



# Civil Capabilities

DESIGN

BUILD

MAINTAIN



**FREYSSINET**

# About Us

## Inside

2

About Us

## Our Civil Services

6

Construction Methodology

8

Post-Tensioning

10

Heavy Lifting and Handling

14

Cable Structures

16

Structural Fittings

18

Seismic Protection

20

Structural Strengthening and Maintenance

22

Geotechnical Engineering

## Who we are

Freyssinet Oceania is a multifaceted contractor that provides innovative solutions for specialist civil engineering, building post-tensioning and structural remediation. The Freyssinet name is synonymous with post-tensioning, as Eugène Freyssinet, our founder, was a major pioneer of prestressed concrete. Innovation is in our DNA.

As a world leader in soil, structural and nuclear engineering, the Soletanche Freyssinet Group – which Freyssinet is a part – has an unrivalled reputation and expertise in specialised civil engineering. We operate in more than 100 countries spanning five continents, with more than 23,000 employees and a turnover exceeding €3.2 billion.

Freyssinet Oceania is recognised as the partner of choice for bridge construction. We have been involved with many iconic bridges in the Oceania region, including the:

- Anzac Bridge
- Sydney Harbour Bridge
- West Gate Bridge
- Bolte Bridge
- Transmission Gully

We also contribute to the construction of many prestressed concrete structures, such as water reservoirs, LNG storage tanks, towers for wind turbines, dams and quay walls.

In the early 1990s, Freyssinet diversified into structural strengthening and maintenance, and our success in this niche area has delivered rapid growth.

## Our culture and values

### Vision

Freyssinet is constantly innovating and finding new applications to develop sustainable solutions, making discoveries and filing new patents.

Our commitment to the future includes combining our global expertise with local experience, supporting our clients beyond project handover and developing the skills of our employees.

### Passion

Our local and global expertise, blended with enthusiasm and genuine interest in our work, defines who we are. Our engineers pool their talents, experiences and creativity to develop the best solutions to problems, from design to implementation.

### Excellence

We strive for excellence across all our activities – employee safety, human resources, international expansion, solution design and risk control. Excellence is the cornerstone of our approach and underpins the way we carry out our projects. Client satisfaction is the benchmark against which we measure our performance.

## Our commitment to safety

The safety of our employees is of paramount importance and commitment to safety is at all levels of leadership, including the highest level. Our safety systems are reviewed and redesigned daily with new learnings. We are guided by the following principles:

- We work closely with stakeholders.
- We methodically plan our work.
- We review our environment regularly.
- We provide purpose-made equipment.
- We identify and mitigate dangerous situations.
- We train our people to prevent accidents.

## Our people

At Freyssinet Oceania, we believe that people deliver projects. Our employees apply their expertise to pursue excellence, nurture relationships, promote team spirit and maintain high standards of engineering.

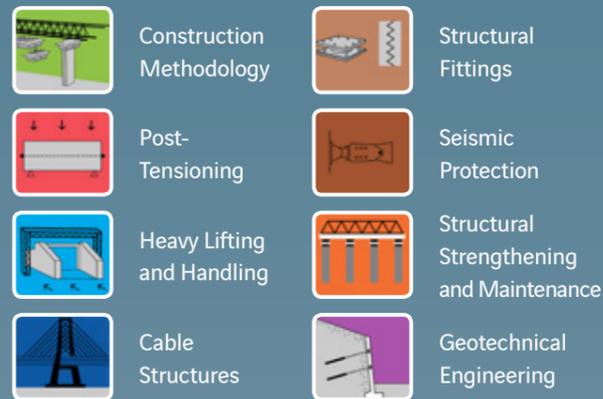
We have an enviable reputation in new construction and structural repair, and our capability in this growth market places us at the forefront of the industry. The renewal and durability of an existing structure is environmentally responsible and technically specialised. With more than 500 employees in the Oceania region and a diverse team of highly skilled individuals, we are able to bring innovative solutions to our clients.

## The Freyssinet Spirit



## What we do

The Freyssinet Civil Division provides specialist solutions across different core services:



Our local and global capabilities are underpinned by an active research and development policy, led by a technical department and a worldwide network that works closely with research laboratories and universities.

Each of our core services is applicable in numerous market sectors and types of structures, including bridges, tanks, dams, stadiums and industrial facilities.

We are sensitive to our clients' needs and take pride in our ability to use our know-how across all sectors.

## Field of applications

### Bridges

Freyssinet is a pioneer in prestressed concrete and cable-stayed technologies. We are recognised as the partner of choice for bridge construction, with a contribution that extends far beyond post-tensioning and includes all the specialist construction methods.

Our expertise in bridge construction is also sought after as a joint venture partner or alliance, where we take an active role in the overall project while maintaining our role as a post-tensioning subcontractor.

### Dams

With the expertise of the Soletanche Freyssinet Group, Freyssinet offers integrated solutions – combining design, supply and installation – as either a specialist subcontractor or the main contractor.

