

 **Commercial Buildings****Reference Details:****Owner**

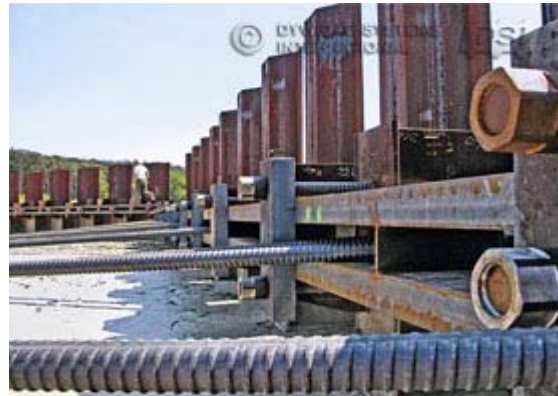
Hafenentwicklungsgesellschaft
Rostock mbH, Rostock,
Germany +++ **General**

Contractor JV Erweiterung
LP60 consisting of Bauer
Spezialtiefbau GmbH,
Schrobenhausen, Germany, and
Heinrich Hirdes GmbH,
Hamburg, Germany +++

Engineer INROS-LACKNER
AG, Rostock, Germany

DSI Unit SUSPA-DSI GmbH, LU
West Langenfeld, Germany

DSI Scope Supply of 46 pieces
GEWI[®] Tie Rods, Ø63.5 mm in
lengths varying from 20-40 m
including GEWI[®] couplers, 78
waling bolts made of GEWI[®]
Bars

**GEWI[®] Tie Rods secure Sheet Piling for Quay Wall, Germany****Relocation and extension of dock 60 in the port of Rostock, Germany**

The seaport of Rostock is the only universal port on Germany's Baltic Sea coast. Notably the handling of cargo has grown rapidly in the past few years, such that the port's capacity had to be expanded to achieve additional increases in shipping volume. Therefore, dock 60 was extended to more efficiently handle larger ships, particularly RoRo ships (roll on roll off). In order to extend northern dock 61 at the same time, the landing area of dock 60 was relocated to the south by 80 m. To accomplish this, the quay structure had to be extended by 60 m.

What made this quay extension project such a challenge was its proximity to the vibrationsensitive Warnow tunnel. To achieve delimitation of the dock in the direction of the tunnel to the south, the quay extension was widened after about 40 m in western direction by 26 m. At the recommendation of project engineering consultants INROS-LACKNER AG, a trapezoidal exit area was constructed on the landside that extends to the south.

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For the anchorage of the sheet piling intended for the quay wall, the contractor had to ensure that the tunnel slab of the nearby Warnow tunnel was not put in jeopardy as a result of vibrations caused by heavy hammering operations. A shore enclosure in the form of a mixed sheet piling was tendered that was to be anchored by means of injection piles. However, an innovative proposal to secure the sheet piling with GEWI[®] Bar tie rods was executed.

In order not to jeopardize the tunnel slab of the adjacent Warnow tunnel due to vibrations caused by hammering operations, soil exchange drills along the entire sheet piling axis were carried out prior to the driving of the sheet piles. Subsequently, the required sheet piles were vibrated into the soil minimizing the amount of vibration needed.

Installation of walers began coincident with the dredging operations. For this purpose, the contractor chose to weld 78 specially designed short 63.5 mm dia. bolts to the walers at an incline to facilitate the short delivery period guaranteed by SUSPA-DSI.

Following partial backfill, tie back walls were erected and the quay walls secured by means of tie rods. To this end, SUSPA-DSI supplied Ø 63.5 mm GEWI[®] Tie Rods in lengths varying from 10 to 15 m to the construction site "just in time". Upon arrival, the rods were assembled to the required lengths of 20-40 m very easily using GEWI[®] Couplers and installed horizontally in two construction stages. The ball bearings in the rod heads made possible the precise adjustment of the rod inclinations to 3-5°. Thus, movements of the wall caused by the concluding grouting operations could be accommodated without problems. A total of 46 GEWI[®] Tie Rods now secure the sheet piles of the extended quay wall in dock 60.