

TO: Professor A.P.S. Selvadurai**FROM: Meysam Najari****DATE: 18th November 2015****SUBJECT: Procedure for saturating Cobourg Limestone Specimens**

The following is the procedure for saturating Cobourg Limestone specimens:

- Vacuum saturation technique was used to saturate bench-size specimens of Cobourg Limestone.
- Each rock specimen was weighed before placing in the vacuum chamber.
- The sample was then placed in the vacuum chamber (Fig. 1) and water was added to the chamber up to one-third of the sample height.

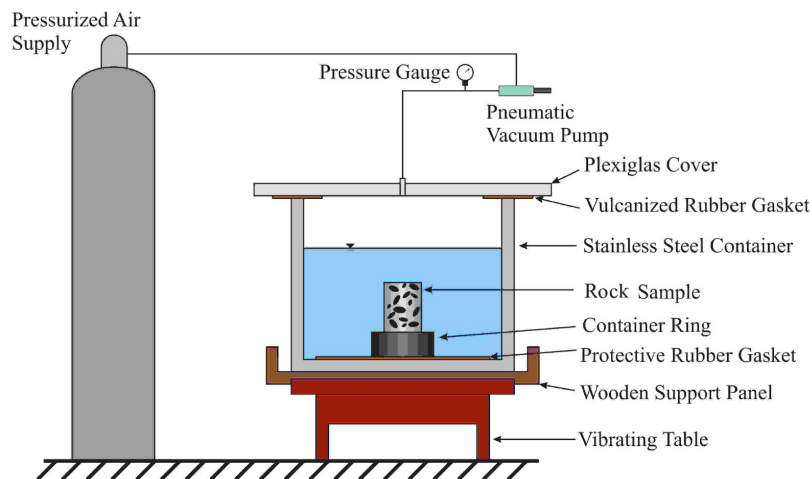


Figure 1: Schematic layout of the saturation chamber (after Selvadurai et al., 2011).

- A negative pressure of -80 kPa was applied to the chamber using a vacuum pump.

- The weight of the sample was then measured every day after removing the surface water using a dry cloth.
- The water level in the vacuum chamber was increased to two-third of the height of the sample after one day and above the sample height after 2 days of saturation. The aim of this practice is to reduce the possibility of air pockets getting formed in the rock during the saturation process.
- The saturation process should be terminated after the gradual increase in the sample weight stops.
- Using a shake table to agitate the sample, while under negative pressure, could help the removal of air bubbles from the rock.
- The sample was then kept in water under zero vacuum to ensure that any residual pressures dissipated prior to conducting any hydraulic experiment. The duration varies from sample to sample depending on size and permeability.