

# FIBRWRAP®

Worldwide Specialized Contractors

## Transportation Infrastructures

The application of the Tyfo® FIBRWRAP® System  
in Transportation Structures (bridges, tunnels, viaducts, etc.)



**FIBRWRAP** CONSTRUCTION EUROPE Ltd.

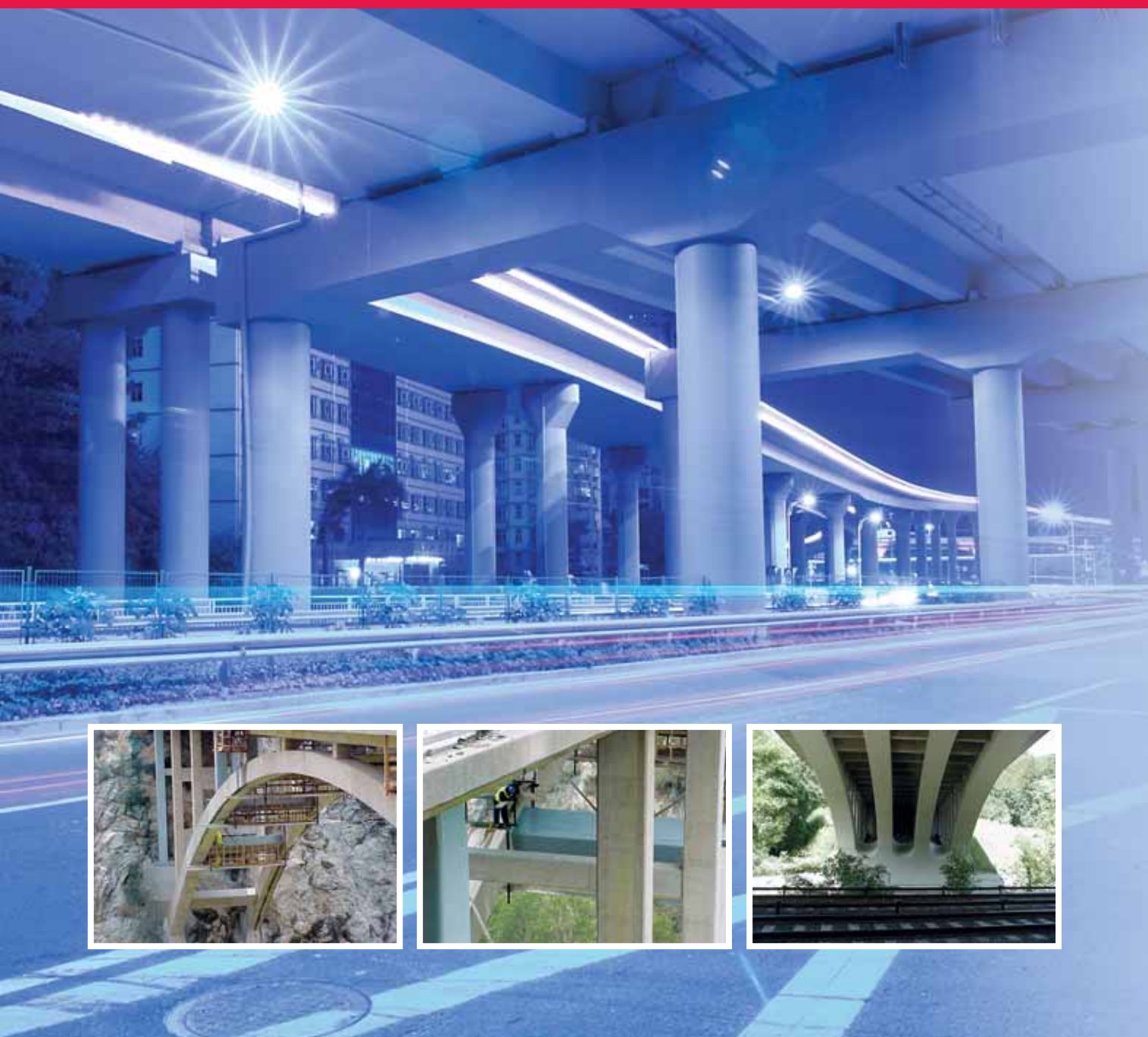
Strengthening Structures | Protecting Lives Worldwide



Transportation infrastructure authorities are facing a huge daily challenge in trying to maintain, to upgrade to modern day standards, and to prolong the life of existing structures of their networks.

Targeted actions are needed in order to repair, rehabilitate, and strengthen these structures. At the same time, all necessary rehabilitation and strengthening construction work needs to be completed while maintaining the operational status of the facilities, i.e., without any or with minimum disruption of their daily use.

The TFS<sup>®</sup> technology is available to cover a wide range of issues related to the integrity of transportation structures. Structural repair and rehabilitation, structural upgrade, seismic retrofit, protection against environmental factors, corrosion and emergency repairs are some of the common problems now easily tackled with the use of such advanced materials and techniques.





