राष्ट्रीय आदिवासी छात्र शिक्षा समिति
(जनजातीय कार्य मंत्रालय के अंतर्गत
एक स्वायत्त संस्थान, भारत सरकार)
भू-तल, गेट नंबर-3ए, जीवन तारा बिल्डिंग,
संसद मार्ग, नई दिल्ली-110001
दूर. 011-23340280

National Education Society for Tribal Students
(An Autonomous Organization under
Ministry of Tribal Affairs, Govt. of India)
Ground Floor, Gate No.3 A, Jeevan Tara Building,
Parliament Street, New Delhi-110001
Telephone No. 011-23340280
वेबसाइट/Website: www.tribal.nic.in
Email: nests-tribal@tribal.gov.in

File No: Nests/Civil/TPQA/49/2020-21 **Date: 20.04.2022**

To,

The Director,
1. NIT Patna, Andhra Pradesh, Jamshedpur, Rourkela, Agartala,
2. VNIT Nagpur
3. IIT Indore

Sub: Guidelines for compliance by TPQA Agency in accordance to the TPQA Agreement – regarding
Reference: - Copy of Tripartite Agreement between NESTS, Construction Agency & TPQAA

Dear Sir,

This office is in receipt of TPQA reports of various institutions which have been entrusted with the Third-Party Quality Assurance work for the C/o EMRSs at various locations as per guidelines of CPWD works manual. These reports have been examined in this office and following are the observations:

1. No Quality Assurance Plan (QAP) has been devised as desired in the scope of work of MOU/Agreement.
2. The compliance provided in annexure 1 to IV as per CPWD manual clause 53.2 and modified annexure V are not available. The TPQA agency has only submitted incomplete modified annexure V.
3. TPQA agency has avoided its elaborative comments on all important fields. The comment is either "Yes" or "No" whereas its specific elaborative comments are required from TPQA agency. TPQA agency has not commented on the quality of building materials like steel, cement, sand, bricks etc.
4. The TPQA report has not been substantiated by any evidentiary proof like copy of important tests, copy of important registers, copy of comments on compliance of necessary instructions of visiting officers of Construction Agency.
5. The provision of MoU regarding 10% tests at the laboratory facility of TPQAA or its outside hired lab facilities are not being followed.
6. Photos of important construction components like column, footings, brick work etc are not being shared.

On the basis of these observations, it is being felt that the basic purpose of Third-Party Quality Assurance is getting defeated. However, VNIT Nagpur seems to have done an exhaustive analysis and tried to point out the defects and submitted elaborative comments. In view of this, I have been directed to impress upon the various TPQA Agencies and construction agency to strictly follow the activities enumerated below in accordance to the Tripartite TPQA agreement between NESTS, Construction Agency and TPQA Agency.

1. As per agreement a Quality Assurance Plan (QAP) is required to be finalized by the TPQA for each site. This QAP shall indicate tentative dates for the TPQA visit to monitor the target activities.
2. QAP shall also devise the various mandatory tests of the building materials being used in construction along with the frequency of tests to be done.
3. QAP shall ensure annexure I to V as per Clause 53.2 of CPWD Work Manual 2014 **(copy enclosed).**

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4. TPQA during inspection shall see that placement of reinforcement/bar bending and casting of RCC shall be conformity to the approved & vetted structural drawings & all codal provisions are met.
5. TPQA shall comments critically on quality issue aspects wherever required or feel necessary.
6. TPQA agency shall check the authenticity of registers which shall be page numbered and a certificate regarding pages and content shall be placed under signature of competent authority like Zonal Engineer.
7. The TPQA report shall be duly signed on each page by institution entrusted with TPQA and report shall be duly acknowledged by Zonal Head/ Competent authority in PSU.
8. TPQA report shall be supported by photos of important construction activities like reinforcement, RCC works foundation, columns, slabs, beams brick work, etc
9. The TPQAA is required to see that the remarks of TPQAA shall be complied by PSU before next TPQAA visit.
10. A copy of TPQA reports shall be maintained at site
11. The TPQA shall report on following activity critically: -