We offer a one-stop shop for a wide range of techniques, including vertical anchoring with ground and rock anchors, geomembranes, structural concrete repair and strengthening and increasing dam and spillway capacity using fusegates.

### Tanks and water

Freyssinet has a long and successful record of providing post-tensioning solutions for large concrete storage tanks.

Freyssinet has worked extensively around the world on new LNG terminal projects, including Pluto, Gorgon and Wheatstone in Australia, which has allowed us to improve our offering in technical efficiency and new plant and installation techniques that we also implement in other industries such as water storage.

### Stadiums

Freyssinet's unparalleled track record for world-class and specialist construction methods is demonstrated by our lead and expertise in several high-profile stadiums and complex facilities around the world.

The use of innovative construction techniques for stadiums includes cable-stayed roofs, heavy lifting, post-tensioning, and design and methodology.

In recent years, we have developed an integrated proposal on cable-stayed structures that includes design, supply and installation.

### Industrial

Freyssinet's new construction techniques extend to industrial structures, including warehouse slabs, port facilities and silos.

Post-tensioning slabs on heavy-load pavements improve cost by reducing the slab thickness, speed of construction and quantity of expansion joints.

Heavy-lifting techniques bring cost-effective solutions as an alternative to the use of heavy-lift cranes.

Freyssinet's design capability, coupled with early project involvement during the preliminary design phase, allows the client to choose the best solution for the project.

### Mining

Mining infrastructure presents unique challenges that require specialist knowledge.

Our involvement in mining projects in Australia has strengthened our expertise in providing specialised engineering services to the mining industry.

### Wind farms

Freyssinet has developed a dedicated turnkey solution for the design and construction of tall concrete towers for wind turbines, maximising energy production from stronger and consistent wind speeds at higher elevations.

The Freyssinet tower design, made of precast concrete sections assembled by post-tensioning, can be adapted to any turbine requirement. Towers can be either all concrete or a hybrid structure with a steel section at the top.

Propping system, Tuggerah Bridge replacement (NSW)

Temporary pier brackets, Grafton Bridge (NSW)



## In-house design

At Freyssinet Oceania, we excel in in-house design and have the resources and capability to deliver a full turnkey solution. Freyssinet has the capability to design complex temporary works that go hand in hand with the specialist methodology services we provide.

With extensive knowledge and experience across civil engineering fields, our team provides in-house support for all our specialist services. We work closely with our clients to deliver innovative solutions and support them throughout the full project life cycle, from concept to reality.

Our in-house capability and facilities ensure a responsive and timely service that minimises risks and maximises results.

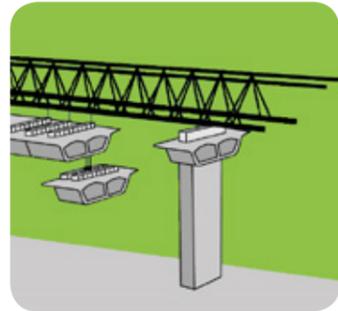
Launching nose, Transmission Gully (NZ)





# Construction Methodology

South Road Superway (SA)



bridges  
stadiums  
wind farms

Freyssinet has established an enviable reputation in developing modern construction methods. Regardless of the material used (e.g. concrete, steel), our construction methods are divided into two categories: in situ construction and prefabrication construction. Both categories involve a broad array of techniques and resources, including:

- carriage-form travellers and self-launching trusses for in situ construction
- launching gantries for cantilever construction
- cable-stayed masts for progressive installation
- assembly trusses for full-span construction
- incremental launching
- lifting and rotation systems for moving structures into position

As world leaders in engineering, our projects are implemented and achieved with significant technical expertise and experience, and with wide-ranging capabilities that include design and consultation.

### Freyssinet's scope

- construction engineering
- design of temporary works
- fabrication of temporary works
- supply of specialist equipment
- erection of the superstructures



Majura Parkway bridge (ACT)



South Road Superway (SA)



Additional crossing of the Clarence River, Grafton (NSW)



Sheahan Bridge duplication (NSW)



Transmission Gully (NZ)

Construction Methodology  
Selected projects



North West Rail Link (NSW)

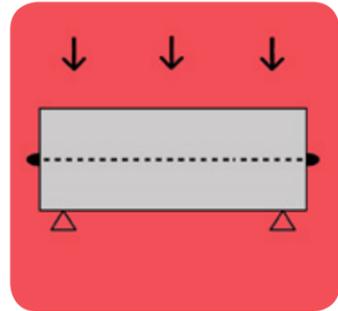


Nepean River bridge (NSW)



Rail Bridge over Wentworth Avenue, Mascot (NSW)

# Post-Tensioning



- bridges
- LNG tanks
- silos
- slabs-on-grade
- water tanks

We have inherited the tradition of technical excellence and attention to detail from our founder, Eugène Freyssinet, who undertook his first experiments on prestressed concrete in 1906 and established a patent for prestressing in 1928. Since then, Freyssinet has continually innovated to now offer the best prestressing system range combining high performance, durability and flexibility that can be applied to many different types of structures.

