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**GOVERNMENT OF ANDHRA PRADESH
ROADS & BUILDINGS DEPARTMENT**



Circular Memo.No. 12582/Vig.I/1/2005-1, Dated: 17.10.2006.

Sub: Quality Control in Road works – Deficiency in the size metal (aggregates), thickness, Binder Quantity in road works – Recovery to be effected from the contractors and disciplinary action to be taken on the officers responsible - Certain Instructions – Issued.

Ref: 1) E-in-C(R&B) Admn&Roads Circular Memo No.711/D2/99-3, dt.15.4.1999.
2) Government T, R&B department Memo. No. 12582 / Vig. I / 1 / 2005-1, dt. 03.11.2005.
3) E-in-C(R&B) Admn&Roads Circular Memo.No. 12582/Vig.I/1/2005-1, Dt.23.03 .2006.

The instructions issued in this office circular memo 3rd cited is herewith cancelled.

Modified instructions are issued as follows.

- TS*
Communicate
to all circles
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1. The Vigilance Commissioner examined the matter with respect to ensuring execution of civil works with good quality as per the standards and specifications indicated in the agreements. While examining this aspect, the Vigilance Commissioner has communicated observations to Government to examine/review the existing circulars. On the above observations the Government have issued guidelines and requested to issue revised guidelines vide Memo reference 2nd cited.
 2. After detailed discussions and examination of the matter, it has been decided that the following guidelines shall be followed in regard to maintenance of quality, quantity and penalties to be imposed for deficient execution of work on the contractors vis-à-vis the disciplinary action to be taken against the concerned engineers:-

I. FORMATION

a. Density: The density of the materials shall conform to MORTH table 300-1. The earth work shall be compacted to the required density .i.e. 95% for OMC.

The determination of density shall be as per IS: 2720(part28)

Acceptance criteria: The density test location shall be chosen only through random techniques as closer as required to yield the minimum number of test results for evaluating a day's work. At least one measurement of density for every 1000 square meters of compacted area shall be taken. The number of tests in onset of measurements shall be 6 (if non-destructive tests are conducted it shall be double). If considerable variations are observed between individual density results minimum number of tests in one set shall be increased to 10. Control shall not be based on any one test but on the mean value of a set 5-10 density determination. The mean density shall not be less than the {specified density + [1.65 - (1.65 / (no. of samples) 0.5)] times the standard deviation }

b. RECOVERY FROM CONTRACTOR: If any deviation is beyond the above limit, the work shall be rejected.

II. GSB/WMM/WBM

a. Thickness: The average thickness shall be based on 5 points in a cross section for two lane and 3 points for single lane and proportionately increased for additional lanes. (At least two cross sections in 1 Km length or less). The average thickness shall not be less than specified thickness.

b. Over Size of Metal: Whenever graded metal is used

- i) No over size will be allowed over and above the range specified as per in the first sieve (top sieve)
- ii) Over size in sieves other than top sieve – the difference in the rates of the metal of the specified size and next higher size in the **specified grade should be recovered for that quantity of over size metal.**
- iii) However if the over size in any sieve other than top sieve is found to be **above 30 %**, Metal collected should be rejected.

c. Weight: The physical requirements shall conform to MORTH table 400-6 / 400-10. The density of the compacted layer shall be at least 98% of the maximum dry density as determined for the material as per IS: 2720 (Part 8). The weight of material (for WBM) shall not be less than the quantity specified in the data as per density of metal to be recorded prior to usage. However 10% tolerance may be permitted due to crushing of edges and corners, deviations in the measurement pit (0.5m x 0.5m)

RECOVERIES:

1. Shortfall in thickness/quantity /weight

- a) If shortfall is **up to 10%** in any one of the above parameter i.e., **specified oversize / thickness / weight** in a km, recovery @ **twice** the agreement rates to be effected for the deficiency.
- b) If shortfall is between **10% and 20%** in any one of the above parameter i.e., **specified oversize / thickness / weight** in a km, recovery to be effected @ **thrice** the agreement rates for the deficiency.
- c) If shortfall is **more than 20%** in any one of the above parameter i.e., **specified oversize / thickness / weight** in a km, the work is to be rejected and redone.
- d) In case both deficiency i.e., thickness & weight of metal is noticed, the recovery shall be for the maximum of the two deficiencies.

III. SDBC/BM/DBM Bituminous items:

a. Thickness: The average thickness shall be the arithmetic mean of the difference of levels before and after construction at all grid points in that area i.e. at every 10m c/c longitudinally and 0.75m and 2.75m on two lanes, 1.25m on single lane transversely.

b. Binder quantity: The Binder content shall have to be tested at the plant or mix at the time of laying. Research carried out in the country revealed that with manage of time there would be loss of bitumen in layer which may occur from day one. Further the testing procedure / sampling itself varies from laboratory to laboratory, person to person and the results are subject to efficiency of the personnel as well as equipment.

