GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

PR&RD Department – Reforms in P.R.Engineering Department – Strengthening of Quality Control wing – Guidelines for carrying out Quality Control by the field staff in the execution of works and further checks by the Vigilance Wing – Orders – issued./

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PANCHAYATIRAJ AND RURAL DEVELOPMENT (ESTT.1)DEPARTMENT

G.O.MS No.101 Dated: 21.3.2000

Read the following:

1. G.O.Ms.No.23,I & CAD (PW.COD)Dept., dt,5.3.1999.
2. G.O.Ms.No.195,PR&RD (Programmes.II)Department,dt.10.5.1999
3. Govt.Memo.No.42243/Estt.1(1)/99-1.dated 3.12.1999
4. Govt.Memo.No.42243/EStt,1(1)/99-2,dated 9.2.2000
5. From the Engineer-in-Chief,PR,Hyderabad letter No.T1/25561/99, dt 14.2.2000

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ORDER:

1. The Government have observed that the field staff in charge of implementation of works have been carrying out quality control checks on P.R. Works such as Roads, Buildings, M.I.Works and Employment schemes etc., based on the age old practices which have become obsolete.

2. A centralized system of quality control has been in existence for material testing of Rural Water supply works and the experiences have shown that such centralized system of quality control has not been effective and it provided a scope for the field staff to shift their responsibility on the staff of quality control of the centralized system.

3. In the G.O.1st cited , the Government issued orders to create one post of Chief Engineer (Vigilance) in each Engineering Department as a policy to do the quality audit periodically and also to evolve suitable punitive action against contractors as well as Engineers in charge of the works who violated proper quality standards.

4. Accordingly, the Government have created the post of Chief Engineer (PR) Vigilance, Hyderabad by redistributing the subjects among the other Chief Engineers (PR).

5. In the review meeting held by the Chief secretary on dt9.2.2000 on the NABARD Works, the Chief secretary opined that the field staff in-charge of implementation should exercise quality control by arranging proper tests which can be carried out in private laboratories, existing department Laboratories, Engineering Colleges. Etc., He has also opined that this should be included in tender documents and the contractors have to carry out the tests in the laboratories approved by the Engineering wing since the Vigilance is not a substitute for quality control.

6. The objective of Vigilance wing is to conduct checks over the quality control measures adopted by the existing staff. There fore, the vigilance wing of PRED shall organize random and independent checks both during execution and after completion of works to assess whether the field staff in-charge of implementation of works that maintained the quality as per standards. In order to achieve the above said objective the following detailed guide lines are issued on quality control by the field staff and checks by the vigilance wing of PRED.

I. Quality Control Measures for PR Works

The Chief Engineers, PR, shall ensure that proper tests are carried out by the Executive staff during the execution of the works. The test that are to be conducted on materials and finished items of work on roads, Bridges and projects shall be as given below:

Coarse Aggregate

1. Impact value
2. Flakiness Index
3. Grading test

Fine Aggregate

1. Fineness Modules
2. Silt content

Bitumen

1. Standard penetration
2. Ductility

Soils

1. Dry Density/Procter compaction
2. CBR Value

WBM

1. Camber
2. Thickness of layer and Grading
3. Width of metal layer

BT Surface

1. Camber
2. Thickness
3. Width of BT layer
4. Bitumen content (Bitumen Extraction test)
5. Stripping Value

Concrete

1. Grading of Aggregate
2. Impact value of Aggregate
3. Flakiness Index of Aggregate
4. Fineness Modules of sand
5. Silt content of sand
6. Suitability of the water for concrete
7. Steel: Tensile strength
8. Cement: Initial and final setting time Compressive strength
9. Cube strength of concrete
10. Slump test

The contractor shall carry out all the above tests by drawing the samples in presence of executing staff and get the tests conducted in the laboratories approved by the Executive Engineer. A provision shall also be made in the tender documents to carry out these tests. In case where such provisions have not been made in the Tender Documents, the execution staff shall draw the samples and carry out the tests in the laboratories with the departments/ private/ Engineering colleges.

The CEs ,PR, incharge of programmes shall under take a critical analysis of Quality Control test results . The CEs , PR, shall ensure that the work performed and the materials used in the work confine to the specification requirements.

II. **Quality Control measures for RWS Works**:

a) Quality Control for material testing:
One testing laboratory for each district under the control of SE,RWS will be established. It will be manned by one DEE,3 AEEs, from Circle office. Two AEEs from each division will also work in this laboratory for testing the samples collected in their respective divisions.
The EEs, will organize the collection of samples of each consignment from the work spots through the field Engineers concerned for getting the samples tested in the laboratory of that district.
The SEs shall issue the test certificates of the materials for the works costing more than Rs. 10.00lakhs and the EEs shall issue the test certificates of the materials for the works costing Rs. 10.00 lakhs and below.