All our systems are compliant with Australian and New Zealand standards and approved by relevant authorities.

### C-Range

The C-Range prestressing system is the most versatile multistrand system designed for a large range of applications. Tendon sizes range from 3 to 55 strands using 15.2 mm and 15.7 mm diameter strands.

### S-Range

The S-Range prestressing system using flat duct has been designed specifically for thin sections. This range is popular in the building industry. Tendon sizes range from 1 to 5 strands using 12.7 mm and 15 mm diameter strands.

### Freyssibar

The high-tensile post-tensioning bars are suitable for short tendons and temporary works. We offer a wide range of bar diameters and properties – from 26 mm to 90 mm, with tensile strength from 1030 MPa to 1200 MPa.

### Freyssinet's scope

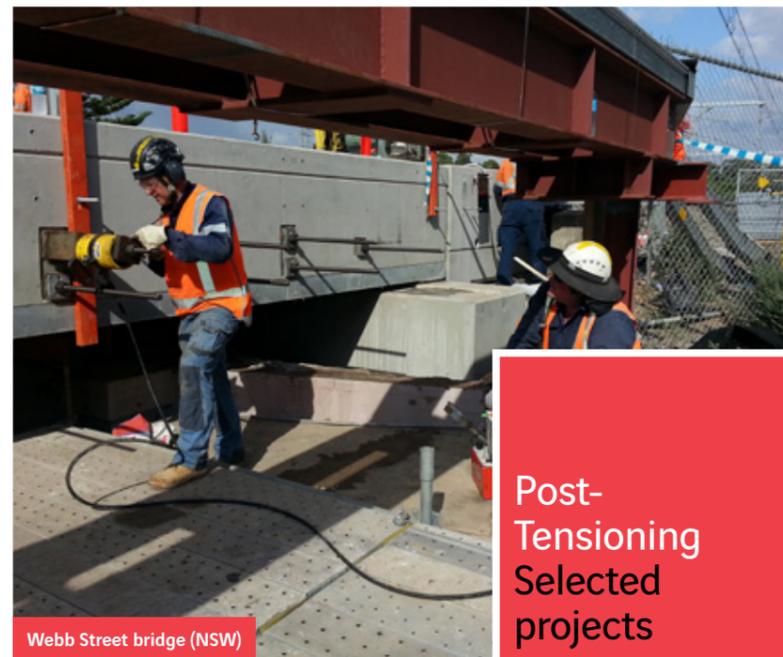
- supply of post-tensioning materials
- supply of post-tensioning equipment
- provision of supervision and labour
- construction engineering



Ellenbrook water tank (WA)



Gannons Road underbridge (NSW)



Webb Street bridge (NSW)



Gateway bridge (WA)

## Post-Tensioning Selected projects



Wheatstone LNG tanks (WA)



Additional crossing, Clarence River, Grafton (NSW)



Dungog clear water tank (NSW)



North West Rail Link (NSW)

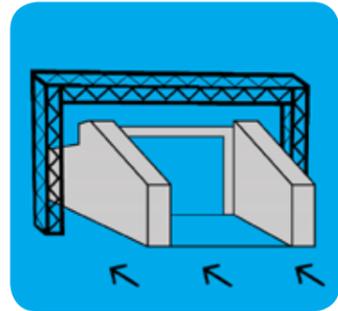


Carrum Rail bridge PT (VIC)



# Heavy Lifting and Handling

Qantas heavy maintenance hangar (QLD)



bridges  
buildings  
industrial  
stadium roofs

Lifting and handling are complex operations that often influence the successful completion of a project. We support our clients throughout the life of their project. We are involved from the design phase, assessing objectives and offering optimum solutions that meet project specifications, budget, time frames and lead times.

### Proven technologies

Lifting and moving a structure demands absolute control over the stresses induced in the structure from the start to the end of the operation. Freyssinet has developed a range of specific lifting and handling equipment, with real-time control and precision, enabling the most stringent requirements to be met in managing reactions and movements at the jacking points.

### Risk management

In accordance with our safety policy, we undertake a hazard identification (HAZID) study and a hazard and operability (HAZOP) study for every lifting and moving process to identify potential hazards and threats relating to our project methods and equipment.

### Freyssinet's scope

- feasibility studies and operation sequencing
- detailed design of lifting and moving methods
- design of temporary structures
- supply of specialist equipment
- synchronised computer jacking
- supply and installation of temporary structures
- performance of lifting and handling operations



Osborne South Development Project (SA)



Low-level bridge replacement project (WA)



Southbank Pedestrian Bridge (QLD)

## Heavy Lifting and Handling Selected projects



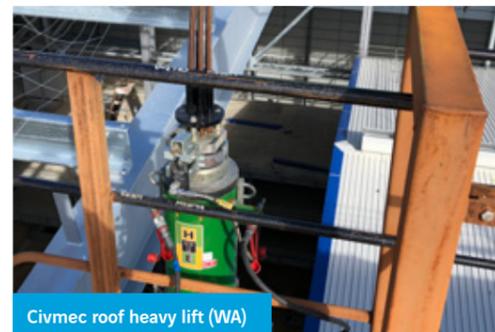
International Convention Centre Sydney (NSW)



