



REPAIR, STRENGTHENING AND PROTECTION OF STRUCTURES



FREYSSINET



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Freyssinet

Freyssinet has been specialising in the construction and structural repair industry for over 75 years and is involved in numerous projects across the five continents, thereby cementing its world leadership status in its areas of expertise:

- ▶ Prestressing
- ▶ Cable-stayed structures
- ▶ Construction methods
- ▶ Structural accessories
- ▶ Structural repairs
- ▶ Structural reinforcements
- ▶ Structural protection
- ▶ Specialised maintenance for bearings, joints and cables

For more information, visit www.freyssinet.com



Freyssinet's repair expertise and solutions are all encompassed by the Foreva® label. From inspection and diagnosis to implementation, including structural design, Freyssinet's customers are guaranteed a range of services tailored to their needs.

Repair: the Freyssinet way

Freyssinet has forged a reputation as a structural repair contractor with the ability to provide its customers with an end-to-end array of bespoke services and solutions, including cutting-edge technologies for protecting, repairing and strengthening different types of structures.

Freyssinet offers contractor services in such fields as engineered structures, buildings, tunnels, industrial structures, marine and river structures, water engineering and historical monuments, with leading-edge solutions including:

- ▶ Additional prestressing
- ▶ Carbon fibre composite reinforcement
- ▶ Dry process shotcrete
- ▶ Sprayed, cast in-situ or precast UHPFRC reinforcements
- ▶ Protection for rebars in reinforced concrete
- ▶ Concrete coating
- ▶ Underpinning
- ▶ Soil stabilisation
- ▶ Replacement of stay cables
- ▶ Replacement of prestressing tendons
- ▶ Replacement of bearings and expansion joints
- ▶ Strengthening of timber, masonry and metallic structures

Structures mature and undergo changes over time.

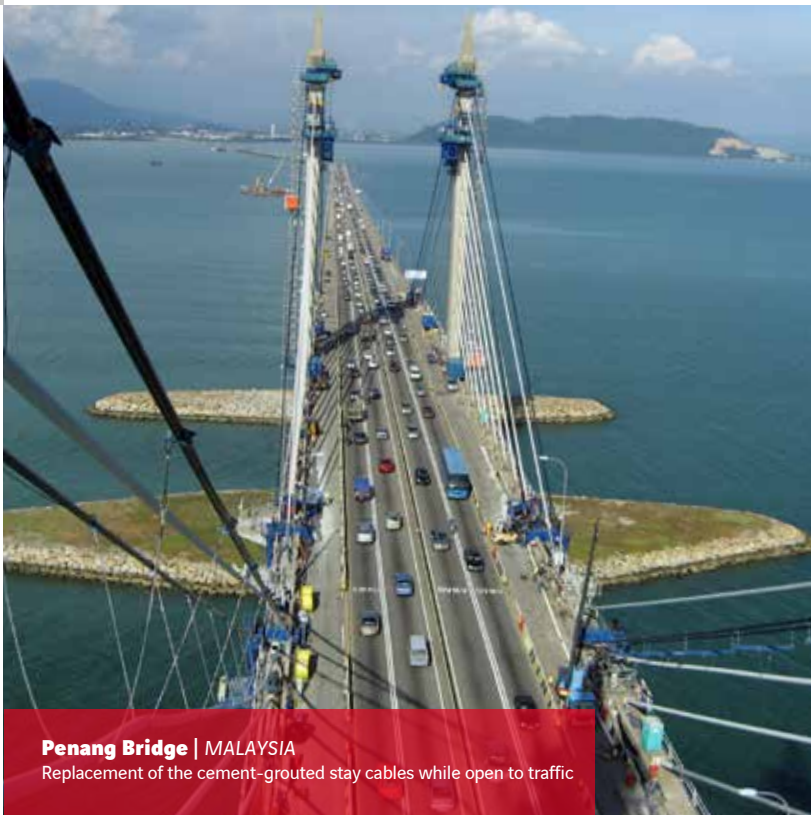
Repairs and strengthening are always complex procedures requiring painstaking attention to detail, just like a new build.



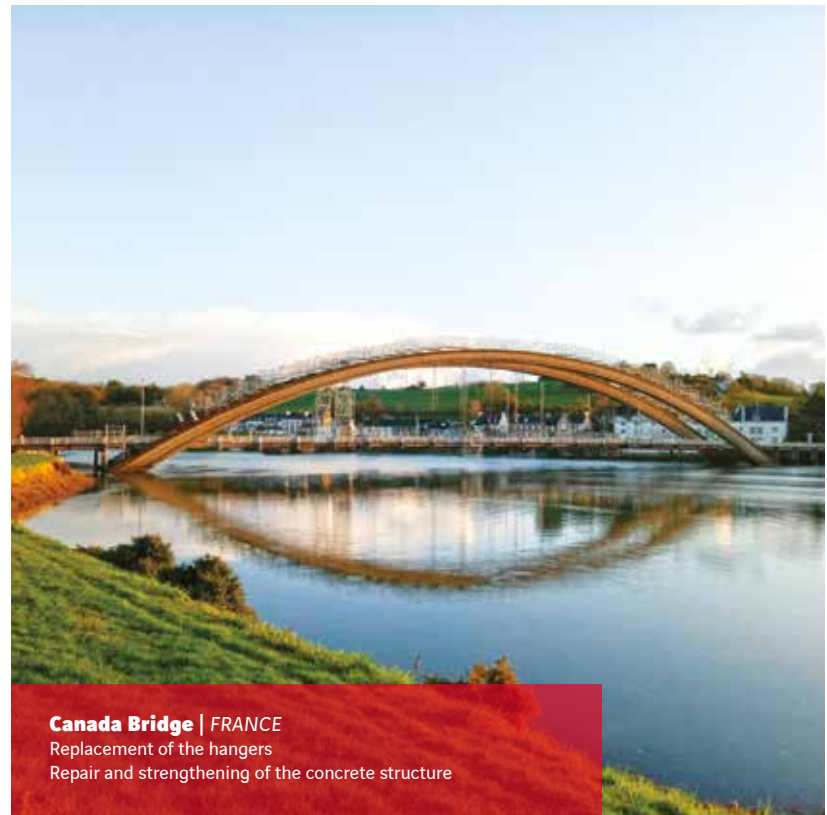
ENGINEERED STRUCTURES



Hammersmith Bridge | UNITED KINGDOM
Capacity restored through additional prestressing



