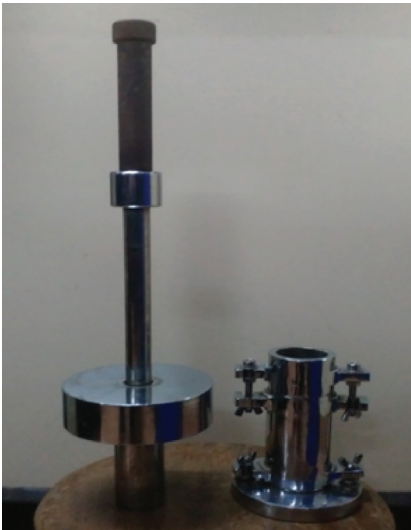


## Miniature California Bearing Ratio (CBR) apparatus

A miniature CBR apparatus was fabricated which is very handy and portable, unlike to that of the standard CBR apparatus which is very heavy and consumes lot of time and effort for conducting the test. This apparatus is very useful in improving the soil properties especially with the new innovative nanotechnology based materials as the apparatus would require lesser quantity in mixing with respect to the lesser size of the mould.

The apparatus fabricated comprises of a chrome plated brass mould and a drop hammer fitted in

supporting frame. The mould is 38.02 mm internal diameter and is 100.6 mm in height. Weights of 1 kg and 2.51 kg measuring 7 cms and 11 cms in diameter respectively and which are 3.5 cms in thickness are used as dropping weights for compaction of the soil specimen corresponding to standard Proctor and modified Proctor test. The plunger is a MS rod of total length 112.6 mm of a tapered section. The dimensions of the spacer disc and the annular weights fabricated in the proposed CBR assembly



Proposed mini CBR mould and hammer assembly



Mini CBR plunger with spacer disc and annular weight

were also obtained by transferring the ratios of depth of the standard CBR mould to the proposed miniature CBR mould. The plunger proposed in this assembly corresponds to 12.92 mm and the ratios for penetrations corresponding to 2.5 mm and 5 mm are obtained as 0.64 mm and 1.28 mm respectively for a D/d ratio of 2.95.

Modified CBR tests were carried out on granular Powai soil and fine grained marine clay and the results obtained were as follows:

For granular Powai soil, soaked CBR obtained for 0.64 mm penetration in case of mini CBR = 1.27 \* soaked CBR value for 2.5 mm penetration of conventional modified CBR test.

For fine grained marine clay, soaked CBR obtained for marine clay for 0.64 mm penetration in case of mini CBR = 1.10 \* soaked CBR value for 2.5 mm penetration of conventional modified CBR test.

From the above, it is evident that the apparatus developed provides more realistic values for fine grained soils in a lesser effort and time.