



Solutions Foreva

BUILDINGS
REPAIR, PROTECTION
AND STRENGTHENING



I M P R O V E , P R E S E R V E , S E C U R E



FREYSSINET
SUSTAINABLE TECHNOLOGY

THE PROBLEMS

Whether concrete, metal, masonry or timber, buildings age and undergo changes over the course of time.

Freyssinet offers its clients proven solutions for the repair, protection and strengthening of these structures.

■ AREAS OF APPLICATION

- Industrial or residential buildings;
- Office buildings;
- Community facilities;
- Shopping centres;
- Car parks;
- Heritage structures.

■ IDENTIFIED PROBLEMS

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

■ NATURAL CAUSES

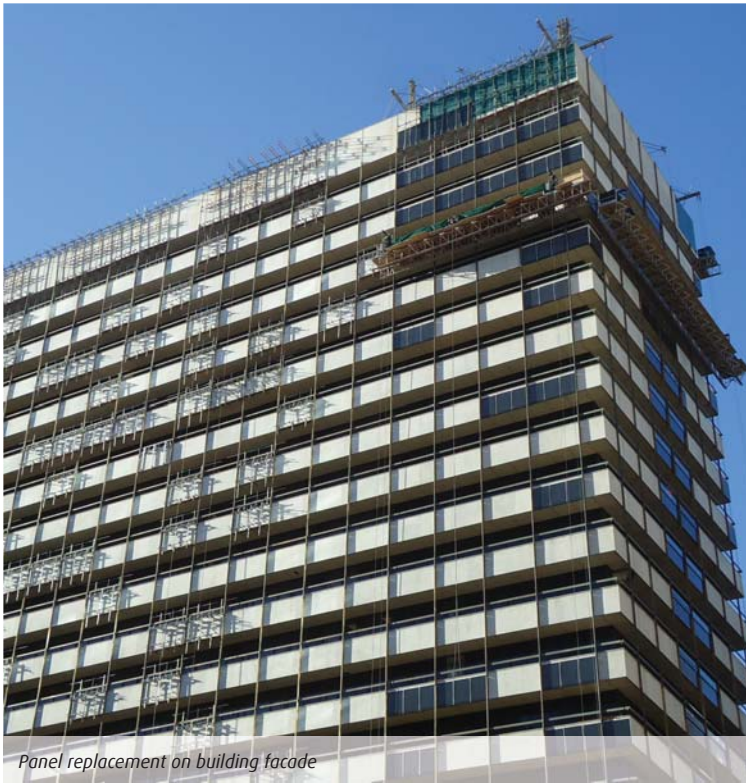
- Ageing of materials (steel, timber, concrete);
- Concrete cracking or spalling due to alkaline reaction;
- Concrete carbonation;
- Chloride penetration in the concrete;
- Chemical attacks.

