



Buildings



FREYSSINET

THE PROBLEMS

Whether concrete, metal, masonry or wood, bridges age and undergo changes over the course of time. Freyssinet offers its clients proven solutions for the repair, the protection and the strengthening of these structures.

■ AREAS OF APPLICATION

- Industrial or residential buildings;
- Office buildings;
- Communal facilities;
- Shopping centres;
- Car parks;
- Historic monuments.

■ IDENTIFIED PROBLEMS

- Corrosion of reinforcing steel,
- Concrete spalling and flaking,
- Concrete cracking,
- Concrete delamination,
- Partial destruction or breaking of elements,
- Excessive deformation.

■ NATURAL CAUSES

- Ageing of materials (steel, wood, concrete);
- Concrete cracking or spalling due to alkaline reaction;
- Concrete carbonation;
- Chloride penetration in the concrete coating;
- Chemical attacks;
- Freeze/thaw cycles.

■ STRUCTURAL CAUSES

- Change of use (increase in live loads, creation of openings);
- Regulatory change (earthquake, wind);
- Calculation error, poor design or implementation;
- Material fatigue, effects of rolling loads.

■ ACCIDENTAL CAUSES

- Fire;
- Excessive loads;
- Ground movements;
- Vibrations



Slab strengthening with additional prestressing



Floor strengthening with Foreva®TFC



Strengthening of wood structure



Balcony strengthening with additional prestressing

Freyssinet, with more than sixty years of experience, as a main contractor in specialized works, has developed the Foreva® offer, a turnkey service guarantee for the long-term enhancement of your structures.

Shotcrete strengthening



OUR SOLUTIONS

The Foreva® solutions enable Freyssinet to carry out repair and retrofit works in line with industry standards and good engineering practice while respecting the environment.

■ ASSISTANCE WITH THE STRUCTURAL DIAGNOSIS

■ ASSISTANCE WITH THE DESIGN

■ CONCRETE REPAIR

- Treatment of cracks
 - Resin and grout injection (**Foreva® TF Inject**)
 - Injection of cracks with water infiltration
- Concrete re-profiling
 - Patch repair (**Foreva® REP**)
 - Shotcrete (**Foreva® Shotcrete**)

■ PROTECTION OF REINFORCING STEELS

- Cathodic protection with galvanic anode:
 - Use of discrete anodes (**Foreva® GP Guard**)
 - Use of zinc coating (**Foreva® GP Zinc**)
- Cathodic protection with impressed current:
 - Use of discrete anodes (**Foreva® CP Tube**)
 - Use of anodic ribbons (**Foreva® CP Ribbon**)
 - Use of anodic meshes (**Foreva® CP Mesh**)
 - Use of conductive anodic coating (**Foreva® CP Coat**)
- Electro-chemical treatment of concrete
 - Realkalinization (**Foreva® PH+**)
 - Chlorides extraction (**Foreva® CL**)
- Surface Treatment
 - Use of Inhibitors of corrosion (**Foreva® Inhib**)
 - Protective coatings (**Foreva® Relastic 310**)
 - Water repellent impregnation (**Foreva® Fuge**)

■ STRENGTHENING WORKS

- Additional prestressing (Freyssinet products)
- Shotcrete (**Foreva® Shotcrete**)
- Carbon fiber bonded composite
 - Bidirectional and unidirectional fabrics (**Foreva® TFC**)
 - Pultruded laminate (**Foreva® LFC**)
 - Pultruded rod (**Foreva® RFC**)
- Metal and wood reinforcements
- Underpinning with micro-piles
- Load transfer using flat jacks (Freyssinet process)

■ PROTECTIVE COATINGS AND WATERPROOFING LININGS

- Polyurea spray coatings (**Foreva® Polyurea**)

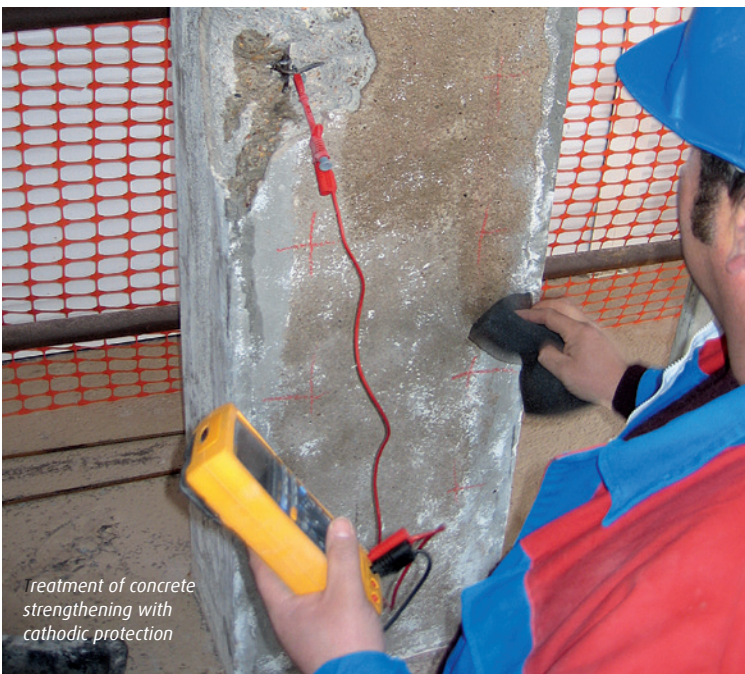
Underpinning with micropiles



Underpinning with Fondapieu



treatment of concrete strengthening with cathodic protection



Our specialist teams are on hand to help you identify the Foreva® solution that meets your requirements.



Americas

Argentina
Brazil
Canada
Chile
Colombia
French Guyana
Mexico
Panama
Peru
El Salvador
United States of America
Venezuela

Europe

Belgium
Bulgaria
Cyprus
Czech Republic
Denmark
Estonia
France
Hungary
Iceland
Ireland
Italy
Latvia
Lithuania
Luxembourg
Macedonia
Netherlands
Norway
Poland
Portugal
Romania
Russia
Serbia
Slovenia
Spain
Sweden
Switzerland
Turkey
United Kingdom

Africa and Middle East

Algeria
Egypt
Jordan
Kuwait
Morocco
Oman
Qatar
Saudi Arabia
South Africa
Tunisia
United Arab Emirates

Asia

Hong Kong
India
Indonesia
Japan
Macau
Malaysia
Pakistan
Philippines
Singapore
South Korea
Taiwan
Thailand
Vietnam

Oceania

Australia
New Zealand

www.freyssinet.com

