1. CONDITIONS OF STEEL AND CEMENT,ETC

A) CONDITIONS FOR SUPPLY OF CEMENT, STEEL, SAND AND COARSE AGRREGATES BY THE CONTRACTOR

CONDITIONS FOR CEMENT:

1. The contractor shall procure 43 grade (conforming to IS: 8112) / 53 grade (confirming to IS:12269) ordinary Portland cement as required from reputed manufacturers of cement such as ACC, Ultra tech, Priya, Rajashree, Grasim, J.P. Rewa, Vikram, Shree Cement, J. K. Lakshmi, Binani, Birla Chetak, Kamal, Sidhi, Birla Jute, Ambuja, Cement Corporation of India, Dalmia cement, Wonder cement of M/s. Wonder Cements Ltd., Star Cement, MCCL, Topcem, Lafarge etc., as approved by Ministry of Industry, Government of India and holding license to use ISI certification mark for their product whose name shall be got approved from Engineer in charge. Supply of cement shall be taken in 50 kg bags machine stitched in manufacturers factory bearing manufacturer's name and ISI marking. Every consignment of cement must have identification marks on packages indicating date of manufacture, grade & type of cement. Cement brought to site shall not be more than 6 weeks old from the date of manufacture. Cement manufactured in major plants having individual production capacity more than one million tonnes per annum only will be accepted. Samples of cement arranged by the contractor shall be taken by the Engineer in charge and got tested in accordance with provisions of relevant BIS – codes. In case the test results indicate that the cement arranged by contractor does not conform to the relevant BIS standards, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer in charge to do so. As far as possible only one brand of cement shall be allowed for procurement especially in case of exposed form finish work.

2. The cement shall be brought to site in bulk supply as per site requirement or as decided by the Engineer-in-charge. Cement shall be stored in a weather proof godown and properly stacked. Required information of cement stock shall be indicated & updated on display board outside the godown by contractor.

3. The cement godown of the capacity to store a minimum of 2000 bags or as decided by Engineer in charge, shall be constructed by the contractor at site of work for which no extra payment shall be made. Double lock provision shall be made to the door of the cement godown. The keys of one lock shall remain with the Engineer in charge or his authorized representative and the key of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer in charge at any time.

4. The contractor shall supply free of charge the cement required for testing. The cost of tests shall be borne by the Department /Contractor in the manner indicated below:-

   i) By the contractor, if the results show that the cement does not conform to relevant BIS codes.
   ii) By the Institute, if the results show that the cement conforms to relevant BIS codes.

   However the charges for initial tests done along with each consignment shall be borne by the contractor.

5. The actual issue and consumption of cement on work shall be regulated and proper accounts maintained. The theoretical consumption of cement shall be worked out as per procedure prescribed in clause 41 of the General Conditions of Contract.

6. Cement brought to site and cement remaining unused after completion shall not be removed from site without written permission of the Engineer in Charge.

CONDITIONS FOR STEEL:

1. The contractor shall procure TMT steel reinforcement bars of grade Fe-500D conforming to relevant codes from main producers / manufacturers such as SAIL, TISCO, lISCO, RINL (VSP), JSW, Jindal Steel & Power limited (under brand name of "JINDAL PANTHER") etc. Samples from each consignment shall be taken and got tested by the Engineer in charge as per the provisions in this regard in relevant BIS codes. In case the test results indicate that the steel arranged by the contractor does not conform to BIS standards, the same shall stand rejected and shall be removed from the site of work by the contractor at his cost within a week's time from written orders of the Engineer in charge to do so.

2. The rate quoted by contractor against respective items for steel reinforcement bars given in the Schedule shall be for the steel bars supplied by PRIMARY PRODUCERS such as SAIL, RINL (VIZAG STEEL), JSW, lISCO, TISCO & Jindal Steel & Power limited (under brand name of "JINDAL PANTHER"). The contractor shall procure the steel reinforcement bars only from the PRIMARY PRODUCERS.

