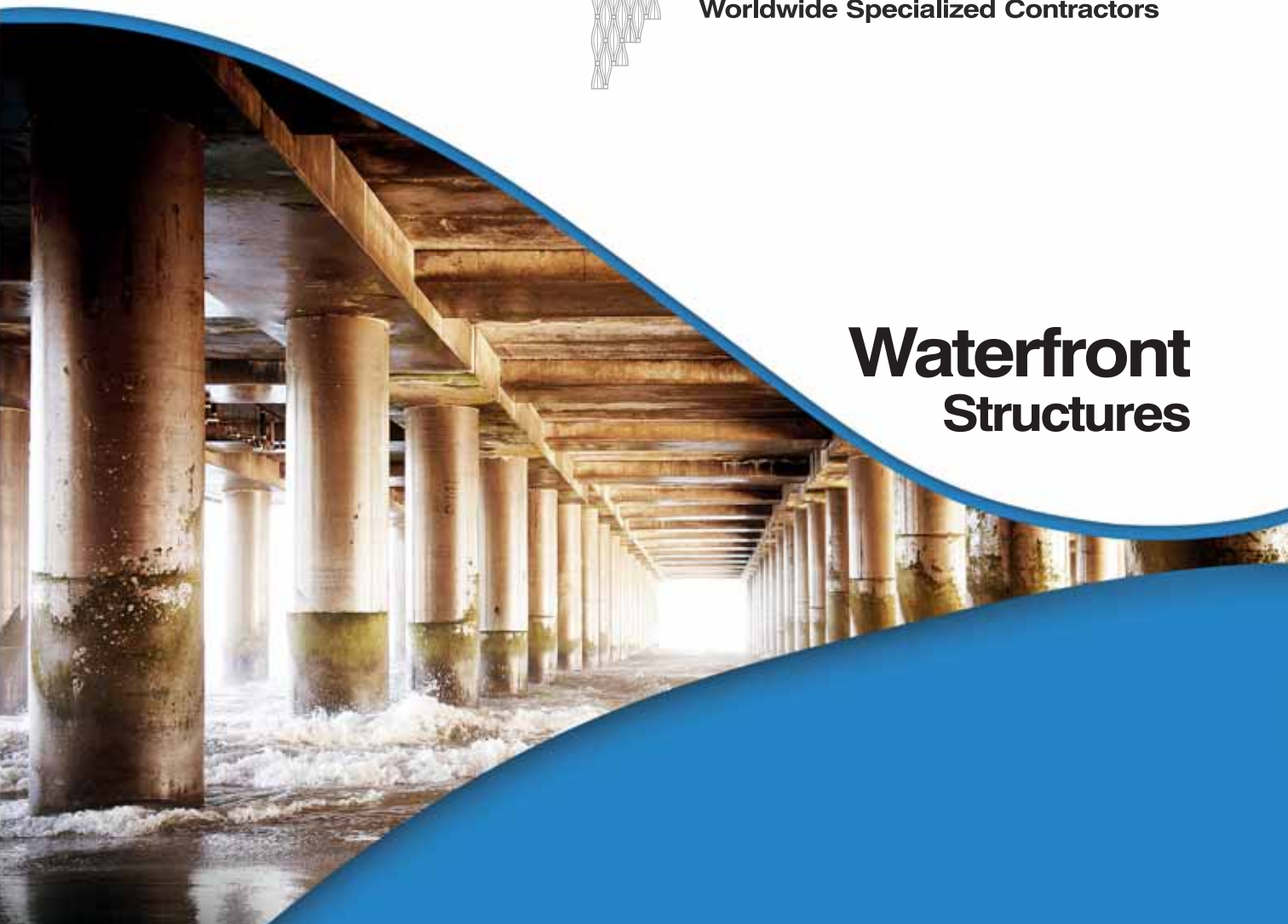
FIBRWRAP®

Worldwide Specialized Contractors



Waterfront Structures

The application of the Tyfo® FIBRWRAP® System in Waterfront Structures (Commercial ports, industrial shipyards, city piers, bridges, wharfs , jetties, etc.)

