SUPERVISED WORK 2

Exercise 1.

A vertical gate 5 m high and 3 m wide closes a tunnel running full with water. The pressure at the bottom of the gate is 195 kN m-2. Determine the total pressure on the gate and the location of the centre of pressure $\gamma_w = 9810N/m^3$.

Exercise 2.

A circular lamina 1.25 m in diameter is immersed in water so that the distance of its edge measured vertically below the free surface varies from 0.6 m to 1.5 m. Find the total force due to the water acting on one side of the lamina, and the vertical distance of the centre of pressure below the



Exercise 3.

A gate at the end of a sewer measures 0.8 m by 1.2 m wide. It is hinged along its top edge and hangs at an angle of 30° to the vertical, this being the angle of the banks of a trapezoidal river channel. (a) Calculate the hydrostatic force on the gate and the vertical distance between the centroid of the gate, G, and the centre of pressure, CP, when the river level is 0.1 m above the top of the hinge.



Depth of rectangular gate along the bank of the trapezoidal river channel, D = 0.8 m. Width of rectangular gate perpendicular to the plane of the paper, L = 1.2 m