

BUILDING FOR LIFE

**ASSESSMENT,
REPAIR,
STRENGTHENING
AND MAINTENANCE**

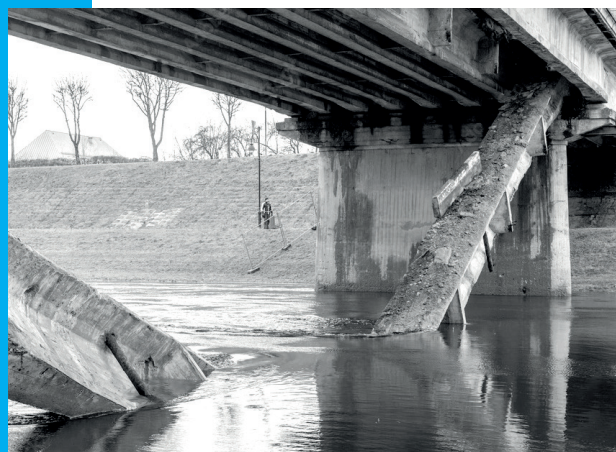
BRIDGES • VIADUCTS • FOOTBRIDGES

PRESERVING BRIDGES

AND EXTENDING THEIR USEFUL LIFE

All bridges, viaducts, and footbridges - whether made of concrete, steel, stone, masonry, or timber - undergo various deterioration processes. These affect their durability and ability to safely carry the loads they were designed for. When bridges must be closed, it can lead to the loss of critical links in transport networks. VSL offers a wide range of proven solutions and technologies to address these challenges.

Bridges, viaducts and footbridges are built to meet today's transportation needs while ensuring user safety and comfort at all times. **Their performance during and beyond their design life depends on robust structural and durability design, proper execution, and proactive management throughout the operational phase.** As a result, the pathologies encountered in ageing bridges, viaducts, and footbridges can be complex. Many of them are common across all types of bridges, whether for pedestrian, road, or rail traffic, or part of infrastructure like pipelines and aqueducts.



Pathologies can arise at different stages of the structure's life cycle.



- CHANGES IN USE
- DESIGN STANDARDS
- LOADING REQUIREMENTS
- CORROSION
- MECHANICAL DAMAGE
- FIRES
- EARTHQUAKES
- EROSION



A MULTITUDE OF PATHOLOGIES

01. DESIGN

Decisions taken in the design phase greatly affect strength, serviceability, and durability. Design rules and knowledge have evolved significantly over the past decades.

02. CONSTRUCTION

The construction phase is prone to deviations from design details or intended sequencing, departures from best practices and standards, and defects in material quality.

These issues often arise from a lack of knowledge or awareness, as well as from the evolving understanding of technical risks.

03. OPERATIONS

The operation phase is where most pathologies materialize. Changes in use, loading, or design standards often necessitate a reassessment of structural capacity.

Materials exposed to the environment naturally deteriorate. They undergo mechanical, chemical, and physical changes. Key issues include the corrosion of steel structures and reinforcement in concrete. Natural hazards and accidental events can cause both sudden and gradual deterioration.

FROM DETERIORATION TO DURABILITY:

A WIDE RANGE OF PROVEN SOLUTIONS

Our VSL teams around the world master a wide range of techniques and solutions designed to address all types of structural pathologies and materials along the entire life cycle of bridges, viaducts, and footbridges.



ANY MATERIAL

Structural inspection and evaluation

Replacement of bearings and joints

Foundation strengthening

Internal or external prestressing repair

Jacking operations

Cleaning, repair and tuning of cables, hangers, tie rods, and prestressing tendons

Total or partial deconstruction or replacement

Seismic upgrading

Structural dampers

STEEL

Cleaning

Replacement of structural elements

Active strengthening

Passive strengthening

Maintenance, including coatings and paints

Corrosion protection and repair

Fire protection

CONCRETE

Cleaning

Hydrodemolition

Crack repair

Structural repair

Active strengthening

Passive strengthening

Abrasion maintenance

Corrosion protection and repair

Waterproofing

Fire protection

UHPFRC

VSL, YOUR TRUSTED PARTNER

QUALITY, SAFETY AND SUSTAINABILITY

Quality, safety, and environmental responsibility are at the core of VSL's methods. We are committed to low-carbon solutions and strongly believe preserving bridges is the best way to minimize the carbon footprint of our infrastructure.

IN-HOUSE TECHNOLOGIES

VSL develops proprietary products and manufactures them in its own factories, carefully selecting designs and materials that meet the highest standards of durability.

BESPOKE DESIGN

VSL's technical department specializes in the analysis and design of custom solutions, developing innovative approaches tailored to your project.

ASSESSMENT REPAIR STRENGTHENING MAINTENANCE

POST- COMPLETION

Our commitment extends beyond project completion. We provide ongoing support to ensure that performance, safety, and the structure's useful life continue to meet our original standards through regular monitoring.

EXECUTION BY VSL-TRAINED TEAMS

VSL's in-house training ensures flawless project delivery. Our skilled local teams handle each project with precision, consistently providing top-quality results.

WE'RE READY TO MAKE YOUR PROJECT POSSIBLE!



www.vsl.com



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We'd love to know more
about your project!