



Fosroc Construction Grouting Solutions

www.fosroc.com



constructive solutions

ABOUT FOSROC INTERNATIONAL

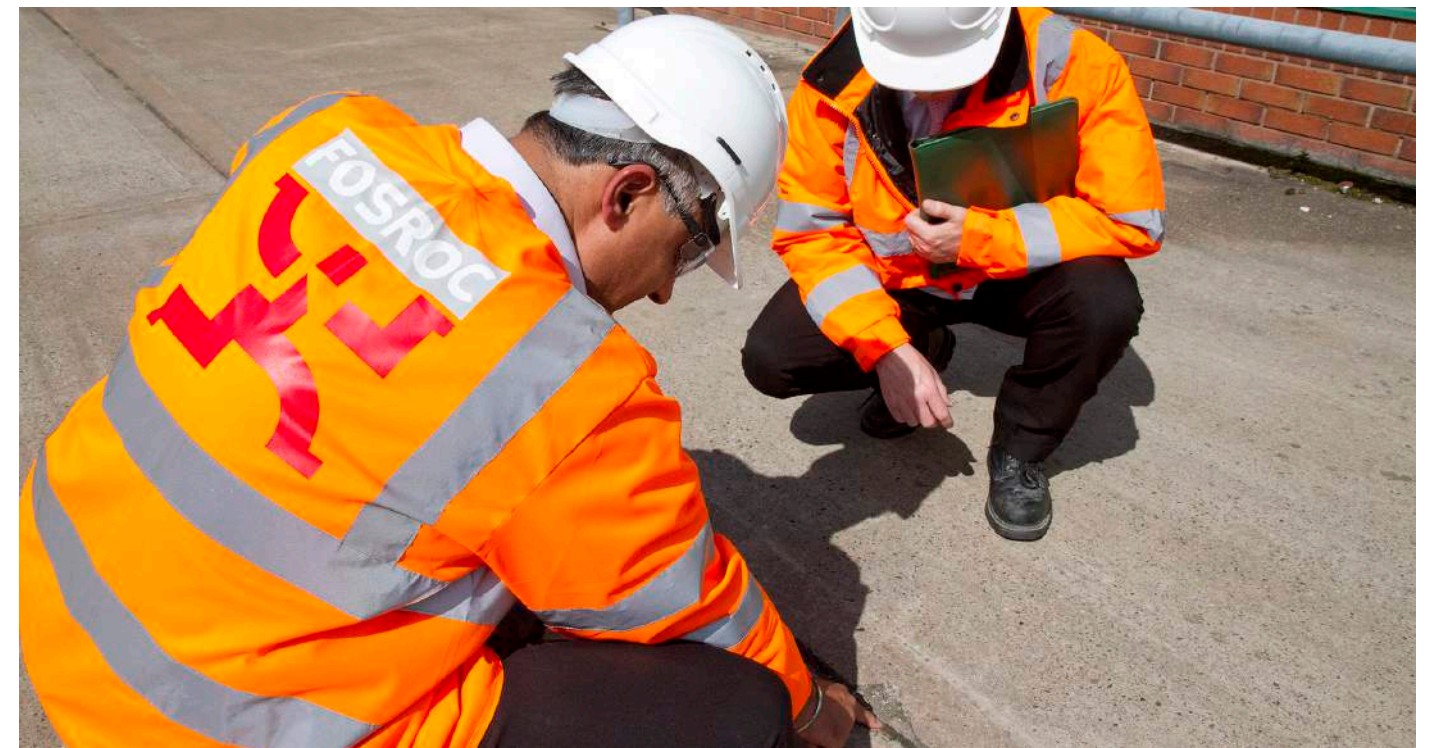
Since the company's beginnings over 50 years ago, Fosroc has developed into an International leader in delivering Constructive Solutions for projects across a broad range of market segments including transport, utilities, industrial and general buildings.

Fosroc's commitment to customer service and technical support is second to none. We work closely with architects, structural engineers, contractors and owners to best understand their requirements. Together we can develop a bespoke solution for a construction project, adding value and becoming more than just a materials supplier, but a solution provider.

Fosroc has an extensive network of offices and manufacturing locations across Europe, the Middle East, India, North and South Asia, and is further represented in other regions across the world by distributor and licensee partners.

Selecting from the full portfolio of Fosroc products and services and integrating expert technical support, world class customer service and innovation, Fosroc goes beyond just product selling to ensure that we partner with our customers to deliver complete constructive solutions.

- > Admixtures
- > Adhesives
- > Protective Coatings
- > Concrete Repairs
- > Industrial Flooring
- > Grouts & Anchors
- > Joint Sealants
- > Surface Treatments
- > Grinding Aids
- > Waterproofing



FOSROC DELIVER SOLUTIONS NOT JUST PRODUCTS

CAD Details

A library of standard CAD details are available, bespoke CAD details can be created for your specific project

Project Specifications

Dedicated specification managers on hand to assist with correct system choices and tailored solutions

Site Support

Expert product and application support made available from our specialist teams.

Seminar & Training

Comprehensive programme of seminars and training courses designed to expand and reinforce your knowledge.

Leader in delivering
Constructive Solutions
Worldwide!

FOSROCS GROUTS THE BASIS FOR SUCCESS

There is a wide range of structural grouts available from Fosroc. That is because we know that each solution needs to be perfectly matched to its challenge. Our team is on hand to understand the project requirements and select the right answer.

Stability is the key to structural integrity. Fosroc has all the grout solutions that you could need to create a total, solid support. Whatever you are putting in place, we have the product to give it the best connection and foundation for success.