I. Foundation and footings of all buildings and Compound Wall
II. Plinth and Columns
III. GF Slab
IV. Roof Slab
V. Brick Work
VI. Protection Work
VII. Plumbing/Sanitary/Electrical Work
VIII. Flooring/Finishing/Doors/Windows
IX. Drainage/Sewerage/Road Work
X. Final Review

This issues with the approval of the competent authority

Encls.: - Copy of annexure I to V

20/04

(K C Meena)
Additional Commissioner

Copy to :-

1. CMD/MD/CEO of B & R, EPIL, HSCL, NPCC, MTDC, MANIDCO, TCIL, WAPCOS for sensitising its field staff regarding quality control of the C/o EMRSs
2. Nodal officer of construction agency B & R, EPIL, HSCL, NPCC, MTDC, MANIDCO, TCIL, WAPCOS for necessary action
3. PS to Commissioner, NESTS
4. Guard File

Minimum Quality Assurance (QA) Plans

Sl. No.	Tentative Date Planned for site visit	Target Activity *	Remarks of TPQA	
1	2	3	4	

*****The visit shall be planned in such a manner so that the major milestones of building construction can be checked from quality point of view. The activities like layout of building components, retaining structures, marking of depth of foundation & centre of columns, foundation concreting, accuracy of plinth levels & lintel level, brickwork, slab casting, plastering, flooring, joinery, surface drains & sewerage planning, finishing works and all other relevant activities as considered necessary to be included in the **Quality Assurance Plan**.

Signature of TPQA

Annexure – I		
Sr. No.	**List of Equipment available For Field Testing Laboratory**	**Comments of TPQA**
A.	**For Building Works**	
1	Balances	
(i)	7 kg. to 10 kg. capacity, semi-self indicating type – accuracy 10 gm.	
(ii)	500 gm. capacity, semi-self indicating type – accuracy 1 gm.	
(iii)	Pan balance – 5 kg. capacity – accuracy 10 gms.	
2	Ovens-electrically operated, thermostatically controlled upto 110 C – sensitivity 1 C.	
3	Sieves: as per IS 460=1962.	
(i)	I.S. sieves – 450mm internal dia, of size100 mm, 80 mm, 63 mm, 50 mm, 40 mm, 25 mm, 20 mm, 12.5 mm, 10 mm, 6.3 mm, 4.75 mm, complete with lid and pan.	
(ii)	I.S. sieves- 200mm internal dia (brass frame) consisting of 2.36mm, 1.18mm, 600 microns, 425 microns, 300 microns, 212 microns, 150 microns, 90 microns, 75 microns, with lid and pan.	
4	Sieve shaker capable of 200 mm and 300 mm dia sieves, manually operated with timing switch assembly.	
5	Equipment for slump test- Slump cone, steel plate, tamping rod, steel scale, scoop.	
6	Dial gauge, 25 mm travel – 0.01 mm/division least count - 2nos.	
7	100 tonnes compression testing machine, electrical-cum manually operated.	
8	Graduated measuring cylinders 200 ml capacity – 3 Nos.	
9	Enamel trays (for efflorescence test for bricks).	
(i)	300 mm x 250 mm x 40 mm- 2 nos.	
(ii)	Circular plates of 250 mm dia – 4 nos.	