3. The steel reinforcement shall be brought to the site as required for the work. The contractor shall procure steel bars in full length. **They shall not bring old, rusted / corroded steel bars to site**. As regards stacking of MS rounds, HYSD bars etc., the relevant BIS standards should be invariably followed.

4. Steel reinforcement shall be stored by the contractor at site of work in such a way so as to prevent distortion and corrosion. No extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.

5. For checking nominal mass, testing for tensile strength, bend test, re-bend test etc., specimen of sufficient length shall be cut from each size of the bar at random at frequency as mentioned below, from each consignment for all diameters separately.

Size of bar	For consignment below 100 tonnes	For consignment over 100 tonnes
Below 10 mm dia	One sample for each 25 tonnes or part thereof	One sample for each 40 tonnes or part thereof
10 mm to 16 mm dia	One sample for each 35 tonnes or part thereof	One sample for each 45 tonnes or part thereof
Over 16 mm dia	One sample for each 45 tonnes or part thereof	One sample for each 50 tonnes or part thereof

6. The contractor shall supply free of charge the steel required for testing. The cost of tests shall be borne by the Contractor / Department in the manner indicated below:-

   i) By the contractor, if the results show that the steel does not conform to relevant BIS codes.

   ii) By the Institute, if the results show that the steel conforms to relevant BIS codes.

   However the charges for initial test of each diameter of bar under every consignment shall be borne by the contractor.

7. The actual issue and consumption of steel on work shall be regulated and proper accounts maintained. The theoretical consumption of steel shall be worked out as per procedure prescribed in clause 41 of the Conditions of Contract.

8. Steel brought to site and steel remaining unused shall not be removed from site without the written permission of the Engineer-in-charge.

CONTROL REGISTER FOR CEMENT AND STEEL:

1. Cement and steel reinforcement bars will be procured by the contractor only from the MANUFACTURERS directly or from their AUTHORISED DEALERS / DISTRIBUTERS for which prior approval from EIC will be obtained. Suppliers printed bill in original indicating his name, address telephone no., ST registration no., machine printed serial number / book no. of bill, items supplied and their grade / type / quality date, quantities supplied, rate and amounts etc. should be submitted by contractor to EIC simultaneously along with each supply including manufacturers supply lot number truck number etc. A copy of manufacturer's certificate for testing of relevant supply – lot also will be submitted with the materials.

2. In case of steel reinforcement bars, the contractor will arrange at his cost for weighment of each loaded and empty truck at a nearby computerized WEIGH-BRIDGE, (Got approved from the EIC in advance) and the printed weighing – slips in original will be produced to the EIC by contractor immediately after supply.

3. As and when the consignments of cement and steel are brought to site by the contractor, they shall inform the Engineer in charge or his authorized representative to verify the quantities received and maintain a Control Register showing the lorry receipt No. in which the consignment is received and the date of receipt to enable the Engineer in charge to verify the consumption as per contract conditions. The register shall be signed by the Contractor and the Engineer in charge.

4. The payment for steel & cement consumed in work will be made under respective items only. The contractor shall take-back the materials remaining unused and / or wastages / cut pieces etc. No payment will be made towards unused left over materials at completion of work and wastages etc.

CONDITIONS FOR SAND AND COARSE AGGREGATES:

1. The river sand used shall be from an approved source confirming to relevant IS codes. In case of non-availability of river sand, M-sand from approved quarry confirming to the relevant standards can be used for RCC, PCC and masonry works only.

2. Coarse aggregate used shall be brought from an approved quarry confirming to relevant IS codes.

B) GENERAL GUIDELINES FOR DESIGN MIX CONCRETE

1. Wherever DESIGN MIX concrete has been specified in the tender, the contractor will have to submit in advance to the Engineer-in-charge, the details of such concrete mix design (which shall be got carried out by contractor at his own expense form a Government Recognized Local Material Testing Laboratory, in accordance with methods of Concrete Mix Design laid down by BIS). The theoretical cement consumption co-efficient for concrete of a particular grade shall be the consumption as indicated in the details of the mix design as approved by the Engineer-in-charge the relevant quantity of concrete as certified by the Engineer-in-Charge which has actually been laid using the concerned approved proportions. The coefficient shall be revised as and when there is a change in the approved concrete mix proportion.

