



FREYSSINET
SUSTAINABLE TECHNOLOGY

REPAIR AND STRENGTHENING

The Benchmark for Specialised Civil Engineering



CONCRETE ENHANCEMENT

Freyssinet clients have access to a complete range of concrete assessment, repair and strengthening resources. These are applied and managed to the highest standards throughout our 'one-stop-shop' contracting service.

Diagnosis, prevention and cure
Concrete repair
Concrete replacement
Coatings and complementary services

We work closely with the major material suppliers to ensure our concrete repair and strengthening solutions benefit from the latest materials engineering.

Diagnosis, prevention and cure

Freyssinet offers a comprehensive range of tests to enable clients to accurately evaluate concrete structure problems and identify appropriate repair strategies. Testing techniques include cover surveys, half cell testing, dust sampling, chemical analysis, defects surveys and other state-of-the-art diagnostic methods. Freyssinet has dedicated resources of highly qualified engineers and technicians offering structural evaluations and 'health checks' using the latest computer-aided diagnostic techniques and equipment.

In-service monitoring of bridges, buildings and other structures provides asset owners with vital information on their condition.

Early detection of defects or of unseen, potentially damaging changes enables clients to implement repair and treatment to prolong design life and minimise the long-term cost of maintenance.



Concrete repair

Repair of spalled, cracked, honeycombed or otherwise damaged concrete is achieved using the latest methods and materials including:

- Modified mortars for patch and thin bond repairs
- Pressure and/or vacuum resin injection using epoxy, polyester and cementitious grouts
- Sprayed concrete
- Leak sealing

Concrete replacement

Replacement may be the only viable answer to poor concrete condition or strength. Freyssinet can provide removal by conventional breaking out or hydrodemolition techniques performed by their own in-house teams, followed by replacement using high performance repair concretes and mortars. Required falsework, shuttering, propping and jacking are all part of Freyssinet's concrete repair capabilities.



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Coatings and complementary services

Corrosion inhibitors, anti-carbonation coatings, waterproofing membranes, paints, other sealants and decorative finishes are among the specialist restorative coatings and concrete treatments provided by Freyssinet. Concrete repair is frequently undertaken alongside other strengthening and remedial work such as repair and strengthening of bridges, buildings, car parks and industrial structures in the public and private sectors.

STRENGTHENING

Freyssinet has amassed a wealth of experience and technology in the strengthening of structures aimed at prolonging service life or facilitating a change of use. Project expertise includes bridge deck strengthening, column reinforcement, upgrading floor slab load capability and strengthening work to post tensioned structures.

External post-tensioning
High-tensile bars - Freyssibar
Carbon fibre
Steel plate bonding
Ultra-high strength fibre reinforced concrete
Design and calculation for strengthening work

External post-tensioning

Particularly applicable to bridge deck strengthening, Freyssinet offers the design and installation of additional post-tensioning to existing structures. For large span box girder bridges, tendons are often retrofitted inside the structure, for smaller span structures, it may be appropriate to fit tendons to the exterior. The effect in both cases is to introduce extra compression in areas subject to excessive tensile forces, allowing the structure to carry higher loads. The technique has many benefits, but is most effective in upgrading circular storage tanks or strengthening bridges.

High-tensile bars - Freyssibar

Developed by Freyssinet, Freyssibar is a pre-stressing system comprising of a wide range of fully threaded bar and complementary anchoring, coupling and extension devices. It is used for post-tension cables and pre-stressed ground anchors and can also be transferred to any application involving temporary or permanent tie rods.

Freyssibar is often used to introduce pre-stress into existing areas with high stress concentrations or subject to bursting forces.



Carbon fibre

Freyssinet is able to formulate, design and install many carbon fibre applications, including:

- Column wrapping
- Beam strengthening
- Floor slab strengthening
- Reinforcement around new structural openings

Steel plate bonding

Plate bonding is another proven technique within Freyssinet's first class engineering portfolio for increasing the load bearing capacity of beams and floor slabs. The process involves the bolting and/or bonding of steel plates, of precision-calculated length and cross section, to the tension zone of the structural component using high performance epoxy adhesive. The steel acts compositely with the beam or slab to achieve an increase in section and consequently in load carrying capability.



“Freyssinet’s capability in engineering naturally embraces the full range of services needed in defining economic and effective programmes for strengthening.”

Ultra high strength fibre reinforced concrete (UHSFRC)

Freyssinet is a leader in the use of UHSFRC for strengthening and improving structures. Using UHSFRC techniques, Freyssinet is able to design, supply and install highly innovative and efficient solutions for a variety of structural problems.

Design and calculation for strengthening work

Freyssinet’s capability in engineering naturally embraces the full range of structural assessment, calculation and consultation services needed in defining economic and effective programmes for strengthening. All these resources are available in-house, enabling us to service clients with a complete design-and-install package for the strengthening application.



