



## Quay Wall Franzenshöhe Stralsund

Germany's federal state of Mecklenburg-Vorpommern is massively expanding the harbour in the hanseatic city of Stralsund. Directly adjacent to the Volkswerft shipyard with its long tradition, works started in fall 2005 for building the maritime industrial and commercial park Franzenshöhe. Offering a total space of 238,000 square meters, the park mainly wants to attract maritime-oriented, processing industry businesses. A new, bigger harbour will secure access to the federal waterway.

The first piles for this future-minded project were driven by HOCHTIEF: HOCHTIEF Construction Civil Engineering and Marine Works carried out the construction works for the new quay structure.

Within a period of eight weeks, HOCHTIEF finalized the first phase of the pile driving works for the 460 meter long quay wall. In parallel to

these works, the harbour basin was excavated to create sufficient room for the launching of a 300 meter long container vessel built at Volkswerft. At the end of July 2006, the quay wall backfill and all reinforced concrete and installation works were completed. After the area had been paved, the commercial park was ready to start operations in October 2006.

## Project data

### Client:

Liegenschafts-Entwicklungsgesellschaft  
der Hansestadt Stralsund mbH

### Technical data:

#### Land side:

Sheet pile wall driven using a pile hammer lead  
Back-anchoring with the help of injection piles  
(approx. 20 m long)  
Steel construction to connect piles to sheet pile wall

#### Water side:

Floating-method installation of the sheet pile wall  
sections  
Flap anchors vibrated into hinterland embankment  
Soil filling with hopper dredger (Rainbow method)  
Deep compaction to increase the backfill's density  
Concrete superstructure with usual harbour instal-  
lations

#### Material required for quay wall:

1,600 t steel (foundation elements)  
50,000 m<sup>3</sup> soil for backfill  
800 m<sup>3</sup> concrete

### Construction period

September 2005 to July 2006

## Competence in marine works

An alternative proposal by HOCHTIEF provided for the use of flap anchors in order to reduce the construction costs for the client. This system can absorb high anchor forces while at the same time requiring comparatively little installation input. HOCHTIEF mounted the 25-meter flap anchors on the sheet pile wall by means of a hinged construction and vibrated the anchor plates into the prepared hinterland embankment with an underwater vibrator. The sand required for the subsequent ground filling was procured during the dredging works for securing the shipping channel in the Strelasund.

The tight timeframe presented a particular challenge for HOCHTIEF's marine works and harbour construction experts. While the land-side works were completed before the winter began, the exceptionally hard winter often made it impossible to continue the works in the water. For about eight weeks, the Strelasund was completely covered with ice so that icebreakers had to be used to support the work process.

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