M/s HLL INFRA TECH SERVICES LTD. (HITES)

(Subsidiary of HLL Lifecare Ltd., A Government of India Enterprise)

As Executing agency to

MINISTRY OF HEALTH & FAMILY WELFARE

GOVERNMENT OF INDIA, NEW DELHI

TENDER

FOR

DESIGN & CONSTRUCTION OF NEW BOUNDARY WALL FOR PROPOSED AIIMS MADURAI AT THOPPUR WITH PRECAST TECHNOLOGY

Volume- IV

SPECIFIC CONDITIONS OF CONTRACT

Tender No. HITES/IDS/18/87

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HLL INFRA TECH SERVICES LTD. (HITES)

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SPECIFIC CONDITIONS OF CONTRACT (SCC)

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SECTION - 1

1. Contractor's General Responsibilities

(a) Installation of batching plant and precast yard at site

The precasting yard for manufacturing the precast panels at quality controlled environment shall be established at site.

i. General Responsibilities:

The tenderer shall first obtain the statutory permits /approvals / NOC from all the concerned authorities like local bodies, NGT, Pollution Control Board, Airport Authority, etc., for the establishment of Batching plant and Precast yard at site.

The tenderer shall prepare the shop drawing consisting of layout showing the set up locations of Batching plant, Material stock yard, approach road for movements, Precast yard, Stock yard of precast components with required dimensions and a detailed Method Statement and shall be submitted for the necessary approval.

The tenderer shall strictly follow quality, safety and environmental management system and relevant IS for the installation of batching plant and pre-cast yard. The tenderer shall make necessary arrangements for the controlled environmental casting.

The tenderer shall make his own arrangement for the requirement of water, power supply, drainage and clearing of debris for carrying out the entire scope of work. No additional charges will be paid.

ii. General requirements:

A. BATCHING PLANT

The tenderer shall plan the suitable size of batching plant as per the requirement of the project. The mixers can be equipped with several sector gates for the production of concrete for different applications, like precast concrete or ready mix concrete for trucks.

Maintain all the equipments including dust collection equipments to prevent any leaks.
Identify a buffer zone which surrounds your operations in which you are planning to contain dust generating activities.
Provide safety, quality and environments management system for the site and plant operations, as well as the delivery system.
Check for fabric leaks, cartridge filter system, suctions and shrouds regularly.

Installation of audible high level arms on the storage silos to avoid over spilling which might damage the filters.
Store all the dust generating materials inside the silos e.g. cement
Use the enclosed batch mixer feed as dust prevention and visible emissions.
Use the spray device to prevent dust emissions.
Conduct all the mixing operations from an enclosed building to help prevent emission of dust.
The stock pile entrance sides should be covered with a flexible curtain.
The opening between the storage bins and the materials weighing scale should be totally closed
To prevent dust emissions, the belt conveyors should be enclosed with metal board on top and on the two sides.
All conveyor transfer points should be enclosed by fitting the flexible seals to prevent dust.
The turning point of all the conveyors should be provided with scrappers to prevent dust collection on the surface belt
Loading concrete trucks should be in such a way that minimizes dust emissions.
All the air borne dust emission generated by material loading and mixing operations should be vented to fabric filtering system.
The concrete mixers and other vehicles should be cleaned off after the loading and mixing operations to wash off the mud, dust deposited on the wheels and body.
Use water sprays or dust suppression agents to reduce dust.
An air extraction and filtration system for collecting the generated dust should be installed.
The roof should be extended at least 6 feet beyond the load areas.
Collect the waste concrete in suitable washout pits where it becomes gravel, sludge and sand which can later be reused.
Waste and contaminated water should be directed to onsite settling ponds and it can be reused later in for dust control, rinsing trucks exteriors.

B. <u>Material stack yard</u>

The tenderer shall allot the required spaces for stacking of materials like cement, fine-aggregate, coarse aggregate, water, admixtures, etc. The tenderer shall clean the ground of stack yard and provide cement platform for stacking the materials. The Cement in small quantities shall be stacked in a separate store room with roof. The space for each material shall be sufficient enough to keep the required stack at all time and to have un-interrupted truck movement. It shall be ensured that the materials shall not be mixed each other. The stacking of all materials shall be strictly followed as per relevant IS Codes.

C. <u>Quality of material</u>

(i) Cement: The cement used shall be of 53 Grade ordinary Portland cement conforming to IS 12269.

(ii) Fly ash: Fly ash conforming to Grade 1 of IS 3812 may be used as part replacement of ordinary Portland cement provided uniform blending with cement is ensured.

