

SHOTCRETE

CASE STUDY



The restoration of Madeira Terrace in Brighton is one of the most significant heritage regeneration projects underway in the UK. The Victorian cast-iron structure – an iconic seafront landmark – has suffered decades of coastal weathering and required major structural intervention. Phase 1 focuses on the restoration of 28 arches, upper deck renewal, accessibility improvements, and green wall reintegration.

Shotcrete Services Ltd (SSL) were engaged to deliver specialised sprayed concrete and soil nailing works essential to stabilising, reinforcing, and re-facing critical structural areas.

CLIENT

Mackleys

LOCATION

Brighton

COMPLETION DATE

October 2025

SECTOR

Sprayed Concrete – Coastal Wall

www.shotcrete.co.uk



CHALLENGE / SCOPE

WORKING ADJACENT TO THE NEWLY OPENED SEA LANES DEVELOPMENT

The proximity to the busy Sea Lanes swimming and leisure complex required constant coordination with their operational team. SSL planned delivery times, equipment movements, and noisy operations sensitively to avoid disrupting public use and business activities. White noise alarms were fitted to site plant to help minimise disruptions to the businesses and their customers.

PUBLIC INTERFACE WITH THE WORKS

The site sits directly on Brighton's active seafront promenade. Mackleys and SSL implemented:

- Clear pedestrian management systems
- Robust hoarding and segregation
- Safe working zones around MEWPs and deliveries
- Continuous communication with the main contractor regarding public flow

This ensured public safety while maintaining progress in a live environment.

HIGH-LEVEL WORKING FROM MEWPS IN A NARROW SITE

The working corridor in front of the arches is extremely limited. SSL undertook:

- Detailed MEWP selection for compact footprints and high level weight capacity
- Specialist operator training
- Constant monitoring of works traffic interface
- Strict safe-working procedures for overhead operations

PEAK TOURIST SEASON WORKING

Construction took place during peak visitor periods, requiring additional management to maintain safety and minimise disruption. SSL adapted:

- Working hours
- Delivery schedules
- Temporary fencing layouts
- Noise controls

HOT WEATHER WORKING WITH CONCRETE

Summer temperatures along the seafront created challenges for curing and handling sprayed concrete. SSL mitigated risks by:

- Adjusting mix designs
- Using controlled hydration techniques
- Increasing workforce rotation
- Scheduling critical spraying in cooler hours
- Implementing enhanced curing regimes

These measures ensured consistent finish quality despite environmental constraints.

THE PROCESS

WET SPRAYED BASE LAYER

A wet-sprayed structural base layer was installed to consolidate the substrate, ensure full encapsulation of reinforcement, and create a durable foundation for the finished facing coat.

DRY SPRAYED FACING COAT (ABOVE DECK AREAS)

A dry-spray application was used for the upper-facing aesthetic layer where a finer heritage-appropriate finish was required. This method offered precise texture control, reduced moisture introduction, and optimised performance in exposed coastal zones.

DOWEL FIXING FOR MESH

To stabilise reinforcement mesh against historic substrates, SSL installed stainless-steel dowels at engineered spacing. This ensured:

- Secure long-term anchorage
- Full mesh tensioning
- Corrosion resistance suitable for marine environments

PULL TESTING OF DOWELS AND SOIL NAILS

Dowels and soil nails underwent formal pull-out testing to verify design capacity. This testing confirmed:

- Achieved load performance
- Correct installation and bond to the substrate
- Structural compliance before concrete application

SOIL NAILING WORKS

Soil nails were installed to the wall behind the terrace to stabilise the Cast Iron arches once replaced. Works included drilling, nail installation, box out fixing, and applying a wood floated layer. Sequencing was carefully managed to protect the 150-year-old planted wall.

CONSTRUCTION JOINTS

Construction joints were positioned to accommodate staged working and interface with existing wall sections not part of the renovation works.



MOVEMENT JOINTS

Movement joints were installed to manage thermal expansion, natural deflection, and long-term movement of the coastal structure—protecting the integrity of the new sprayed concrete finishes.





