



225 ton Goliath Crane

At Kingston Shipbuilding Yard, Port Glasgow for Lithgows Ltd

Structural Engineers

CLARKE CHAPMAN - JOHN THOMPSON LTD, SIR WILLIAM ARROL BRANCH

Steelwork Contractors

CLARKE CHAPMAN - JOHN THOMPSON LTD, SIR WILLIAM ARROL BRANCH

Judges Comments

This entry is an instance of where only structural steel could provide the solution. It demonstrates a high standard of design, both efficient and economic and with a clean and elegant appearance.

The crane is designed for transporting large prefabricated parts of ships, up to 225 tons each, and holding them accurately in position while they are welded to the main structure.

The crane portal consists of a main girder, fixed leg and a pinned leg, and has a clear span of 350ft and an overall length of 368ft. There are two crabs on the main girder, an upper and a lower, and because of the trapezoidal cross-section of the girder they can pass each other. There is one 75 ton lifting eye on the lower crab and two 75 ton eyes at 40ft centres on the upper.

The position of the lifting eyes allows the loads to be lifted and safely held in an inclined position for welding, and to be turned in the air up to an angle of 180° about the horizontal axis in line of the berth. The lower lifting eye can be adjusted ± 8 in under load in the direction of crane travel and thus permits accurate location of parts. Loads can be rotated horizontally from relative movement of the upper eyes, the lower remaining stationary.

The structure consists entirely of welded plate box girders, trapezoidal for the main girder and rectangular for the legs. Load is transmitted to the pinned leg through a neoprene bearing.

A number of advantages is claimed for this type of crane in shipbuilding including:

- The deflection of the girder is kept to a minimum.

- The constructional parts can be turned by moving the lower crab beneath the upper.

- Most of the mechanical and electrical units are housed in the weatherproof box sections.

- Maintenance is easy.

- Aerodynamic advantages increase the stability.

- Pleasant shape.

Bottom right. A view inside the main girder