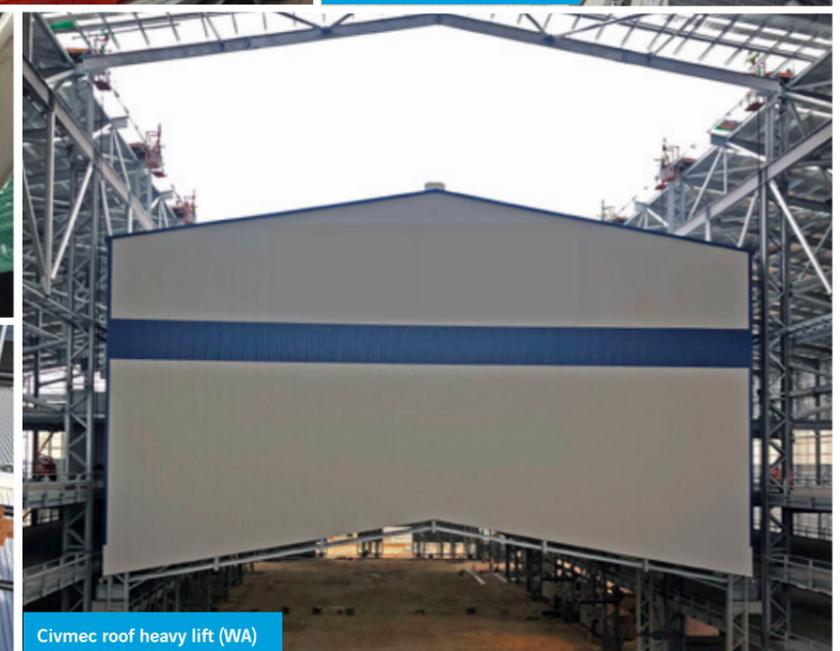
Civmec roof heavy lift (WA)



International Convention Centre Sydney (NSW)



Civmec roof heavy lift (WA)



Civmec roof heavy lift (WA)





# Cable Structures

Anzac Bridge (NSW)



North West Rail Link (NSW)



arch bridges  
cable-stayed bridges  
stadiums and arena roofs

Over the past 40 years, the rapid development of cable-stayed structures, in particular cable-stayed bridges, has demonstrated a growing interest in this type of structure.

The parallel strand stay cable system, using individually protected strands and anchorages derived from prestressing technology, represents the state of the art in bridge engineering. Isotension®, the Freyssinet worldwide patented stressing method, is the result of considerable investment into research and development as well as experience from the construction of more than 400 cable-stayed bridges. This method facilitates strand-by-strand erection and eliminates the need for heavy erection equipment.

Freyssinet has developed two ranges of stay cables: H2000 for large structures and H1000 for smaller structures, such as a pedestrian bridge.

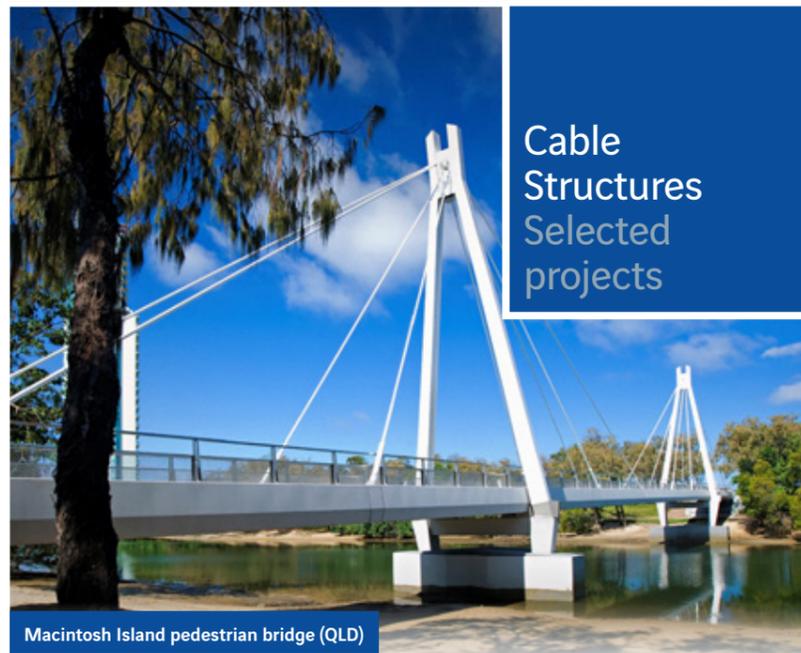
- Freyssinet's scope**
- construction engineer
  - stay cable materials
  - specialised equipment
  - installation works



H2000 Range



H1000 Range



Macintosh Island pedestrian bridge (QLD)

## Cable Structures Selected projects



Narellan Road upgrade (NSW)



Sydney Super Dome (NSW)

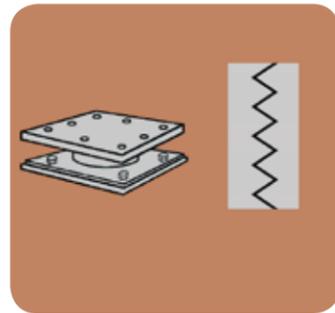


Bridge outside the Sydney Airport domestic terminal (NSW)  
Photo: BlueScope Steel



# Structural Fittings

Iron Cove Bridge (NSW) Photo: Creative Commons



bridges  
buildings

Structural accessories are systems that link two structures together and fully determine the relative movements and forces that each structure transmits to the other under the influence of external stresses.

