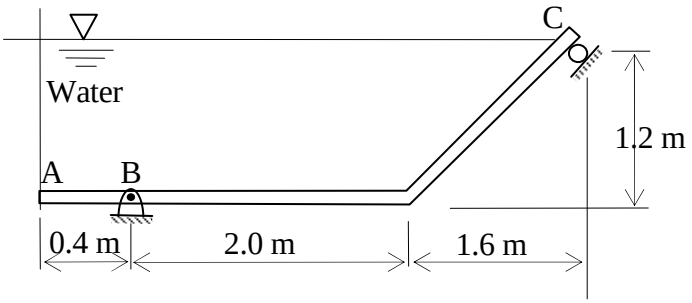
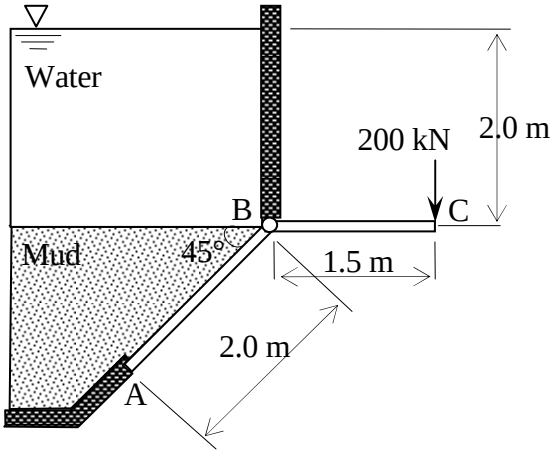
UNIVERSITY OF TORONTO
Department of Civil Engineering

CIV100F - MECHANICS – GROUP G (107)
Problem Set 10
Due: 5:00 pm on Monday November 19, 2012
In Dropbox #2 in GB422 (Computer Lab)

1. A 3.0 m-wide steel plate is used to support a body of fresh water as shown. If the density of water is 1000 kg/m^3, determine the support reactions at B and C. Neglect the weight of the steel plate. Show the results on a new sketch.



2. 3.0 m-wide gate ABC is supported by a pin at B and a point load at C. The gate has a mass of 300 kg between A and B. If the density of water is 1000 kg/m^3, and the density of mud is 1800 kg/m^3, determine the force that the gate exerts on the smooth stop at A.



3. A 6.0 m-wide concrete gravity dam is held in place by its own weight. If the density of concrete is 2500 kg/m^3, the density of water is 1000 kg/m^3, and the density of silt is 1760 kg/m^3, determine:

i.) the overturning moment;
ii.) the resisting moment in terms of d; and
iii.) the distance d that will prevent the dam from overturning.