MATERIALS USED

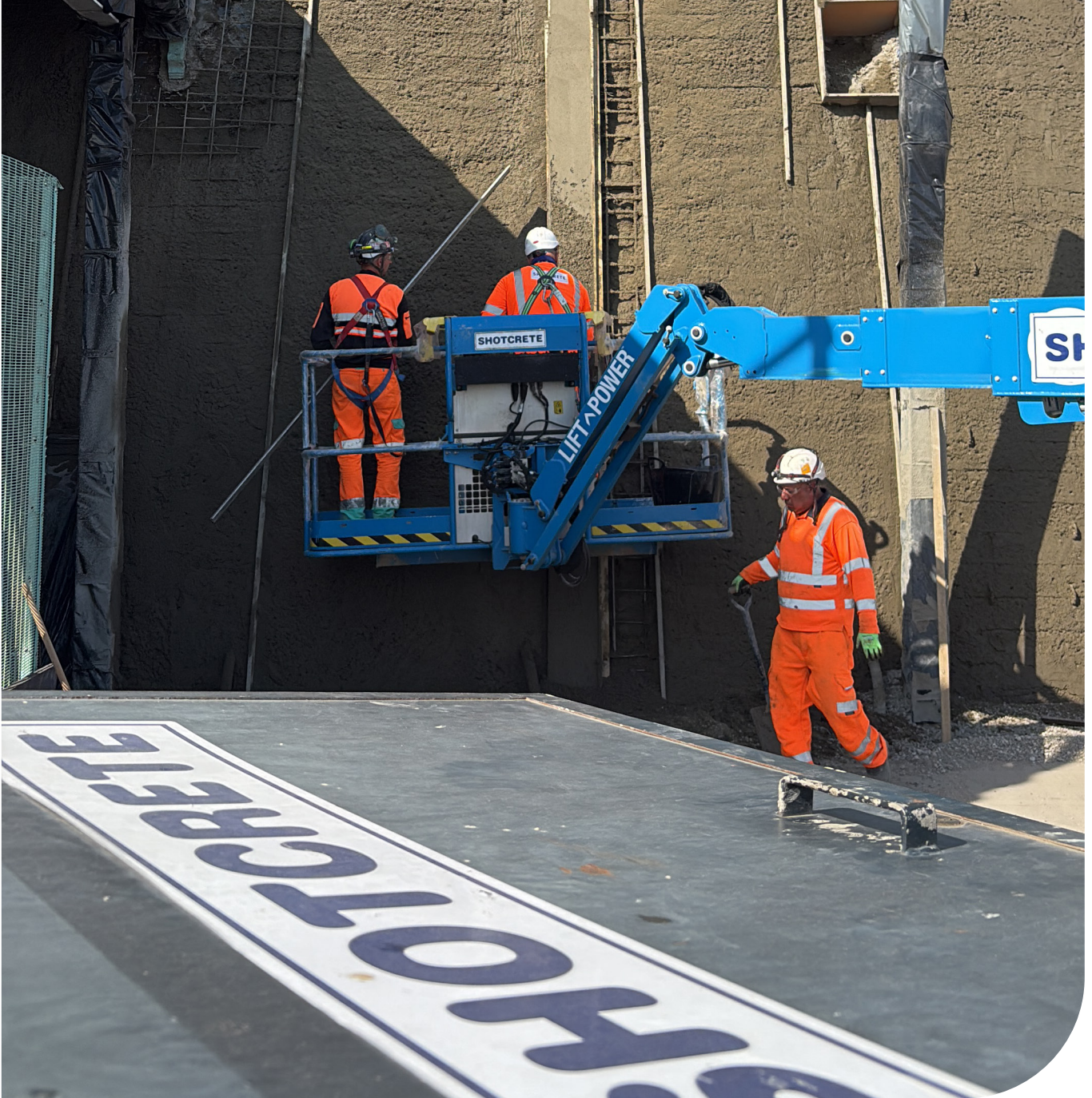
- ✓ SSL's P450 wet spray 10mm mix
- ✓ Fosroc DS dry spray material
- ✓ Minnova soil nails

CONCLUSION / SOLUTION / OUTCOME

SSL's work provided the structural reinforcement and high-quality finishes required to bring Madeira Terrace back into safe public use. The combination of sprayed concrete expertise, geotechnical stabilisation and complex site management contributed significantly to the successful execution of Phase 1.

This project demonstrates SSL's capability in delivering:

- Specialist sprayed concrete systems
- Soil nailing and structural stabilisation
- High-risk constrained-site operations
- Heritage-sensitive restoration aligned with coastal durability requirements



THANK YOU

FOR YOUR INTEREST IN SHOTCRETE.

SHOTCRETE

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