Concrete

Lecture - 3

Course Coordinator
Dr. Raju Sharma
Assistant Professor
Department of Civil Engineering
Thapar Institute of Engineering and Technology
Patiala, Punjab

Content

1. Slump Test
2. Compacting Factor Test
3. Vee Bee Test
4. Flow Table Test

Workability

☞ *Workability can be measure*

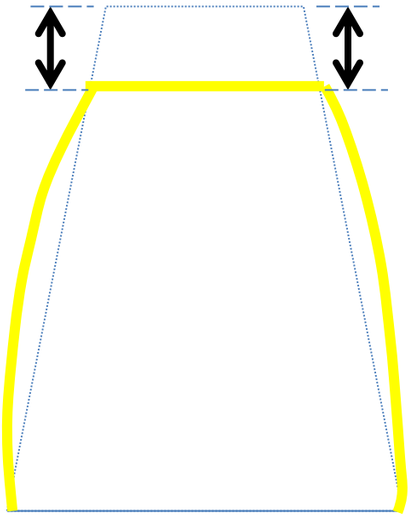
Slump Test

Compacting Factor Test

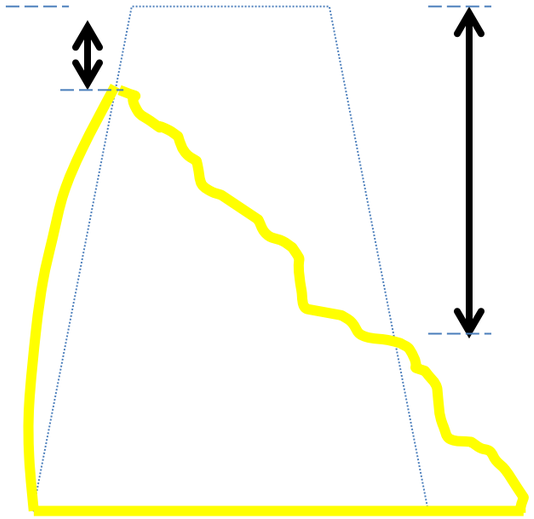
Flow Test

Vee Bee Consistometer Test

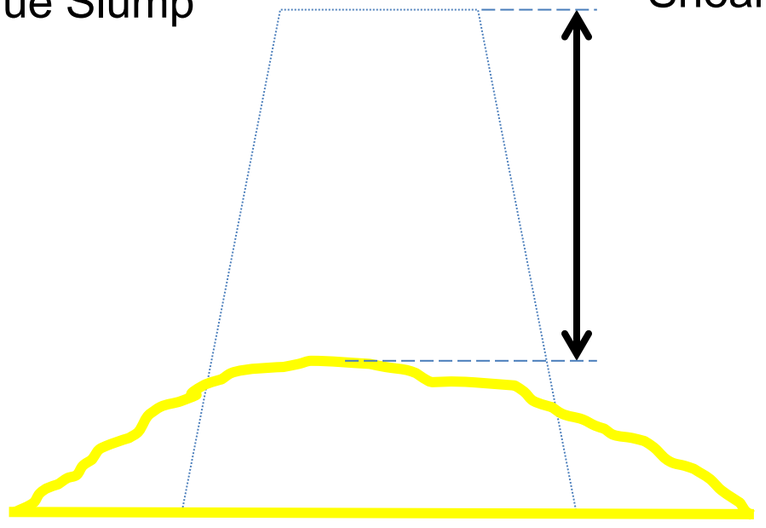
Slump Test



True Slump

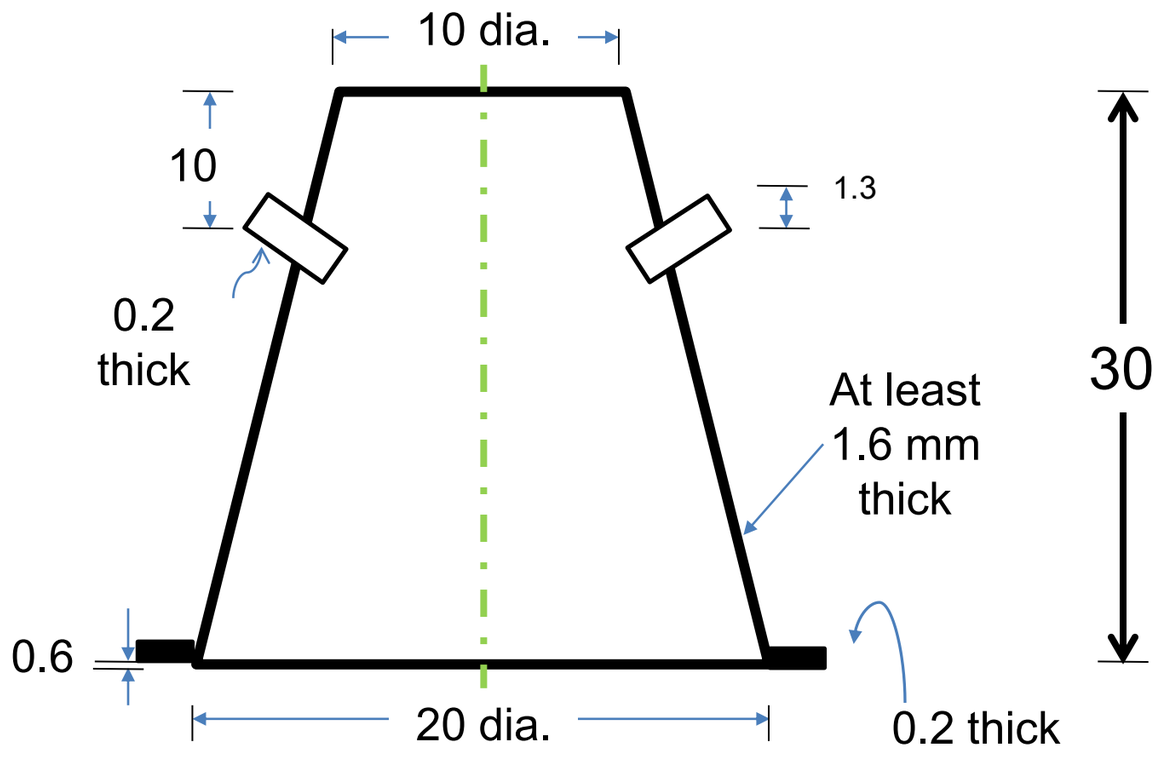


Shear



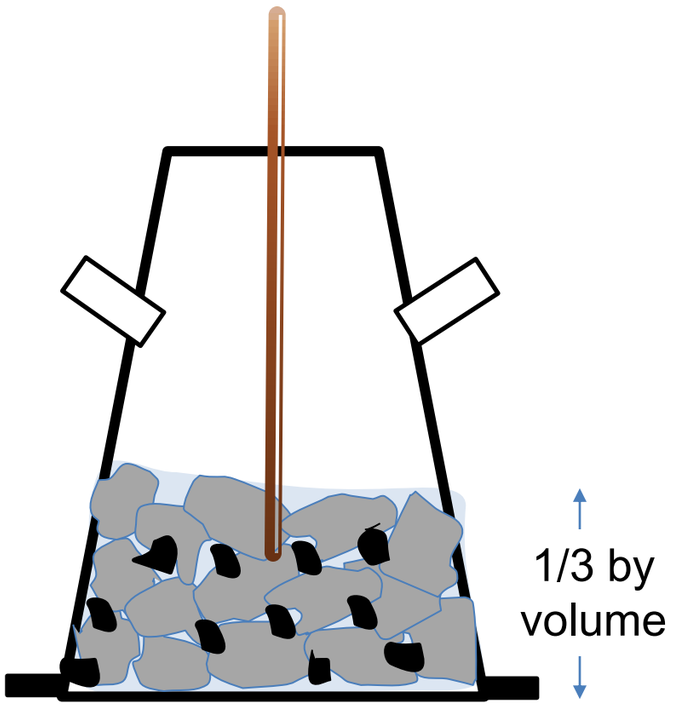
Collapse

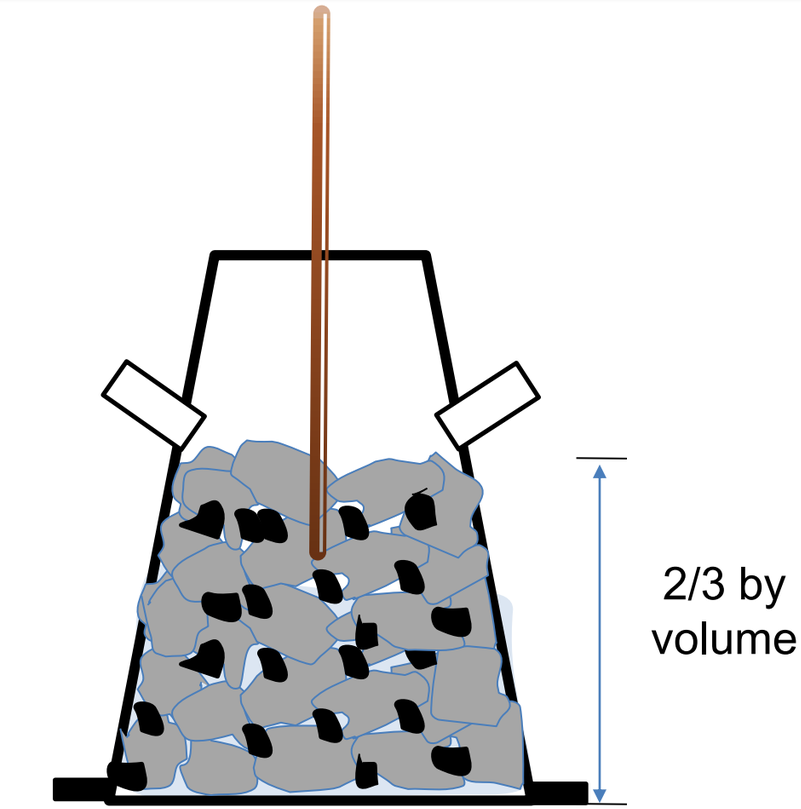
Equipment Detail

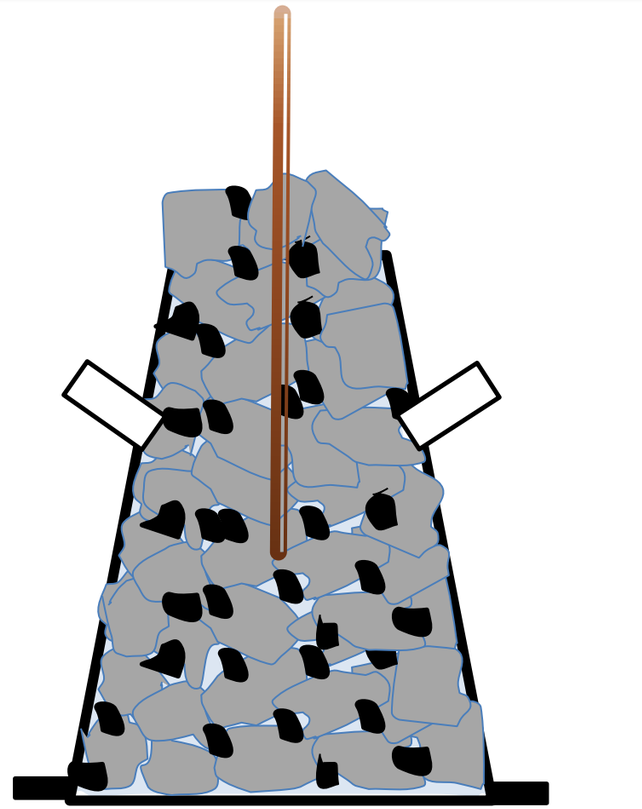