(iii) Aggregates: Aggregates shall comply with the requirements of IS 383. As far as possible preference shall be given to natural aggregates. Other types of aggregates such as slag and crushed overburnt brick or tile, which may be found suitable with regard to strength, durability of concrete and freedom from harmful effects may be used for plain concrete members. But such aggregates should not contain more than 0.5 percent of sulphates as SO_3 and should not absorb more than 10 percent of their own mass of water. Coarse and fine aggregate shall be batched separately. All-in-aggregate may be used only where specifically permitted by the engineer-in-charge.

(iv) Water: Water used for mixing, and curing shall be clean and free from injurious amounts of oils, acids, alkalis, salts, sugar, organic materials or other substances that may be deleterious to concrete or steel. Potable water is generally considered satisfactory for mixing concrete.

(v) Admixture: Admixture, if used shall comply with IS 9103. Admixtures should not impair durability (If concrete nor combine with the constituent to form harmful compounds nor increase the risk of corrosion of reinforcement.

(vi) Reinforcement: The reinforcement shall be of High strength deformed steel bars conforming to IS 1786. The contractor shall procure TMT bars of Fe500 grade (the grade as per BOQ) from manufacturers as per list of approved makes. All reinforcement steel shall have suitable corrosion coating and earthquake resistance as per the relevant IS Codes and approval of Engineer-in-charge. All reinforcement shall be free from loose mill scales, oil, mud or any other substances which may destroy or reduce bond. Sand blasting or other treatment is recommended to clean reinforcement.

D. Pre-casting:

The bidder can setup a fully controlled environment pre-cast yard inside the site premises at their own arrangement. The pre-cast yard should be equipped with computerized batching plant to ensure the quality and uniformity of the concrete mix, concrete distributed system such as concrete shuttle or concrete spreader or moving pallet system by which can over comes the man made errors and also should contains suitable moulding platform to avoid the flexural cracks at the time of de-moulding.

During concreting, slump shall be checked for every batch of concrete before pouring of concrete. As per the IS Standards the minimum number of cubes shall be casted as per the volume of the concrete poured on the day. Extra 3 cubes shall be casted to check the 75% of the compressive strength of 28 day duration as per relevant IS codes before de-moulding.

The mix design for a specified grade of concrete shall be done for a target mean compressive strength Tck = Fck + 1.65s

Where Fck = Characteristic Compressive Strength at 28 days
s = Standard deviation which depends on degree of quality control. This is to avoid cracks in the panels.

E. Curing:

It is essential to use proper and adequate curing techniques to reduce the permeability of the concrete and enhance its durability by extending the hydration of the cement, particularly in its surface zone.

F. Demoulding & lifting:

After Confirmation of achievement of 75 % of compressive strength of the precast component and on the instructions of Engineer-in-charge, demoulding shall be done adhering to relevant safety and IS codes.

G. Stacking:

All the demoulded precast elements should be stacked in an orderly manner complying to all IS codes and safety norms. Any damages or discrepancy observed in the precast elements will be rejected.

(b) Execution of works:

The Contractor shall, subject to the provisions of the Contract, and with due care and diligence, execute and complete the Works & remedy any defects therein in accordance with the Contract. The Contractor shall provide all labour, including the supervision thereof, materials, Constructional Plant and Machineries and all other things, whether of a temporary or permanent nature, required in and for such execution, completion, maintenance and remedying of any defects, so far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract.

If the contractor finds any discrepancy in the drawings or between the drawings, bill of quantities and specifications, he shall immediately and in writing refer the same to the Engineer - in- Charge for clarifications who shall decide the matter.

The successful contractor is bound to carry out any items of work necessary for the completion of the job even though such items are not included in the bill of quantities and rates instructions in respect of such additional items and their quantities will be decided as per the provision of the contract and issued in writing by the Engineer-in-charge.

The Contractor must bear in mind that all the work shall be carried out strictly in accordance with the specifications as given in these documents and also in compliance of the requirements of the local public authorities and to the requirements/ satisfaction/ direction of the Engineer-in-charge and no deviation of any account will be permitted.

The contractor shall have to use materials from the makes/ manufacturers specified in the list of materials of approved brand and/or manufacture contained in the contract documents and as approved by the Engineer - in- Charge. Wherever different pattern/ Design/ Quality of materials with same specification/ make as specified in the contract, is available in the market, Engineer-in-Charge will approve

the pattern/ Design/ Quality of the material/ item which shall be final and binding on the contractor. The contractor shall supply samples of all the materials / fittings/ fixtures proposed to be used in the work and obtain approval of the Engineer - in- Charge. These samples shall be retained at site till completion of the work. If subsequently it is found that approved material upon testing does not meet the requirement as specified in the contract the contractor shall get approval of alternate material.

