Slump test of concrete - Step By Step Procedure with Report

Why to do slump test?

A slump test of concrete is done to check the workability of concrete. It also helps to know the water required to construct the structure with concrete.

It is performed before casting of concrete into formwork. Here, I shall tell you how to perform a slump test of concrete at site as per 1199-1959.

Apparatus required

1. Slump cone with its base plate.
2. This test also called frustum whose upper diameter is 50 mm and the bottom diameter is 100 mm and the height is 300 mm.
3. Steel rod of diameter 16 mm and 600 mm long.
4. Non porous base plate.
5. 80 measuring scale.

Procedure for Slump test of concrete
Take the slump cone and put on its base plate.
Now, the required concrete should be taken and poured into a slump cone.
Keep in mind that only pour (1/4)th part of the cone at first.
After that, compact the concrete with the help of a tamping rod of diameter 16 millimeters and 600 millimeters long.
The concrete should be tamped about 25 to 30 times with a steel rod.
Again fill the concrete about half part of cones and repeat the same process.
Finally filled up to the surface of the cone and again compacted.
Now, clear the surface of the cone to remove the overflow of the cone to make it a plane.
Now, remove the slump cone.
The filled concrete of the cone will now begin to fill from its conical shape.
Now, initially the height of concrete was the same as the height of the cone.
But after removing it, it will decrease its height.
Note the reading of the concrete height before and after removing the slump cone.
• This reading is taken with the help of a steel rod which has coated with measuring dimension in millimeter.
• Finally the reduced height of concrete will be the slump value of concrete.

Taking Measurement of Slump Value

**Report of slump test**

Initial height of concrete \((A) = 300 \text{ mm}\)

Final height of concrete \((B) = 250 \text{ mm}\)

Slump value \(= (A-B) = 300 - 250 = 50 \text{ mm}\)

**Types of slump**

1. True Slump
2. Shear Slump
3. Collapsible Slump

Types of slump

**Recommended value of slump for different Structure**

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Construction</th>
<th>Recommended Minimum</th>
<th>Recommended Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pavement</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Unreinforced footing</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>Reinforced foundation footing and walls</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>Reinforced slabs and beam</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Column, retaining wall</td>
<td>75</td>
<td>150</td>
</tr>
</tbody>
</table>
Recommended value of slump for different Structure

Precaution while Testing

1. Concrete should not be poured into a slump cone at once. It should be layer by layer.
2. The compaction should be done with a steel rod of standard dimension.
3. Slump value should be taken carefully.
4. Overflow concrete should be removed.
5. The slump cone and base plate should be cleaned properly.

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