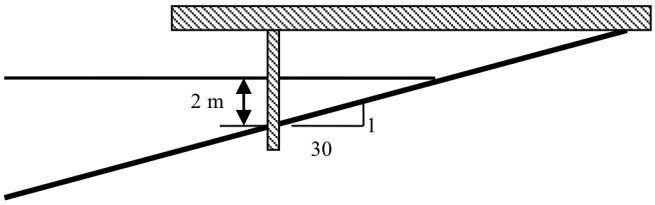
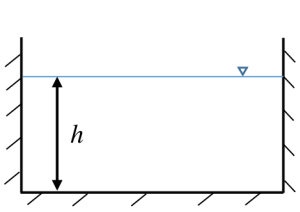
Due Thursday, March 8, 2018 11:40 am

1) You are building a small pier to be supported by piles (see figure below). The water depth at the front row of piles is $h(x)$= 2 m. The beach slope is 1/30. A wave buoy in the "deep water" measured the following wave conditions: Wave amplitude a = 0.5 m; wave period T = 12 sec.

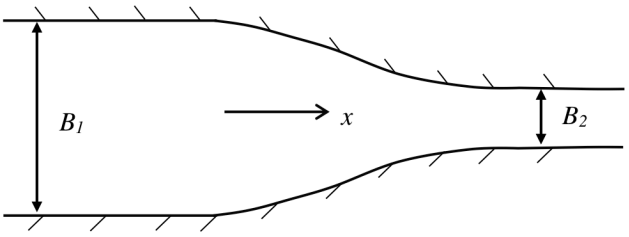
a) What is the minimum clearance needed to maintain a dry deck?
b) Are the waves at pile location "shallow water waves"?
c) What is the maximum onshore water particle velocity (u & w) at the location of pile?



2) A simple harmonic small amplitude progressive wave train propagates in a rectangular channel with a constant depth, h. The wave frequency is σ. The channel width has a smooth and gradual transition from B_1 to B_2 (see the following figure). Assuming that the wave amplitude in the channel section with width B_1 is A_1, what is the corresponding wave amplitude at the section where the width is B_2? (State your assumptions).



Cross-section



Top View