Through decades of experience, we know that effective grouting and anchoring relies on more than strength alone. The flow and workability of Fosroc's Conbextra range ensures that the best possible contact is achieved for your application, meaning you will achieve all the strength that you need, exactly where you need it.

With exceptional flow, stability and strength characteristics, our grouts provide the best solution for high precision applications, combined with a wide range of cement and resin based anchoring systems. They are tested and outperform industry laid norms and standards. For many years, our grouts have been supporting some of the world's most demanding projects, such as the King Fahad Causeway between Saudi Arabia and Bahrain, the Paradip Oil Refinery in India and the Emirates Cable Car in London. Fosroc Conbextra Grouts are chosen for their ability to deal with dynamic loads, chemical exposure, extremes of heat and harsh natural exposure, making them the industry's number one choice in critical load-bearing situations.



GROUTING SOLUTIONS FOR VARIOUS SECTORS



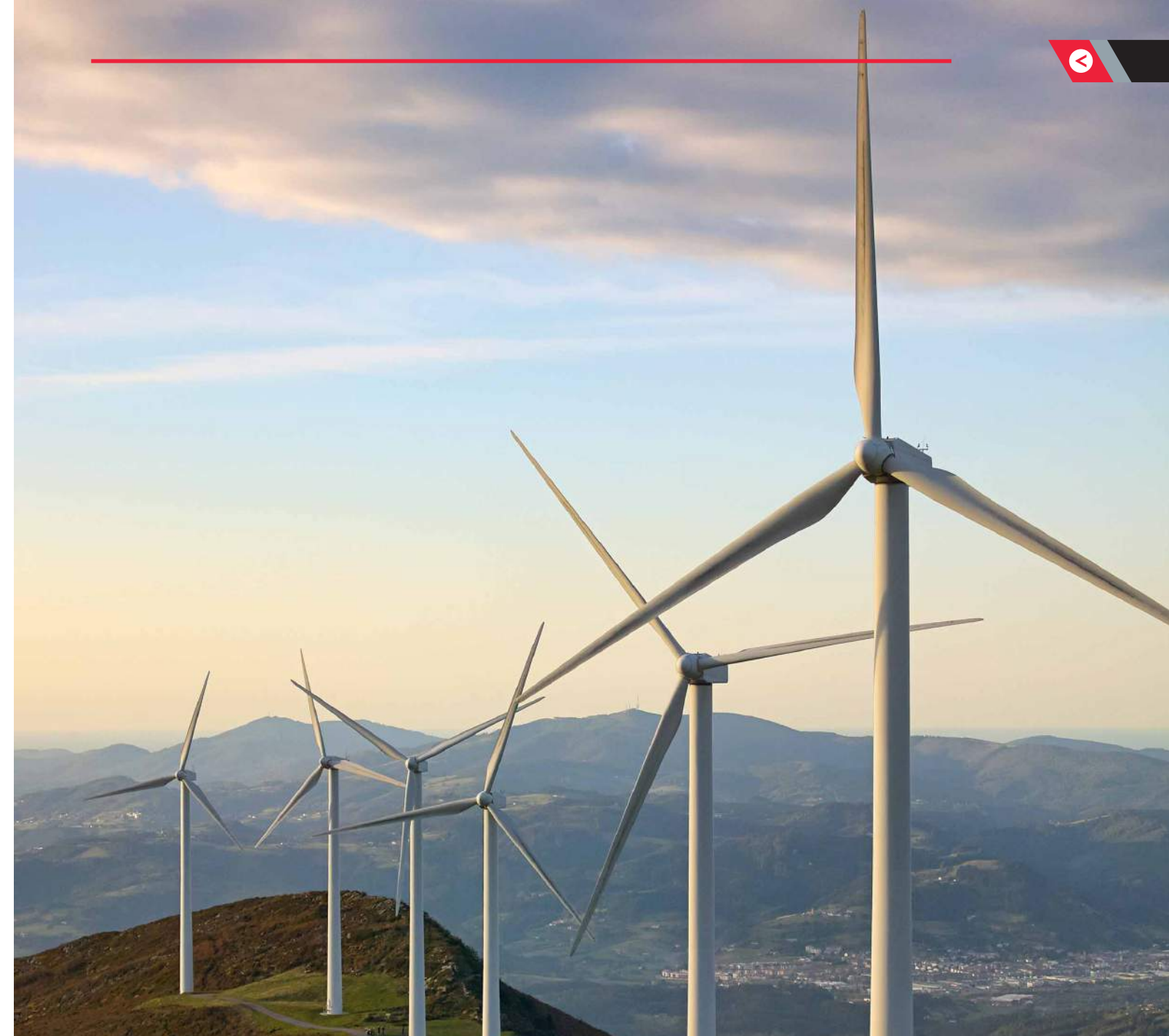
Industry &
Power
Generation



Commercial &
Residential
Buildings



Civil
Structures



WHY GROUT ?

