BULKING OF SAND

OBJECTIVE

To study the bulking behaviour of the given sample of fine aggregate

BACKGROUND INFORMATION

In volume batching of concrete, dry quantity of fine aggregate to be added depends upon the volume of cement. Free moisture forms a film around each particle. This film of moisture exerts what is known as surface tension which keeps the neighbouring particles away from it. Therefore no point contact is possible between particles. This causes bulking of sand means increases in volume of sand.

EQUIPMENTS AND MATERIALS

1) 250 ml measuring jar,
2) Weighing machine etc.

PROCEDURE

1) Take out about 250gm of sand and pour it into a pan.
2) Add 2% (by weight) water and mix it well.
3) Pour the sand sample into a 250ml measuring cylinder and consolidate by shaking.
4) The surface is levelled. The reading is measured as Y1.
5) Take out the whole quantity of sand and continue the experiment by adding 2% water more each time and note the corresponding volume of sand until the dump sand volume starts decreasing.
6) Beyond this point, add 4% more water each time until the sample become fully saturated.
7) To standard cylinder sample in measuring cylinder, add 50ml water more and stir sample well and note down surface level of sand.
8) Take the reading at the sand surface (Y ml)

OBSERVATIONS TABLE AND CALCULATIONS

Percentage Bulking of Sand = (Y1-Y) x 100 /Y

PRECAUTIONS

Shake the mixture properly to remove the entrapped air.

RESULT AND DISCUSSION

The percentage of bulking of fine aggregate is

REFERENCES

1) IS : 2386 (Part III) – 1963 (Reaffirmed 2002)