



State Flag Square / Baku Coastline
Baku, Azerbaijan

STATE FLAG SQUARE, AZERBAIJAN PROJECT CASE STUDY



Project Overview

The State Flag Square is a large city square in Baku (Azerbaijan). When it was built in 2010, the 20,000 m² square, was home to (officially) the tallest flagpole in the world. At a height of 162 metres, the erected flag support sat on a large concrete pedestal base, with a foundation diameter of 3.2 metres. The flagpole and square project reportedly cost \$30 Million to complete. Azerbaijan lost the record to Tajikistan in 2011 where a 165-meter flagpole was erected, itself superseded by a later construction in Saudi Arabia.

In 2017, the national flag was taken down from the pole after repeatedly being torn by the wind, and the pole was disassembled and removed. The State Flag Square and the State Flag Museum were closed for repairs due to the reconstruction and restoration works. In 2021 Turkish construction giant ENKA announced its subsidiary company Cimtas would be working on the world's new tallest flagpole, again set for location in State Flag Square. At a proposed height of 192 meters, the new mast consists of nine steel conical tube segments with a diameter of 5.7 m to 2 m, weighing between 13 and 270 tons.

Concrete in the base pedestal construction into which the flagpole would find its foundation had deteriorated since its original construction, next to the testing environment of the Caspian Sea shoreline. The pedestal was also due to house a 'State Flag Museum' and required structural waterproofing. Referral from trusted manufacturers would see Beton Bauen become involved with specialist works for the State Flag Square pedestal, and in turn be a significant part of the project.

Project Details

Project Title:	State Flag Square, Azerbaijan
Sector:	Infrastructure/Landmark
Beton Bauen Project Value:	Approx. £350,000
Project Duration:	2023-24
Our Client/On Behalf of:	Government of the Republic of Azerbaijan
Other Partners:	Ecosphere Global Logistics; ENKA/Cimtas; Sika; Fosroc; Normet; Baku Boulevard Department

ENKA



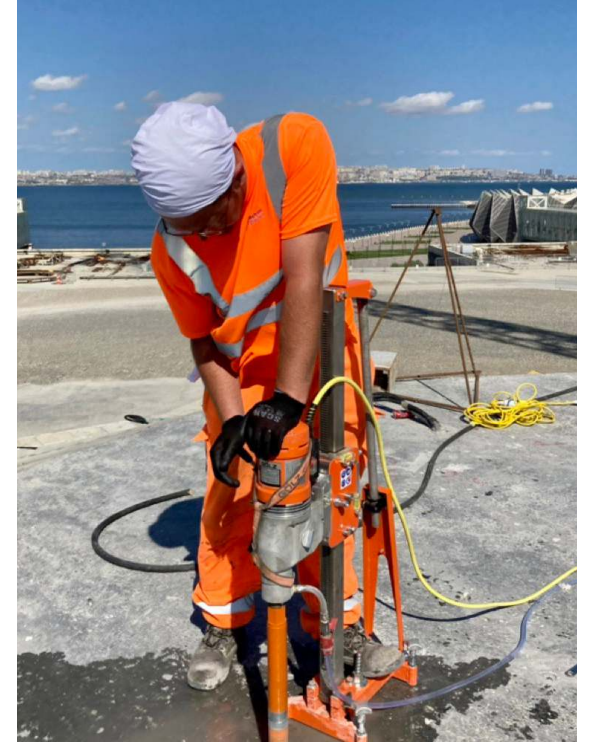
cimtas
INTEGRATED SOLUTIONS



normet
FOR TOUGH JOBS



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Project Services



SERVICES DELIVERED DURING THIS PROJECT

PRODUCT/SOLUTION DESIGN & APPLICATION TRAINING

EPOXY RESIN INJECTION

SPECIALIST COATINGS

CRYSTALLINE STRUCTURAL WATERPROOFING

CORROSION PREVENTION

Project Description

Beton Bauen Project Contribution

At the request of The Vice President of Azerbaijan, Beton Bauen project managers were processed with 'fast-track' visas and invited to inspect the reinforced concrete base in Baku. During the 6-month project Beton Bauen would deliver consultancy, application, and onsite training.

