KAWASAKI STEEL TECHNICAL REPORT
No.17 (October 1987)

Construction of New Products-Berth for 80 000-DWT Vessels

Satoru Kenmochi, Tamotsu Kimura, Ichiro Okumura

Synopsis :

A new products-berth was designed to accommodate vessels up to 80 000 DWT, thus providing cost savings in ocean freight charges. In Chiba Works the design of the new products-berth was an absolute necessity, in order to utilize the cargo handling equipment and techniques more effectively and economically. The berth is a quay-type wharf structure supported on steel pipe piles. A structure 300-m long and 41-m wide was designed, with a dredge depth of -15.5 m. In this project, each work of dredging and

Construction of New Products-Berth for 80 000-DWT Vessels*



Synopsis:

A new products-berth was designed to accommodate vessels up to 80 000 DWT, thus providing cost savings in ocean freight charges. In Chiba Works the design of the new products-berth was an absolute necessity, in order to utilize the

2 Design Conditions

2.1 Soil Conditions

The geologic profile at the site is shown in **Fig. 2**. At depths of 40 m or more below the Arakawa River construction site datum level AP (Arakawa Pale), there is a sandy diluvium with *N*-values of 50 or more, which is composed of sandy group layers belonging to the Narita

Stratum. This diluvium was, generally, utilized as the bearing layer. At depths of 20 to 40 m below AP, clay

2.3 Loading Conditions

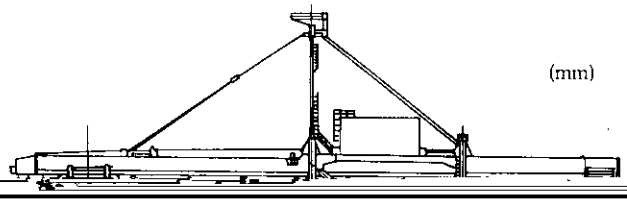
In view of steel products to be handled at this berth, the loads on the concrete deck plate of the berth are high. Three 150-tf [illegible]

time below the berth crane and the deck portion behind the crane rails was designed to serve as temporary storage with a superimposed load of 4 tf/m^2. Two berth cranes with a lifting capacity of 50 t and weighing 610 t each were considered, as well as the possibility of [illegible]

being close to each other at certain times in the loading cycle for a typical [illegible]

Products loader

(mm)



For this project, 451 steel pipe piles over open water were driven from pile-driving barges and using the KST system. The pile arrangement is shown in **Fig. 4**. The pile-driving barge were equipped with KB70 or MH-72B diesel hammers. KB45 diesel hammers were used with the KST system.

4 New Material and New Pile-Driving System

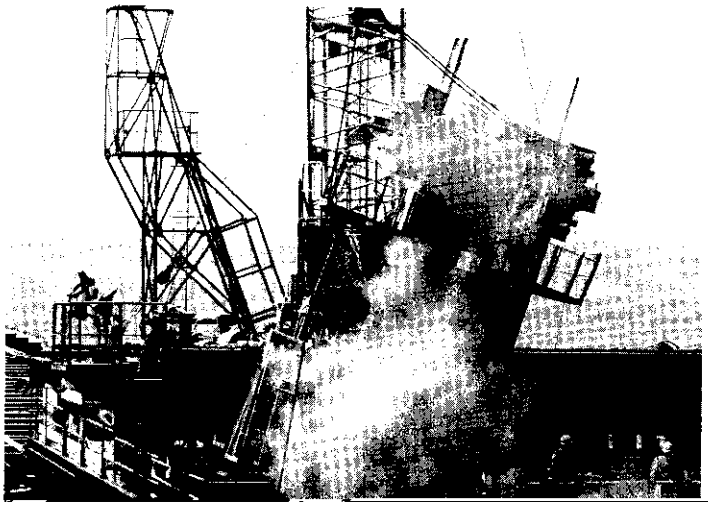
4.1 Heavy-Duty Anticorrosion Steel Pipe Piles (KPP Piles)

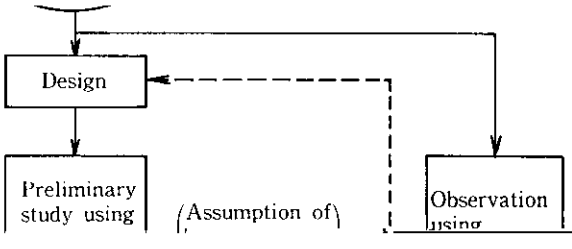
Heavy-duty anticorrosion steel pipe piles (KPP piles) developed at Kawasaki Steel were used for the founda-

of the schedule was easier and quality and safety improved.

Rubber sheets and nylon slings were used to prevent damage to the polyethylene coating of pipe during transportation and temporary storage of the KPP piles. In order to prevent damage from the steel anchor wires of the pile-driving barges during pile driving, already installed piles were covered with protective steel pipe or

crane. Slight damage to the polyethylene coating was repaired by melting a polyethylene stick. Since portions of the steel pipe to be welded were not coated with polyethylene to avoid the influence of welding heat, the steel surface of such portions was cleaned after welding and





ship between the static ultimate bearing capacity and dynamic ultimate bearing capacity obtained from static vertical load tests, and a modified bearing control chart was prepared. The bearing capacity control of the piles was based on this modified chart.