■ STRUCTURAL CAUSES

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

■ OTHER CAUSES

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



Panel replacement on building facade



Concrete reinstatement



Strengthening of wood structure



Concrete replacement

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

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

■ PROTECTION WORKS

Concrete repair and protection

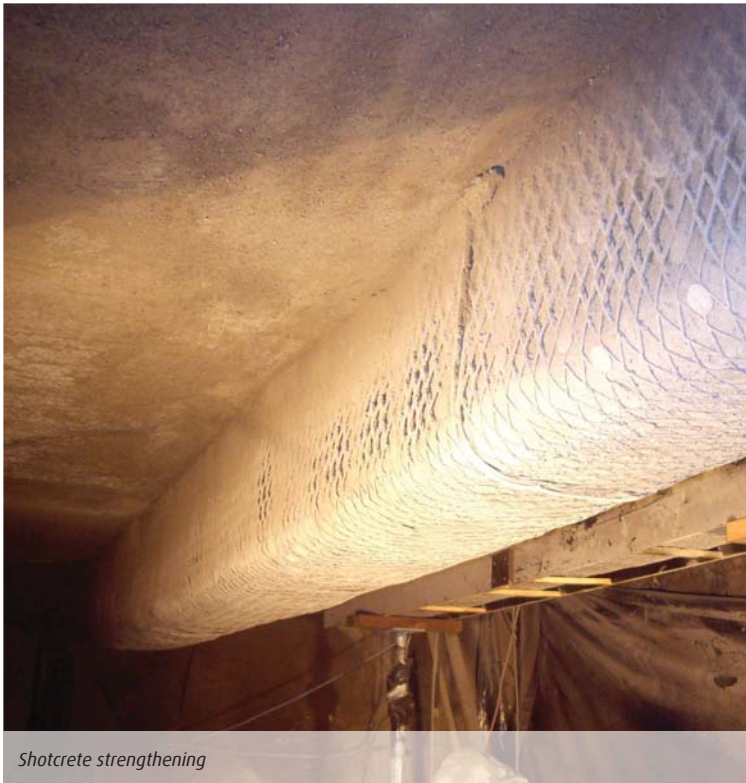
- Treatment of cracks
 - Resin and grout injection
- Concrete re-profiling
 - Resurfacing and patch repair
 - Shotcrete

Protection of reinforcing steel

- Cathodic protection with galvanic anode:
 - Discrete anodes (**Foreva® GP Guard***)
 - Sprayed zinc coating (**Foreva® GP Zinc**)
- Cathodic protection with impressed current:
 - Discrete anodes (**Foreva® CP Tube**)
 - Anodic ribbons (**Foreva® CP Ribbon**)
 - Anodic meshes (**Foreva® CP Mesh**)
 - Conductive anodic coating (**Foreva® CP Coat**)
- Electro-chemical concrete repair
 - Realkalinisation (**Foreva® PH***)
 - Chlorides extraction (**Foreva® CL***)
- Surface Treatment
 - Physical and chemical treatment with corrosion inhibitors
 - Protective coatings

■ STRENGTHENING WORKS

- Additional post-tensioning (Freyssinet products)
- Shotcrete
- Carbon fibre bonded composites
 - Fabric (**Foreva® TFC**)
 - Laminate (**Foreva® LFC**)
 - Rod (**Foreva® RFC**)
- Metal and timber reinforcements
- Underpinning with micro-piles
- Load transfer using flat jacks (Freyssinet process)



Shotcrete strengthening



Strengthening with TFC

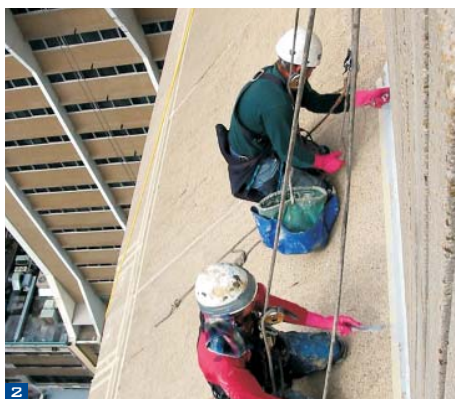


Treatment of concrete strengthening with cathodic protection

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



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SYDNEY
Level 3, 13-15 Lyonpark Road
Macquarie Park NSW 2113
Tel: +61 2 9491 7177

MELBOURNE
217 Arden Street
North Melbourne VIC 3051
Tel: +61 3 9321 1300

BRISBANE
6 Chapman Place
Eagle Farm QLD 4009
Tel: +61 7 3862 0100

PERTH
115 Radium Street
Welshpool WA 6106
Tel: +61 8 9251 1030

NEWCASTLE
271 Brunner Road
Adamstown NSW 2289
Tel: +61 2 4978 7806

CHRISTCHURCH
1220 Main North Road
Christchurch 8083 New Zealand
Tel: +64 3 903 2362



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1 / Facade repair 2 / Resealing joints 3 / Facade repair access system 4 / Forming concrete repair 5 / External post-tensioning



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