The tenderer shall first obtain the statutory permits /approvals / NOC from all the concerned authorities like local bodies, NGT, Pollution Control Board, Airport Authority, etc., for the establishment of Batching plant and Precast yard at site.

The tenderer shall prepare the shop drawing consisting of layout showing the set up locations of Batching plant, Material stock yard, approach road for movements, Precast yard, Stock yard of precast components with required dimensions and a detailed Method Statement and shall be submitted for the necessary approval.

The tenderer shall strictly follow quality, safety and environmental management system and relevant IS for the installation of batching plant and pre-cast yard. The tenderer shall make necessary arrangements for the controlled environmental casting.

The tenderer shall make his own arrangement for the requirement of water, power supply, drainage and clearing of debris for carrying out the entire scope of work. No additional charges will be paid.

a. The work shall be carried out in conformity with the relevant drawings and the requirement of architectural, electrical, structural, and other specialised service drawings approved by Engineer-in-charge.

   i. The Contractor shall make provision of hangers, sleeves, structural openings and other requirements during construction to avoid holding up progress of the construction schedule. The Contractor should ensure that the structure is designed for additional loads or cut outs. Subsequent Cutting of holes in the RCC structural members /slab shall not be allowed.

   ii. The contract items comprise of furnishing of all materials, equipment, labour & transportation etc. necessary to render the installation/ item fully operational as per the intent of specifications and drawings, including any necessary adjustment or corrections. Further the installation/ item shall be in conformity with local laws and manufacturer's instructions applicable.

b. <u>Samples & Approval of Materials</u>

   i. The Engineer-in-charge will not supply any materials required for execution of the Works under this Contract. The Contractor must, therefore, make his own arrangements for timely procurement of various materials including steel and cement.

   ii. Prior to ordering any equipment/ material/ system, the Contractor shall submit to the Engineer-in-charge the catalogues, along with samples from approved list of manufacturers. No material shall be procured without written approval of the Engineer-in-charge.

iii. Prior approval of each and every material including steel cement, aggregate, bricks etc. or any other fittings & fixtures shall be taken by the contractor from the Engineer-in-charge. Samples for all the materials to be used in the work shall be got approved from Engineer-in-charge before their bulk procurement. Samples approved shall be kept in the sample room till the completion of the work.

iv. All materials used on the Works shall be new and of the approved quality and make available, conforming to the relevant specifications of the contract. Prior approval shall be obtained in writing from the Engineer-in-charge for all materials proposed and when necessary, approved samples duly identified and labeled shall be deposited with the Engineer-in-charge and shall be kept in the sample room at Site. List of approved make indicates make/ manufacturer generally acceptability. Final choice of make/ manufacturer of material & models shall be with the Engineer-in-charge.

c. Material and Equipment

i. All material and equipment shall conform to the relevant Indian Standards and bear IS marking where ever applicable.

ii. Where interfacing is involved, both equipments shall be mutually compatible in all respects.

iii. Where an item of equipment, other than as specified or detailed on the drawings, is approved by Engineer-in-charge, requires any re-design of the structure, partitions, foundation, piping, writing or any other part of the mechanical, electrical or architectural layout, all such re-design, and all new drawings and detailing required therefore, shall be prepared by the Contractor at his own expense and approval obtained from the Engineer-in-charge.

iv. All similar equipment, materials, removable parts of similar equipment etc. shall be inter-changeable with one another.

d. Approved makes for materials and vendor list

The contractor shall procure materials amongst the vendors as mentioned in the vendor lists enclosed. In case a material is not available from any of the vendors in the enclosed vendor lists, the contractor may intimate and submit details of source from where the contractor wishes to procure the material, along with complete details and the particular material shall be got approved from the Engineer - in-Charge before procurement.

e. Safety in Construction

The contractor shall employ only such methods of construction, tools and plant as are appropriate for the type of work or as approved by Engineer-in-Charge in writing.