Signature of TPQA

Annexure – II		
Sr. No.	**Field Testing Instruments**	**Comments of TPQA**
1	Steel tapes – 3 m	
2	Vernier calipers	
3	Micrometer screw 25 mm gauge	
4	A good quality plumb bob	
5	Spirit level, minimum 30 cms long with 3 bubbles for horizontal vertical	
6	Wire gauge (circular type) disc	
7	Foot rule	
8	Long nylon thread	
9	Rebound hammer for testing concrete	
10	Dynamic penetrometer	
11	Magnifying glass	
12	Screw driver 30 cms long	
13	Ball pin hammer, 100 gms	
14	Plastic bags for taking samples	
15	Moisture meter for timber	
16	Earth resistance tests (for Electrical Divisions)	
17	Meggar (for Electrical Divisions)	

Signature of TPQA

Annexure – III

Proforma For Mandatory Tests To Be Attached With Running Bills

Name of the work …… Name of Contractor…….. Agreement No. and Date ……..
R/A Bill No. …….

Sl. No.	Item	Quantities as per agreement	Frequency as per specification	No. of tests required	Upto date quantity	No. of tests required	No. of tests actually done	Remarks
1	2	3	4	5	6	7	8	9

Note: If the number is less than that required, then reasons shall be recorded.

Signature of TPQA

Annexure – IV

Check Lists For Various Items

PART – A

CHECK LIST FOR ITEMS OF FOUNDATION CONCRETE

Name of work ……

Name of contractor ……..

Agreement No. …….

1. Date of inspection
2. Location
3. Material used for concrete whether tested
   (a) Sand Yes/No
   (b) Coarse aggregate Yes/No
   (c) Water Yes/No
   (d) Admixture, if any Yes/No
4. Raft top level, whether provided as per details Yes/No
5. Architectural/structural drawing correlated Yes/No
6. Whether location of construction joint has been discussed with Executive Engineer, and he has approved it Yes/No
7. Cleaning over water proofing surface and construction joint done Yes/No
8. CC cover blocks of 60 mm, thickness provided (min 2 in one square metre area) Yes/No
9. Reinforcement placement as per relevant structural drawing checked Yes/No
10. Layout of columns as per relevant structural drawing checked Yes/No
11. Placement of shuttering plates and key board for proper construction joint with shuttering oil Yes/No
12. Cement slurry applied on construction joint before pouring of concrete Yes/No
13. Trained mason available Yes/No
14. Concreting to start from farthest point to nearest point with respect of weight batching plant Yes/No
15. Concrete mix has been designed Yes/No
16. Plasticiser being used Yes/No
17. Adequate number of concrete vibrators in working condition available Yes/No
18. Slump checked Yes/No
19. Sample cubes taken Yes/No
20. Signature of Junior Engineer ……..
21. Signature of Assistant Engineer ……
22. Signature of Executive Engineer …….

Signature of TPQA

PART – B

CHECK LIST FOR COLUMNS/BEAMS/SLABS

1. Date of inspection
2. Drawing No.
3. Location
4. Whether materials used conform to relevant Specifications
   (a) Sand Yes/No
   (b) Coarse aggregate Yes/No
   (c) Water Yes/No
   (d) Admixture, if any Yes/No
5. Whether structural drawings correlated with architectural drawings? Yes/No
6. Whether the centre line of column/beams checked with references to grid lines as per architectural drawings? Yes/No
7. Whether treatment of expansion joint, wherever required, is done? Yes/No
8. Whether cleaning, repairing and approval of shuttering plate, application of quality shuttering oil is done? Yes/No
9. Whether shuttering is in true plumb and vertical and properly done and maintained during concreting? Yes/No
10. Whether reinforcement detailing, their placement are as per structural drawings? Yes/No
11. Whether proper gauge binding wire is used and with full cross binding and tightening of reinforcement bars with stirrups? Yes/No
12. Whether required minimum cover to reinforcement is maintained? Yes/No
13. Whether stainless steel cramps, angle irons for holding stones and any holding arrangement for electrical/mechanical/fire fighting/other services have been seen and approved by JE (E)/AE (E) Yes/No
14. Whether conduits for various electrical/mechanical/fire fighting/ other services have been seen and approved by JE (E)/AE (E) Yes/No
15. Whether concrete of approved design mix within maximum permissible water-cement ratio is used? Yes/No
16. Whether admixture of good brand quality approved by Engineer-in-charge is used? Yes/No
17. Whether technical supervision at batching plant/mixer and at point of concreting done? Yes/No
18. Whether concreting is placed within initial setting time of mixing? Yes/No
19. Whether proper compaction with vibrator is done? Yes/No
20. Whether the concreting has been done in a lift not exceeding 1.5 m? Yes/No
21. Whether cubes as per requirement filled for testing? Yes/No
22. Signature of Junior Engineer ……..
23. Signature of Assistant Engineer ……
24. Signature of Executive Engineer ……..