Penang Bridge | MALAYSIA
Replacement of the cement-grouted stay cables while open to traffic

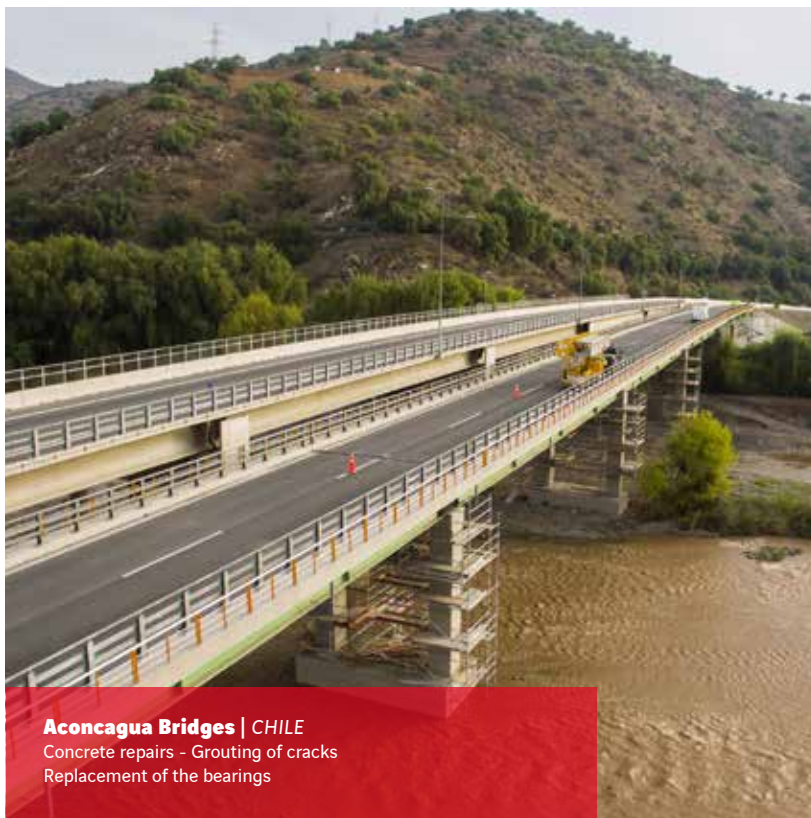


Canada Bridge | FRANCE
Replacement of the hangers
Repair and strengthening of the concrete structure



Ricamarie Viaduct | FRANCE

Asbestos removal - Continuity of the deck through additional prestressing - Replacement of the bearings and expansion joints



Aconcagua Bridges | CHILE

Concrete repairs - Grouting of cracks
Replacement of the bearings



Sahasinaka Viaduct | MADAGASCAR

Strengthening arch soffits with dry process shotcrete
Repainting - Grouting of cracks - Protection for rebars in reinforced concrete



