

A large photograph showing several construction workers in high-visibility orange and white protective suits and hard hats working on a concrete repair site. They are using various tools, including a large hand-operated machine and long-handled tools, to work on a wet, muddy concrete surface. In the background, there are several shipping containers, including one labeled 'TANK MANAGEMENT AS' and another 'HOYER'. The scene is set in an outdoor industrial area under a cloudy sky.

# Repair of shipping container platform slabs at working port

**Service/product:** Concrete repair works | **Customer:** PD Ports | **Location:** Teesport Docks

PD Ports operate major port and logistics sites on the east coast of England. Teesport is PD Port's sixth largest and busiest port in the UK, handling 28 million tonnes of international imports and exports per year.

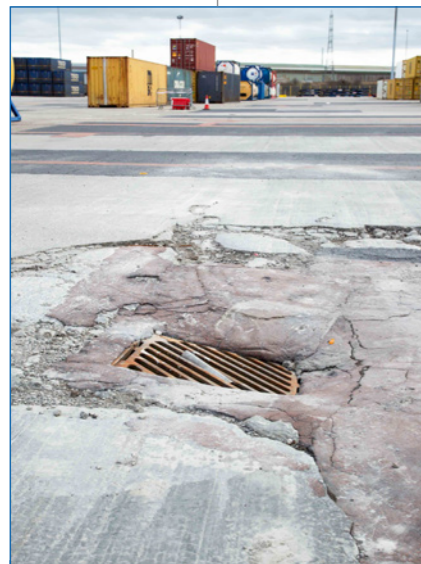
## The problem

In March 2024, PD Ports called upon OnSite Specialist Maintenance to carry out concrete repair works to twelve shipping container platform slabs at Teesport. Due to consistent traffic and heavy shipping loads, the concrete slabs had become cracked, allowing water ingress which subsequently damaged the concrete reinforcement. The brickwork surrounding the existing gullies, manholes and cable chambers had also begun to collapse and crumble.

## The solution

The client provided a detailed project brief and drawings for replacement of the concrete and installation of ironworks to F900 specification. The team carried out the full depth reconstructions of the container platform slabs and a total of 250m<sup>3</sup> of concrete was needed for the 12 new replacement slabs.

# Project timeline



## Phase one - Project brief

The team visit the site to assess the area and establish the problem. They propose and agree a solution with the client.



## Phase two - Project preparation

**Planning** - The team break down each element of the job and confirm the actions and resources required to achieve the project goal.

**Mobilisation** - The team complete the initial steps to get organised for the start of the project. This includes allocating storage areas for equipment and materials and arranging access to a water source.

**Traffic management system set-up** - The team work closely with the client to devise a one-way traffic system which will allow all parties to safely work alongside each other in the busy port.



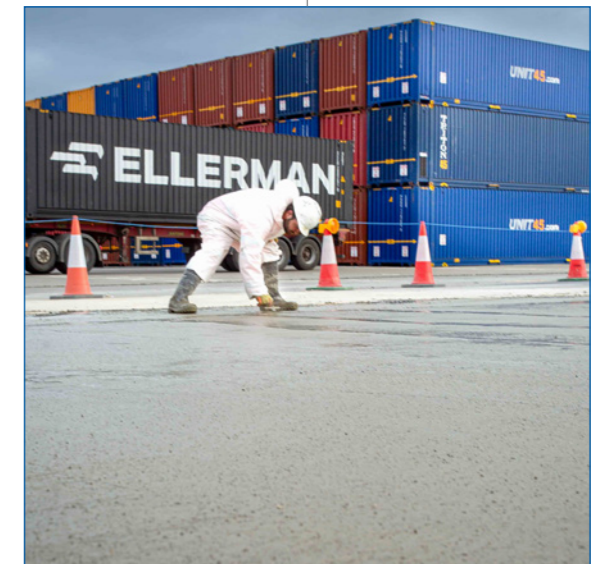
## Phase three - Full depth reconstruction

**Concrete removal** - The 300mm deep damaged concrete is removed and recycled.

**Concrete reinforcement** - A 175mm deep sub-base is put in place using compacted type one aggregate and a damp-proof membrane sheet. The concrete is reinforced with concrete block spacers and wire chair spacers. Dowels are drilled to connect the new concrete to the existing slab.

**Concrete fill** - 11 lorry loads of concrete arrive to fill the sub-base. The team use a concrete vibrator to evenly distribute the concrete before giving it an anti-skid brush finish.

**Concrete set** - The team leave the concrete to set.



## Phase four - Testing and final inspection

**Testing** - The team conduct a concrete compression test on day 7, day 14 and day 28. The concrete reached its required strength at day 14 and the port was able to open the lane two weeks earlier than planned.

**Joint sealing** - Once the concrete has set, the 40mm deep, 20mm wide joints are filled with a flexible, waterproof seal.



## The challenges and result

Throughout the project, Teesport remained a secure, live working port. There was constant heavy traffic with the movement of shipping containers around the working area, necessitating a 'traffic management system' to be set up which included closure of port lanes and a one-way system. This allowed the port to continue working as normal whilst also allowing safe access for the significant quantities of concrete that were delivered to the site. The team worked to tight deadlines to deliver the project with minimal disruption:

- a) so that the lanes were able to re-open as quickly as possible.
- b) to accommodate ferries docking on known days of the week, works were planned accordingly.

The team had to consider the condition of the ground in which they were working. The size of the slab meant that sheets of water would accumulate when it rained and underground water also had to be pumped out to maintain the quality of the sub-base.

Additional works were identified with defective drainage and OnSite's jetting and CCTV services were required to assess the extent of the damage.

The team kept the site safe and clean by disposing of all materials at a local recycling centre, with approximately 700-800 tonnes of old concrete and steel recycled. They also liaised with local concrete suppliers to source materials as close to the site as possible and used battery operated concrete vibrators which produced zero emissions.

The project was completed in 16 weeks. The work was delivered to the client specification, on time and within the budget. Working closely with the client to address the logistical and safety challenges that the site presented, meant that the port was able to function as normal during the works, and no delays or issues were caused to their business. Throughout the project, the team demonstrated OnSite's commitment to implementing sustainable ways of working, in line with our journey to Net Zero whilst delivering works safely, efficiently and effectively.