the balustrades' perforations morphs along the bridge's length to provide the best ratio of strength to weight at every point. This patterning is optimized algorithmically; it's most open at the centre, where the forces are carried through the deck and handrails, while the abutment areas are relatively solid, to carry the high shear stresses.

At the embankments, the superstructure lands on elastomeric bearings and terminates on vertical pendulum rods. These rods allow the bridge to lengthen by as much as 10 centimetres under thermal and pedestrian loading. To control vibration, three tuned-mass dampers are integrated within the apex.

The bridge was fabricated as a single superstructure, which was floated to the site and craned into place in a single lift.

Domain

Engineering Variability

