MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF OCEAN ENGINEERING

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

13.10J/1.573J Structural Mechanics

Fall 2001

Problem Set 10

Assigned: Nov 7, 2001

Due: Nov 19, 2:30pm , 2001

(a) Problem 14.4

(b) Problem 14.18

(c) Problem 14.42

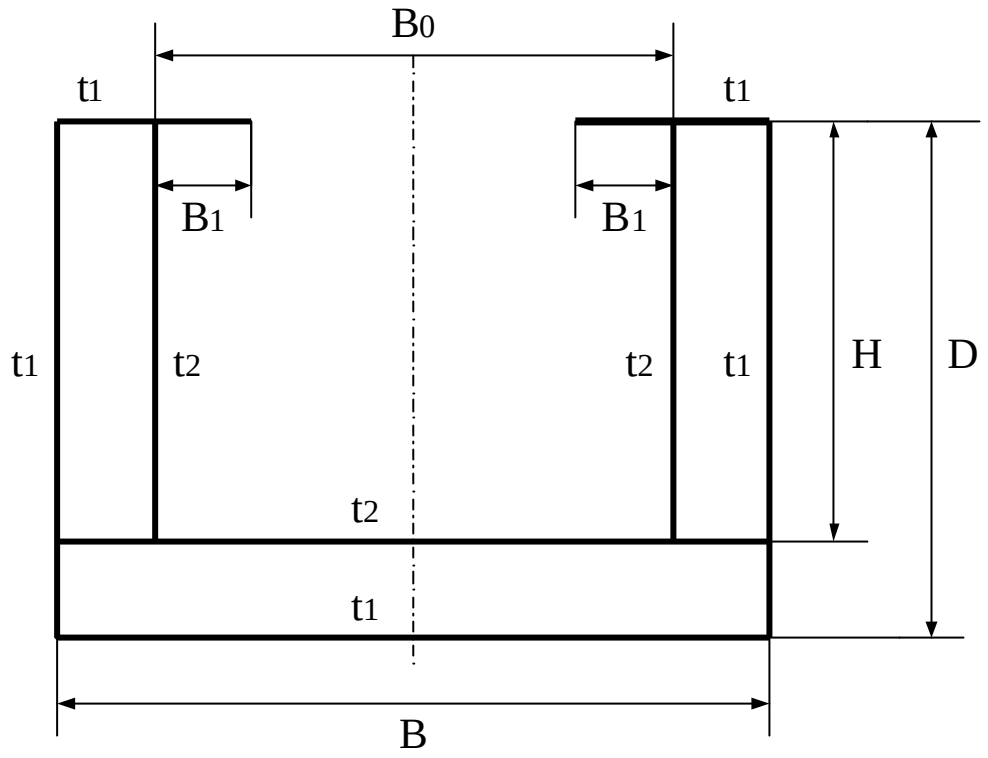
(d) Problem 14.46

(e) A typical cross section of an idealized ship is shown in Figure 1. If the ship is subjected to a torque of $3*10^6$ N•m about the longitudinal axis, compute

(1) The shear stress distribution on the cross section.

(2) The magnitude and location of maximum shear stress.

Here, the shear modulus is $G=1*10^{11}$ Pa.



B = 20m D = 15m H = 10 m B_1 = 3m

B_0 = 15m t_1 = 20mm t_2 = 16mm

Figure 1