Emergency Structural repair of **Railway Bridge**, of Hellenic Railway Organisation, Kiato, Greece



Structural Upgrade and increase of the loading capacity of **Evinos river Bridge** at Grevena, Greece

Fibrwrap, through the implementation of TFS<sup>®</sup>, offers a complete range of products and techniques for the rehabilitation, repair, seismic upgrade and enhancement of the structural capacity of existing structures (bridges, viaducts, tunnels, retaining walls, etc.).

Moreover, Fibrwrap can completely fulfil the toughest requirements for structural preservation, corrosion related repair and rehabilitation, and environmental protection. In addition, the client also benefits from the fact that all rehabilitation construction is carried out with minimum disturbance to traffic and normal every day operations.

Fibrwrap also provides the preliminary design and compilation of a technical proposal for the implementation of the TFS<sup>®</sup>, tailored-made to satisfy the specific demands for each project.

### TFS<sup>®</sup> Solutions:

- Rehabilitation of corroded or distressed members to restore lost capacity.
- Structural upgrades to improve load-carrying mechanisms. Additional shear and flexural capacity can be added to beams, columns, slabs, and walls of any transportation construction (bridge, tunnel, etc.)
- Seismic retrofit and upgrade aiming to improve the seismic structural behavior.
- Preservation of historic structures, such as arch bridges, with a variety of materials that can be used to repair and strengthen while preserving their appearance.
- Emergency repairs.
- Design and/or construction error remediation



### TFS<sup>®</sup> Applications:

- Column, beam, slab, and wall applications to increase shear strength, flexural strength, ductility and to improved confinement where needed.
- Increase of shear and moment strength of beam to column connections.
- All structural elements (beams, columns, slabs, walls, etc.) can be repaired or upgraded with minimum disturbance to traffic and normal every day operations.

Tyfo® FIBRWRAP® Systems (TFS®) is a patented composites system, that can be used to increase the structural capacity of any structural material (concrete, steel, wood, etc.) of existing transportation structures and to cover any requirements for additional strength, repair or rehabilitation.



Seismic upgrade **Knight Street Bridge**, Vancouver, Canada



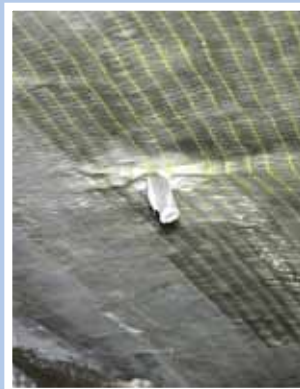
Structural Strengthening of **Xerias River Motorway bridge**, Argirokastro, Albania



Rehabilitation of corroded members (PT cable) of **MacKay Bridge**, Canada

## TFS® Features:

- Thoroughly tested at independent laboratories
- Cost- and time-effective solutions
- Extends the service life of existing structures
- Significantly lowers the corrosion rate when confining existing members
- Will prevent the onset of corrosion when applied to new structural elements
- Can be used on circular, square, rectangular, hexagonal, flared and alternative shaped cross sections with negligible shape and size modifications
- Can be used to repair/strengthen historic structures while preserving their original appearance



## Advantages - Benefits:

- Successful applications of the TFS® since 1988
- Short application time required
- Rehabilitation of corroded or distressed members
- Prolongation of the service life expectancy of the structures
- Fast emergency repair of the damaged sections
- Architecturally friendly solutions that do not affect the aesthetics of structures



# Tyfo<sup>®</sup> FIBRWRAP<sup>®</sup> System (TFS<sup>®</sup>)

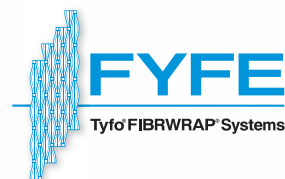
Since its establishment in 1988, Fyfe Co LLC, through a vigorous research and development program, has managed to produce the **Tyfo<sup>®</sup> FIBRWRAP<sup>®</sup> System (TFS<sup>®</sup>)**.

The **TFS<sup>®</sup>** has been reviewed and approved by more independent authorities than any other composite system.

Carbon, glass or aramid reinforcing fibers are combined with high quality resins to produce a multitude of high performance FRP strengthening systems, which - in turn - provide design engineers with a wide range of options to meet the individual needs of a project.

The success is proven by the fact that the **TFS<sup>®</sup>** is a reliable composite strengthening system with more approvals, demonstrations and proven installations than any other competitive system in the industry.

The **TFS<sup>®</sup>** includes a carbon fiber solution that meets the International Building Code<sup>®</sup> (IBC<sup>®</sup>) requirements.



# Network

Fibrwrap Construction Europe Territory

www.ThinkBAG.eu



**FIBRWRAP** CONSTRUCTION EUROPE •



## An ever-expanding network beyond Europe

Working with FIBRWRAP Construction Europe Ltd. is equivalent to entering the largest family of companies worldwide, dealing with any kind of structural rehabilitation need. With offices across the globe, Fibrwrap is an international business with a local twist strengthening and protecting people, properties and assets everywhere.



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