

# CONCRETE RESTORATION



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# Why? PFC Group

PFC Group uses a wide range of Concrete Repair & Protection Solutions from suppliers who are World Market Leaders in Concrete Repair Mortars, Protective Coatings for Concrete, Special Mortars for Extreme & Demanding Applications, & Structural Strengthening using Carbon Fiber Technology.



# CONCRETE REHABILITATION

01

Concrete provides resistance and stability to the structural elements of buildings, bridges, water retaining structures, sewage treatment plants, docks, and more. Therefore, it is very important to protect the concrete and any deterioration or damage should be repaired quickly so as not to affect the structure.

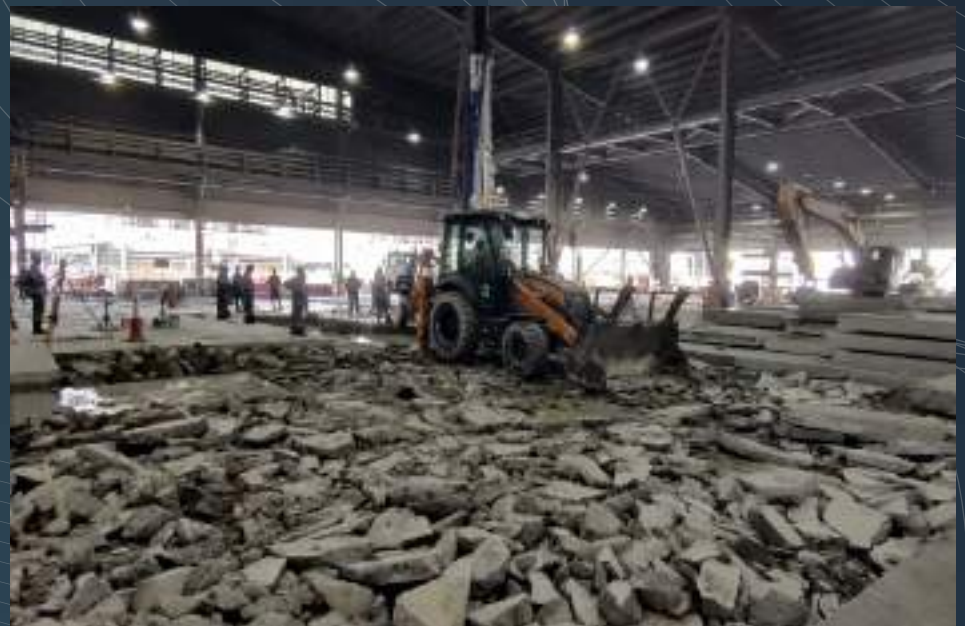
Repairs performed at an early stage will save on extremely expensive repair measures that may become necessary at a later stage. There are various techniques for repairing and restoring concrete structures to concrete damage and defects. These concrete repair techniques and materials are described.



# 1.1 Concrete Patch Repair

Petron Frontier Construction (PFC) a specialist in concrete patch repair, maintenance, and strengthening, offers variety of contracting service for all concrete repair requirements.

PFC conducts visual non-destructive examination of these reinforced concrete structures to identify, review and evaluate items of specific concern. PFC's site team carry out various surveys such as visual survey, acoustic sounding, crack depth measurements, half-cell potential, carbonation depth, etc. using conventional measuring equipment such as ultrasonic thickness meters, calipers, GPR radars and carpenter rules.



## 1.2 Micro Concrete

PFC has a special team which undertake hand placed, sprayed or flowable micro concrete repair solutions. As the concrete around the steel breaks down due to carbonation, the corrosive effects of the air and water rust the steel causing it to expand, spall and crack. For which, micro concreting is specifically developed for repairing damaged reinforced concrete.

PFC's micro concrete methodology repair always ensure that the structure is restored safely. As part of the work, PFC look into ways to obtain the highest levels of long-term durability and strength.



## 1.3 Shotcrete

PFC offers this highly effective technique to provide additional support to slopes of various compositions to prevent slippage or spalling. Shotcrete a perfect way of constructing the boundaries, damaged & deteriorated concrete, strengthening walls, and encasing structural steel. The repair of structural members such as beams, columns, and connections are common for damaged structures.