Structural accessories can be categorised into two families based on their main function:

- bearings, which transfer major vertical loads and allow displacement between a deck and its piers
- expansion joints, which ensure a continuous road surface, such as between a main deck and its end spans.

### Bearings

We design and supply the full range of bearings, including pot bearings, spherical bearings, elastomeric bearings and special bearings.

### Expansion joints

Freyssinet expansion joints range from 30 mm to 1000 mm and includes strip seal (WOSD range), sawtooth (WD range), finger joint (WP range) and modular (LW range).

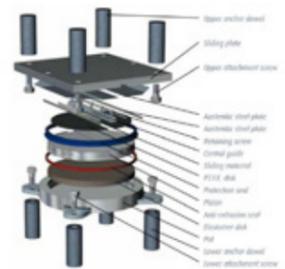
Freyssinet delivers end-to-end project support, from design through to completion.

### Freyssinet's scope

- structural accessory design and sizing, in accordance with the requirements of applicable standards
- controlled manufacturing in Freyssinet's production centres
- on-site installation and fine-tuning



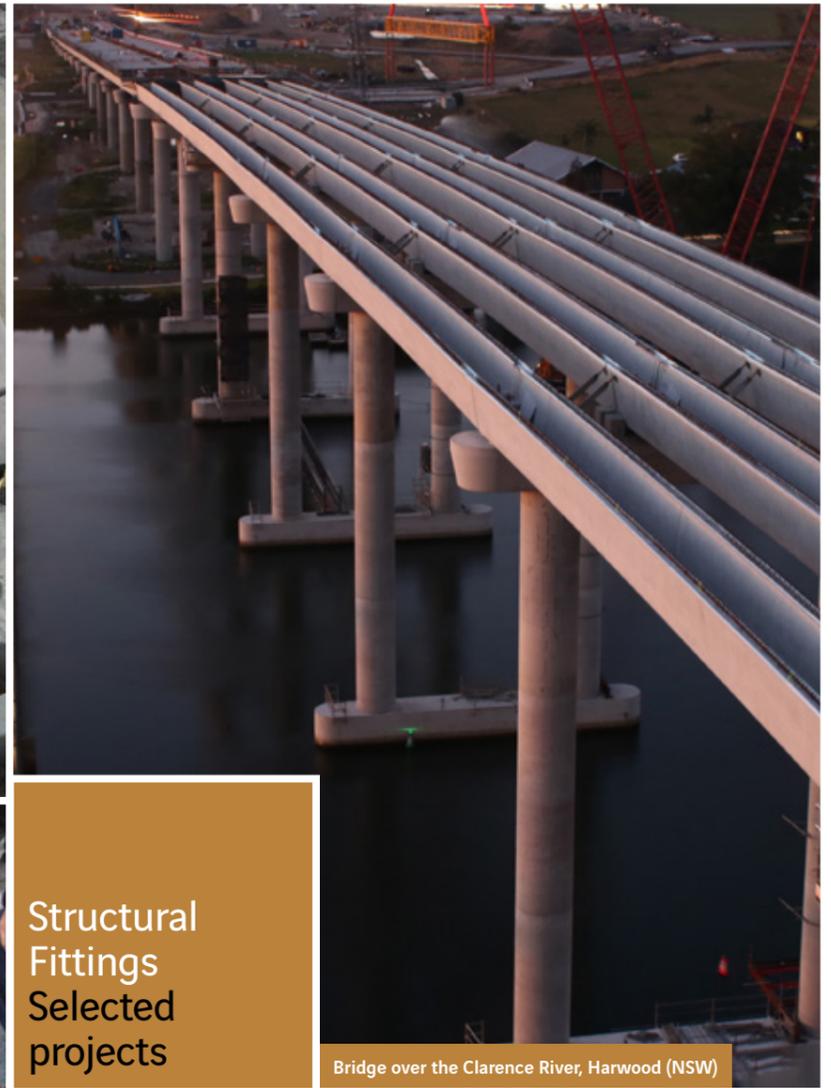
Freyssinet WD expansion joint



Freyssinet pot bearing



Hume Highway WP joint, Tarcutta (NSW)



Bridge over the Clarence River, Harwood (NSW)



Spirit of Progress WD joint (NSW)

