



#### HYDRAULIC HAMMER

Considering the soil investigation report which indicates the presence of a hard layer of sand stone encountered frequently along the Batinah coast, adequate hydraulic and vibro hammers had to be mobilized.

This 42 T hydraulic hammer is equipped with very precise controls to ensure exact positioning of the piles.



#### TUG BOAT

This vessel is vital to ensure successful logistical support in towing Kumzar barge loaded with plant equipment, materials and tools.



#### STEEL PILES

The berthing facility consists of a set of three piles to be connected together.

The distance between the piles takes into account the size and shape of ships that will be mooring against them.

#### PILE DRIVING

The hydraulic hammer is driving-in the piles.

The efficiency and productivity improved as the work progressed.

Three piles were driven in final position in a time lapse of 24 hours.



#### JETTY-BERTH C1A & C1B

The new Liwa Plastic project will generate products that have to be exported on vessels from a jetty berthing facility in the port of Sohar.

The consortium of CB&I – CTCI are carrying out package 1 which covers the steam cracker unit and their scope includes extension alterations and renovation of existing jetty.

The marine works were entrusted to Sarooj.

Although the volume of the work is not large, adequate marine equipment had to be mobilized to cope with the challenging requirement.

36 m long pipe, 1500 mm diameter were imported from China and the protection works were done in Sohar.

Special hydraulic vibro hammers were mobilized.

To minimize the work in-situ, pile caps were welded onto their support outside the water.

Existing bollards are to be replaced by new ones.

Considering that the existing jetty is still in operation a strict time frame had to be designed to minimize inconvenience of vessel movements.

7-day slots followed by 7-day waiting time were given to us to work day and night on marine works. Preparation works continued offshore during the idle period.

#### CAPS

Every three piles were to be capped and held together firmly.

Much of the controlled welding was done outside the water and the structure lifted in position so that final welding can be done in-situ.

