

# PROJECT: METHIL SEAWALL REPAIRS

VALUE: £390,000  
ROLE: MAIN CONTRACTOR  
START DATE: OCTOBER 2013  
COMPLETION: MAY 2014

CLIENT: SCOTTISH POWER GENERATION  
DALDOWIE FUEL FARM  
UDDINGSTON  
GLASGOW

- 630m long Seawall with various repairs including expansion joints, resin injection and spalling / scour repairs
- All repairs were identified by Southbay and SP / IEC using the Pre-Condition Survey
- Restricted tidal working in some areas
- Materials included Sikaflex Pro3, Marine Mortar, Sika Armorcrete and Epoxy Injection Grout
- These products were accepted by our designer, Fairhurst as a suitable material for the repairs
- All workforce were briefed and COSHH assessed to these materials and methods

Southbay were awarded the Methil Seawall Refurbishment project by Scottish Power. Over the 40 years, the existing Seawall had been host to large environmental forces and had become severely damaged. Southbay carried out vast amounts of concrete repairs throughout the 630m Sea Defence Wall divided into 7 areas. Majority of repairs were governed by tidal movements and man basket duties.

## EXPANSION JOINTS

Approximately 450m of split and missing expansion joints were repaired using Sikaflex Pro3, an elastic joint sealant with high mechanical resistance. The majority of joints were located throughout the vertical wall face and on the spillway floor.

The existing joint was first separated and removed to sound material before power washing and removing marine growth / vegetation. After the joint was completely cleaned, Aerofill Foam was placed inside the joint and a primer applied to the foam and surrounding concrete face. The expansion material, Sikaflex Pro3, was then injected into the joint by injection cartridge and screeded for aesthetical appearance.



## SPALLING / SCOUR REPAIRS

Due to environmental forces, the seawall was prone to spalling and scours damage. It was in Southbay Civil Engineering scope to carry out the repairs necessary to these areas. Around 350m<sup>2</sup> of spalling / scour areas were repaired using Sika Armorcrete and Parex Marine Mortar for small repairs and Concrete C28/35 for larger repairs.

All areas damaged were cut to a minimum of 50mm depth and to sound material (using stihl saw and breaker). Using a power washer, the area was cleaned of marine growth. Timber formwork was then installed as per Temporary Works Design to suit the area of repair. The materials, Sika Armorcrete and marine mortar were then mixed by grout paddle mixer and poured to the area of spalling / scour.



## RESIN INJECTION

Resin Injection was a method to accommodate cracks on the seawall (0.1mm-10mm). 327m of horizontal, vertical and diagonal cracks were repaired through this method. The material used was Parex Epoxy Injection Grout.

All cracks were cleaned of damaged mortar thoroughly by a wire brush and blown to make the surface area essentially dry. As per manufacturer's guidelines, the injection nozzles were located at 300mm centres of the crack. The grout was then mixed and inserted to the nozzles by means of a mechanical pump from the lowest point moving upwards. After 6-8 hours the resin was cured and nozzles were disposed of according



## CHALLENGES

Harsh environmental marine conditions were experienced during the working period including Arctic Winds of up to 80mph at times.

## PROGRAMME

The programme was set over the duration of the contract. With repairs to the Area 1 Front Face a critical path in the programme.