FIBRWRAP CONSTRUCTION EUROPE Ltd.

Strengthening Structures | Protecting Lives Worldwide

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Waterfront structures are subjected to severe and aggressive environmental conditions due to their proximity or coexistence with water (sea, river, lake). Consequently, they suffer heavy losses of strength, mainly due to corrosion, being in a condition of constant deterioration. The corrosive nature of marine environment can destroy the aesthetics of a structure, hindering its serviceability and rendering it useless. The levelof structural distress varies with each project.

Tyfo® FIBRWRAP® System (TFS®), purposely developed for waterfront structures, can resolve structural problems, rehabilitate and restore them aesthetically, provide significant long-term protection and prolong the service life of these structures.

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Waterfront Structures

Structural Strengthening of **AG Wrights Sluice Gates**, Denver, Norfolk, UK

Crack Repair and Inner Dock Wall and long term Protection from water ingress, at **Bristol Port, UK**

Structural rehabilitation and repair of **Redondo Beach Restaurant**, California

Fibrwrap delivers advanced technological solutions for a variety of waterfront structures (commercial ports, industrial shipyards, city piers, bridges, wharfs & jetties etc.) close to or under the water, which are in need of long-term structural repair or upgrade. The Tyfo® FIBRWRAP® System (TFS®) is used to achieve the rehabilitation of corrosion damaged structures in and around waterways.

Fibrwrap is involved in all phases of a project, from the root of the problem, the preliminary design and the finally implementation of the final technical proposal which is best suited for the particular problem in hand.

TFS® Solutions:

- Rehabilitation of corroded or distressed members
- Extension of service life
- Seismic repairs & retrofit of structural components
- Structural repair & strengthening near & under water
- Corrosion protection from aggressive environments
- Enhancement of structural capacity for increased loads
- Pre-fabricated Systems for underwater applications
- Cathodic protection
- Emergency repairs

TFS® Applications:

- Rehabilitation and repair of structural elements of waterfront structures such as piles, beams, slabs, walls (concrete, steel or wood)
- Protective, pigmented epoxy coating, providing improved aesthetics and long-term durability
- Protection of corroded reinforced concrete and steel structures
- Preventative measures for new construction
- Preventing of corrossive agent intrusion including oxygen and marine organisms

The Tyfo® FIBRWRAP® System (TFS®) is designed to add strength and protection to existing in-water structures. This system is comprised of high strength fibers and specially designed epoxies. The TFS® is installed at or below the water line in both fresh and salt water at temperatures as cold as 4°C (40°F), in circular, octagonal, rectangular and odd-shaped cross sections.

Repair and protection of support columns from further coastal erosion of the **West Stub Pier,** Bristol Port, UK

Structural Enhancement of **NASSCO Berths III & IV,** San Diego, USA

Concrete Repair and Protection on **Chula Vista Bayside Park Pier**, CA

TFS® Features:

- Thoroughly tested at independent laboratories
- Cost - effective
- Extends the service life of existing structures
- Significantly lowers the corrosion rate while confining existing members
- Can 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 odd shape and size modifications
- Increase the member capacity for projects requiring change of use

Advantages - Benefits:

- **Advanced technological solution for rehabilitation and repair**
- **TFS® is extensively tested and carry all required approvals**
- **Preventing loss of strength due to corrosion or erosion**
- **Increasing of the original capacity for change-of-use retrofit projects**
- **Extending the lifecycle of any kind of waterfront structure**
- **Minimum disturbance**
- **Environmentally friendly solution**

Tyfo® FIBRWRAP® System (TFS®)

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

The **TFS®** 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®** is a reliable composite strengthening system with more approvals, demonstrations and proven installations than any other competitive system in the industry.

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

FYFE
Tyfo® FIBRWRAP® Systems

Network

Fibrwrap Construction Europe Territory

www.ThinkBAG.eu

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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