VolkerLaser

King George Docks

Constructed in 1914, King George Docks resides in the Port of Hull, on the north bank of the Humber Estuary. With the Humber overseeing nearly one quarter of the UK's seaborne trade, and serving the whole of the British Isles, it is crucial that the structural integrity of the port is maintained.

VolkerLaser was awarded the North Quay project from Associated British Ports as a result of previous success in delivering strengthening and repair works to the Saltend Jetty in 2013.

North Quay is a 750m-long suspended quayside, divided into bays that support cranes for unloading incoming shipments. The exposed coastal location challenges the quay's structural integrity and restricts safe access for refurbishment, which is further complicated by fluctuating water levels due to tide times, port activity, and weather.

To address this, our team collaborated with project engineers to design and build innovative steel workboats with adjustable heights, allowing consistent access regardless of dock conditions. Once safe access was achieved, hydrodemolition using high-pressure water jets was carried out to remove delaminated concrete from the quayside's beams and columns. Exposed and corroded link reinforcement bars were then replaced, restoring the strength of the substructure.

Approximately 10,800 galvanic anodes were then attached to the new and existing link rebars, in order to prevent any further corrosion.

Approximately 370m^3 of Sika 133F spray applied concrete was utilised in order to achieve a superior level of structural integrity.

For the crane beams, where the structure was compromised, extensively due to the corrosion of the rebars, additional strengthening was required. We collaborated with design engineers Curtins, in developing a unique and innovative solution of applying carbon fibre Sika wrap to restore integrity to the beams.

King George Docks marks the very first time carbon fibre wrapping has been successfully utilised for structural strengthening within a marine environment.