

REF A05

RENOVATION OF CONCRETE BRIDGE & ITS BUILDINGS IN GERMANY

PROJECT	HUMBOLDT BRIDGE AND ITS BUILDINGS RENOVATION
LOCATION	Potsdam, Germany
CLIENT	City administration of Potsdam
ENGINEER	Martin Krone, Berlin
IMPLEMENTATION	2007



Applications → Box-girder strengthening & end-anchorages

Design → Hilti method

Hardware → HIT-RE 500, HCC-K 10x200 mm, TE-C3X Drill bits

Software → PROFIS Engineering

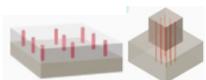
Services → Design, engineering support and job-site training

CHALLENGES

- Modernization of under-operational RC bridge for road vehicles and trams
- Shifting of the tram line
- Box-girder strengthening and abutment structure extensions

HILTI TOTAL SOLUTION

- ✓ Code-compliant design solutions using Hilti method and national standards
- ✓ Strengthening using qualified and efficient shear-connectors HCC-K + HIT-RE 500
- ✓ Post-installed rebars for end-anchorages in abutments



LOAD / CONDITIONS: Modernization of RC bridge

PROJECT HIGHLIGHT

Box-girder strengthening using HCC-K connectors of varying depth

PROBLEM STATEMENT AND OBJECTIVES

The Humboldt Bridge located in Potsdam, Germany was used both by road vehicles and trams.

Modernization of the existing bridge was to be carried out due to **updated code requirements**.

The renovation of the bridge and abutments were executed as a modernization procedure, thus **requiring the relocation of the tram line**.

This was achieved by **strengthening of the box-girders of the bridge using shear connectors HCC-K** and the abutment structure was strengthened using post-installed rebars

DESIGN APPROACH

Together with Hilti and the general contractor, the engineering office developed the procedure for the design and execution of the strengthening of the bridge structure. The project team employed the use of coherent, coordinated systems with building approval authority.

The bridge was strengthened in the area of the box-girders by adding **concrete shear-friction overlays using Hilti HCC-K shear connectors**.

The abutment structures were strengthened by subsequent reinforcement connections using the Hilti post-installed rebar system

SOLUTION AND FINAL OUTCOME

Hilti Method was used for shear friction overlay of the box-girders

Abutment structure – Post-installed rebars for abutment structure following the **national reinforced concrete standard**.

Hilti shear connectors **HCC-K 10x120 mm and HCC-K 10x180 mm; HIT-RE 500** was used as the adhesive mortar.

Quality assurance through training for the assembly personnel on the construction site.

Application : Box-girder strengthening



Application : End-anchorage



Efficient shear-connectors – HCC-K