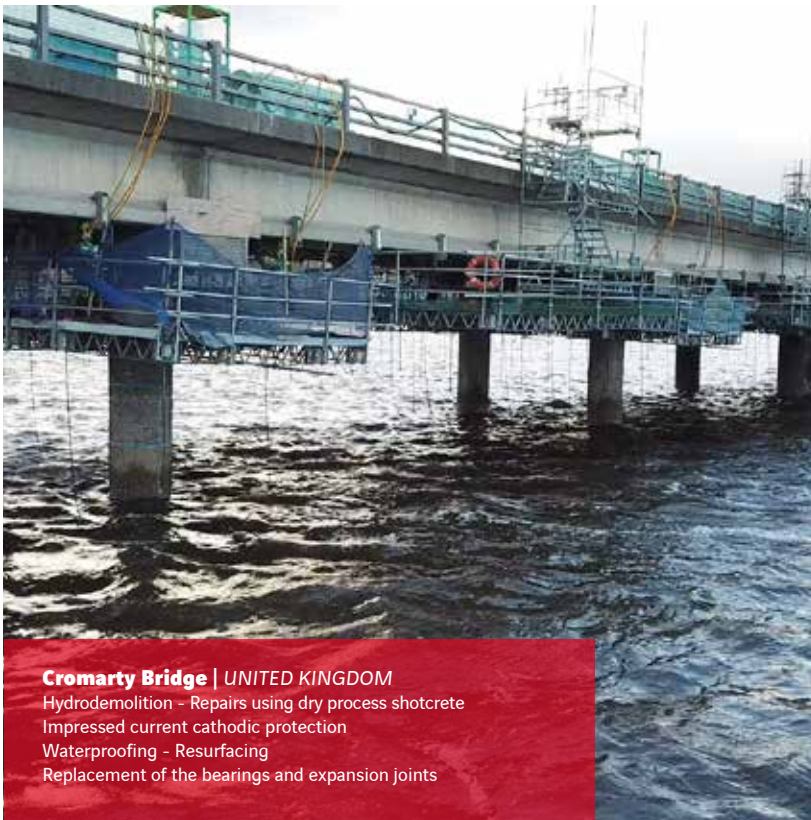
Saint-Cloud Viaduct | FRANCE

Impressed current cathodic protection for the segments
Concrete restoration



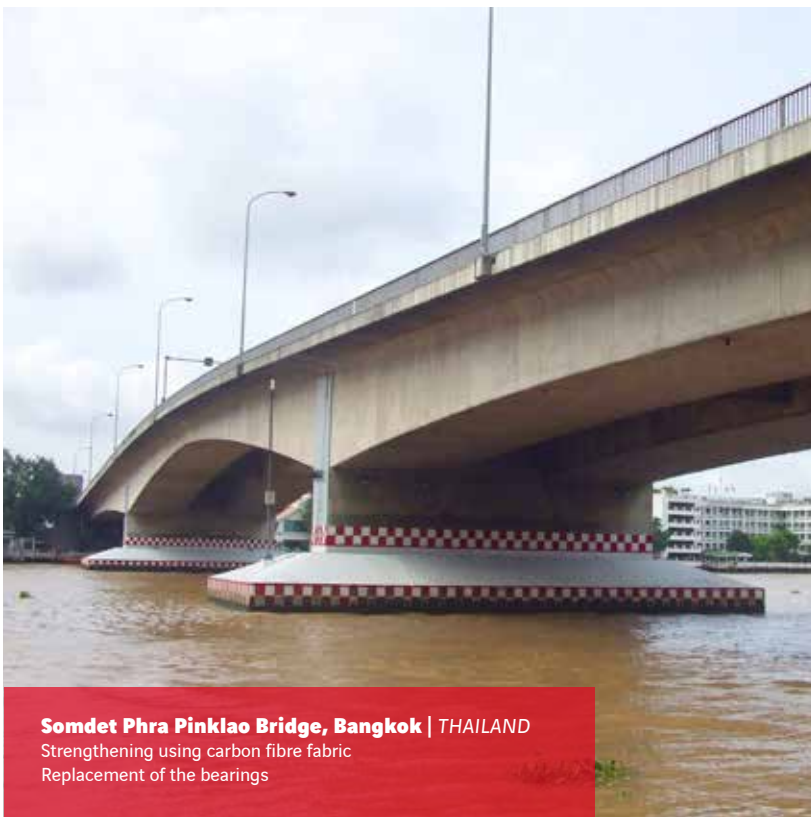
Ayala Bridge, Manila | PHILIPPINES

Rehabilitation and alignment with earthquake standards - Lifting-
Metalwork repairs and protection - Installation of earthquake
protection devices - Strengthening through additional prestressing



Cromarty Bridge | UNITED KINGDOM

Hydrodemolition - Repairs using dry process shotcrete
 Impressed current cathodic protection
 Waterproofing - Resurfacing
 Replacement of the bearings and expansion joints



Somdet Phra Pinklao Bridge, Bangkok | THAILAND

Strengthening using carbon fibre fabric
 Replacement of the bearings



Ewijk Bridge | NETHERLANDS

Replacement of the stay cables on a deviation saddle bridge
 Modernisation with Cohestrand® sheathed strands