A successful solution would be dependant on a multi-system integration including Epoxy Resin Injection, Grout Reinstatement, Waterproofing, and Protective Coatings; all would have to adhere to strict QA/QC standards, with compliance to BS EN 1504 Parts 2, 3, and 5. Overall, protecting the integrity of a structure of immense symbolic importance.

Solution Methods & Methodology

Beton Bauen were engaged to inspect, repair, inject, grout, and protect the exposed concrete base, delivering a full package of specialist works including crack injection, waterproofing, gap filling, and protective coatings. The project would have to be delivered over a concentrated programme, coordinated to minimise disruption and align with national events.

The Azerbaijan National Flagpole project is a demonstration of Beton Bauen's ability to deliver complex, high-profile works to exceptional standards of safety, durability, and quality.

The works combined structural crack injection, large-scale void grouting, crystalline waterproofing, and protective mortars / coatings. This holistic integration of advanced EN 1504-compliant systems ensured long-term resilience in a severe marine environment.

Epoxy injection resin: Low-viscosity system capable of force-filling cracks down to 0.2mm in dry, damp, or water-bearing conditions. Provided >2.0 N/mm² bond strength and monolithic performance.

Grout: High-flow, non-shrink cementitious grout (BS EN 1504-3 Class R4) for gap thicknesses 75–500mm, achieving 60 MPa at 28 days. Selected to reinstate large voids without segregation or cracking.

Crystalline waterproofing: Applied in slurry form to provide long-term resistance to water ingress, enhancing durability of the concrete base.

Mortars and Coatings: Used for precision finishing, colour-matching, and protection against carbonation and chlorides.

These systems were chosen to provide long-term durability in a marine environment, meet tight deadlines aligned with national events, and ensure both technical and aesthetic excellence. The integration of multiple EN 1504-compliant systems provided a sustainable solution, extending service life and avoiding future invasive interventions.

High winds on the shoreline of the Caspian Sea threatened to undermine the specialist grout and resins; it was imperative that applied materials were given protection from the wind (yet kept moist) to gain in strength and prevent premature curing. To combat these issues Beton Bauen set about constructing temporary working shelters.

The base of the flagpole is a highly visible, symbolic feature, meaning visual quality and cosmetics were critical. Repairs had to be indistinguishable from the original construction while ensuring structural durability. Challenges

included colour variation from weathering, risk of patchwork finishes, and the need to balance aesthetic expectations with technical coating performance. Solutions included careful colour matching of mortars, use of epoxy pastes to seal injection points cleanly, and phased coating applications to avoid differences in shade. Protective coatings served both a technical and aesthetic function, producing a uniform, durable and visually clean finish. The outcome was a seamless and high-quality surface that enhanced the monument's presentation, while providing robust, long-term protection.

Environmental & Sustainability

Sustainability was embedded into every stage of the project, including:

Material Efficiency: Use of Conbextra TS grout reduced waste by controlled mixing ratios (3.3L water/25kg bag).

Durability as Sustainability: crystalline waterproofing extended life expectancy, reducing future interventions and whole-life carbon.

Reduced Carbon Impact: Repairs extended service life instead of replacing the base, avoiding demolition and reconstruction.

Low Waste Practices: Careful batching of materials minimised surplus; packaging was segregated and recycled.

Local Engagement: Where possible, local labour and logistics partners were used to minimise environmental footprint.

ISO 14001 Compliance: All practices aligned with Beton Bauen's certified environmental management system.

Health and Safety

Health and Safety would also include it's own challenges and outcomes, but was critical due to the international setting, exposed location, and the monument's national importance.

Environmental Hazards: Coastal winds, reflective surfaces, and high heat managed with shaded rest areas, hydration breaks, and weather monitoring.

Resin Safety: Controlled handling of solvents, safe disposal of waste, ventilation within mixing tents.