2. The proportions as per the design mix shall be allowed to be used only after written approval to the same by the Engineer-in–Charge. The contractor shall ensure the mix proportions as per the approval accorded at site diligently and scrupulously. No change in the concrete proportioning shall be made by contractor without written approval of EIC.

3. The contractor shall submit sample (consisting of quantity of material as directed by EIC) of the material(s) (like fine and coarse aggregates, water, admixtures etc) along with the details of concrete mix design. Contractor shall also submit along with the mix design, the results of the tests conducted to ascertain the basic properties of materials on which the mix design is based.

4. Coarse clean sand (from approved source) confirming to relevant grading zone and Clean, appropriate size well-graded, hard stone coarse aggregates from approved quarry shall be used for all concrete works. In case of non-availability of river sand, M-sand from approved quarry confirming to the relevant standards can be used.

5. During the course of execution of the work also the contractor shall abide by the IS guidelines in all respect for monitoring and testing of the properties of component materials like coarse & fine aggregates, water, cement & admixtures etc and also the concrete including for method of sampling, frequency of sampling method of testing and maintenance of test records etc. The acceptance criteria for design mix concrete as laid at site shall be that given in para 16 of IS-456 (latest Edition).

6. Whenever there is any change in the basic properties of materials (including due to change in the source etc) adopted in the approved mix design, the contractor shall re-submit the mix design details as per the revised data for design. Revised design details shall be adopted only after approval form the Engineer-in-Charge.

7. The contractor shall establish and maintain at his expense, a System, to the satisfaction of the EIC, for monitoring and testing of the properties of concrete and it's component materials. The contractor shall also maintain and up-date all necessary records in connection with monitoring and testing of the concrete and it's constituent materials as per the direction of the EIC. Values of the Standard Deviation of concrete test results shall be calculated and brought up to date after every change in the mix design and at least once a month. Records in connection with monitoring and testing of quality of concrete and it's component materials shall be kept open for inspection by the EIC or his authorized representatives any time.

8. In all cases the contractor shall be bound to use the minimum quantity of cement as per IS Code(s) including IS-456 (Latest Edition) for Exposure Conditions mentioned under various RCC items of Price Bid from Durability point of view. The contractor shall also not exceed the maximum water cement ratio as per IS-456-2000 for Durability Criteria for relevant Exposure conditions.

9. All design mix concrete shall be mechanically batched, mixed and vibrated unless otherwise specified. Guidelines for extreme weather concreting as given in the IS codes shall be followed by contractor and no extra cost, over & above the quoted rate of contractor for design mix concrete will be payable for extra precautions to be taken/extra efforts in this regard.

C) ADDITIONAL GUIDELINES FOR READY MIX CONCRETE (RMC)

1. The contractor has to procure the concrete from a Ready mix concrete plant having the computerized weigh batching plants conforming to IS: 4925 with arrangement for automatic dosing of admixture and adequate protection capacity. The target mean strength shall be as per formula mentioned in IS 456. Suitable adjustments shall be available for allowing variation in respects of quantity of aggregates / water to allow for variations due to surface moisture in the aggregates. The cement used for RMC shall be OPC 43 / 53 grade cement of ACC, Ultra tech, Priya, Rajashree, Grasim, J.P. Rewa, Vikram, Shree Cement, J. K. Lakshmi, Binani, Birla Chetak, Kamal, Sidhi, Birla Jute, Ambuja, Cement Corporation of India, Dalmia Cement, MCCL, Star Cement, TopCem,Wonder Cement of M/s. Wonder Cements Ltd.

2. RMC manufactures approved by Department/Institute are ACC, LAFARGE, Ultra Tech Ready Mix & J.K.Laksmi Power Mix, Birla RMC , M/s. RMC Ready Mix (India) etc and same are mentioned in the respective item under Price bid. However, the tenderers may submit a list of names of RMC manufacturers, which they propose to use in the work. The tender accepting authority reserves right to accept or reject name(s) of RMC manufacturer(s), which the tenderer proposes to use in the work. No change in the tendered rates will be accepted if the tender accepting authority does not accept the list of RMC manufacturers given by the tenderer, fully or partly.