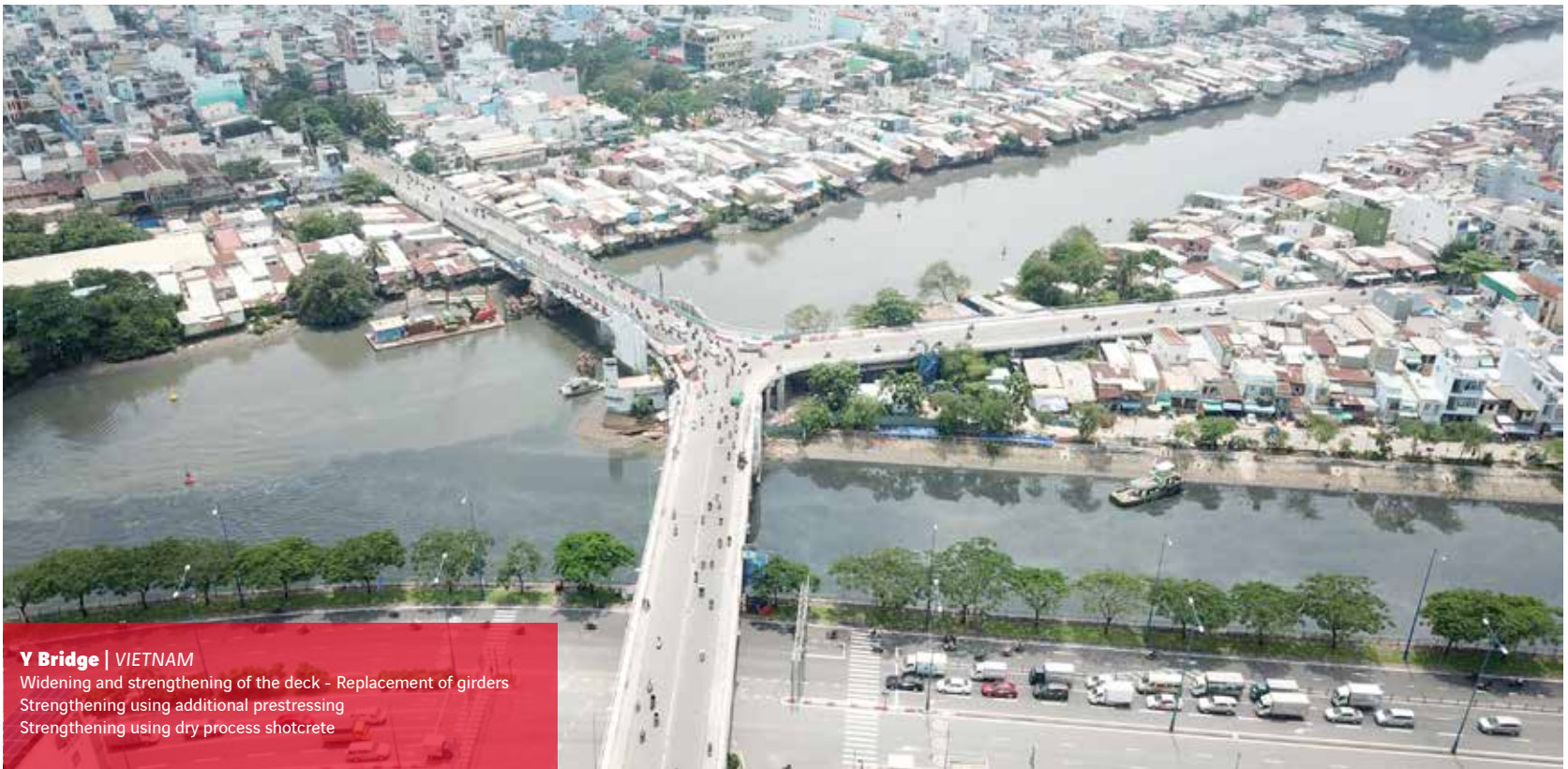
Pertuiset Bridge | FRANCE

Strengthening of an abutment and the deck - Replacement of the stay cables and bearings - Repair and protection of the tower - Strengthening through additional prestressing
Repairs to the superstructure



Agigea Bridge | ROMANIA

Replacement of the stay cables



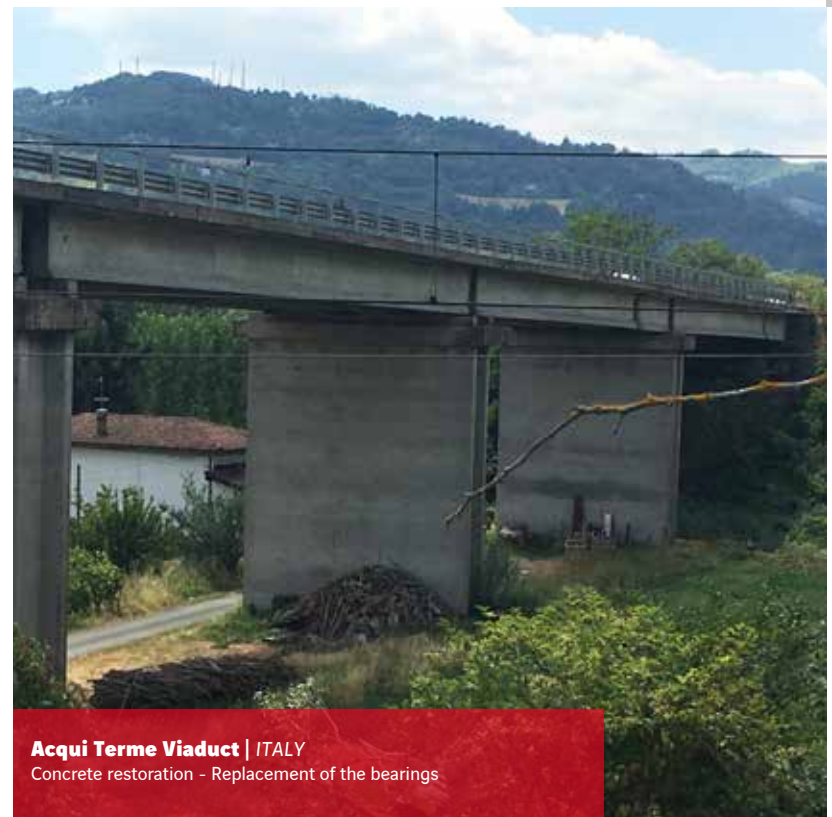
Y Bridge | VIETNAM

Widening and strengthening of the deck - Replacement of girders
 Strengthening using additional prestressing
 Strengthening using dry process shotcrete



Hjar Ennhai railway bridge | MOROCCO

Repainting - Grouting of cracks
 Protection of the rebars in reinforced concrete
 Repairs using dry process shotcrete
 Strengthening using additional prestressing



Acqui Terme Viaduct | ITALY

Concrete restoration - Replacement of the bearings



Clémenceau Medical Center, Amman | JORDAN

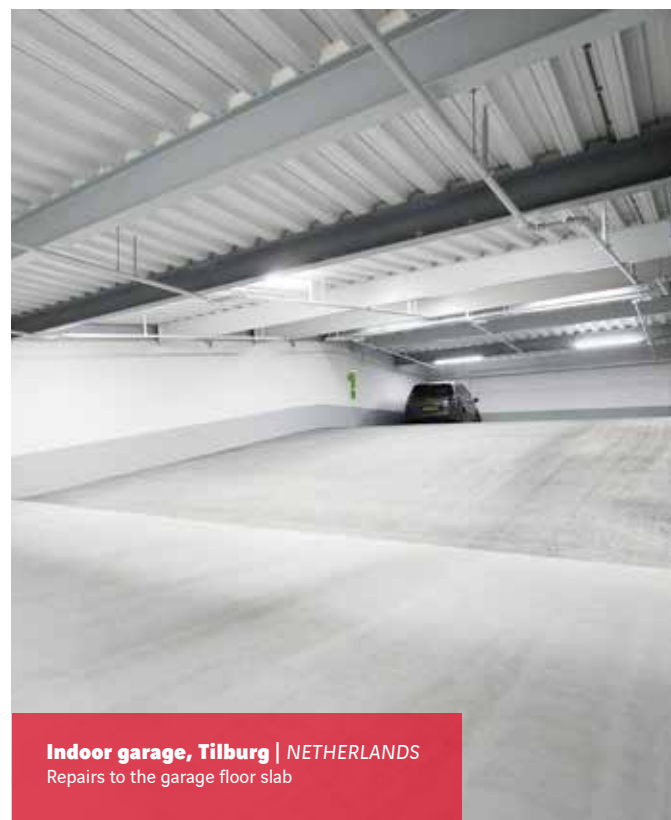
Modification to the structure during construction to transform the buildings into a medical centre - Strengthening using dry process shotcrete and carbon fibre fabric