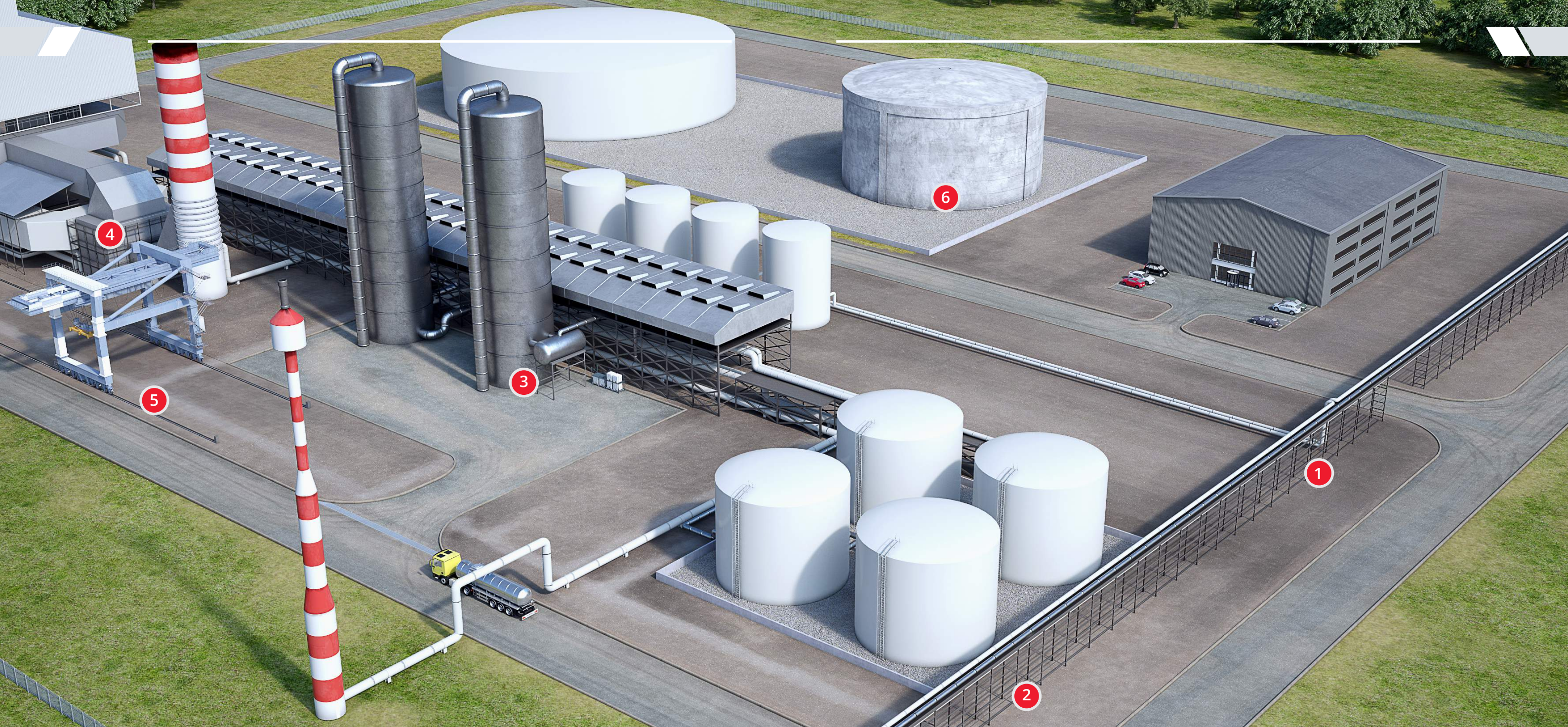
True Grouting is a precision job. That is why Fosroc are firm believers that using Conbextra proprietary material is the best way to achieve the results you need.

Using standard concrete there are numerous problems in achieving the required results. Predominantly, concrete shrinks, meaning achieving anything like the contact area required is impossible. Getting concrete to flow into all the gaps you need requires a lot of working, vibration and additional water; all of which lead to a weak and bleeding mix. Concrete will give varying properties and strengths, so it is generally difficult to be confident in the strengths you will achieve. Conbextra grouts overcome all of these problems and more.

Many of Fosroc's cementitious grouts are dual phase shrinkage compensated, ASTM C1107 Grade C Type. This means that they adjust for water loss in the pre-hardening and post hardening stages. This ensures the grout provides continuous support and achieves the best contact with the load it bears.

FOSROC CONBEXTRA GROUT

- > Flowable
- > Stable
- > Durable
- > No Shrinkage
- > No Bleed
- > No Segregation
- > High Effective Bearing Area
- > Strong
- > Consistent
- > Site Friendly
- > No Creep
- > Not Harmful
- > Pumpable



GROUTING SOLUTIONS FOR INDUSTRY & POWER GENERATION

Fosroc has a wide range of precision grouts ensuring the smooth running of plant and factory facilities, from petrochemical processing to food and beverage manufacture. We understand the strains placed upon machinery and the importance of minimising downtime, and have the solutions to achieve these aims

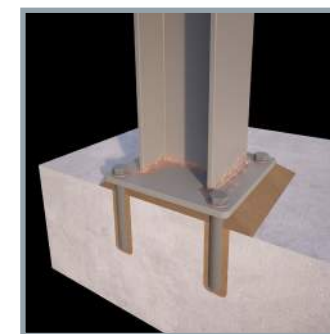
1. **Conbextra GP** and **Conbextra HF** – Cementitious grout for supporting columns, stanchions and bases
2. **Lokfix** – Polyester and epoxy resin anchors for bolts, starter bars and fixings
3. **Conbextra HF** or **TS** – Cementious grout for static base plates
4. **Conbextra HT** – High early strength and service temperature up to 400°C
5. **Conbextra EP** for dynamic loads such as rails and machine plates
6. **Conbextra Cable Grout** – For post tensioned cables and fine slots



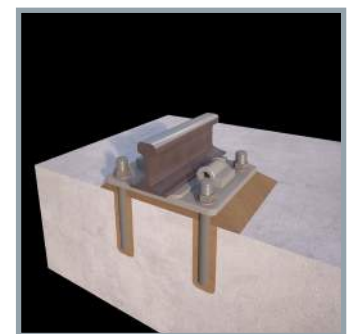
Conbextra HF has excellent flow properties, high strength and dual shrinkage compensation.