Structural Fittings Selected projects



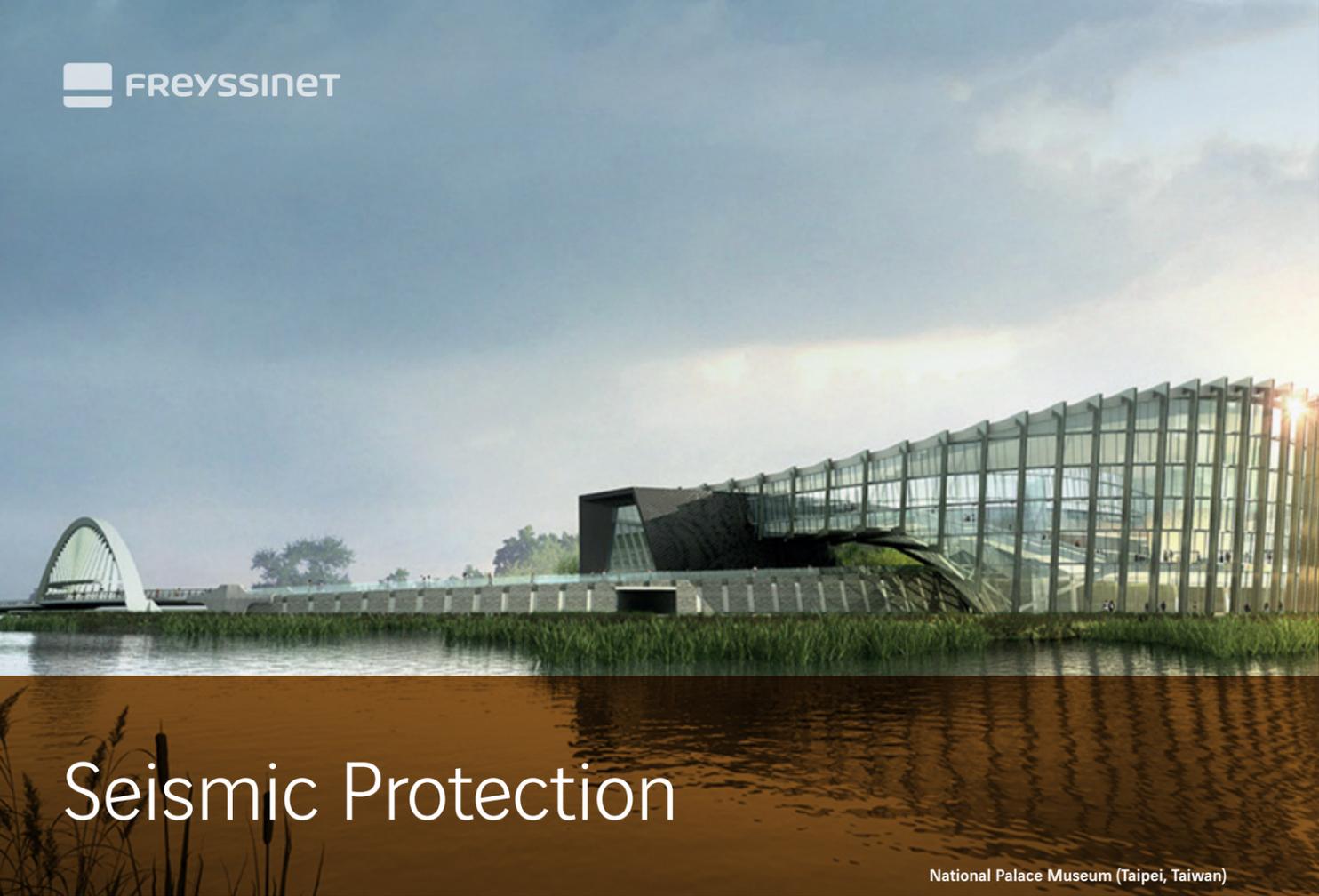
North West Rail Link (NSW)



Bearings on the North West Rail Link (NSW)

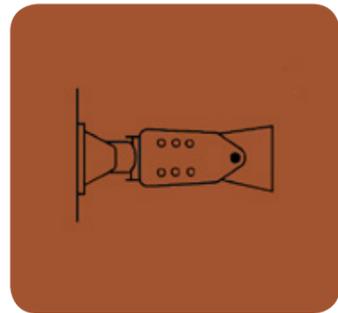


Iron Cove Bridge (NSW)



# Seismic Protection

National Palace Museum (Taipei, Taiwan)



bridges  
buildings  
infrastructure

From proposing an earthquake protection strategy geared towards a specific structure through to delivering and installing systems that have been designed, manufactured and tested in-house, Freyssinet offers turnkey solutions for seismic protection of new and existing structures.

The company's expertise in earthquake protection devices is fuelled by its extensive track record built over more than 25 years. Leveraging its wealth of knowledge and experience in building and infrastructure, Freyssinet has developed a full range of earthquake isolation devices known as ISOSISM®.