Access Safety: Bespoke edge protection, fall-arrest systems, and controlled entry zones around confined areas.

High-Security Environment: All works delivered under additional access checks and restricted movement.

Training & Communication: Daily briefings & toolbox talks (translated for local operatives) ensured full understanding of site risks.

Training and Staff Development

The project served as a live training platform. Senior supervisors mentored junior operatives in advanced crack injection, grout placement, and waterproofing applications. For many, it was their first international project, offering exposure to cultural, logistical, and regulatory challenges. Rather than classroom learning, training was practical and hands-on, allowing operatives to adapt in real time, under supervision. A post-project debrief captured lessons learned, which were then shared across the wider workforce. The project-built confidence, pride, and ownership among staff, strengthening Beton Bauen's culture of professionalism and leaving the company with a more adaptable, skilled team.

Issues Encountered

There were a number of obvious 'hurdles' to overcome including international logistics, customs, language barriers, and security restrictions. The transportation and level of paperwork required for specialist resin pumps, core rigs, spray equipment and potentially hazardous materials, via London Heathrow, would prove especially difficult. Logistical delays with customs became familiar, and safe-storage onsite, in Baku would also need to be considered. With the assistance of a logistics partner, and provided with Azerbaijani interpreters, Beton Bauen managed to avoid these issues escalating.

Physically, conditions in the seaside area of Baku were challenging. High temperatures would also cause issue. Resin systems had to be mixed and injected under 35-40°C conditions, managed with climate-controlled tents and adjusted working times. This would also mean it best to employ local labourers who were familiar to these conditions, with Beton Bauen leading the project technically. Accompanying senior managers Sean Davies and Arthur Dacey, were handpicked Beton Bauen concrete technicians from the UK, with the team bolstered by the local contractors.

The strong coastal winds also caused movement at the base, requiring reinforcement and careful scheduling to avoid de-bonding or cracking.

Beton Bauen also found themselves on a site with restricted access. Confined work zones required bespoke access platforms and strict entry control systems. Similarly, as a national landmark, access was tightly controlled with strict security protocols, requiring additional planning to maintain productivity within restricted working hours.



Project Summary

The Azerbaijan National Flagpole project highlights Beton Bauen's expertise in delivering multi-faceted concrete rehabilitation on one of the world's most recognisable landmarks. By combining structural crack injection, large void grouting, crystalline waterproofing, and protective coatings, the company delivered a complete and durable repair strategy.

Operating overseas demanded adaptability to local regulations and cultural expectations. Careful planning and proactive coordination allowed the team to navigate complex logistics, extreme climate, and stringent security while maintaining uncompromising safety standards.

The project demonstrated technical competence in applying products compliant with BS EN 1504 Parts 2, 3, and 5, showcasing Beton Bauen's ability to integrate advanced systems. Rigorous inspection and quality assurance, supported by manufacturer guidance, ensured both performance and visual excellence. Through proactive planning, innovative access design, climate-controlled storage, and close liaison with authorities, Beton Bauen delivered a safe, uninterrupted programme to the highest technical standard.

The project demanded meticulous management of environmental extremes, international logistics, and strict programme deadlines linked to national events. By combining teamwork, problem-solving, and technical innovation, Beton Bauen delivered the project safely, on time, and to an exemplary standard.

Equally, the project demonstrated commitment to sustainability and workforce development. By repairing and extending the structure's life, significant carbon and waste reductions were achieved. At the same time, staff gained invaluable mentoring and international experience, strengthening company-wide capability for future projects.

Beton Bauen has carried out structural waterproofing and a series of concrete repair works at the State Flag Square in Baku. All works were completed with high quality, in full compliance with technical requirements and project specifications.

During the course of the works, all safety regulations and construction standards were strictly observed, and the tasks were completed on time and to a professional standard.

Based on the company's demonstrated professionalism and cooperative approach, we hereby recommend Beton Bauen Ltd as a reliable partner for similar future projects.

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