Post-concreting:

25. Whether shuttering stripped off as per specification, and laitance removed immediately thereafter? Yes/No

26. Whether proper arrangement of curing and curing period maintained as per specifications? Yes/No

27. Whether hacking of RCC surface by proper hacking tool for subsequent plastering/finishing is carried out? Yes/No
28. Signature of Junior Engineer ……..
29. Signature of Assistant Engineer ……
30. Signature of Executive Engineer ……..

Signature of TPQA

PART – C

CHECK LIST FOR BRICK WORK

1. Date of Inspection
2. Drawing No.
3. Location
4. Whether materials used conform to relevant Specifications and whether mandatory tests doen?
   (a) Sand Yes/No
   (b) Bricks Yes/No
   (c) Water Yes/No
5. Whether structural drawings co-related with architectural drawings? Yes/No
6. Whether the centre line of brickwork checked with reference to grid lines as per architectural drawings? Yes/No
7. Whether bricks soaked in water before use for sufficient period? Yes/No
8. Whether queen closers are used at junction of walls? Yes/No
9. Whether brickwork is in true plumb and vertical and all layers truly horizontal? Yes/No
10. Whether graduated wooden straight edge storey rod being used for keeping height of brick courses uniform? Yes/No
11. Whether wall height being constructed in a day is being restricted to 1 m height? Yes/No
12. Whether parts of wall left at different levels are raked back at an angle of 45 degrees or less with the horizontal? (Toothing is not to be permitted) Yes/No
13. Whether top courses of all plinths, parapets, steps and top of walls below floor and roof slabs laid with brick on edge? Whether marucona provided at corners in such brickwork? Yes/No
14. Whether thickness of joints in brickwork is kept 1 cm +_ 20%? Yes/No
15. Whether mortar of approved mix within maximum permissible water cement ratio is used? Yes/No
16. Whether all horizontal and vertical joints are being filled? Yes/No
17. Whether proper arrangement of curing and curing period maintained as per specification? Yes/No
18. Whether date of work done written? Yes/No
19. Signature of Junior Engineer ……..
20. Signature of Assistant Engineer ……
21. Signature of Executive Engineer ……..

Signature of TPQA

PART – D

CHECK LIST FOR PLASTERING

1. Date of inspection
2. Drawing No.
3. Location
4. Whether materials used conform to relevant specifications and whether mandatory tests done? Yes/No
5. Whether surface cleaned of all loose mortar and efflorescence? Yes/No
6. Whether all conduiting and electrical piping done? Yes/No
7. Whether all doors, windows etc. fixed? Yes/No
8. Whether all defects of brickwork/CC/RCC rectified? Yes/No
9. Whether preparation of surface done? Yes/No
10. Whether 2.5 m long aluminium straight edge and plumb bob being used to check vertically and evenness of surface? Yes/No
11. Whether 15 cm x 15 cm bunda at every 2 m horizontally and vertically being provided to serve as gauges? Yes/No
12. Whether uniform groove provided at junctions of all plaster and ceiling plaster? Yes/No
13. Whether mortar of approved mix within maximum permissible water cement ratio is used? Yes/No
14. Whether proper arrangement of curing and curing period maintained as per specifications? Yes/No
15. Whether date of word done written? Yes/No
16. Signature of Junior Engineer ……..
17. Signature of Assistant Engineer ……
18. Signature of Executive Engineer ……..