BEARING REPLACEMENT

Freyssinet has extensive experience in bearing, jacking and sliding technology, and in the management of health, safety and logistics of these often very complex, high risk projects.

Bearing assessment
Bearing replacement
Jacking and sliding

Bearing assessment

As a leading specialist in bridge bearing design and manufacture, Freyssinet is eminently qualified in the assessment of in-service bearings. Consultation includes bearing inspection and testing, identification and confirmation of the design specification from archived drawings. We provide clients with advice and recommendations for bearing refurbishment or replacement, together with cost estimates and photographic material to support client's project planning.

Freyssinet has developed a wide range of bearings, both mechanical and elastomeric and is able to provide the right solution to meet its customers' needs for every type of structure.

All of Freyssinet's bearings are designed by our in-house technical team to ensure compliance with current standards and project specifications. Following assessment, we are able to modify bearing arrangements to make replacement easier, and also undertake the refurbishment of existing bearings.



Bearing replacement

Freyssinet offer bearing replacement as principle contractor or on a subcontractor basis. This one-stop-shop service combines our proven expertise in bridge bearing design with knowledge of jacking operations and specifically construction chemicals. An extensive range of repair and strengthening services are available where bearing work is accompanied by other structural needs. Hydrodemolition, wall sawing and diamond drilling are carried out by our in-house teams to complete the package.



“As a leading specialist in bridge bearing design and manufacture, Freyssinet is eminently qualified to support client’s project planning.”

Jacking and sliding

Freyssinet is able to offer clients a variety of jacking techniques. These skilled applications effectively overcome problems in both new construction and existing structures. Principally using flat jack and conventional hydraulic jack techniques, we are able to complete critical procedures to lift, slide and realign structures.

As experts in bearing manufacture, we have pioneered the additions of PTFE and elastomer sliding surfaces to the jack head to accommodate limited vertical and horizontal movement to permit bridge deck jacking under live traffic.

EXPANSION JOINTS

As a structural accessory specialist, Freyssinet is at the forefront of related technology, installation and maintenance of bridge bearings, high tensile bar and expansion joints.

Expansion joint design
Expansion joint installation

Expansion joint design

Freyssinet has extensive experience in the design and production of expansion joints and is able to offer an integrated service which includes inspection, design, manufacture and expert installation.

Designed to enable continuous traffic between two structures, expansion joints are necessary to absorb movement, accommodate changes in temperature and creep and shrinkage effects on structures.

Many of the joints that were installed on bridges in the UK over 40 years ago are now at the end of their life, as a result of fatigue, corrosion or structural movement, causing a significant issue for the UK's highways network.

Freyssinet has a full range of accredited joints available, including surface mounted, composite and steel finger joints and is able to develop products to meet the specific site, climate and operational conditions of a structure.



Expansion joint installation

Freyssinet has been installing expansion joints to structures all over the world for more than 40 years.

The installation of expansion joints requires crucial planning, preparation and attention to detail on the finishing touches. Our experienced specialists regularly review all aspects of joint installation to guarantee our products performance and durability.

When replacing an expansion joint in an existing structure, a number of different techniques are used. To begin with, the existing joint is broken out using either manual or machine mounted breakers or hydrodemolition.

The surfaces are prepared and the joint is hung to line and level using bespoke hanger brackets. Reinforcement steel will have been prepared and placed in the receiving area prior to placing the joint modules.