Sevestre swimming pool, Issy-les-Moulineaux | FRANCE

Strengthening of the roof girders using carbon fibre fabric and additional prestressing - Galvanic cathodic protection with sprayed zinc

BUILDINGS



Indoor garage, Tilburg | NETHERLANDS

Repairs to the garage floor slab



Marmara University Hospital | TURKEY

Seismic isolation - Installation of elastomeric and pendulum bearings - Structural reinforcement



Alpes-Maritimes Administrative Centre (CADAM), Nice | FRANCE

Repairs using dry process shotcrete - Strengthening using carbon fibre fabric - Waterproofing



Citibank, Mombasa | KENYA

Concrete restoration - Girder maintenance - Repairs to the joints





Montgomery College indoor car park, Silver Spring | UNITED STATES
 Replacement of the prestressing tendons - Repairs to the prestressed concrete floors - Grouting of cracks - Replacement of the joints



Le Corbusier building (listed building), Marseille | FRANCE
 Restoration of the facing panels following fire damage - Replacement of the corroded steelwork - Treatment of the facing panels by impregnating with a corrosion inhibitor - Waterproofing of the loggia roofs



MLC Tower, Sydney | AUSTRALIA
 Repairs to the reinforced concrete facing panels and restoration of the building's appearance
 Cathodic protection - Development of a maintenance plan

INDUSTRIAL



Campbell Soup factory, Toronto | CANADA
Strengthening using carbon fibre fabric



Golden Bay Cement silos, Portland | NEW ZEALAND
Repairs using dry process shotcrete - Anti-carbonation paint
Strengthening using additional prestressing



Hillside Aluminium silos, Richards Bay | SOUTH AFRICA
Concrete restoration - Protective coating - Treatment of the facing panels by impregnating with a corrosion inhibitor



Republic Cement preheater tower, Bulacan | PHILIPPINES
Strengthening using carbon fibre fabric - Strengthening using additional prestressing - Replacement of the elastomeric bearings



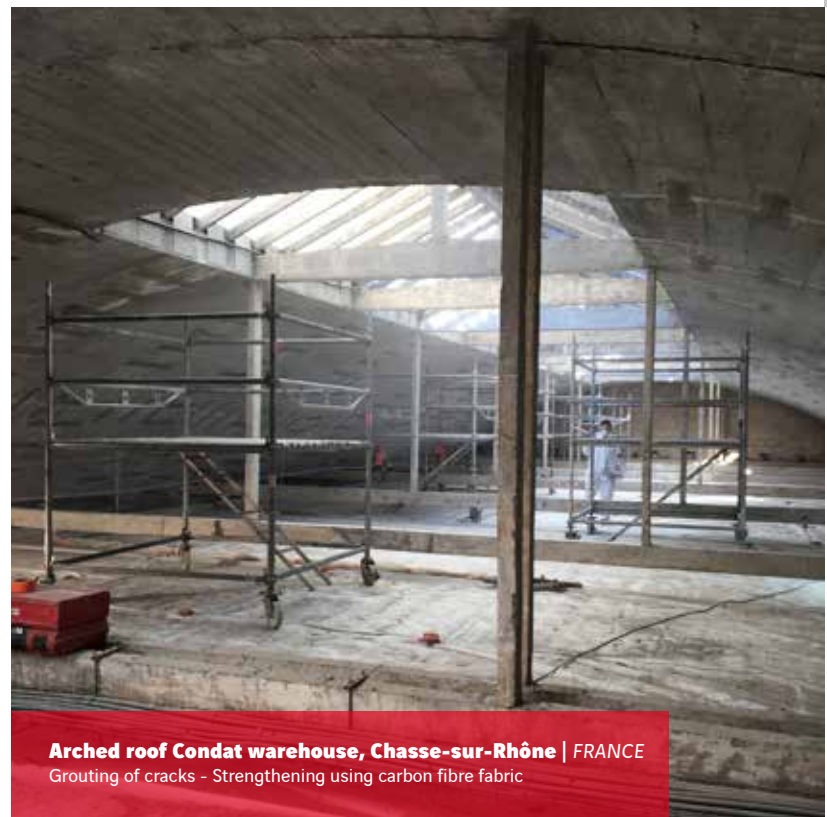
Tawa reservoir | NEW ZEALAND
Seismic strengthening



Dong Siri offshore platform, North Sea | DENMARK
Cross-bracing using Cohestrand® 169-strand submarine cables -
Improvement to the H2000 stay cable system to ensure watertightness
of the complete system at 10 bar



Steam chimney at the Buxeda Vell factory, Barcelona | SPAIN
Grouting of cracks - Strengthening using carbon fibre fabric



Arched roof Condat warehouse, Chasse-sur-Rhône | FRANCE
Grouting of cracks - Strengthening using carbon fibre fabric

WATER ENGINEERING...



