

# Double Hull Oil Tankers

## Chapter 4

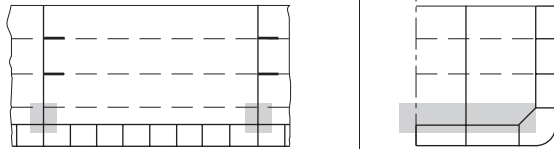
### SECTION 2

**Lloyd's  
Register**

AREA 5: Connection of bottom girders in double bottom tanks to transverse bulkheads

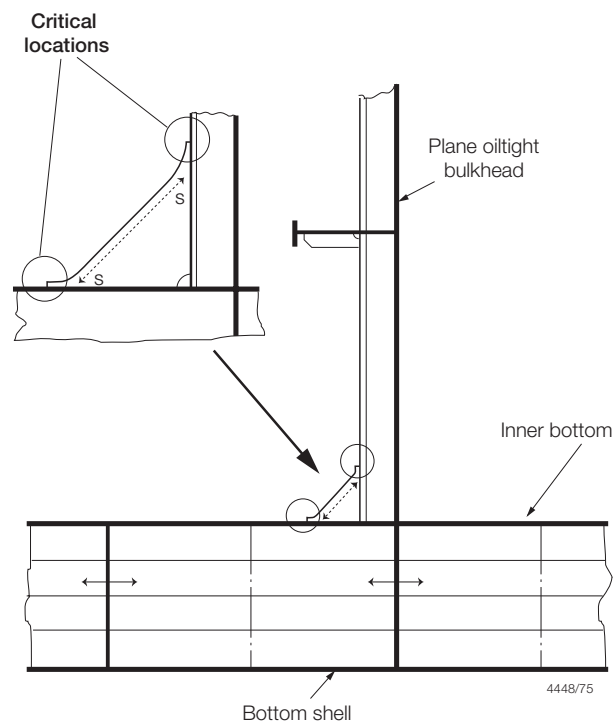
EXAMPLE No. 3: Higher tensile steel girders to vertical stiffener end brackets on plane transverse oiltight bulkheads

#### CRITICAL AREAS

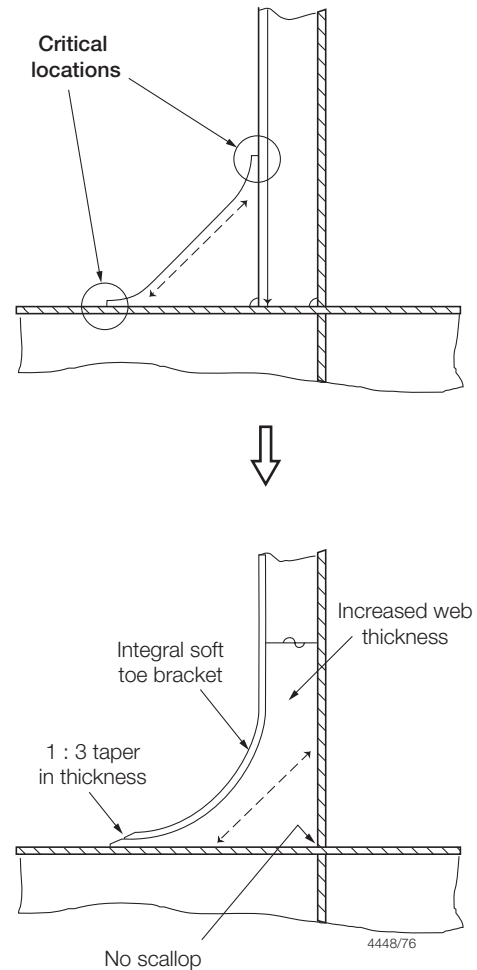


#### CRITICAL LOCATIONS

##### Bracket Toes



#### DETAIL DESIGN IMPROVEMENT



Minimum Detail  
Design Improvement

As a minimum, the detail design improvement is to be fitted, i.e. integral soft toe bracket.

Critical Location

Toe connections of vertical stiffener end brackets to bottom girders in double bottom tanks and vertical stiffeners.

Detail Design

Integral soft toe bracket to reduce peak and range of resultant stresses arising from cyclic external hydrodynamic pressure, cargo inertia pressure and hull girder global loading.

Building Tolerances

Enhanced alignment standard. The nominal distance between the centres of bracket toe thickness and bottom girder web thickness should not exceed 1/3 of the inner bottom thickness.

Welding Requirements

Fillet welding having minimum weld factor of 0,44 (Connection of end brackets to inner bottom plating). A wraparound weld, free of undercut or notches, around the bracket toe. A small scallop of suitable shape, which is to be closed by welding after completion of the continuous welding of bulkhead, is to be provided where scallop is eliminated. *See also* Pt 3, Ch 10 of the Rules for Ships.

DETAIL DESIGN GUIDELINES FOR DOUBLE HULL TANKER  
STRUCTURAL DETAILS

FIGURE  
5.3