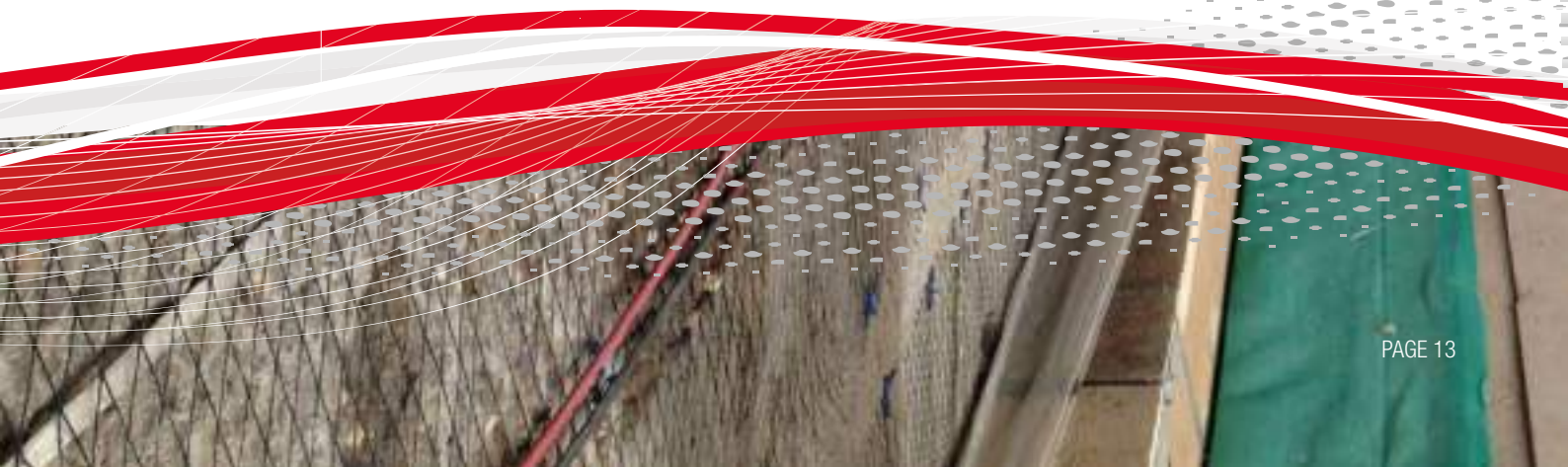
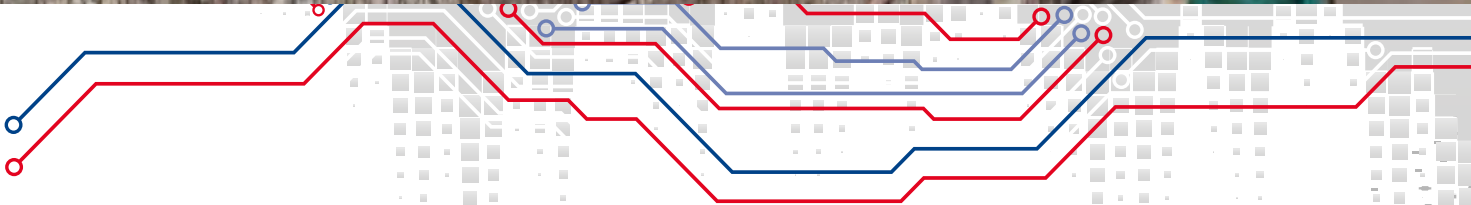
“Freyssinet have a full range of accredited joints available.”

Once the joint anchors are set in place, the concrete is added and allowed to go off. The anchors are then tensioned and the run off surfaces are completed using either a bituminous or cementitious material (Requirements differ depending on where the joint is being installed).

Finally, the hanging props are removed after the concrete is at sufficient strength and the anchor bolts on the joint are stressed.



“Reinforcement corrosion, exacerbated by reduced alkalinity of the surrounding concrete, is the major cause of concrete deterioration.”



HEALTH, SAFETY, ENVIRONMENT & QUALITY

Freyssinet Limited is wholly committed to meeting its legal and ethical responsibilities. This applies to the health and safety of its employees and clients, the environments in which they work and the quality and sustainability of the products and services which the company provides.

Safety and Environment
Quality
Clients

Safety and Environment

Freyssinet ensures that the company's health, safety, environment and welfare standards stand in positive comparison with recognised good practise within the construction industry at all times. Our Health and Safety system is accredited to ISO 45001 and our policy on Environmental Protection is accredited to ISO 14001.

Freyssinet employs a full time in-house NEBOSH qualified QSE Manager who has ready access to group level and external health, safety and environmental advisors when required.

Freyssinet is regularly employed on a principle contractor basis and is experienced at fulfilling the role of Principal Contractor required by the CDM regulations. The majority of our site operatives are directly employed and all hold CSCS cards. All employees enjoy access to appropriate safety and training equipment.

Quality

Freyssinet was amongst the first construction companies in the UK to be awarded BS EN ISO 9001 and has long known that complete client satisfaction with our products and services is the only way to ensure repeat business. Our certificate includes full scope for repair and strengthening works, and recognises the in-house design facility that Freyssinet is able to provide. Freyssinet employ a full time Quality Manager to ensure both internal and external quality expectations are met and exceeded.



Clients

Freyssinet enjoys an extensive client list that features Highways England, Local Authorities, industrial clients and developers, and main contractors. Freyssinet operates both as a principle contractor and a specialist subcontractor. Freyssinet is approved by Constructionline, CHAS and Achilles, and has significant notation for civil engineering works. Freyssinet is an active member of the Concrete Repair Association – the only recognised grouping of major contractors and materials suppliers in the repair industry.

Additional association memberships include:

- Bridge Joint Association
- Corrosion Prevention Association
- Post Tensioning Association
- Water Jetting Association
- Concrete Repair Association





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Cert No. 15662



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Supplier No: 060626



Other services offered by Freyssinet:

- Bridge Bearing – Design & Manufacture
- Post Tensioned Systems – Design & Installation
- Cable-stayed Structures
- Reinforced Earth Structures



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Freyssinet operates across the whole of the UK and Ireland from bases in Telford, London and Leeds.
For enquiries and technical advice please contact our Head Office at Telford.

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