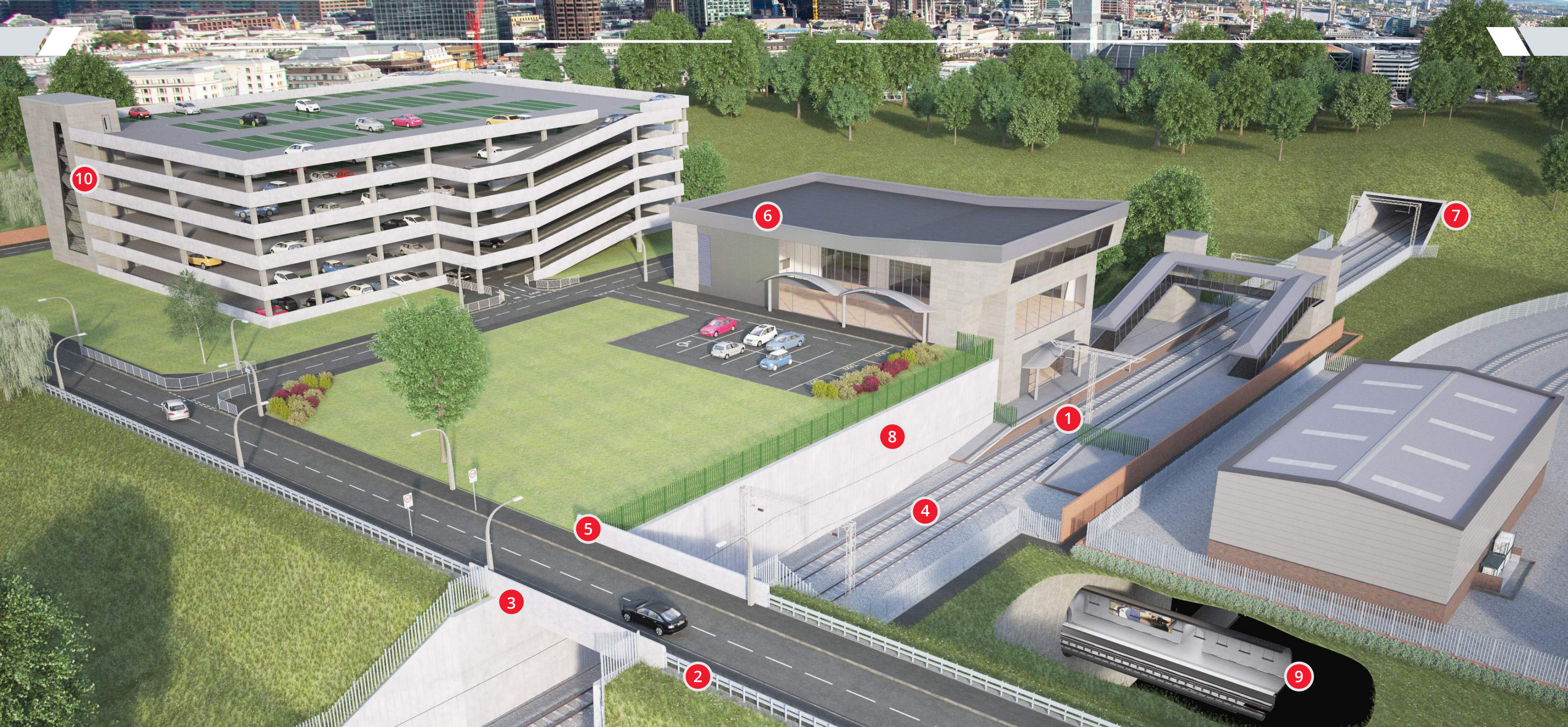
Lokfix resin anchor is fast curing and ideal for setting holding down bolts and starter bars.



Conbextra GP is excellent for static load bearing, ideal for stanchions and precast recesses.



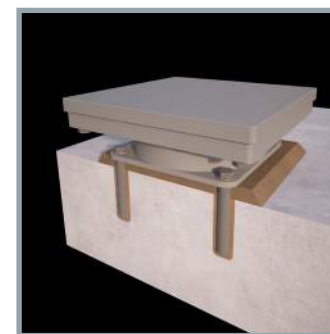
Conbextra EP range of epoxy grouts are ideal for dynamic loading, with a fast cure and chemical resistance.



GROUTING SOLUTIONS FOR CIVIL STRUCTURES

Fosroc's Grout Range is ideal for high intensity and high quality construction. With experience in installations such as power stations, wind turbines, railways, bridges, harbours and tunnelling to name a few, the durability and dependability of Fosroc's grouts is one of the reasons we are selected to support the world's infrastructure.

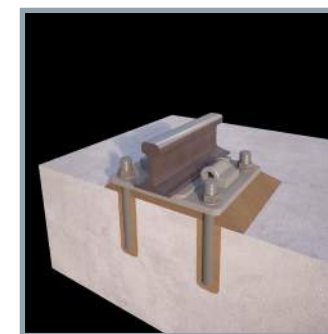
1. **Conbextra GP** and **Conbextra HF** – Cementitious grout for supporting columns, stanchions and bases
2. **Lokfix** – Polyester resin anchors for bolts, starter bars and fixings
3. **Conbextra BB** – Cementitious grout for bridge bearings
4. **Conbextra EP** for dynamic loads such as rails
5. **Nitomortar TS** – Epoxy bedding for bridge joints
6. **Conbextra Cable Grout** – For post tensioned cables
7. **Cebex 653** – Concrete grout admixture for void filling in tunnel annulus
8. **Nitofil LV** – epoxy grout injection for structural cracks
9. **Nitofil UR60 WS63** – Swelling polyurethane leak sealing grout
10. **Conbextra PM** – pumpable mortar for precast construction



Conbextra BB is compliant with transport approvals and has excellent elastic stability and chloride resistance.