These devices can be used alone or in combination to achieve the most effective and appropriate protection for each project. The ISOSISM® range covers the three fundamental operational modes of seismic protection:

## Dissipation

- viscous dampers for both infrastructure and building application (high-reactivity dampers)
- prestressed damping spring (a flag-shaped dissipator with activating threshold and recentering capacity unique to the ISOSISM® range)

## Isolation

- high-damping rubber bearings
- lead rubber bearings
- friction pendulum bearings

## Connection

- shock transmitter unit
- SFX joint: supported mat joint that withstands seismic displacement in both longitudinal and transverse directions and maintain trafficability after the event

## Freyssinet's scope

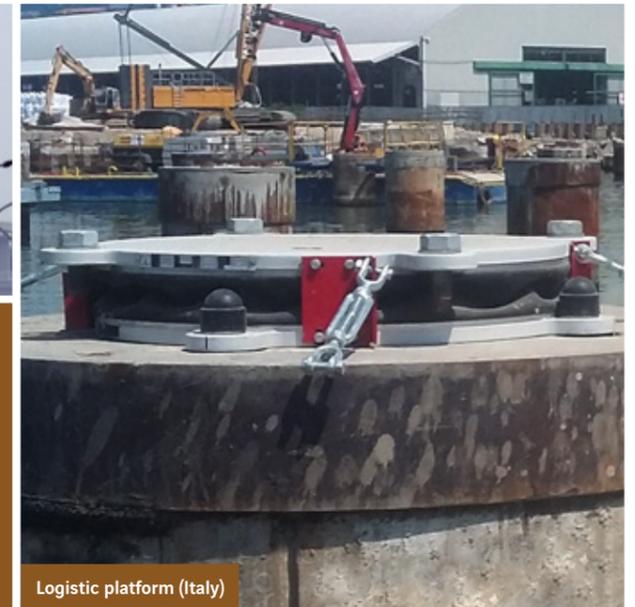
- definition of seismic protection strategies
- design and manufacture of tailor-made devices
- installation of devices, including methods and temporary works design



Waikato Expressway (NZ)



Jakarta LRT Viaduct (Indonesia)



Logistic platform (Italy)

## Seismic Protection Selected projects



Riyadh Metro System (Saudi Arabia)



London Bridge Station (United Kingdom)

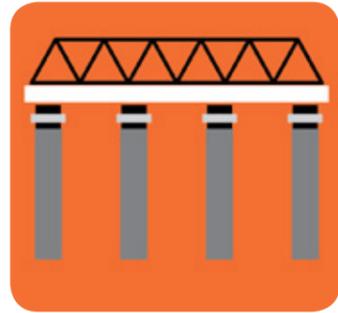


Alibeykoy and Kagithane bridge (Istanbul, Turkey)



# Structural Strengthening and Maintenance

Southern Link Burnley and Morshead Viaducts (VIC)



- bridges
- dams
- silos
- stadiums
- tanks

Based on our knowledge of major structures, Freyssinet has developed a wide range of strengthening and maintenance services.

### Bearing replacement

Freyssinet Oceania offers a one-stop bridge bearing replacement service. Our services combine our pre-eminent position as a designer and bridge bearing manufacturer with our expertise in design, supply and operation of jacking systems and associated temporary works.

### Additional post-tensioning

Additional post-tensioning consists of adding external forces to modify the stress condition of an existing structure to restore it to its original working capacity, increase its load-bearing capacity and/or improve its serviceability and performance relating to cracking and deflection.

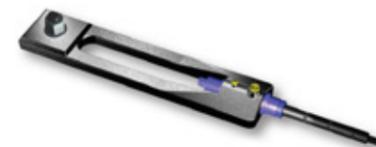
The technique can be used on bridges, circular structures, such as water towers and silos, and building slabs and beams. Additional post-tensioning can be performed using Freyssinet's strand or bar systems.

### Freyssinet's scope

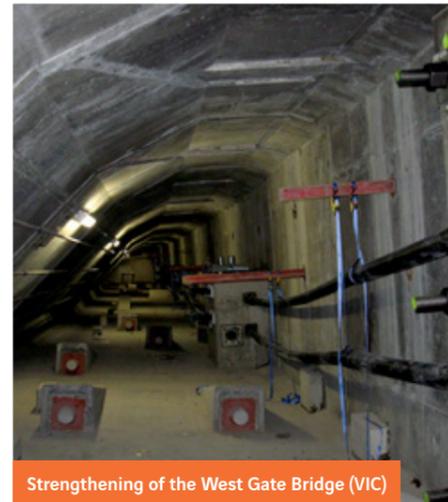
- design and construction method statement
- supply of proprietary system
- performance of the works



Freyssinet X-Range anchorage system for circular structures



Freyssinet 1R15 anchorage, monostrand anchorage designed for concrete beams, pier headstocks and slabs



Strengthening of the West Gate Bridge (VIC)



Life extension works for GBC Silos (NZ)



Life extension works for GBC Silos (NZ)



Widening of the M2 motorway viaducts at Terrys Creek and Darling Mills Creek (NSW)