Signature of TPQA

PART – E

CHECK LIST FOR WATER SUPPLY LINES

1. Date of inspection
2. Drawing No.
3. Location
4. Whether materials used conform to relevant specifications and whether mandatory tests done? Yes/No
5. Whether plumber employed is licensed plumber or not? Yes/No
6. Whether plan for piping system has been prepared and got approved? Yes/No
7. Whether all pipes and fittings are ISI marked? Yes/No
8. Whether a sample system has been prepared and got approved? Yes/No
9. Whether clamps provided at specified spacing? Yes/No
10. Whether pipe lines checked at required pressure before covering? Yes/No
11. Whether weight of flushing pipe checked? Yes/No
12. Whether flushing cistern is ISI marked and internally painted with bitumastic paint? Yes/No
13. Whether fittings like wash basin, sink pan, cistern, bib cock, stop cock, wheel valves, etc. are ISI marked? Yes/No
14. Whether PVC water storage tank is ISI marked? If not, whether sample sent for testing? Yes/No
15. Signature of Junior Engineer ……..
16. Signature of Assistant Engineer ……
17. Signature of Executive Engineer ……..

Signature of TPQA

Annexure-V(Modified)		
Name of TPQA Agency: -		
Sl No.	Particulars of work:	Remarks.
1.1	(a) Name of work	
	(b) Description/Scope of work	
1.2	(a) Sub-Division and name of Assistant Engineer:	
	(b) Division and name of Zonal Manager or Representative	
	(c) Circle and name of superintending Engineer.	
	(d) Zone and name of Chief Engineer.	
1.3	Agency/contractor	
	(a) Name:	
	(b) Registration class	
1.4	Agreement No.	
1.5	Stipulated time and date of start.	
1.6	Stipulated time and date of completion.	
1.7	(a) Estimated cost put to tender	
	(b) Schedule of rates applicable.	
1.8	Accepted tendered cost with overall percentage.	
1.9	Percentage progress at time of inspection vis-à-vis expected as per contract and reasons for delay, if any.	
1.10	Inspection officers (Name and Designation)	
1.11	Officers and contractor present during inspection (Name and Designation)	
1.12	Date of inspection and number	
2.0	Quality control Aids:	
2.1	Is site equipped with	
	(a) Copy of agreement	
	(b) CAs specification along with upto date correction slips.	
	(c) List of ISI marked/approved materials to be used.	
	(d) Guard file containing inspection report of CTE/QCTA/AE/QC/Zonal Head/GM/SE/SE etc.	
	(e) Testing facilities to check conformation to acceptance criteria	
	(f) QAFW circular on quality control	
2.2	Is field laboratory existing and well equipped	
3.0	Department procedure aspects	
3.1	Maintenance of inspection register.	

3.2	Highlights of inspection by GM, Engineer-in-Charge requiring compliance.	
3.3	Are all site register maintained in standards forms?	
3.4	Are test registers reviewed by Engineer-in-Charge with dates	
3.5	Cement Registers	
	a.) Is cement store checked by Engineer-in-Charge periodically as stipulated	
	b.) Comment of TPQA on cement stock with reference to cement register. (Critical Analysis/Elaborative opinion of TPQA is required required)	
3.6	Site order book and schedule of defects	
	a) Is site order book properly maintained?	
	b) Is site order book reviewed by GM and Engineer-in-Charge (Mention details)	
	c) Have timely notices been issued to the contractor with the schedule of defects/damages whether action under clause 14/17 initiated? (Please elaborate)	
4.0	Process control aspects:	
4.1	Is soil investigation done? (Give brief details)	
4.2	Suitability of water for construction:	
	(a) What is the sources of water?	
	(b) Has water been tested subsequently (i.e. after every 03 months) and found fit for use in works.	
	(c) Has water been tested subsequently (i.e. after every 03 months) and found fit for use in works.	
4.3	Are 10% (25% for concrete) of all samples for testing taken in presence of Engineer-in-Charge	
4.4	Are all mandatory tests carried out at stipulated frequency?	
4.5	Are materials approved by Engineer-in-Charge If so, are samples available at site?	
4.6	Are sample units/items completed and approved by Engineer-in-Charge before start of mass finishing work?	
4.7	Specific control on RCC work like centering/shuttering, proportioning with boxes: mixing by full bag capacity hopper fed mixer: control of slump: placing/compaction with vibrator.	
4.8	Any other particular comments on adequacy of process control.	