All dimensions are in centimetres

Procedure to Conduct Slump Test

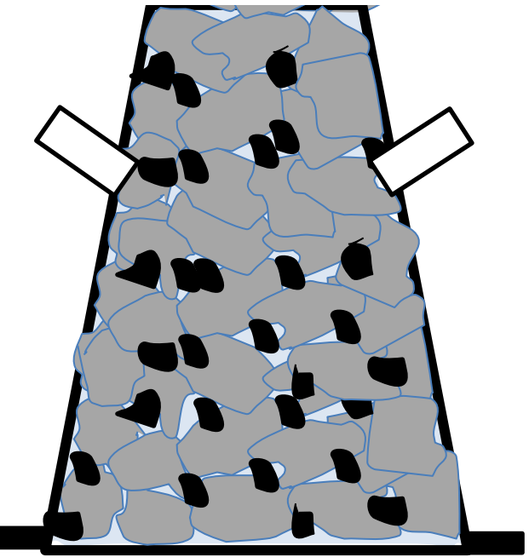






Apply 25 strokes on each stage. During Stage III, Fill cone to overflowing and again rod 25 times with rod just penetrating into it, but not through, the second layer Distributed Strokes evenly.

Procedure to Conduct Slump Test

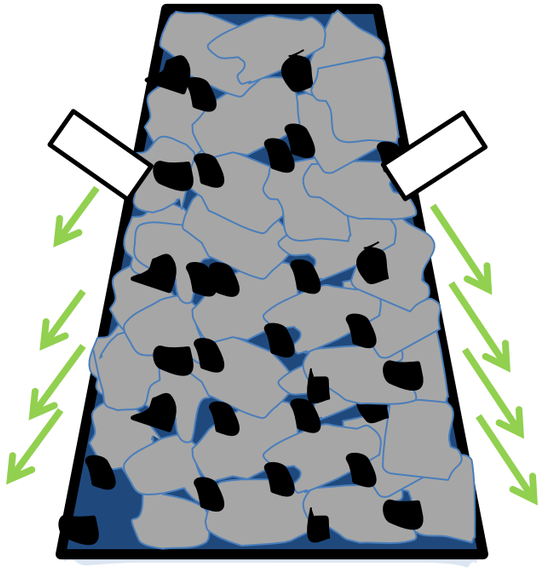


Foot here

Foot here

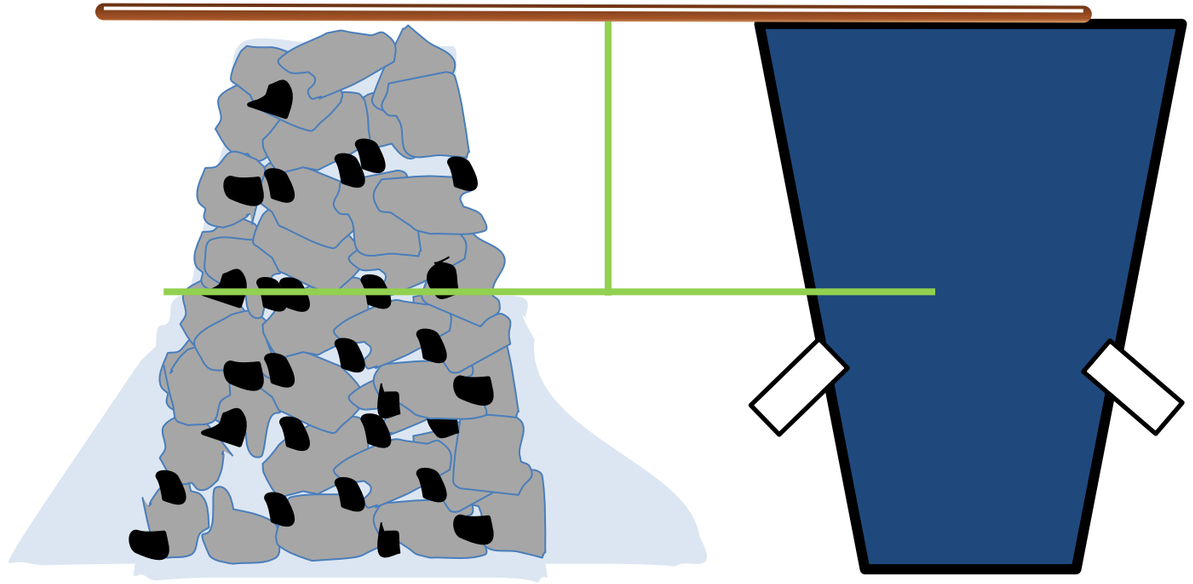
Stage IV

Strike off excess concrete from top of the cone with the steel rod so the cone is exactly full



Stage IV

Immediately after stage IV lift the mould within 5± 2 sec. Time duration from filling the mould to removing the mould must be completed in 2-1/2 min.