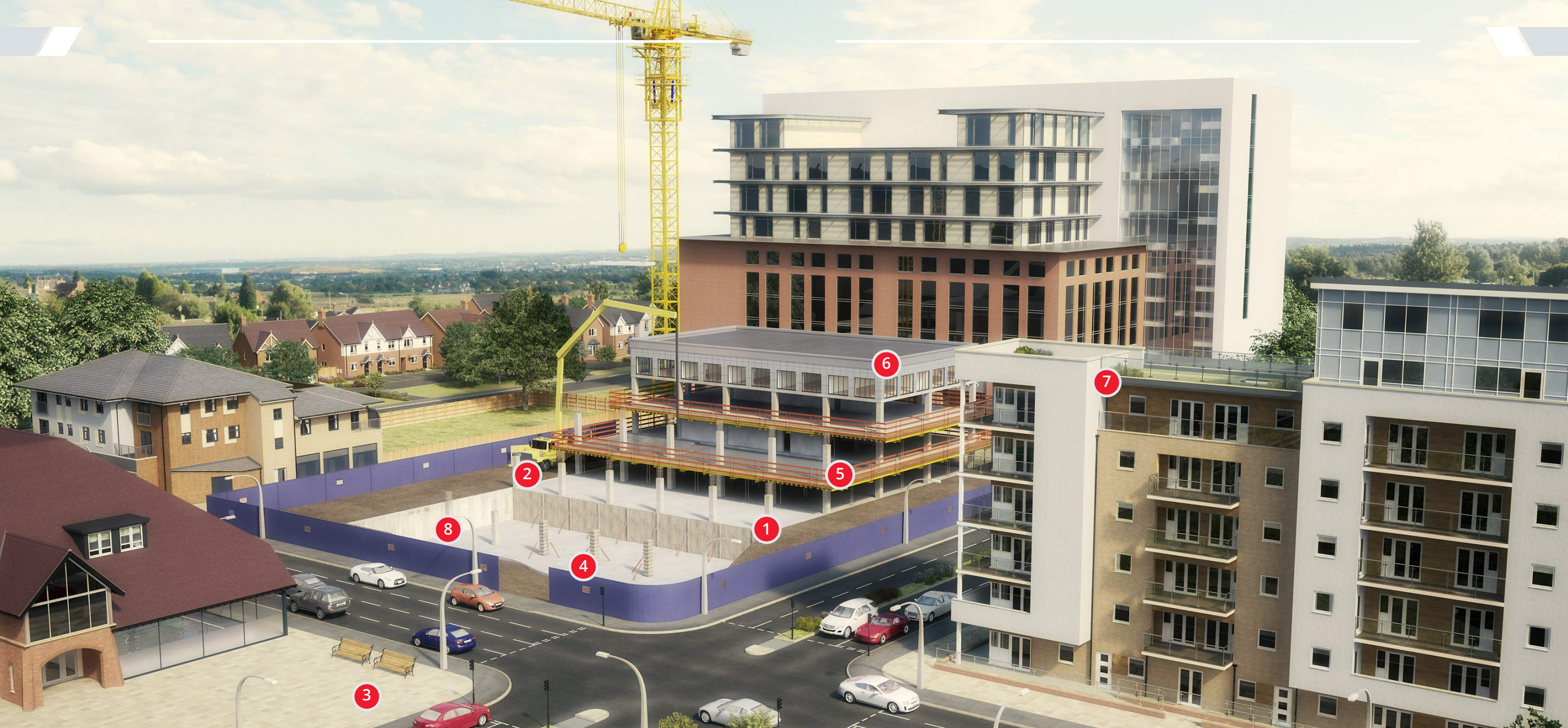
Conbextra UW has been specially formulated with anti-wash out agents for work in flowing water and tidal zones.



Conbextra EP range of epoxy grouts are ideal for dynamic loading, with a fast cure and chemical resistance.



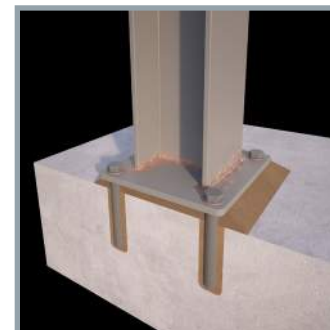
Cebex Tunnel annulus grout admixtures are excellent for controlling site batched mixes and preventing wash-out.



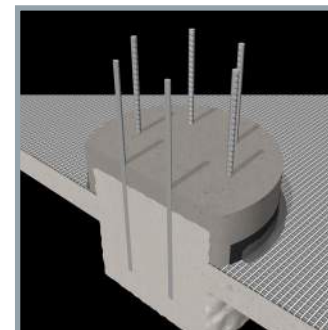
GROUTING SOLUTIONS FOR COMMERCIAL & RESIDENTIAL BUILDINGS

Fosroc Conbextra grouts add precision to both site cast and precast concrete structures. Class leading handling and dependable results have seen our products used in mega projects as well as small scale construction.