The MORTH specification gives a tolerance of $\pm 0.30\%$ which infact is for the plant mix and cannot be straight away applied for tests conducted on the surface after lapse of time. The bitumen extraction tests shall have to be conducted as early as possible and in no care beyond 6 months.

Considering all these aspects the variations in Binder content and recoveries to be effected are:

- 1) 0-10% recovery to be effected @ twice the agreement.
- 2) 10-15% recovers to be effected @ thrice the agreement.
- 3) More than 15% the layer shall be rejected and re-laid.

RECOVERIES:

1. Shortfall in thickness/quantity /weight

- a) If shortfall is **up to 10%** in the specified **thickness / quantity /weight**, recovery @ **twice** the agreement rates to be effected for the deficiency in the quantity.
- b) If shortfall is between **10% and 20%** in the specified **thickness/quantity /weight**, recovery to be effected @ **thrice** the agreement rates for the deficiency in quantity;
- c) If shortfall is **more than 20%** in the specified **thickness/quantity /weight** - the work is to be rejected and redone.

CONCRETE ITEMS:

The testing and tolerance shall be as per MORTH section 903.5. No deviations are acceptable in thickness of PCC / all members except concrete pavements. In case of strength requirement in which established based on concrete cores / cubes, no deviation is permitted from specified strength. However if the lesser strength concrete is allowed duly satisfying design criteria the rate of lower grade concrete or equivalent to the actual strength only shall be paid

PAYMENT ADJUSTMENT FOR DEFICIENCY IN THICKNESS

Deficiency in the average thickness of day's work	Percent contract unit price payable
Up to 5 mm	100
6-10 mm	87
11-15 mm	81
16-20 mm	75
21-25 mm	70

GENERAL:

1. The edges of the carriageway shall be correct within a tolerance of $\pm 10\text{mm}$.
2. The negative tolerance of top layer shall not be permitted in conjunction with positive tolerance of bottom layer.
3. The QC shall inspect the work at every stage of execution particularly before laying bituminous layers & during execution of BT layer on their own. QC is meant for

P-4

the section officer. The name of work and quarry location shall be clearly noted in the test reports.

PUNISHMENTS TO R&B OFFICERS

- a. If the average deficiency of deficient items is more than 10%, the A.E.E. in charge of construction is to be held responsible:
- b. If the average deficiency of deficient items is 15% and above the A.E.E. and D.E.E. in charge of construction are to be held responsible:
- c. If the average deficiency of deficient items is more than 20%, the A.E.E./D.E.E./E.E. in charge of construction all three are to be held responsible:
- d. In respect of deficiencies observed by other inspecting agencies like V&E Dept., etc. in the works already inspected and passed by Quality Control staff, if the average deficiencies observed are **50% higher than the average deficiencies observed by Quality Control staff, the AEE/DEE/EE (QC) who conducted the Quality Control checks/Tests and passed, are to be held responsible along with executing AEE/DEE/EEs**

The Engineer-in-Chief (R&B) Administration here by issues these circular instructions in super cession of the earlier existing circular instructions as indicated above on the penalties to be imposed on the contractors and action on the concerned officials for deficient execution of works as stated above. For all ongoing works, these conditions may be entered as supplementary agreement. To this extent clause may be incorporated in bid documents and agreement in future works.

for Engineer-in-Chief (R&B) Admn & Roads

To

All the Superintending Engineer (R&B) for taking necessary action and to circulate among the all Executive Engineers / Deputy Executive Engineers / Assistant Executive Engineers/ Assistant Engineers (R&B) working under their control.

Copy to

- The Engineer – in-Chief (R&B) Roads for information and taking necessary action.
- The Chief Engineer (R&B) NABARD for information and taking necessary action.
- The Chief Engineer (R&B) Buildings for information and taking necessary action.
- The Chief Engineer (R&B) NH for information and taking necessary action.
- The Chief Engineer (R&B) & Managing Director, APRDC for information and taking necessary action.
- The Deputy Chief Engineer (R&B) Roads for information and taking necessary action.
- The Deputy Chief Engineer (R&B) Buildings for information and taking necessary action.
- The Deputy Chief Engineer (R&B) NABARD for information and taking necessary action.
- The Superintending Engineer (R&B) QC Circle, Hyderabad for information and taking necessary action.
- The NTPA -I, O/o the E-in-C(R&B) Admn & Roads

Handwritten initials and date: 14/11/2006

Encl - No. 632/TS/RS/Bul/2006-07/3908/ dated. 6.12.2006.

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worksaccounts.com