Stage VI

Place the steel rod horizontally and measure the distance steel road to the centre of the displaced concrete

Compacting Factor Test

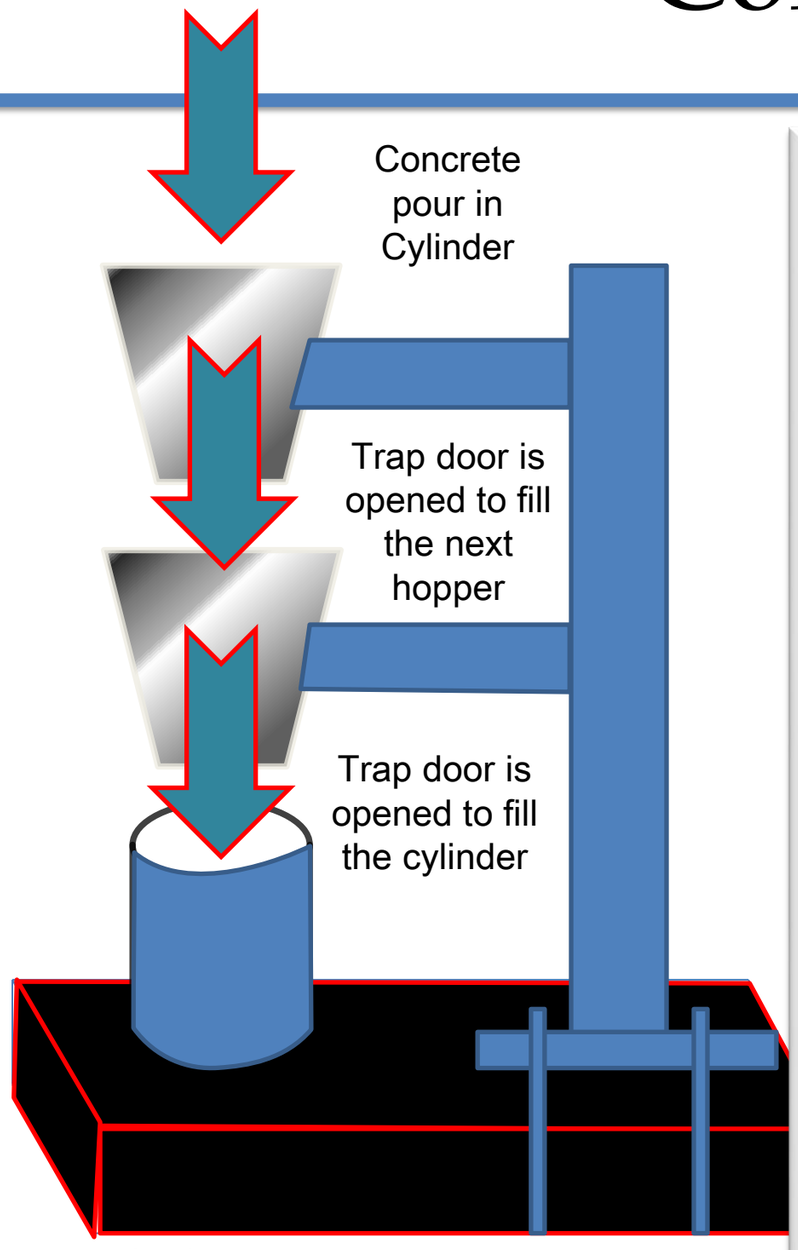
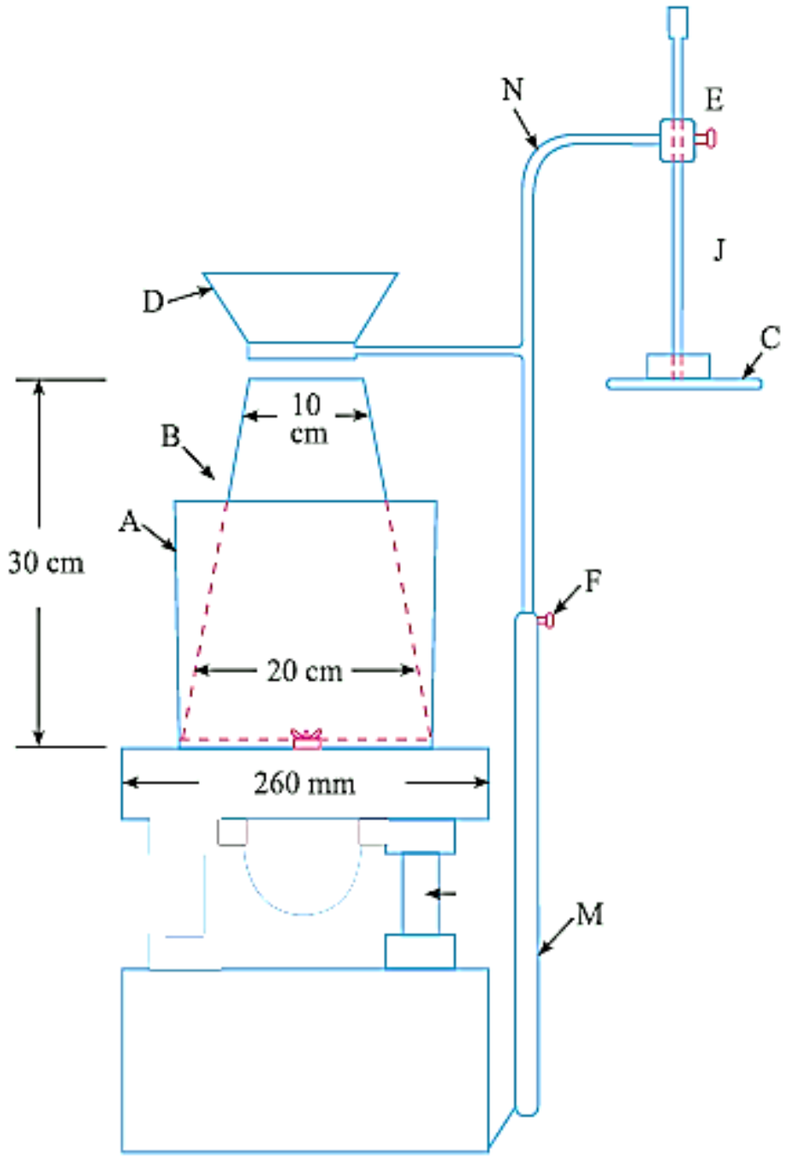