The district laboratories will have the facilities for testing following materials.:
1. PVC pipes
2. HDPE pipes
3. CID/F pipes
4. Electrical pumps and Motors upto 10 HP
5. CI Valves
The Electrical pumps and motors above 10 HP shall be tested at the manufacturers work shop by the field Engineers as given below:

1. Upto 20 HP ————————DEEs

2. Above 20 HP and upto 50 HP—EEs

3. Above 50 HP ————SEs

The PVC,BWCCP and GRP pipes shall be tested by the EEs / DEEs concerned at the manufacturers work shop before utilizing them. The materials shall also be tested in the field after laying and joining to the full designed test pressure or 1 ½ times the working pressure as the case may be.
The third party Quality Control inspection by the specialized agencies like SGS, RITES, Engineers India (Ltd.) etc. shall be provided where ever necessary and a provision to that effect shall be made in the tender documents and agreements.

b) Quality Control in the execution of works:
In the execution of OHSR works, Filters and other major works, the usage of machine mixtures vibrators shall be insisted.
The concrete cubes shall be collected while laying concrete for OHSRs of capacity 90,000 ltrs and above and other important concrete works like slow sand filters and rapid sand filters etc. and shall be tested in the departmental approved laboratories and its record shall be maintained. If the test results are not confirming to the specifications, the works shall be summarily rejected. OHSRs,GLSRs and filters shall be tested for water tightness.
All the pipelines shall be tested Hydraulically to the required test pressure in each segment of 500 mts, while laying and joining them, before the trench is refilled. The test results for all pipe lines shall properly recorded and maintained by the field staff.

The SEs and EEs shall check the depth of pipeline trench when ever they inspect the work.

II. Checks by the Vigilance Wing :

The objective of the vigilance wing in PR Engineering dept. consisting of five divisions, 22 Sub-Divisions and 108 Sections headed by CE,V&QC, is to check the Quality and Quantity of works both during and after completion of execution of works. The vigilance staff shall draw random samples from the collected materials and also from finished works and carryout the following tests to assess whether the quality is achieved as per specifications:

1. Grading test
2. Impact value
3. Flakiness index
4. Cube strength of concrete

The Vigilance staff shall also carryout the following tests to verify whether the quantitative measures are achieved.

1. WBM thickness
2. BT thickness
3. Bitumen Extraction test

The vigilance staff shall check up whether the execution staff are carrying out all the Prescribed QC tests as per the required norms and shall verify the QC records maintained by them both in the office and at field level.

IV. **Follow-up action and vigilance checks:**

The CEs incharge of works/ programmes shall immediately respond to the observation made in the vigilance reports of PRED,V&E Dept. and Advisor of QC, GAD, Press reports, Representations from Public Representatives., references from lokayuktha etc., on the implementation of works. The CEs in charge of works/programmes shall correlate the QC registers maintained by the execution staff with the above reports. The SEs/EEs in charge of the works/ programmes shall critically scrutinize all the relevant records of both work and QC. If any additional tests are to be carried the officers concerned shall draw the samples and get the tests conducted in the departmental/ private/Engineering colleges laboratories. When an allegation is made against an officer, the office of one rank above him shall carry out these tests.

The CEs in charge of the works/programmes, after detailed examination of the records and test results shall initiate necessary corrective actions to rectify the defects and recover the costs whenever needed.

When ever the disciplinary action is to be initiated against the erring officers, the ENC shall get the Draft articles of charge prepared by the CE in charge of the works/ progammes and take necessary action thereon at his level or send the same to the Govt., if it is the disciplinary authority, along with a comprehensive report for taking further action at Government level.

The ENC,PR,Hyderabad is directed to ensure that the institutions are taken to the notice of all Engineering personnel in PR Engineering Dept. and ensure proper and strict implementation of the said instructions, in order to maintain quality of works.

(BY ORDER AND IN THE NAME OF THE GOVERNER OF A.P.)

C.ARJUNA RAO
SPECIAL CHIEF SECRETARY TO
GOVERNMENT

GOVERNMENT OF ANDHRA PRADESH
PANCHAYATI RAJ &RURAL DEVELOPMENT (ESTT.I) DEPARTMENT

Memo No. 15320/VIG.I/2005-1 **Dt.12.05.2006**

Sub: Guidelines- PR&RD dept.-Modification guidelines to deal with reports in Execution of works-Revised orders-issued

Ref: 1. Govt.memo, no.42243/Estt.I (1)/99-2, PR&RD (Est.) Dept.Dt.9-2-2000
2. Govt.memo, no.43079/Estt.I (1)/2002-11, PR&RD (Estt.i)Dept. Dt. 8-4-2004
3. Govt.memo, no.9874/Vig.II/A1/2005-4,PR&RD(Vig,II)Dept. Dt.04-7-2005
4. From the ENC.PR,Hyd.Lr.no.T1/25581/99,dt.10.10.2005
5. From the ENC.PR,Hyd.Lr.no.T1/25581/99,dt.28.10.2005

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In the ref.1st and 2nd cited, certain guidelines/instructions were issued to deal with QC cases of PR engineering Dept.