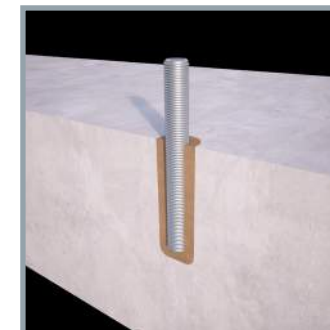
1. **Conbextra GP** and **Conbextra HF** – Cementitious grout for supporting columns, stanchions and bases
2. **Conbextra HF** – For casting round congested steel and penetrations
3. **Lokfix** – Polyester and epoxy resin anchors for bolts, starter bars and fixings
4. **Proofex WG** – Waterproof Capping of Piles
5. **Conbextra PM** – pumpable mortar for precast construction
6. **Conbextra Cable Grout** – For post tensioned Cables
7. **Nitofil LV** – epoxy grout injection for structural cracks
8. **Nitofil UR60 WS63** – Swelling Polyurethane leak sealing grout



Conbextra GP is excellent for static load bearing, ideal for stanchions and precast recesses.



Proofex WG provides strong watertight capping of construction piles, ideal for below ground construction.



Lokfix resin anchor is fast curing and ideal for setting holding down bolts and starter bars.



Conbextra BM is ideal for bedding precast panels, with fast strength gain and excellent workability.

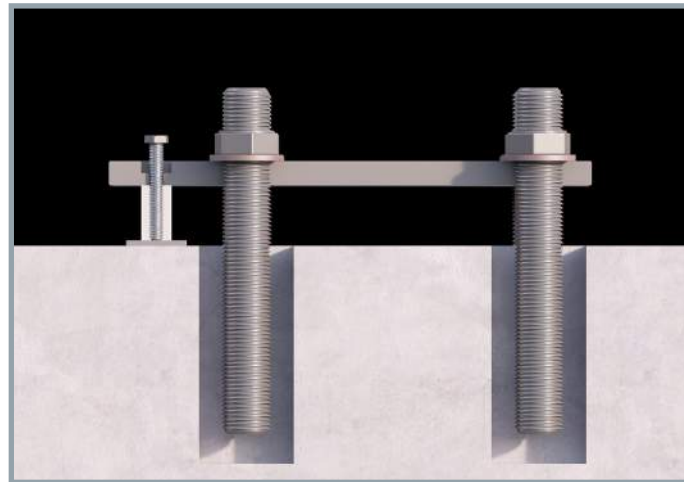
GUIDE TO SITE APPLICATION OF CONBEXTRA PRODUCTS

The following procedure is designed to provide guidance to achieving the best grout pour results using Conbextra Cementitious Grouts. Consult your local Fosroc team for specific site guidance.



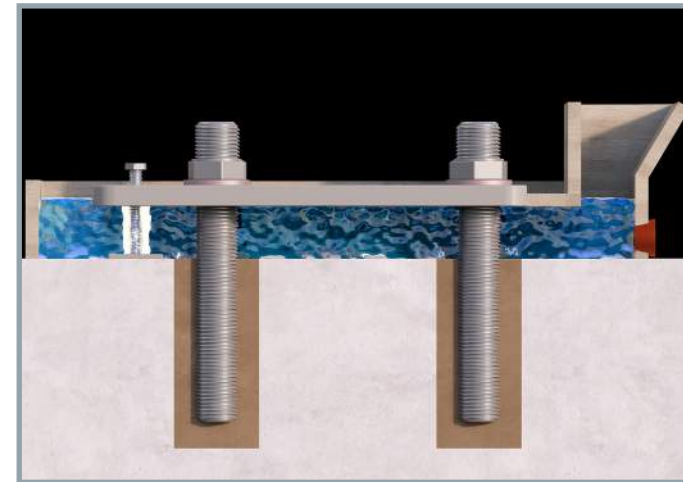
1. Planning

Correct planning is essential. Calculate the correct material consumption factoring water addition and including material wastage. Ensure that the correct head/flow/distance has been calculated. Ensure the correct equipment is available including strapping or rods as well as sufficient mixing teams to undertake a continuous pour. Plan the correct amount of time that will be needed for the work. Ensure the correct working temperatures are achieved.



2. Preparation & Setting

Remove laitance, damage or contaminants from the slab conducting repairs if necessary. Ensure all corrosion deposits have been removed from the baseplate. Identify any high spots in the baseplate and drill through to prevent air entrapment. When setting the plate, using a threaded bolt to level is often the best technique, providing maximum adjustability before, during and after the pour. Levelling shims may also be used, but must be removed after the pour.



5. Saturation

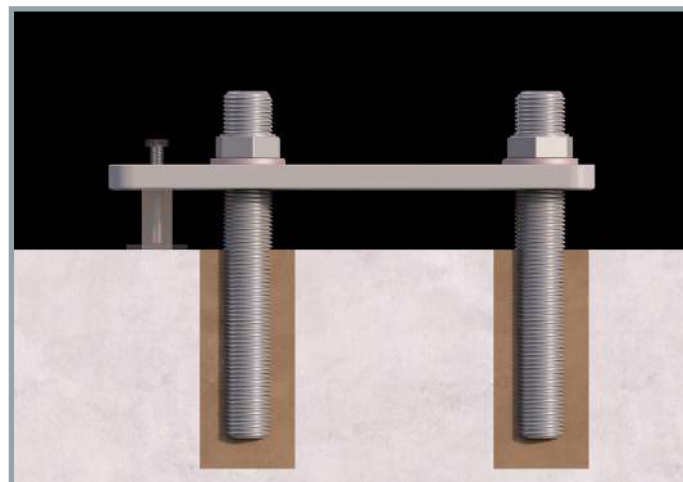
Fill the formwork with clean water and allow it to stand for a minimum of 2 hours. Check formwork for leaks and plug where necessary. After saturation, drain water and remove any standing water in low spots using sponges or vacuum. Begin the grouting process immediately after completion of the saturation process.