Chancy-Pougny dam | FRANCE
Seismic strengthening and installation of anchor tie rods



Pannecière dam | FRANCE
Repairs using dry process shotcrete - Asbestos removal - Fitting of a Carpi waterproofing membrane



...MARINE AND RIVER STRUCTURES





South Hook LNG jetty | UNITED KINGDOM

Impressed current cathodic protection of the concrete sections and piles



Webb Dock industrial docks | Melbourne, Australia

Concrete restoration and jacketing of the piles

Impressed current cathodic protection of the concrete beams



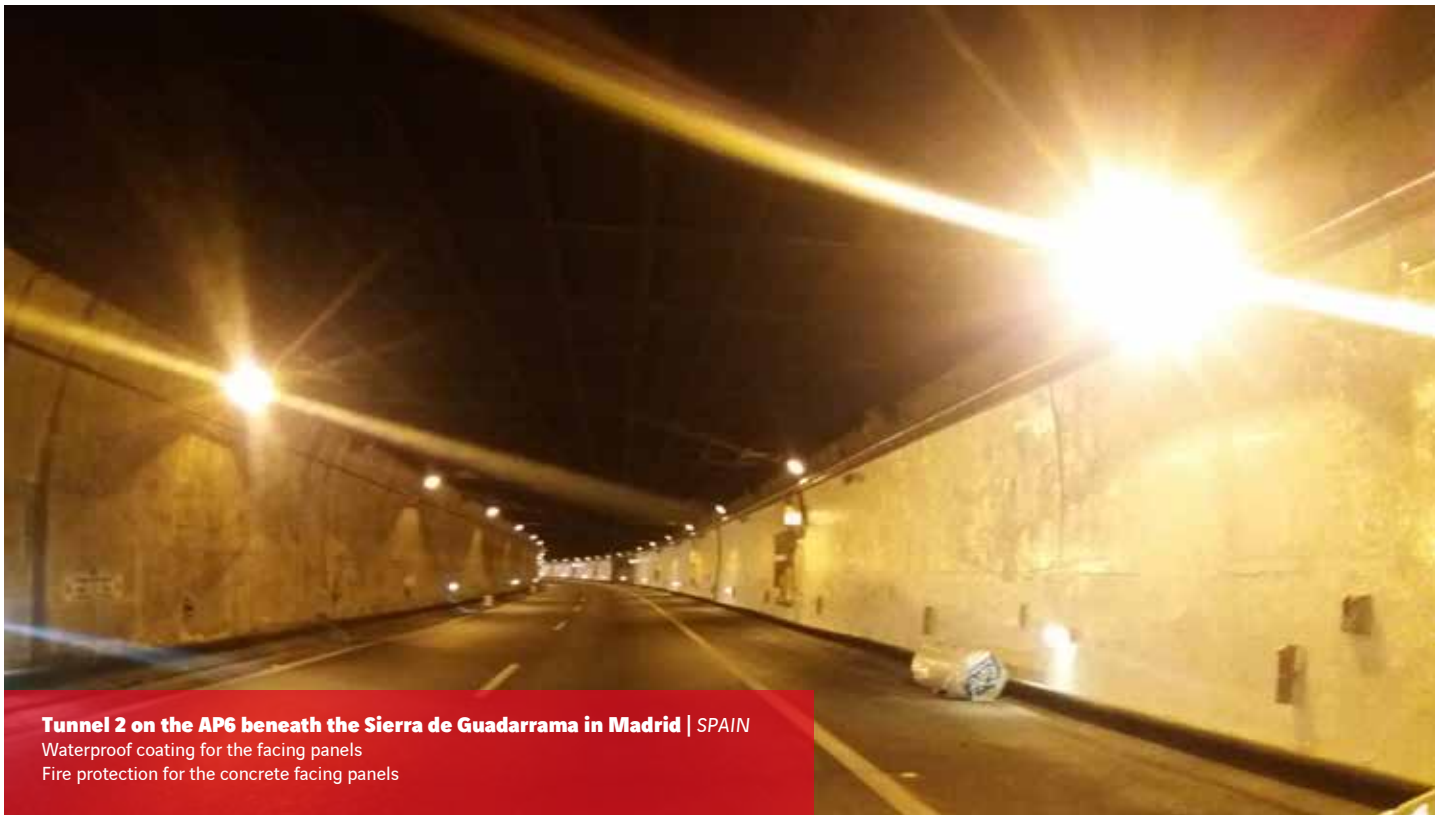
Manila International Container Terminal | PHILIPPINES

Repairs using dry process shotcrete

Grouting of cracks - Impressed current cathodic protection

Strengthening using additional prestressing

TUNNELS



Tunnel 2 on the AP6 beneath the Sierra de Guadarrama in Madrid | SPAIN

Waterproof coating for the facing panels
Fire protection for the concrete facing panels