1. The ENC,PR Hyderabad in his letter 4th and 5th cited has submitted proposals for issue of fresh guidelines to deal with the reports in execution of road works in PR&RD dept in modification of existing guidelines and suggested to adopt for future cases.

2. Govt. after careful examination of the matter has decided to have common procedure to deal with the reports in road works. Accordingly the following guidelines are prescribed to deal with the future cases.

A) Volumetric evaluation is inevitable in PR&RD dept, in view of huge Nos. of works taken up at different levels and different magnitudes (Gram panchayaths, Mandals, Zilla parishads, marketing, MP lads, and constituency development funds) besides grants under FFWP, EAS. Employment generative schemes implementation of Government and Government of India schemes, Hence the following are the recommendations in respect of tolerance limits.

a) Shortfall in thickness /quantity/weight for all items of road works:

i) if shortfall is up to 10% in the specified thickness recovery @ twice the agreement rates to be effected for the deficiency in quantity.

ii) If shortfall is between 10% and 20% in the specified thickness, Recovery to be effected @ thrice the agreement rates for the deficiency in quantity.

iii) If shortfall is more than 20% the work is to be rejected and redone.

b) Shortfall in Binder quantity for Bituminous works:

Shortfall in Binder content 0 to 10% - recovery to be effected @ twice the estimate rates and 10% to 15% - recovery @ 3times estimate rate of Binder for the quantity of deficiency. If the deficiency is more than 15% of the specified binder content, the work has to be totally rejected and redone.

B) Responsibility for the lapses:

a) if the average of all the deficiencies observed is more than 10% the AEE in charge of construction is to be held responsible.

b) If the average of all the deficiencies observed is 15% and above the AEE and Dy.EE in charge of construction are to be held responsible.

c) If the average of all the deficiencies observed is more than 20% the AEE/Dy.EE/EE in charge of construction are top be held responsible.

d) In respect of deficiencies pointed out by other inspecting agencies like Vigilance & Enforcement Dept. etc. in the works which were already inspected and passed by Quality Control staff if the average deficiencies are 50% higher than the average deficiencies observed by Quality Control staff the AEE/Dy.EE/EE Quality Control who conducted the Quality Control checks/ Tests and passed, are to be held responsible
along with executing AEE/Dy,EE/EEs.

C) Time lag of completion of Quality Control tests:

The analysis of tests results available with the Quality Control wing, revealed deterioration of BT contents various from 6- 8% per annum. This needs further investigations and analysis.

D) However, in view of SP 20 recommendations, this 6-8% deficiency will be considered per year of lapse for arriving at deficiency levels of BT for the Purpose of disposal of pending Quality control Advisory cases.

E) Consideration over all thickness of road, assessment along with and analysis of individual layers: A shortfall thickness in the bottom layer can be allowed to be compensated with additional thickness in the next layer. As the material used for the top layers are of always superior in quality, a more dense and durable layer can be achieved by providing additional thickness. This has to be done with the prior permission of next superior authority/ the estimates sanctioning authority.

F) However, for the purpose of disposing the pending advisor, Quality Control cases, over all thickness can be considered for sufficiency by way of additional thickness in the top layer. For any deficiency in the lower layer, this will be taken up positively.

G). Regarding quality tests recording in the Measurement Books, a certificate has to be appended in the Measurement Books about the specified tests conducted by the field staff and entered in the quality test register. Till such time detailed guidelines, &testing equipment are made available at the field level

H)**. Responsibility at different levels**
As per ‘D’ code, the Executive Engineer is the final authority and responsible person in the field for qualitative and quantitative work. The responsibility of superior officers will be limited to the checks they do on the works regarding quantity. For quality, the inspecting officer has to analyze and advise during their visits to the field.

However, technical sanction authorities are responsible for specifications, designs, estimate provisions, which have been made based on data furnished by the field level.
It must be made mandatory to estimate yield of sources and to conduct qualitative and quantitative tests before execution of PWS schemes as non adherence of these preliminary

investigations may cause wasteful expenditure and in such cases the responsibilities have to be fixed on the concerned for their lapse.

4. Further, it is also hereby decided to adopt the orders issued in the reference 3rd cited, for disposal of the existing advisor (Quality control) cases in the PR&RD Dept. i.e. the inspection reports of Chief Engineers / Engineer-in-Chief, shall be taken as final ins respect of the Advisor (Quality Control) reports and further action can be taken as per their reports. in cases, where deficiencies are beyond tolerable limits as per the inspection reports Chief Engineers / Engineer-in-Chief, they can be referred to General Administration (COI) Department after following due procedure for regular enquiry into the charges framed against the erring officials.

5. The Engineer-in-Chief, PR, Hyderabad is requested to take action accordingly.

M. Samuel,
Principal Secretary to Govt.,