

## **Portable Piers**

### **How to Unload Ships Without Port Facilities**

By Jeff Spira

To unload ships without developed port facilities can be difficult. Traditionally to create a location where you can unload ships is expensive, time consuming, and requires access to the site by land, with developed highways to bring in the heavy equipment needed for the massive construction project. With a portable pier system though, a port can be made literally anywhere where ships can be brought in and unloaded. Originally conceived for the Normandy landings after D-Day during WWII to supply the personnel and materiel requirements of the Allied invasion of Europe, modern portable piers are inexpensive, light and easily erected.

Portable piers consist of a number of barges that serve double duty as carriers of the pilings and erection equipment when being towed at sea, and then later, to be jacked up and serve as the pier structure after the pilings have been driven in-place. The pier may be set up in one location for a certain period of time, then the structure taken down and moved to another location and re-erected to serve as a pier in another location entirely.

The secret to modern portable piers is the hydraulic jacks that raise and lower the barges to serve as double duty, transport barges and pier roadways. The best of these lifts the barges using ship style anchor chain rather than wire rope or other means. Anchor chain is the least affected by salt-water corrosion. On all four corners of the barge, these small hydraulic jacks raise the barges one link at a time using reliable hydraulic fluid power systems.

The sequence of installing the portable piers is straightforward. First tugboats bring in barges carrying pile drivers and pilings. The pilings are driven into the sea floor in at least the four corners of a barge especially designed to be both a barge and serve as a pier structure. Next, the hydraulic chain jacks are positioned atop the pilings and the barge lifted into place. If this structure is at least semi-permanent, the barge is then welded to the pilings to make a section of pier. A pinned arrangement could be designed so that the portable pier could conveniently be taken down in a very temporary application, as well.

This procedure continues for additional barges until a complete pier is complete. Tee or ell shapes are easily built, as well as multiple roadway paths in more complicated structure arrangements where multiple ships need to be accommodated. The ship mooring leg of the pier can be at whatever distance to the shore as needed to accommodate vessels of various drafts and to be used in coastlines with shallow or steep bottom angles. A few common components can be rearranged to make an enormous variety of possible combinations of shapes and configurations.

Like any port, portable piers are most useful when erected in protected waters. Nonetheless, with proper design techniques, there is no reason these structures can't be erected to take the full force of storm seas in areas where there is little option in their location.

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