PFC is a leading company specialist in concrete construction, with a focus on improvisation designs and advanced formwork solutions. PFC offer these services in addition to crucial site preparation skills in the areas of foundation, concrete strengthening and stabilisation, and deliver structural integrity.



# 1.4 Expansion & Construction Joints

PFC provides a variety of construction and expansion joint repair options. These include use of epoxy resin adhesives to fix and seal either side of the expansion joint or fracture. PFC provide chemical-resistant repair methods that prevent water outflow and entrance while allowing for expansion to accommodate movement

PFC specifies a whole system consisting of a strong and flexible material that can readily fill the expansion joints and enable movement in the joints for the bridge's expansion joints. Where foot and vehicle traffic might be a concern, PFC will meet your needs by providing pourable & bulk gun sealing solutions.





# 1.5 Infrastructure Rehabilitation

PFC focuses in structural restoration of infrastructure assets, particularly highways and railway lines, including bridges and tunnels, as well as hydropower plants, water supply systems, wastewater disposal and treatment plants. PFC rehabilitates these buildings that were built to last between 60 and 80 years.

PFC is now a leader in combining repair and maintenance services, assisting industrial clients in increasing the durability of operation equipment assets while also increasing productivity. PFC offers a comprehensive variety of repair and maintenance services, including complete, value-added solutions.



# 1.6 Industrial Flooring & Screeds

PFC has expertise in floor screeding that is applied directly to the foundation floor to support the final flooring. The final outcome depends on how well the floor screed is applied, since it affects the overall quality and longevity of the floor.

PFC uses innovative approach and proven expertise to create high-performance, on-time, and on-budget flooring solutions for Industrial Facilities, Commercial Venues, and more. Polymer flooring, antimicrobial and subfloor screeds, rapid cure MMA resins, seamless terrazzo, car park decking, and industrial resins are just a few of PFC's major working areas.



# 1.7 Waterproofing

PFC provides solutions for failures in the waterproofing system that can be disastrous and expensive to repair. Water penetration which will cause significant damage to the building if it is not stopped quickly. The stability of a building determines its service life, and this is what influences water entry.

PFC has been providing outstanding services in waterproofing sector for concrete decks, reservoir roofs, bunds, top of basement wall detailing green roofs, truck beds, ships hulls, and bridges over many years. PFC provide various type of waterproofing such as Cementitious, Liquid Applied, Cold Applied, Bitumen (Torch & Self Adhesive) Applied, Polyurethane Liquid membranes, etc.



# 1.8 Traffic & Epoxy Coating

PFC offers flooring solutions for industry that are customised to the needs of each specific working environment. For the industrial and commercial sectors, Epoxy and polyurethane floor coatings are used in areas which require an aesthetic finish that is hard wearing, dust free, chemically resistant and allow for floor markings.

PFC provide polyurethane and epoxy resin flooring services. Because of the reliability and longevity of the resin systems PFC supply and install, industrial ESD flooring or Anti-Static Flooring, Gravel Epoxy floor, Flaked Epoxy floor, Solvent Based Epoxy floor and Terrazzo Epoxy floor which is the ideal flooring option for chemical manufacturers, industrial and commercial establishments.



# STRUCTURAL STRENGTHENING

# 02

Structural strengthening is the process of upgrading a structure to improve performance under existing loads or to increase the strength of structural members to support additional loads. Structural reinforcement needs are often caused by building codes, deterioration, change of use, or defects caused by design and/or construction errors

The use of a building or civil engineering structure may change throughout its life, for example, its functionality may change, loads may increase, or building standards may be higher. becomes necessary and the structure must be implemented accordingly.



## 2.1 Retrofitting / Jacketing

PFC, one of the leading structural strengthening service providers, in concrete jacketing which is designed and executed to improve the stability of the structure and increase the integrity of the structure. In order to rehabilitate by improving its performance characteristics, extending the service life of the structure retrofitting/Jacketing are carried out.

PFC offers latest technology to develop innovative ways for restoring or increasing capacity of the bridges, buildings, parking garages, silos, and other structures. Detailed investigations, well specified techniques, expert execution, and systematic quality control are all provided by PFC for the rehabilitation, strengthening, and protection of concrete structures.



