



SIKA AT WORK

THE RIALTO BRIDGE, VENICE: STRUCTURAL RESTORATION PROJECT

REFURBISHMENT: SikaWrap®, Sika Anchorfix®, Sikadur®

BUILDING TRUST



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PROJECT DESCRIPTION

The Rialto Bridge is one of the most well-known bridges in the world. It is certainly the most famous bridge in Venice (Italy), where thousands of tourists every day take pictures, walk over it or sail under it by Gondola. It is one of the four bridges that span "Canal Grande". The other three are Ponte dell'Accademia, Ponte della Costituzione and Ponte degli Scalzi.

Designed by Antonio da Ponte and completed after three years in 1591, the bridge, which rests on two ramps, is 48 meters long with single 22 meter span arch made of stones. On either side of the central portico, the covered ramps carry rows of shops.

During the building of the bridge, many believed the project was too audacious from the engineering point of view, yet the bridge is still standing and has become one of the architectural icons of the city of Venice.

PROJECT REQUIREMENTS

The restoration project was based on the awareness of the Bridge's strong historical, architectural and constructional heritage as a landmark of the city of Venice.

For above these reasons, the design took into consideration three main topics: the general architectural design, the preservation of the materials, and the structural strengthening.

Sika was involved in the latter in 2015.

The final goals were to pursue the restoration, maintenance and overall refurbishment of the Rialto Bridge, preserving the architectural nature of the original materials and applying non-invasive but efficient structural solutions as well as to stop the decay of its structure and materials.



DESCRIPTION OF THE STRUCTURAL ISSUES

Both sides of the Rialto Bridge are rimmed by a balustrade made of Istria stone. This balustrade protrudes beyond the external edge of the masonry arch and it rests on stone cantilevers anchored underneath the deck.

Upon removal of the stone deck, many cantilevers supporting the balustrade turned out to be cracked and the balustrade slightly rotated outward.

SIKA SOLUTION

Sika provided solutions with FRP structural strengthening system **SikaWrap®** to reinforce the stone cantilevers and to increase the safety of the balustrade, blocking further rotations. **SikaWrap®-300C**, unidirectional carbon fiber fabric, impregnated with **Sikadur®-330** epoxy resin was used.

An ending anchorage with carbon fiber rope

SikaWrap® FX-50 C impregnated with **Sikadur®-52 Injection** epoxy resin was installed on both ends of each fabric strip. The connector was anchored in stone with **Sika AnchorFix®-3+** epoxy resin.

The entire strengthening solution is absolutely non-invasive and invisible as it is hidden under the deck.

Manual dry application was used for **SikaWrap®-300C** system. **Sikadur®-330** serves as primer, levelling and impregnating resin.

A special procedure developed by Sika was used for the application of **SikaWrap® FX-50 C** connectors. This procedure allows the application of the connectors "all-at-once". At first holes in the stone were drilled and cleaned thoroughly with compressed air and round brush, then the holes were partially filled with **Sika AnchorFix®-3+** from the bottom up. **SikaWrap® FX-50 C** carbon fiber connectors were impregnated with **Sikadur®-52 Injection**, inserted in the holes and spread on the surface of the stone. **SikaWrap®-300C** carbon fiber fabric was cut in size, impregnated with **Sikadur®-330** epoxy resin directly on the substrate, after the accurate preparation and cleaning of the stone surface.

PRODUCTS/SYSTEMS USED

- SikaWrap® FX-50 C
- Sika Anchorfix®-3+
- SikaWrap®-300C
- Sikadur®-330
- Sikadur®-52 Injection



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Year of work execution: 2015

GENERAL CONTRACTOR

ATI LARES - LITHOS - SETTEN

APPLICATOR

ATI LARES - LITHOS - SETTEN

TEAM PROJECT

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Photos provided by Antonino Montalbano and Fotolia

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