

## GOVERNMENT OF KERALA

15738/DC2/2011/LSGD

Local Self Govt (DC) Department,  
Thiruvananthapuram,  
Dated: 30-3-2011.

Circular

Sub:- LSGD- Quality Control Systems in ULBs for BSUP& IHSDP Projects -  
Instructions for conducting mandatory test-Reg

- Ref:-1. Note no. KS/G/2983/2009 dated 14/02/2011 of Executive  
Director, Kudumbashree  
2. Note no. DBI/1912/2011/LSGD dated 28/2/2011 of Chief Engineer, LSGD

As per the letter 1<sup>st</sup> cited the Executive Director Kudumbasree has reported that a list of mandatory tests (their periodicity/ frequency) to be conducted at the ULB level so that the State can ensure good quality of works under JnNRUM. Most of the works undertaken in BSUP& IHSDP works are building works. The materials used for building works such as bricks, coarse aggregate, fine aggregate, cement, steel, water are to be tested for ensuring quality. The quality of concrete is decided according to the quality of materials used, water-cement ratio, mixing, conveyance, placing, compactions and curing.

The specification given in the schedules attached with the agreement clearly suggests to carryout the works according to the standard specifications. Mandatory tests are also to be conducted for ensuring the quality of works. How ever, It is noticed that some of the Engineers are not aware of such mandatory tests.

In the above circumstances ,for ensuring the quality of works, the ULBs should conduct the following Mandatory Tests for ensuring the quality of works under BSUP& IHSDP projects .These tests are to be conducted in the specified frequency during the entire period of the projects and keep separate Register for verification in future. The details of mandatory tests are also available in any of the books written for "*Building materials*" and relevant *IS codes* of practises.

**1. Brick**

## 1) Size:

Nominal size of country burnt bricks is 23x11.5x7.50 cm. The tolerance limits shall be

- 1) +/- 3mm on long side.
- 2) +/- 1.5mm on height and breadth.

## 2) Water absorption.

Shall not be more than 15% by weight.

## 3) Crushing strength.

Shall not be less than 3.5 Kg/cm<sup>2</sup>, arrived at on an average of 6 bricks tested.

## 4) Drop down test

Bricks dropped from 1.0 m height shall be intact.

- 5) Frequency of testing  
As and when source of supply changes.

## 2. Water

- 1) pH of water: shall not be less than 6.
- 2) Organic impurities: less than 2000 mg/litre
- 3) Inorganic impurities: less than 3000 mg/litre
- 4) Sulphites(SO<sub>3</sub>): less than 400mg/litre.
- 5) Chlorides (Cl): less than 500mg/litre for RCC works
- 6) Chlorides (Cl): less than 2000mg/litre for other works
- 7) Suspended matter: less than 2000mg/litre.

Frequency testing: Once in 3 months or when the source changes.

## 3. Steel

- 1) Mean diameter: Checked on 3 samples of each size.
- 2) Weight per meter: Checked on 3 samples of each size on a 1.0m long piece.
- 3) Ductility (On bars below 20 mm dia): 3 times bending should not cause break.
- 4) Tensile strength of Steel bars: To be ascertained at laboratory level on each size of bars

Frequency of testing: On every fresh batch upon arrival.

## 4. Cement

Manufacture's test certificate of every batch is mandatory.

## 5. Fine Aggregate

Shall confirm to zone I as designated in IS 383. Sieve Analysis to be carried out at site, Particle size distribution.

10mm	-	100 % passing
4.75mm	-	90 to 100 %
2.36mm	-	60 to 95 %
1.18mm	-	30 to 70 %
600microns	-	15 to 34 %
300microns	-	05 to 20 %
150microns	-	0 to 10 %

## 6. Coarse Aggregate

Particle size distribution.

40mm	-	100 % passing
20mm	-	95 to 100 %
4.75mm	-	30 to 50 %
600microns	-	10 to 30 %
150microns	-	0 to 06 %

Frequency of testing: When the source changes

## 7. Concrete Work

### 1) Mandatory test

- a) Slump test: 50/100mm for roofs, beams, slabs etc tolerance is 25mm
- b) Cube test: As per IS 516-2000, Results of individual cubes shall not vary more than 15%

Frequency: Six cubes for every 50m<sup>3</sup> of concrete or part thereof.

### 2) Stripping of formwork (OPC)

- 1) Walls and Columns after 16 to 24 hours
- 2) Slabs with props left -7 days.
- 3) Beams with span less than 6m with props left- 14 days.
- 4) Beams with span more than 6m with props left- 21 days.

### Practical Recommendations:

- a) Roof slabs shall have a minimum slope of 1 % accommodated in the slab itself (not in the plastering works)
- b) Rain water down pipes shall be minimum 100 mm in diameter.

### Mandatory tests for Road Works at site level.

#### 1) Earth work :

- a) Dry sieving
- b) Wet sieving
- c) Liquid limit
- d) Plastic limit
- e) Proctor density

Plasticity index shall be less than 45 %  
Compaction at OMC

CBR Value less than 1.76 gm/CC

Frequency of testing: 1 per 4000m<sup>3</sup> of soil.

Sub Base- WBM works (Gradation Test)

90mm	- 100 % passing
63mm	- 90 to 100 %
53mm	- 25 to 75 %
45mm	- 0 to 50 %
4.75mm	- 0 to 5 %

Residue shall not greater than 23 %.

Frequency: One test for 500 m<sup>3</sup>.

Base Course (36mm) WBM

63mm	- 100 %
53mm	- 95to 100 %
45mm	- 65 to 90 %
22.4mm	- 0 to 10 %
11.2mm	- 0 to 5 %

Residue shall not be greater than 23 %.

Frequency : One test for 500 m<sup>3</sup>.

Post job test : Field density by sand replacement method.

Frequency : One test for 2000 m<sup>2</sup>.

Binder content : at designated lab frequency 1 per job.

Temperature test : 165 centigrade frequency regularity.

Viscosity test : One per 10 tonnes

Asphalt Gradation

22.5mm	-	100 % passing
11.2mm	-	0 to 5 %

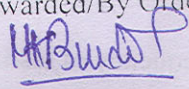
M. Unnikrishnan,  
Additional Secretary.

To

The Executive Director, Kudumbashree, Thiruvananthapuram  
The Director Urban Affairs  
The Principal Accountant General, (Audit), Kerala Thiruvananthapuram.  
The Accountant General, (A&E), Kerala Thiruvananthapuram.  
All Mayors of Corporations (Through the Director of Urban Affairs)  
All Chairmen of Municipalities (Through the Director of Urban Affairs)  
All Secretary of Corporations/Municipalities (Through Director of  
Urban Affairs)  
The Executive director, IKM. (for publishing in the official web site)

Copy to: PS to Minister (LSGD)  
PA to Addl. Chief Secretary, LSGD.  
PA to Secretary, LSGD

Forwarded/By Order.

  
Section Officer.