Strengthening of the Cobbadah Creek bridge (NSW)

## Structural Strengthening and Maintenance Selected projects



Douglas Park twin bridges (NSW)



Bridge over the South Coast rail line, Gerringong (NSW)



Strengthening of the bridge over the M4 motorway (NSW)

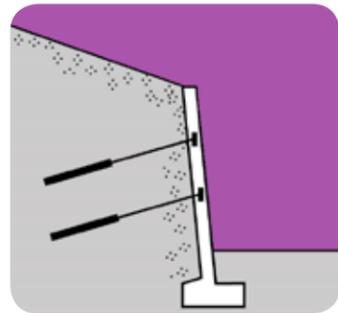


Bridge jacking of the bridge over Schofields Road (NSW)



Kangaroo Creek Dam (SA)

# Geotechnical Engineering



bridges  
buildings  
dams

With more than 70 years' experience in soil structure, together with an accredited production force that complies with international standards, Freyssinet designs, manufactures and performs works on-site.

Freyssinet provides expertise and skills on various geotechnical techniques, such as:

- soil nails and rock bolts
- temporary and semi-permanent strand anchors
- permanent strand anchors
- temporary and semi-permanent bar anchors
- permanent bar system anchors.

We draw on our expertise at every stage of the process to deliver superior performance and future-proof our work.

Products are developed and then manufactured in modern workshops by skilled workers. Quality is the keyword at every stage in the manufacturing process, and all products undergo exhaustive tests to guarantee best-in-class performance.

We offer anchoring solutions and associated services to companies that engineer special foundations and carry out strengthening work to ensure structural stability and reinforce the ground.

We provide expert advice on structural design, installation methods and specialised technologies.

With expertise across all aspects of geotechnical and geological engineering, we pursue an active research and development policy, and our main aim is to gain a clear insight into each client's requirements in a bid to deliver the best-fit solutions.

### Freyssinet's scope

- construction methodology
- supply of specialised materials
- prefabrication off-site
- specialised works on-site



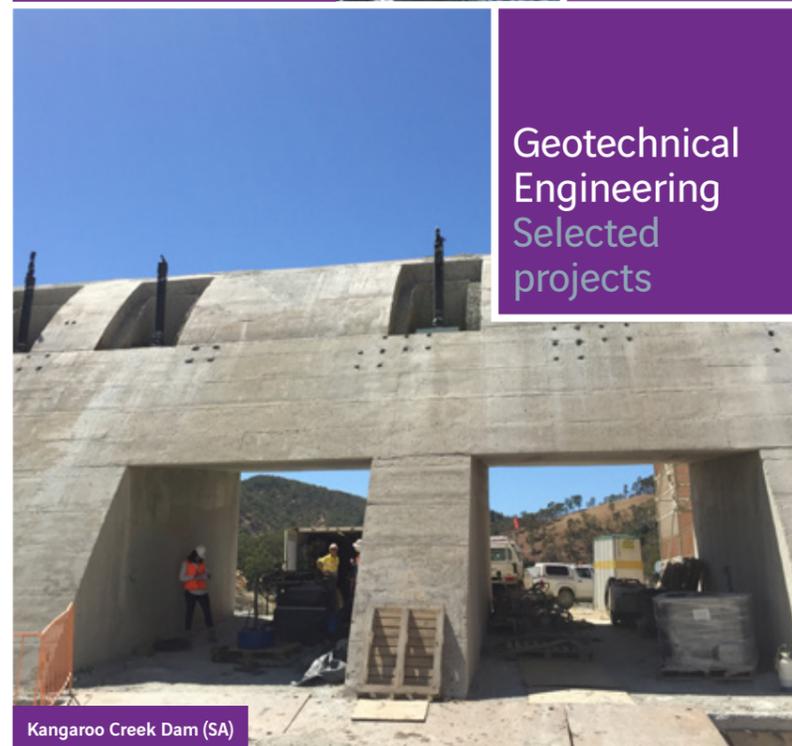
Ground anchors at Cotter Dam (ACT)



Eildon Dam (VIC)



Warragul underpass (VIC)



Geotechnical Engineering  
Selected projects

Kangaroo Creek Dam (SA)



Manly Dam and Centennial Park reservoirs (NSW)



M80 motorway upgrade (VIC)



Ground anchors at Victoria University (VIC)

# Our global network



**THE AMERICAS:** Argentina · Brazil · Canada · Chile · Colombia · El Salvador · Mexico · Panama · United States · Venezuela

**EUROPE:** Belgium · Bulgaria · Czech Republic · Denmark · Estonia · France · Hungary · Iceland · Ireland · Latvia · Lithuania · Macedonia · Netherlands · Norway · Poland · Portugal · Romania · Russia · Serbia · Slovenia · Spain · Sweden · Switzerland · United Kingdom

**AFRICA AND MIDDLE EAST:** Abu Dhabi · Algeria · Dubai · Egypt · Jordan · Kuwait · Morocco · Oman · Qatar · Saudi Arabia · Sharjah · Tunisia · Turkey

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