Channel Tunnel | FRANCE

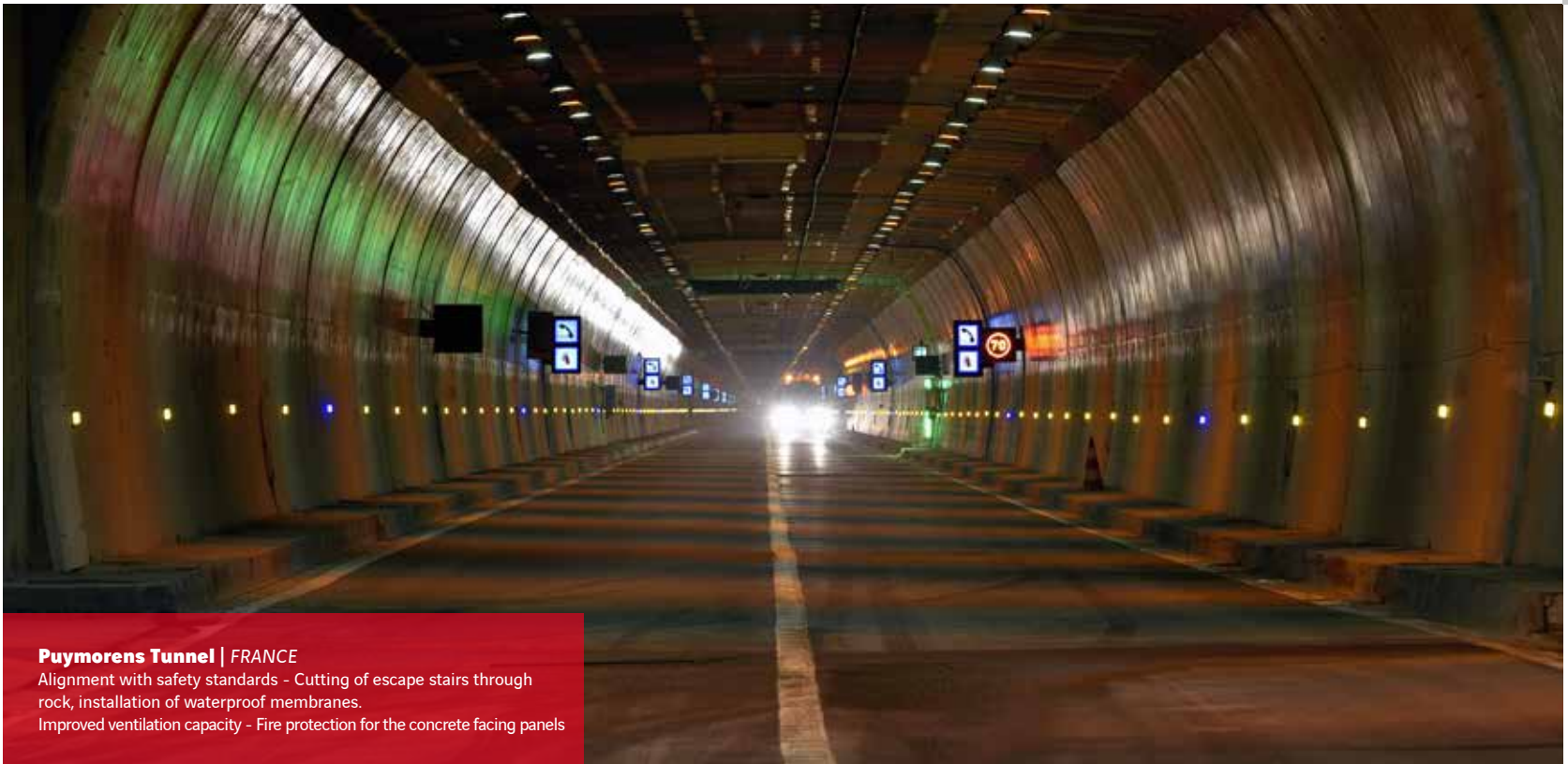
Repairs using dry process shotcrete



Glasgow Subway | UNITED KINGDOM

Repointing - Water ingress treatment

Repairs to the facing panels - Repairs using wet mortar spray process



Puymorens Tunnel | FRANCE

Alignment with safety standards - Cutting of escape stairs through rock, installation of waterproof membranes.

Improved ventilation capacity - Fire protection for the concrete facing panels



Crémazie Metro station (STM), Montreal | CANADA
Grouting of cracks - Concrete restoration - Consolidation with cement grout



Barcelona railway tunnel | SPAIN
Work while open to traffic - Improved water drainage
Waterproof coating for the facing panels



Tardy and Beaubrun railway tunnels | FRANCE
Work while open to traffic - Change to the catenary anchors



Golden Gate NRA tunnel, San Francisco | UNITED STATES

Concrete restoration - Water ingress treatment - Grouting of cracks
Installation of a new lighting system - Replacement of the drainage system



Noord/Zuidlijn Metro in Amsterdam | NETHERLANDS

Fire protection for the concrete facing panels



Convent of Santa Maria de los Reyes, Seville | SPAIN
Concrete restoration



Former CACI factory, Barcelona | SPAIN
Renovation and conversion of a world heritage industrial building

HISTORICAL MONUMENTS



Saint-Jean Church, Elbeuf-sur-Seine | FRANCE
Strengthening of the solid timber structure
Strengthening using carbon fibre fabric



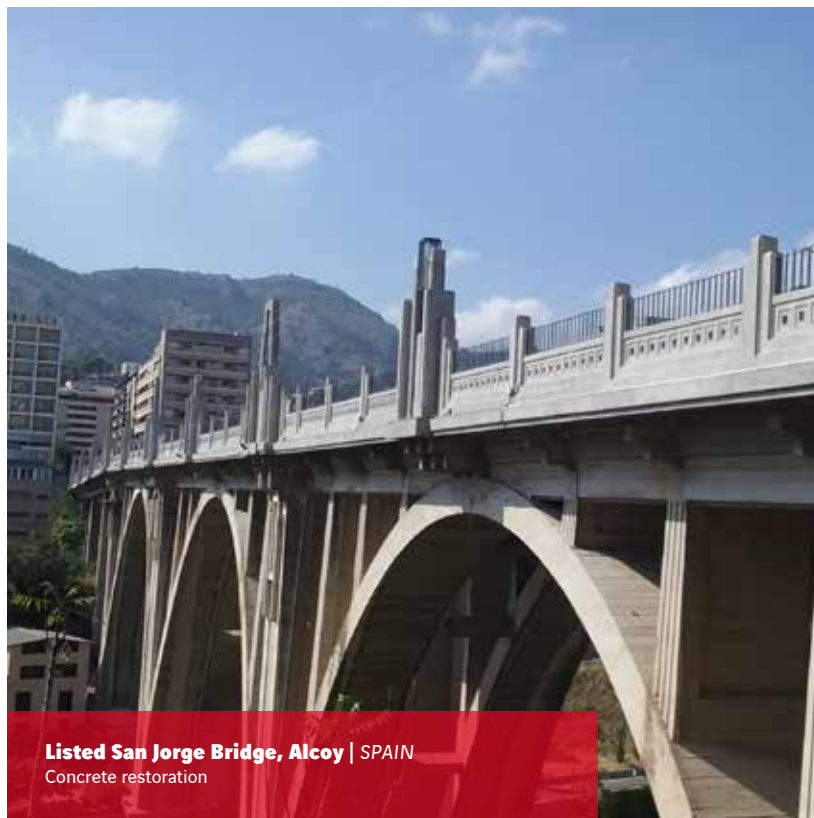
Brisbane City Hall | AUSTRALIA
Concrete restoration



