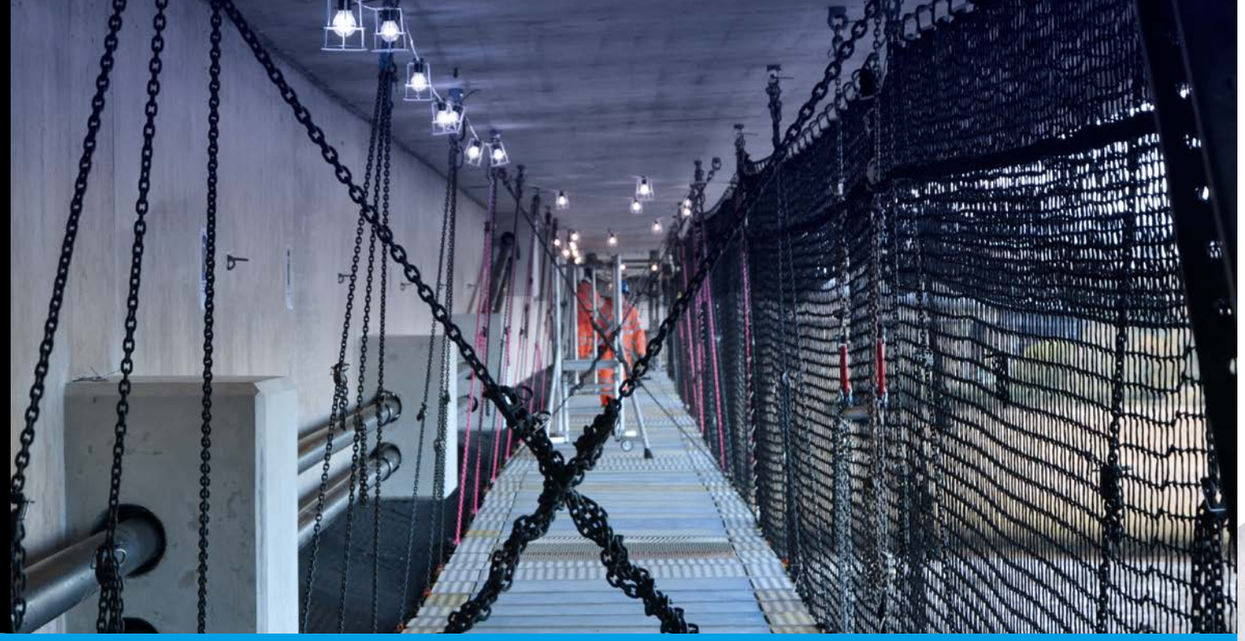
/ ASSET PRESERVATION, STRUCTURAL REPAIRS & UPGRADING /

ADDITIONAL EXTERNAL POST-TENSIONING

Additional external post-tensioning (PT) is an efficient and durable solution to reinforce a structure, increase its redundancy and improve its serviceability. By applying post-tensioning to an existing structure, the service life of the asset can be prolonged without significantly increasing the self-weight.

VSL

A member of
Bouygues Construction



SOLUTIONS FOR STRENGTHENING

Much of today's infrastructure has been in service for decades but the increases in road and rail traffic were largely underestimated in the past. Many bridges and other structures now need to be strengthened for higher traffic loads and an increased number of load cycles. At the same time corrosion and other deterioration mechanisms pose a constant threat to both steel and concrete. One of our solutions is to add additional high-strength steel tendons that are external to the existing structural members. The key benefit is that this provides active strengthening that can be applied without having to remove loading on the structure.

METHODS

The PT is aligned and anchored by means of steel or concrete blisters at defined locations. By stressing the tendons with a hydraulic jack, an additional prestressing force is applied to the structure. This can be tuned to meet the design requirements by varying the number and size of the tendons as well as the tendon profile.

EXTERNAL PT SYSTEMS

Our external post-tensioning solutions are detailed for the highest level of durability and ease of maintenance. VSL offers several types of systems that provide enhanced durability.

OPTIONAL FEATURES

Various features are available to ensure mechanical, anti-vandalism and fire protection to suit the local environment. Our systems can be further equipped to perform continuous load and durability monitoring and to allow for simplified inspection and future replacement.

PREPARATION

01

Careful design and planning of the works — including access to the structure — is essential for a successful strengthening project. Design can be carried out in-house or with external partners.

SCANNING, MAPPING & MARKING

02

By mapping the existing reinforcement, damage to the structure can be avoided and clashes prevented.

PREPARATION OF THE EXISTING SURFACE

03

Bonding of the interfaces or interlocking must be guaranteed to ensure safe load transmission.

BLISTER ASSEMBLY AND CONSTRUCTION

04

Reinforced concrete blisters or steel guide elements define the tendon geometry. The durability of the solution is ensured by using high-quality materials. Special concrete mixtures provide very high workability and the steel elements have long-life corrosion protection. PT bars are used to provide the required pre-compression of the load transfer interface and can be combined with passive shear dowels.

PT TENDON INSTALLATION AND STRESSING

05

The installation, stressing and anti-corrosion encapsulation of the PT tendons is performed by VSL's certified PT specialists, which guarantees the highest level of workplace safety, quality and durability.

OPTIONAL FEATURES

06

Finishing works include the application of anti-vandalism protection and the installation of any permanent monitoring devices.

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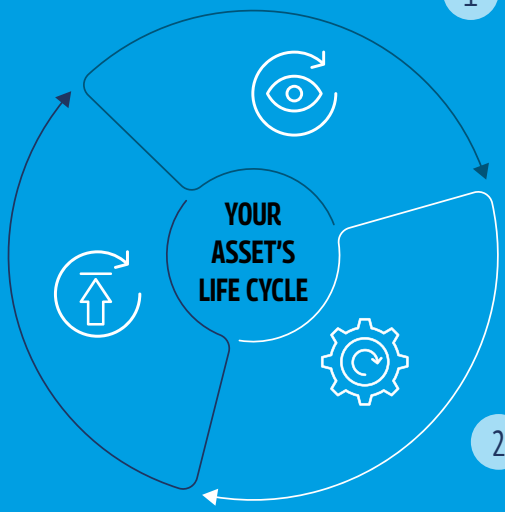

1

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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