Do Not saturate concrete when using Conbextra epoxy resin grouts!



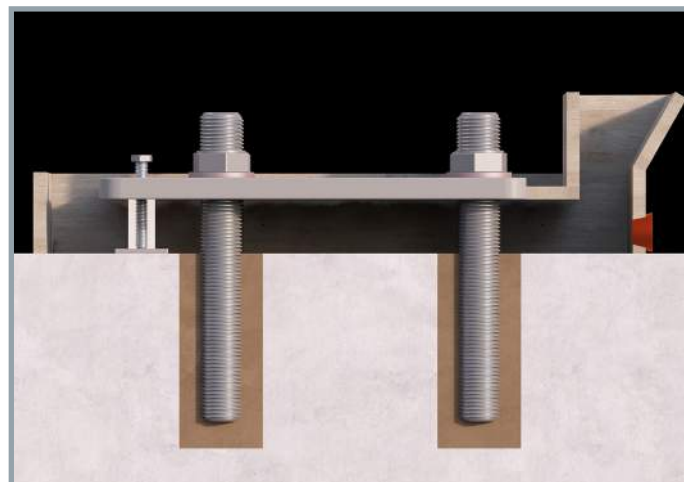
6. Mixing

Use a slow speed drill (appx 500rpm) with Mixer Paddle MR3, for large quantities a shear vane mixer may be used. Slowly add powder to a pre-measured amount of water, ensure consistency of water/powder ratio. Do not allow material to stand for more than 15 minutes. Material mixing process should ensure that a constant pour is achieved with no time gaps.



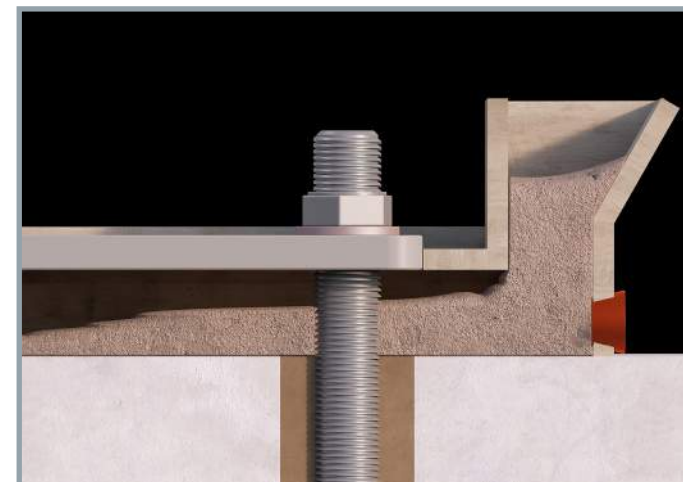
3. Fixing

Make sure the bolts and bolt holes are clean and dry, with sufficient mechanical key. Apply Lokfix or Lokfix DUR resin anchors into the hole. Immediately place the holding bolts into the resin, applying in a twisting motion until the required depth is reached and some resin protrudes slightly above the line of the floor. Ensure the bolts are straight and centred and allow the material to set.



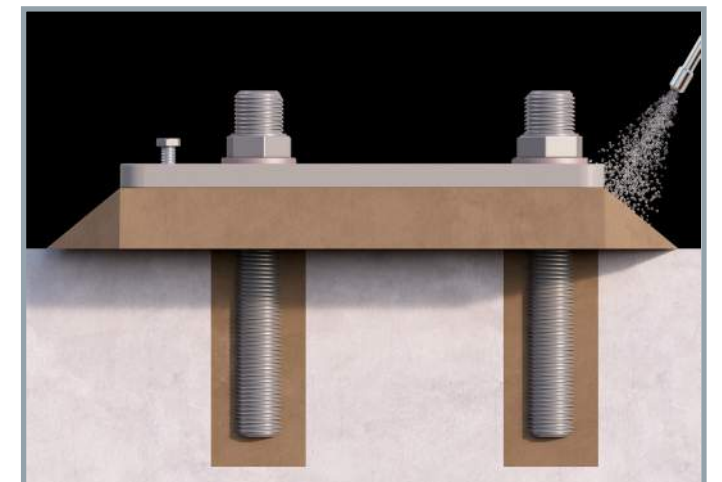
4. Formwork

Using timber fix the shuttering around the baseplate. Gaps at the pouring end should not exceed 150mm and at the free end no more than 50mm. All shuttering should be watertight and supported sufficiently to be able to withstand the pressures of the grouting process. The shuttering should be designed to allow water release or removal. The grout box shall provide sufficient head of pressure in relation to the viscosity of the grout and the length of the pour. A smooth wood should be used and, where necessary, carefully applied Reebol mould release oil may be used.



7. Pouring

Using the header box pour the grout continuously through the area, keeping gaps between pours to an absolute minimum and maintaining head of pressure. Check that material flows correctly beneath the plate, and any air vents are plugged as they become full. Pour only from one side to avoid entrapping air. Do not vibrate or agitate Conbextra grout when it is in its plastic state. For large area pours consider using a grout pump.



8. Finishing

Exposed edges of the material should be cured using Concure WB. The edges of the pour should not project above the bottom level of the baseplate, especially if movement is anticipated. 45° chamfers may be achieved by formwork, cutting the grout, or by using a Rederoc mortar. Observe material strength gain information prior to loading.