TABLE I ESSENTIAL DIMENSIONS OF THE COMPACTING FACTOR APPARATUS FOR USE WITH AGGREGATE NOT EXCEEDING 38 mm NOMINAL MAXIMUM SIZE

(*Clause* 5.2.2.1)

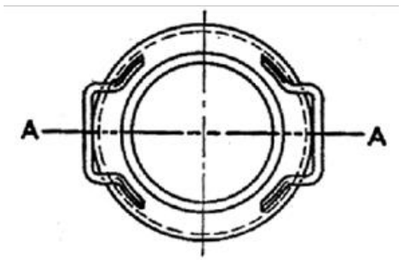
DETAIL (*see* FIG. 2)	DIMENSION cm
Upper hopper, *A*	
Top internal diameter	25·4
Bottom internal diameter	12·7
Internal height	27·9
Lower hopper, *B*	
Top internal diameter	22·9
Bottom internal diameter	12·7
Internal height	22·9
Cylinder, *C*	
Internal diameter	15·2
Internal height	30·5
Distance between bottom of upper hopper and top of lower hopper	20·3
Distance between bottom of lower hopper and top of cylinder	20·3

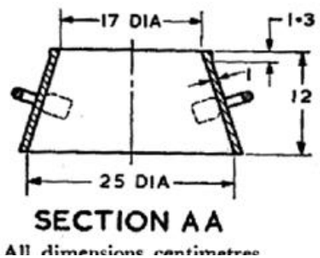
Vee Bee Test



Slump cone is placed inside the sheet metal cylindrical pot of the consistometer. The glass disc attached to the swivel arm is turned and placed on the top of the concrete in the pot. The electrical vibrator is then switched on and simultaneously a stop watch started. The vibration is continued till such a time as the conical shape of the concrete disappears and the concrete assumes a cylindrical shape. This can be judged by observing the glass disc from the top for disappearance of transparency. Immediately when the concrete fully assumes a cylindrical shape, the stop watch is switched off. The time required for the shape of concrete to change from slump cone shape to cylindrical shape in seconds is known as Vee Bee Degree. This method is very suitable for very dry concrete whose slump value cannot be measured by Slump Test, but the vibration is too vigorous for concrete with a slump greater than about 50 mm.

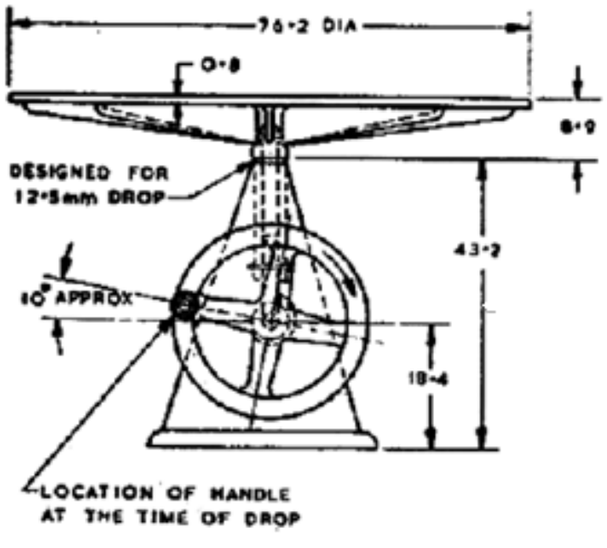
Flow TableTest





SECTION AA

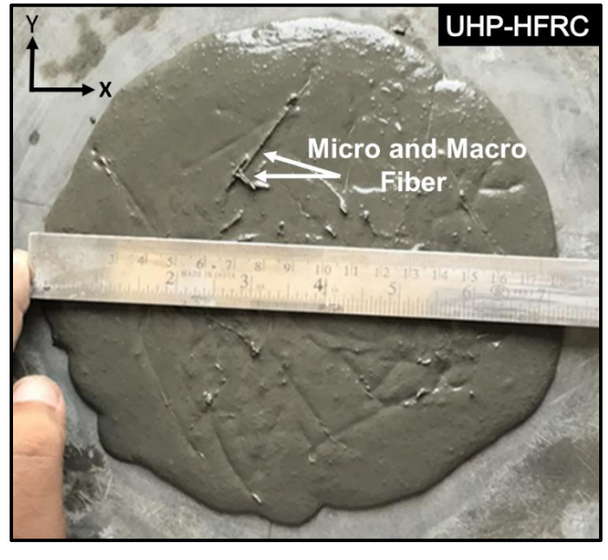
All dimensions centimetres



- The mould should be wet and clean
- The mould should placed at the centre of the table
- The mould should be filled in two layer and each layer subjected to 25 stroks with 16 mm diameter metal road.
- The excess concrete which has overflowed the mould shall be removed and the area of the table outside the mould again cleaned. The mould shall be immediately removed from the concrete by the steady upward pull.
- The table shall then be raised and dropped 12.5mm, 15 times in about 15 seconds. The diameter of the spread concrete shall be the average of six symmetrically distributed caliper measurement read to the nearest 5 mm.

Flow (%) = $\frac{spread\ diameter\ in\ cm - 25}{25} \times 100$

Flow TableTest



Indian Standard Code to Determine Workability

IS : 1199 - 1959
(Reaffirmed 1999)

Indian Standard

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 9

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- Slump Test
- Compacting Factor Test
- Vee Bee Consistometer Test
- Flow Test

Summary

- *Slump Test*
- *Compacting Factor Test*
- *Vee Bee Test*
- *Flow Table Test*

THANK YOU