## 2.2 Carbon Fiber Reinforced Polymer

PFC provides design and installation service for Carbon Fiber Reinforced Polymer (CFRP) composite strengthening utilising both pultruded plates and wrap systems that include innovative strengthening methods and materials which complies with current international standards. CFRP latest technique used for structural strengthening, maintenance and repair. Buildings, marine constructions, bridges, pipelines, and other industrial infrastructure are all repaired and improved by this methodology.

As concrete repair contractors, PFC propose CRFP systems that are capable of enhancing the structural capacity of existing structural elements including seismic retrofit, pipe rehabilitation, structural preservation and environmental protection.



## 2.3 Glass Reinforced Plastic

PFC is a well-known GRP lining specialist. With an extensive expertise, PCP have a vast experience to provide clients with customised waterproofing solutions. PFC provides services for RCC tanks, swimming pool drainage systems, manholes, and mild steel tanks from any form, size, depth, or design.

As an industry leader in GRP Products, PFC designs, supplies, and installs a diverse range of water tanks, panel tanks, chemical storage tanks, septic tanks, storm water/sewerage tanks, ladders, manholes, flower pots, water falls, gratings, covers, and ladders, among other industrial and decorative products. PFC has advanced machineries that enable it to perform moulding as a professional supplier.





# CRACK INJECTION

# 03

Cracks should only be treated when they pose a potential threat to the strength of the reinforcement or cause unacceptable leaks. Injections should not be used for cracks caused by corrosion of reinforcement. There is a lower limit of about 0.1mm on the crack width that can be successfully injected, depending on the type of resin injected. Polymers used for crack injection include epoxies, acrylics, polyesters and polyurethanes.

The concrete surface is first cleaned along the crack to remove debris and dirt. The crack itself is blown with clean, dry air so that the resin can flow freely into and along the crack. The resin is then injected under pressure into inlet holes that have been glued to the concrete surface above the crack, or through holes drilled to intersect the crack.



## 3.1 Dry Crack Injection

PFC offers a wide range of applications, including crack injection treatments with mechanical packers, crack injection treatments with surface packers, and curtain injection treatments. A lot of damage to concrete structures occurs as a result of cracks and cavities that allow pollutants to penetrate the structure.

The objective of crack filling is to prevent corrosive elements from penetrating concrete and steel. PFC's highly trained staff can perform injection treatments using epoxy, polyurethane, acrylic resins and gel injection. PFC also offers a range of high-quality Injection Hose system, Polymer grouting's, Fiber Reinforced injection grouting, and Sulfo-Aluminate grouting that can be used for a number of crack injection repair applications.



## 3.3 Wet Crack Injection

PFC provides the latest crack injection, concrete injection, and water leak repair injection works. Leaking concrete structures can have a greatly reduced service life due to steel corrosion and concrete damage. These leaks can be completely sealed and waterproofed by injection, avoiding the high expenses of structural repairs or water-damaged interior finishes, furniture, or other items.

PFC offer the right tools for your leakage concerns such as PU Injection, Gel Injection, Epoxy Injection, High Pressure Pile Injection, Soil Stabilization, Curtain Wall Injection and many more. PFC provides a variety of curtain injection/grouting services, including facture & compensation grouting, rock curtain grouting, jet grouting, seepage control or interception grouting, hot bitumen grouting, and soil stabilization grouting.



## 3.4 Soil Stabilisation

PFC holds expertise in soil stabilization injection services to enhance compressive strength and improve its ability to bear weight. PFC creates a more reliable basis for building and construction works and can remedy existing issues with earth and subsoils that are causing problems such as settlement.

PFC offers advanced resins & injection process for building stabilisation to make your foundations stable and prevent them from sinking any further. PFC establish several monitoring devices to verify & guarantee that the slab or floor or foundation is properly lifted and no further settlement shall occur. PFC offer the innovative & high-quality materials for your concerns such as PU Injection, Gel Injection, Epoxy Injection, High Pressure Pile Injection, Soil Stabilisation, Curtain Wall Injection and many more.



# CATHODIC PROTECTION

# 04

Corrosion is the main cause of premature failure of metal structures. Operators can extend the life of their facilities and equipment by installing cathodic protection systems and checking them regularly.