5.0	Site inspection for observations and comments on quality control system in place.	

5.1	Observation on floor slope (especially in Bath, WC, Kitchen, Terrace, Balcony etc).	
5.2	Observation on QC for dampness/leakages prevention. If dampness/leakages notices, then locations and probable reasons.	
5.3	Are Samples collected by Quality Control Cell of Construction Agency	
6.0	Observations on site materials QC aspects (Keeping in view the requirement of contract specifications: BIS marked/CAs approved products etc.) (Attached separate sheet, if required). (Critical Analysis/Elaborative opinion of TPQA is required required)	
7.0	Observations on workmanship QWC aspects. (Attached separate sheet, if required) (Critical Analysis/Elaborative opinion of TPQA is required required)	

Note :- The comments of TPQA shall not only be restricted to Yes or No at the points where elaboration of the opinion of TPQA is required.

SECTION 53

QUALITY ASSURANCE AND TECHNICAL AUDIT WING

53.1 Introduction

(1) The Quality Assurance activity, in order to be truly effective has to ensure a progressively improved and uniform quality of the finished work. Experience gained over years indicate that "Process Control" is essential in building construction to ensure that the work in different phases is executed in a manner pre-determined and laid down in specifications. In order to achieve the above, the pre-requisites cover among other things, an inbuilt provision in the contract for a system of continuous check on quality by the field staff and the contractor for ensuring quality of work; availability of adequately manned and equipped agency for overseeing the quality aspects, and periodical appraisal of quality and a system of feed back for effecting possible improvements.

(2) Maintenance of quality has to be imbibed in the minds of the contractor as well as the officials of the department. It is better to have a system in which the quality of work is achieved during the construction stage itself, rather than indulge in 'fire fighting' activities after the damage has been done by way of post-construction 'quality control'. Quality control does have a place in the system, but this has to be more by way of being a means of enforcement, to ensure that the quality of work is checked and controlled as a continuous process during the construction stage itself: The final output will then be satisfying both to structural as well as aesthetical sensibilities.

53.2 Minimum Quality Assurance Plan *(Modified as per OM/MAN/233)*

(1) Minimum Q.A. Plan shall have to be part of tendered document for all the works costing more than Rs. 1 Crore, and for works not exceeding Rs. 1 Crore, the Technical Sanctioning Authority may provide this clause in the NIT considering its necessity. (Modified vide OM DG/MAN/261 dt. 18.01.2014)

(2) Lot size, number of required tests and frequency of testing needs to be clearly indicated in QA Plan. While deciding these criteria CPWD Specifications & Provisions of BIS Code and Standard Practices may be referred. Volume of work, Practical Difficulties and Site Conditions etc. may also be kept in view and lot size, number of tests and frequencies of testing may be varied suitably by NIT Approving Authority.

(3) It should clearly indicate the Machinery and other Tool & Plants required to be deployed at site by the contractor. Entire Machinery and T&P may not be required at the start of work, therefore, a proper time schedule by which each Machinery & T&P is to be brought at site should also be indicated.

(4) Requirement to setup field laboratory should be defined. All the testing equipments to be arranged by the contractor should be clearly mentioned. If field lab is to be setup by the Department the same may be indicated in the QA Plan.

