/ ASSET PRESERVATION, STRUCTURAL REPAIRS & UPGRADING /

STAY CABLE REPLACEMENT

Cable-stayed bridges are popular and aesthetically pleasing structures that depend on the support of durable stay cables. They can be subjected to high stresses and exposed to harsh environments, putting them at risk of being damaged by corrosion, fatigue, collisions, vandalism, blast or fire. As such their replacement may become essential in order to ensure continued structural stability.

VSL

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Stay cables are key structural components of a cable-stayed bridge and the need for replacement may become highly critical. We work in close co-operation with the asset owner and the designer to identify best-for-project answers, and deliver tailored turnkey solutions.

ENSURING SAFETY

Replacement of stay cables is generally carried out while the asset remains in operation. Therefore, user and workplace safety are the overarching principles guiding our decision-making. Each structure is different and poses its own particular challenges. Maximum efficiency and safety on site are guaranteed by thorough planning and the selection of the most suitable means of access, temporary support and equipment.

AVOIDING DISRUPTION OF SERVICE

Not all bridges are designed to allow removal of a single cable without stopping the traffic. VSL has the experience to engineer comprehensive solutions that minimise the required working space and traffic restrictions. Shutdown of the asset can be avoided by combining the right methods with a detailed design assessment covering all temporary stages. Temporary cables can also be deployed if needed.

CABLE REPLACEMENT SOLUTIONS

Existing stay cables come in many shapes: bar systems, locked-coil, spiral strand, parallel wire and wedge-anchored parallel strand systems. VSL can cater for all these different cable types during a replacement operation and always ensures appropriate and safe handling.

INSTALLING DURABLE REPLACEMENT CABLES

As a specialist in stay-cable technology capitalising on decades of R&D, VSL can assist with the selection and detailing of the most suitable type of replacement cables. Strand-by-strand-installation (SSI) technology offers the flexibility for installation with light equipment and allows for ease of replacement. VSL SSI and MSI parallel strand cables provide unrivalled ease of installation, inspection and maintenance and are recognised as the most durable solution.

01 PREPARATION

Every structure is unique and will need a careful study of the requirements including the load transfer sequence and the capacity of the permanent works during each temporary stage.

02 TEMPORARY WORKS

Traffic is maintained on the bridge while the means of access, temporary works or temporary cables are being installed in preparation for the load transfer. If needed, temporary cables can be added to support the bridge during the replacement operation.

03 DE-TENSIONING

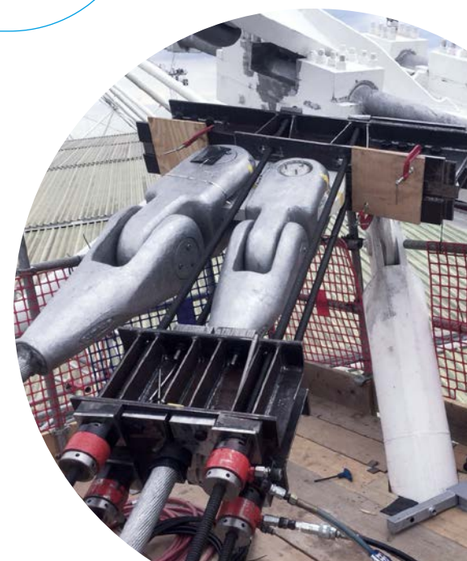
The existing stay cable is de-tensioned in a controlled manner. Forces and displacements are monitored and compared to the values calculated in the stage-by-stage analysis. Depending on the results of an overall risk assessment, work can be done with daytime traffic in place or during night closures.

04 INSTALLATION OF THE NEW CABLE

The new cable is installed and stressed. Methods are adopted to suit the chosen cable type as well as traffic and access requirements. Any modifications of the anchorage zones to accommodate the new cable are undertaken prior to installation.

05 FINISHING WORKS

Final tuning of the cable forces and bridge geometry is carried out and the final corrosion protection is applied to the anchorage components. Dampers, fire, blast and anti-vandalism protection as well as monitoring devices can be installed as optional features.



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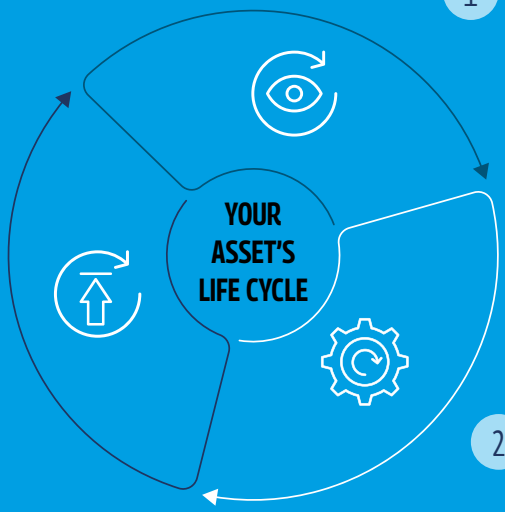

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ASSET PRESERVATION

PREVENTIVE MAINTENANCE
INSPECTION
ASSESSMENT
MONITORING

2

STRUCTURAL REPAIRS

REPAIR
REPLACEMENT

3

UPGRADING

STRENGTHENING
CHANGE OF USE
RESILIENCE ENHANCEMENTS

- CREATIVE ENGINEERING & EFFICIENT METHODS
- IN-HOUSE STRUCTURAL TECHNOLOGIES
- OPERATIONAL SKILLS IN COORDINATION & EXECUTION

WE'RE READY TO MAKE YOUR PROJECT POSSIBLE!

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