Niebla Walls | SPAIN
Strengthening of the stone building
Treatment of the facing panels with water-repellent impregnation



San Andrés ramparts of the Ciutadella de Roses | SPAIN
Strengthening of the stone building



Listed San Jorge Bridge, Alcoy | SPAIN
Concrete restoration

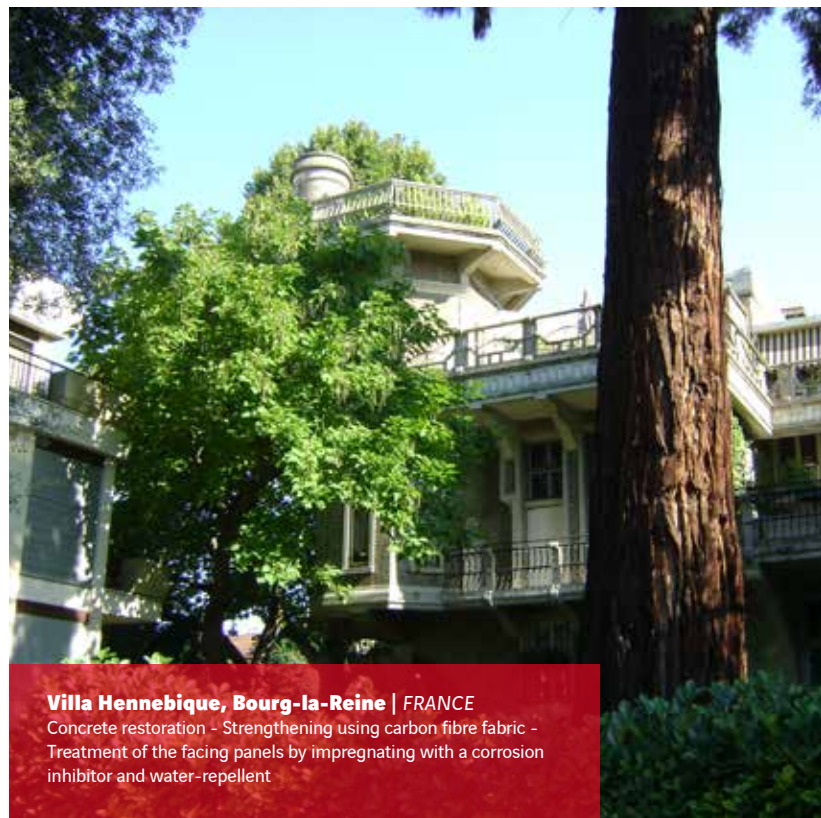


Church of Saint Joan of Arc, Nice | FRANCE
Concrete restoration

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Halle Freyssinet, Paris | FRANCE
Concrete restoration - Strengthening using carbon fibre fabric -
Treatment of the facing panels with water-repellent impregnation



Villa Hennebique, Bourg-la-Reine | FRANCE
Concrete restoration - Strengthening using carbon fibre fabric -
Treatment of the facing panels by impregnating with a corrosion inhibitor and water-repellent



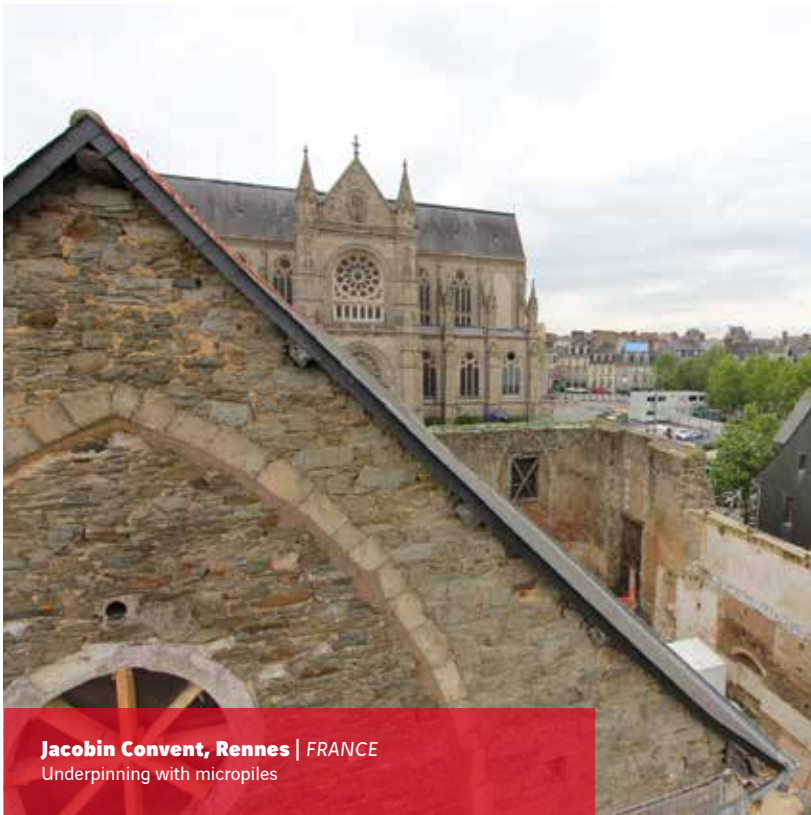
Bridge of Remembrance, Christchurch | NEW ZEALAND
Strengthening using additional prestressing



Bucharest City Hall | ROMANIA
Replacement of the bearings - Seismic strengthening



Nuestra Señora de Consolación Church, Seville | SPAIN
Concrete restoration - Grouting of cracks - Strengthening using carbon fibre fabric



Jacobin Convent, Rennes | FRANCE
Underpinning with micropiles



Rijksmuseum, Amsterdam | NETHERLANDS
Underpinning with micropiles - Computer controlled hydraulic jacking



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