3. Setting of concrete:

3.1. Excessive delay in transportation of concrete may lead to initial setting of Concrete and may render it unusable. In order to avoid setting of concrete, generally retarder i.e. retarding admixture is used which prolong the setting of concrete. While permitting use of retarder, it should be ensured that the suitability and dose of retarder is decided after conducting necessary trials. It may be noted that generally retarding effect of retarder is smaller at higher temperature and sometimes few retarders seem to be in-effective at extremely high temperature. Thus, it is desirable to keep the temperature of concrete as low as possible.

3.2. In view of above, it is necessary that suitability of retarding admixture is judged at the maximum ambient temperature likely to be achieved during concreting. In addition, it is also important that a dose of retarding admixture is tested by conducting trials. Large quantity of admixture/retarder may delay the setting of concrete adversely or may prevent the setting of concrete totally. Some time dosing of admixture is done in stages to ensure desired workability. In such cases, admixture should be mixed at delivery site only. Addition of admixture should not be permitted during transit.

3.3. **Curing:-** Use of retarders also may increase the risk of plastic shrinkage. Good curing, soon after finished concrete surface shows sign of initial set, will reduce plastic shrinkage cracks. Protecting the concrete surface against hot and windy condition by covering the surface with wet hessian cloth also reduces shrinkage. Usually, Ready Mixed Concrete needs fast curing than normal concrete. The starting time of curing should be carefully decided and proper curing started once the concrete shows sign of initial set.

4. Time period for delivery of concrete: In order to control loss of workability and setting of concrete, IS: 4926, Cl. 6.3.1 specifies that concrete should be delivered completely to the site of work within one and half hours (when the atmospheric temperature is above 20^{o} C) and within two hours (when the atmospheric temperature is at or below 20^{o} C) of adding the mixing water to the dry mix of cement and aggregate or adding the cement to the aggregate whichever is earlier. Adequacy of the time period, required for delivery of concrete, should be checked. In case, location of site of construction is such that this time period is inadequate, delivery time period should be increased and specified clearly duly keeping some margin for hurdles in the way (i.e. level crossing/ check post/ heavy traffic congestion locations etc).

5. Checking suitability of admixture: As explained earlier, generally admixture like water reducing agents/ retarders are used in Ready Mixed Concrete for retention of workability and to avoid setting of concrete. IS: 9103 “Specification for admixtures for Concrete” may be referred to judge the suitability of admixtures. According to it, the concrete mix should be prepared both with and without admixture using the same raw materials as proposed to be used for the work. The later being treated as the reference or controlled concrete mix. Test samples from both the mixes should be prepared and tested for physical requirements. The properties of the concrete mix with admixture should conform to the requirements.

6. Special conditions for use of Ready Mixed Concrete:

(i) **Planning for use of Ready Mixed Concrete:** In case to use Ready Mixed Concrete for the work, it should be ensured that these conditions shall be complied by RMC manufacturer. It would be beneficial for tenderers to incorporate these conditions in the agreement entered with RMC supplier.

(ii) **Ready Mixed Concrete:** Ready Mixed Concrete means concrete produced by completely mixing cement, aggregates, admixtures, if any and water at a central batching and mixing plant and delivered in fresh condition to purchaser at site of construction.

(iii) **Necessary information for guidance of manufacturer of Ready Mixed Concrete.**

(a) Coarse clean sand (from approved source) confirming to relevant grading zone and Clean, appropriate size well-graded, hard stone coarse aggregates from approved quarry shall be used for all concrete works. In case of non-availability of river sand, M-sand from approved quarry confirming to the relevant standards can be used.

(b) Water proposed to be used in concrete shall be in accordance with IS456/ clause 4.3 of IRS Concrete Bridge Code.

(c) The test cubes shall be tested at the age of 7 /28 days. The frequency and number of tests shall be made in accordance with relevant Indian standard / CPWD specifications.