A wide variety of residential and industrial applications use these systems to resist corrosion for many years. They are typically installed during initial construction, expansion, or major upgrades. Cathodic protection (CP) is an electrochemical method for protecting structures from corrosion. This condition is caused by corroded steel beams which can lead to cracking of the stone facade. It's unsightly at best, but excessive cracking can lead to catastrophic failure.



# CATHODIC PROTECTION

Cathodic protection applications include: onshore, onshore and submarine pipelines, offshore steel platforms, piers, jetties and coastal structures, aboveground storage tanks, buried and disturbed tank mixer, the well casing, the water box, the equipment, the reinforced concrete structure

PFC's employees are trained on how to repair and safeguard reinforced concrete buildings on a regular basis using Impressed Current Cathodic Protection (ICCP) and Sacrificial Anode Protection (SAP). PFC collaborate with renowned product manufacturers to provide our clients with the best possible solutions for their projects.



# SCANNING, CORING & CUTTING

# 05

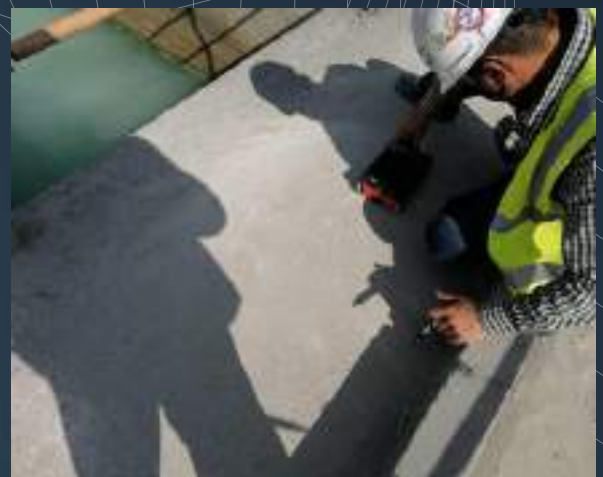
Latest technology of Concrete scanning is very useful to a number of construction project situations. It is the most popular and successful ways of determining what's beneath a concrete slab before any repair is performed. A concrete scan is vital during construction because it simplifies drilling, cutting, and coring, reduces the danger of damaging utilities, rebar, post-tension cables, pipelines, and conduits, and maintains the structural integrity of the concrete.



# 5.1 Concrete Scanning

PFC offer wide range of concrete scanning techniques including Ground Penetrating Radar (GPR) surveys, Cover Meter surveys, Half-Cell Potential Tests, Ultrasonic Pulse Velocity Tests, Concrete Resistivity Meter Surveys, Ferroskan Surveys, etc. PFC specializes in the application of Ground Penetrating Radar concrete scanning in the construction and civil engineering sectors providing rebar location, rebar mapping, concrete imaging and floor thickness imaging.

PFC provides 2D and 3D GPR rebar detector concrete imaging, offering easy-to-interpret 2D and 3D pictures that enable for non-destructive testing. PFC scanning technology can detect rebars, tendons, metal and plastic conduits, glass-fiber cables, voids, and wood in dry concrete constructions up to 300mm deep.





## 5.2 Concrete Cutting

PFC provide a vast range of large diameter sawing services for civil & structural project requirements. PFC provide specialist saw cutting solutions for any requirements through walls, floors and other concrete or masonry structures or road surfaces. PFC utilizes modern saw cutting equipment producing minimal vibration for the safety and comfort of our operatives.

PFC makes sure to offer cutting of concrete with extreme precision and secure procedure and further transporting it from the construction site which always remains a problem for most drilling professionals. We can cut through any reinforced concrete wall or floor to an impressive depth using high-quality diamond blades.



## 5.3 Concrete Coring

PFC offers diamond drilling, concrete cutting and controlled demolition services throughout UAE. PFC provides installation of pipe work, power cables, telephone cables, ventilation equipment, location holes for barriers, machine base fixings and core samples.

PFC has electric or hydraulic rotary drill motor mounted on a drill rig using a diamond tipped core bit to cut through reinforced concrete and other construction materials, such as masonry, brick and blockwork. Core drilling is a quick and easy approach to make core holes for service penetrations in walls and floors of various diameters.



# GALLERY



# GALLERY



# GALLERY



# GALLERY



# ACHIVEMENTS



# LICENSES



# AWARDS





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**GROUP**

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