CONSTRUCTIVE SOLUTIONS IN ACTION

Selecting the correct grout requires more than looking at compressive strength. That is why Fosroc provides a wide array of grouting products and complimentary ancillaries. We design our materials to exhibit 'best in class' properties, always looking at the critical issues such as material stability, flowability and ease of application, compressive, flexural and tensile strengths. Perhaps most critically, Fosroc design our grouts to stand the test of time.

Here is a selection of some of our projects from around the world:



King Fahad Causeway

Saudi Arabia

The 25km King Fahad Causeway, linking Bahrain to Saudi Arabia, is used by over 19 million passengers a year. Reducing maintenance cycles is a key aim of all designers, this critical piece of infrastructure is no different. This enormous structure has been supported by Fosroc's **Conbextra HF** since its construction began in 1981.

The product was pumped under pressure between the segmental rings of the precast piles that support the bridge as they were lifted into place. The grout was selected for its flowability at high temperatures, stability under pumping pressure and dual shrinkage compensation. The speed of its set allowed rapid erection of the piles. **Conbextra HF** has weathered the elements and exposure, proving Fosroc is the supplier of choice for critical and durable applications.



Paradip Oil Refinery

India

Construction at the massive Paradip refinery for the Indian Oil Corporation presented a challenge to the Fosroc team. The processing units for crude oil required varying depths in application and base plate sizes were very large. To add to the difficulty, ambient temperatures during application frequently rose above 40°C. Of course, the grouts also had to exhibit resistance to a number of very aggressive chemicals and excellent flexural strength and creep resistance. The team worked to produce special product formulations to meet the application procedures ensuring high contact, high strength and crack free grouting beneath the machines. Our ability to produce bespoke solutions and a variety of products including **Conbextra EP75**, **Conbextra EP300**, **Conbextra GP** & **Conbextra BB92** to meet application needs meant Fosroc were the only company selected to supply the refinery's grouting.



Emirates Airline Cable Car

UK

A novel piling technique was used to cast the supporting columns in the brisk tidal zone of London's River Thames. The use of **Conbextra UW** enabled a very high quality of concrete to be cast even under water. Once the piles were in place the initial skirt of the tower was set onto them almost immediately, meaning the early age compressive strength of **Conbextra UW** was another critical requirement.

Initially the proposed construction method and programme meant that the cable car would not be operational until the end of the summer. Fosroc's **Conbextra UW** was an integral part of the success of the new innovative piling technique adopted due to its very high strength and anti-wash out characteristics. This innovative approach took 6 weeks off the completion time of the project; ensuring that it finished well ahead of schedule and was in place to assist in the logistics of staging the London 2012 Olympic Games.



PRODUCT RANGE SELECTOR

A selection of common Fosroc Grouting and Fixing Products and their application. More products are available, consult your local Fosroc Company.

| Epoxy Resin Grouts | | | |
|---|--|-----------------|--|
| Typical Application | Material Characteristics | Fosroc Products | Usage Requirements |
| High compressive and dynamic loads such as bridge bearings, rail bedding, vibrating machinery, chemical or wet-process areas. | Free flowing materials with fast development of strengths. High early and ultimate compressive, tensile and flexural Strengths. Adheres to most building materials. Electrically isolating, water and chemical resistant. Non-shrink. High Effective Bearing Area. | Conbextra EP10 | Thin-section grouting. |
| | | Conbextra EPHT | Tolerates service teamperatures up to 160°C |
| | | Conbextra EP150 | Mid-section free flowing grout with high creep resistance. |
| | | Conbextra EP300 | Thick-section grout with low exothermic reaction |
| | | Proofex WG | Watertight Grout for pile caps |
| Pre-bagged Cementitious Grouts | | | |
| Typical Application | Material Characteristics | Fosroc Products | Usage Requirements |
| High compressive strengths and consistent strength development. Machinery bases, bridge bearings, precast concrete construction, columns and stanchion supports. May also be used for low criticality bolt anchoring. | High flowability and adjustable consistency. Medium to high compressive strengths. Shrinkage compensated in plastic and hardened state. High Effective Bearing Area. Final material characteristics sympathetic to concrete. Negligible chloride content. No iron content. | Conbextra GP | General purpose grout for most standard applications |
| | | Conbextra HF | Dual shrinkage compensated, high flow, precision grout. Ideal for challenging applications |
| | | Conbextra BB | Thick section grout with low exothermic reaction |
| | | Conbextra UW | Grout for underwater application |
| | | Conbextra BB | Bridge Bearing grout with rapid strength development |
| Concrete Additive Grouts | | | |
| Typical Application | Material Characteristics | Fosroc Products | Usage Requirements |
| High volume, low criticality applications such as tunnel annulus voids, soil stabilisation | Largely dependent upon concrete mix design. | Cebex 100 | General purpose shrinkage compensation admixture. |
| | | Cebex 250 | Under water grouting. |
| | | Cebex 653 | Tunnel annulus grouting admixture. |
| Resin Anchors | | | |
| Typical Application | Material Characteristics | Fosroc Products | Usage Requirements |
| Adhering starter bars, holding down bolts, structural tie bars. Substrate stabilisation anchors. Fixings close to edges. | Rapid strength gain, high adhesion values to most building materials. Non-expansive. Electrically insulating, non-corrosive, waterproof, chemical resistant. | Lokfix P | Rapid set polyester resin anchor with low slump for horizontal fixings. |
| | | Lokfix S | Rapid set pourable polyester resin anchor. |
| | | Lokfix DUR | Epoxy - Acrylate resin cartridge system for ease of application |



Fosroc offers a full range of construction chemical solutions, helping to protect structures throughout the world. Please refer to our brochures, which include:



Details of your local Fosroc office can be found at
www.fosroc.com

Important Note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it.



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