(5) All the relevant and applicable codes, specifications and standards, as well as the acceptance criteria for various items of work, workmanship, materials and process employed needs to be mentioned.

(6) A proper shuttering schedule showing quantity of shuttering to be brought at site either in one lot or at different stages of work should form part of QA Plan.

(7) Maintenance of Register of Tests -

(i) All the registers of tests carried out at Construction Site or in outside laboratories shall be maintained by the contractor which shall be issued to the contractor by Engineer-in-charge in the same manner as being issued to CPWD field staff.

(ii) All Samples of materials including Cement Concrete Cubes shall be taken jointly with Contractor by JE and out of this at least 50% samples shall be taken in presence of AE in charge. If there

is no JE, all Samples of materials including Cement Concrete Cubes shall be taken by AE jointly with Contractor. All the necessary assistance shall be provided by the contractor. Cost of sample materials is to be borne by the contractor and he shall be responsible for safe custody of samples to be tested at site.

(iii) All the test in field lab setup at Construction Site shall be carried out by the Engineering Staff deployed by the contractor which shall be 100% witnessed by JE and 50% of tests shall be witnessed by AE-in-charge. At least 10% of the tests are to be witnessed by the Executive Engineer.

For outstations the percentage of tests to be witnessed by JE, AE & EE are to be decided by NIT Approving Authority and should form part of QA Plan.

(iv) All the entries in the registers will be made by the designated Engineering Staff of the contractor and same should be regularly reviewed by JE/AE/EE.

(v) Contractor shall be responsible for safe custody of all the test registers.

(8) Submission of copy of all test registers, Material at Site Register and hindrance register along with each alternate Running Account Bill and Final Bill shall be mandatory. These registers should be duly checked by AE(P) in Division Office and receipts of registers should also be acknowledged by Accounts Officer by signing the copies and register to confirm receipt in Division office.

If all the test registers and hindrance register is not submitted along with each alternate R/A Bill & Final Bill, it will be responsibility of EE & AAO that no payment is released to the contractor.

(9) Maintenance of Material at Site (MAS) Register -

(i) All the MAS Registers including Cement and Steel Registers shall be maintained by Contractor which shall be issued to the contractor by Engineer-in-charge in the same manner as being issued to CPWD field staff.

(ii) Each of the entry of receipt of material at site shall be 100% test checked by JE or by AE if there is no JE.

(iii) Each MAS Register shall be checked by JE at least twice a week and at least once a week by AE. If There is no JE then MAS registers will be checked by AE at least twice a week.

(iv) Cement Register shall be reviewed by EE at least ***once*** in a month.

For outstations the frequency of checking the Registers by JE, AE & EE is to be decided by NIT Approving Authority and should form part of QA Plan.

(10) It will be deemed that work so measured, checked and paid is of the required quality and standard, both in respect of ingredients as well as the intended functions it is supposed to perform. In other words, the work would not only meet the required specifications but also the workmanship as per sound engineering practices.

(11) Minimum QA plan may vary work to work basis depending upon nature and volume of work.

(12) The Superintending Engineer shall also have to check and sign these reports at suitable intervals in token of his ensuring compliance of the 'Quality Assurance Plan' for the work. For major works costing above Rs. 10 crores, he shall check and sign these reports for works in his headquarter, before every alternate running account bill, beginning from the first bill, as well as before the final bill is paid to the contractor. For works outside his headquarter, he shall check and sign these reports whenever he goes on inspection. The Chief Engineer can waive this requirement in exceptional cases, and for recorded reasons. However, in any case, the Superintending Engineer shall not be absolved of his responsibility to ensure that the 'Quality Assurance Plan' is complied with in every work under his charge. It will be his responsibility to locate the lapses or deficiency and take suitable remedial action if the Quality Assurance Plan is not implemented in spirit and action by the field officers.