(d) Other miscellaneous requirements including durability requirements:

- Only design mix concrete shall be used for production of the required grade and strength of concrete.
- Maximum total chloride content shall be restricted to 0.15% by mass of cement for RCC works.
- The total amount of soluble sulphate content shall be less than 4% by mass of cement.

(iv) **Permeability for design mix:** Permeability test shall be conducted as per the requirement of Appendix-G of IRS Concrete Bridge Code (DIN: 1048). The maximum moisture penetration depth in the test specimen shall not exceed 25mm.

(v) **Quality control:** The producer of RMC shall adopt quality assurance programme, which shall get approved by Engineer-in-charge. It shall cover Forward control, immediate control and retrospective control. He shall have necessary laboratory facilities to carry out necessary tests to ensure quality control at each stage during production of concrete. In case, few tests are done outside, which are not required frequently, the record of test results shall be available with RMC manufacturer.

(vi) **Approval of Design Mix Concrete:** Only design mix concrete shall be produced for the required grade and strength of concrete. For design of concrete mix, IS: 10262 or any other standard may be used for guidance. The design mix computation shall be submitted in advance to the Engineer-in-charge by the contractor. Based on the proposed design mix, cubes shall be cast and tested under the supervision of Department Engineers. In addition to strength, proposed design mix shall be tested for workability, initial setting time, permeability, total chloride content & sulphate content. Only after satisfying the requirements of initial setting time, workability, strength, permeability, total chloride & sulphate content, the design mix shall be approved by the Department. In case there is any change in ingredients or in the process/ plant, design mix shall be redesigned and got approved by Engineer-in-charge.

(vii) **Loss in workability and strength of concrete during transportation:** The loss in workability and strength of concrete during the transit time involved in transportation of concrete, from mixing plant to the place of work, shall be determined before hand and same shall be accounted while designing the concrete mix.

(viii) **Access to Institute's Engineers to Ready Mixed Concrete plant:** RMC Manufacturer shall allow the Institute's officials to supervise the operations involved in concrete production. Adequate facilities shall be provided by the manufacturer to the Institute's officials to supervise the materials proposed to be used in production of concrete, the process of manufacture and method of delivery of concrete. They shall also provide adequate facility to the Department's officials to take samples for materials used.

(ix) **Accessibility of technical records maintained by RMC manufacturer:** RMC manufacturer shall allow Institute's officials to peruse the past & present technical records maintained by him.

(x) **Deputation of Institute's supervisor:** Manufacturer shall allow deputation of Institute Engineers/ supervisors at Ready Mixed Concrete plant on the days on which concrete is likely to be produced for Institute. Institute will ensure that concrete is being produced as per the requirement of work. It will also be ensured that other conditions, as agreed to, are being followed.

(xi) **Temperature of concrete:** Temperature of produced concrete shall not be less than 5^0 C and shall not exceed 35 ^{0}C.

(xii) **Transportation of concrete:** The concrete shall be transported in concrete transit agitators conforming to IS: 5892. Agitating speed of the agitators during transit shall not be less than 2 revolutions per minute nor more than 6 revolution per minute.

(xiii) **Transit Time and placement of concrete:**

a) The concrete shall be delivered at the site of work and discharge shall be completed with-in **1.50 hours** of adding mixing water to the dry mix of cement and aggregate. Concrete received after the transit time, as specified above, shall not be accepted.

b) Concrete, thereafter, shall be placed in position within the designed initial setting time. At the end of initial setting time, the left over portion of concrete, if any, shall be rejected.

(xiv) **Re-tempering:** Under any circumstances addition of any water shall not be allowed after the initial mixing of concrete.

(xv) **Testing for workability and strength at the time of placement of concrete:** The concrete shall be tested for the required workability and strength at the time of placement. Concrete shall be deemed to satisfy/ comply with the strength requirement when it fulfills the criteria laid down in relevant IS codes.

(xvi) **Dosing of admixture at site of concreting:** After arrival of Ready Mixed Concrete at site, additional dose of admixture, if provided for in approved mix design, shall be added in presence of Institute Engineer. However, the RMC manufacturer shall specify the Maximum Quantity of super plasticisers to be added at site (if any).

(xvii) **Measurement of concrete:** Measurements of concrete work so done will be based on finished concrete work. No measurement shall be done for green concrete

D) QUALITY ASSURANCE / CONTROL / MANAGEMENT SYSTEM

INTRODUCTION:

(1) In order to deliver the quality of each item as required by the designer & owners, special efforts shall be made by contractor. For this, separate set-up shall be installed with required manpower by contractor. The quality assurance activity has to ensure the required 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, this inbuilt provision in the contract for a system of continuous check on quality by the field staff of NIT Meghalaya and the contractor for ensuring quality of work availability of adequately manned and equipped set-up overseeing the quality aspects, and periodical appraisal of quality and a system of feedback for effecting possible improvements.

(2) Maintenance of quality has to be systematically approached & attained by the contractor as well as the officials of the department. It necessiate 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 continuous process during the construction stage itself. The final output will then be satisfying both to structural as well as aesthetical sensibilities.

Quality Assurance Plan (QAP) :

(1) A Quality Assurance Plan will be prepared by contractor within 15 days from issue of Work Order and shall be got approved from the Engineer-in-Charge. Q.A. Plan shall be part of tender & contract document for all the works.

(2) Lot size, number of required tests and frequency of testing needs to be clearly indicated in QA Plan. While deciding these criteria Engineering Section NIT Meghalaya specifications, 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 Engineer-in-Charge.

(3) QAP 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) Contractor is required to setup field laboratory including temporary building to house it. The testing equipments to be arranged by the contractor should be as given in list.

(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 in the QAP.

(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 Field laboratory on Construction Site or in outside laboratories shall be maintained by the contractor which shall be checked & countersigned by Engineer-in-charge.

(ii) All Samples of materials including Cement Concrete Cubes shall be taken jointly with Contractor by Institute Site Engineer and out of this at least 50% samples shall be taken in presence of Engineer-in- charge. All the necessary assistance shall be provided for this 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 QA Staff deployed by the contractor which shall be 100% witnessed by Department Site Engineers and 50% of tests shall be witnessed by Engineer-in-charge. At least 10% of the tests are to be witnessed by the inspecting official i.e. Institute Engineer/Director, NIT Meghalaya.

(iv) All the entries in the registers shall be made by the designated QA Engineer of the contractor and same should be regularly reviewed by EIC.

(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 hindrances register along with each alternate Running Account Bills and Final Bill shall be mandatory. These registers should be duly checked by QA wing of NIT Meghalaya Office and receipts of registers should also be acknowledged by Accounts Officer by signing the copies and register to confirm receipt in Accounts office.

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

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

(i) All the MAS Registers including Cement& Steel Registers shall be maintained by Contractor which shall be checked & countersigned by Engineer-in-Charge in the same manner as being maintained by Institute field staff.

(ii) Each of the entry of receipt of material at site shall be 100% test checked by Institute Site Engineer or by EIC.

(iii) Each MAS Register shall be checked by Institute Site Engineer at least twice a week and at least once a week by EIC. If there is no Institute Site Engineer, then MAS registers will be checked by EIC at least twice a week.

(iv) Cement Register shall be reviewed by EIC at regular interval to verify the physical stock with entry in register.

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

(12) Director, NIT Meghalaya 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. 10.00 Crores, he shall check and sign these reports for works in his office, before every alternate running account bill, beginning from the first bill, as well as before the final bill is paid to the contractor.

Method Statement:

It will be mandatory for contractor to submit a 'Methods statement' for the approval of the department soon after (within 15 days) the award of work to him. The 'Methods statement' is a statement by which the construction procedures for important activities of construction are stated, checked, and approved. The "Methods statement', should have a description of the item with elaborate procedures in steps to implement the same, the specifications of the materials involved, their testing and acceptance criteria, equipments to be used, precautions to be taken, mode of measurement, etc.