The contractor shall take all precautions and measures to ensure safety of works and workmen and shall be fully responsible for the same. Safety pertaining to construction works such as excavation, centering and shuttering, trenching, pre casting, cast-in-situ concreting, reinforcement work, loading / unloading, erection

using crane and necessary machineries, all kind of construction machinery shall be governed by the Safety code, relevant safety codes and the direction of Engineer-in-Charge

f. Adequacy, stability and safety:

The Contractor shall be fully responsible for the adequacy, stability and safety of all site operations and methods of construction, the contractor shall ensure that all safety norms are followed as per contractual and other statutory requirements.

g. Temporary works and arrangements**:**

The Contractor shall furnish to the Engineer-in-charge full particulars i.e. site location and area required including drawings, etc. of all temporary works necessary for the execution of the works and shall give adequate time to the Engineer - in- Charge for his approval. The Contractor shall be solely responsible for the stability and structural safety of all temporary works including obtaining statutory approvals and payment of statutory fees, if any. Should it be necessary to shift the temporary works to some other place during the execution of the works, the Contractor shall do so, at his own cost.

h. Initial and Final Clearance of site for temporary works:

The Contractor shall be responsible for the clearance of the site of all scrub, debris, rubbish, etc. to be removed off site to a location to be provided by the contractor and approved by the Engineer- in-charge. However, no trees shall be removed without the prior permission of the Engineer-in-charge. The structures, services and works required to be demolished and removed shall also be removed off site to a location as mentioned above. The Contractor shall obtain necessary permissions and approvals from the local authorities for such disposals. The demolition shall include digging, excavating and removal of substructures, foundations and buried works. The cost of all this shall be borne by the Contractor.

The above is applicable for all site offices, labour camps, and godowns etc., which are not required after the work is completed.

i. Storage, Cleaning and Dewatering

The Contractor shall at all the times during construction keep the Site clean and free from all debris and unwanted materials on a daily basis as per instructions of the Engineer-in-charge.

Storage of materials shall be in an organized manner and in proper compartments as directed by the Engineer-in-Charge. Storage on suspended floors shall not be permitted unless specifically approved in writing by the Engineer-in-charge for specific materials in specific locations and in approved manner. The Engineer-in-charges shall be furnished with load details, if requested, before seeking approval for storage.

Regular cleaning operations shall be undertaken to remove all dust, debris, waste materials etc. A cleaning schedule shall be maintained.

The Contractor shall make his own arrangement for storage of those materials, which can be accommodated at site. Contractor shall be fully responsible for safe

custody of the same. Materials shall be considered as "Delivered at Site" only after the physical presence of materials at site are verified by the Engineer-in-charge. Storage of materials/ equipment elsewhere shall not be considered as "Delivered at Site."

The Contractor shall be responsible to keep entire site free from water due to water coming from any source at any level and shall protect all materials and works from being damaged by the water from any source. Contractor shall make proper arrangements for drainage prior to use of water for curing, testing, cleaning etc.

Any expenditure incurred by the Contractor in fulfillment of his obligations under this sub-clause shall be deemed to have been included in the financial bid and subsequent contract.

2. Watch & Ward and Lighting

The Contractor shall throughout the execution and completion of the Works and the remedying of the site and the Works and the remedying of any defects therein have full regard for the safety of all persons entitled to be on the site and keep the site and the Works in an orderly state to avoid any accident or danger and provide safety measures, lights, guards, fencing and barricades where ever necessary or required by the Engineer-in-charge, or by any duly constituted authority, for the execution and for the protection of the Work, and/or for the safety and convenience of the public or others and take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to person or property of the public or others resulting from pollution, noise and other causes etc. at his own cost.

3. Care of Works

From the commencement to the certified completion of the whole of works, the contractor shall be responsible for the care, safety and maintenance of the works executed under the contract thereof and of all temporary works. In case of any damage/ loss or injury shall happen to the works or to any part thereof or to any temporary works from any cause whatsoever save and except the expected risks, the contractor shall at his own cost repair and make good the same, so that on completion the works shall be in good order and condition in conformity to every respect with the requirements of the contract. The contractor shall also be liable for any damage to the works occasioned by him including his subcontractors in the course of any operations carried out by him for the purpose of completing any outstanding work and complying with his obligations under the Contract. In case of failure on the part of the contractor the damage/ loss/ injury shall be made good by the CLIENT/ HLL at the risk and cost of the contractor.

4. Force Majeure:

Any failure or delay in the performance by either party hereto of its obligations under his Contract shall not constitute a breach thereof or give rise to any claims for damages if, and to the extent that it is caused by occurrences beyond the control of the party affected, namely, acts of God, floods, explosions, wars, riots, storms, earthquakes, insurrection, epidemic or other natural disasters. The party so affected

shall continue to take all actions reasonably within its power to comply as far as possible with its obligations under this Contract. The affected party shall promptly notify the other party after the occurrence of the relevant event and shall use every reasonable effort to minimize the effects of such event and act in all good faith with due care and diligence.

5. Contractor's Superintendence

(a). The contractor shall be solely responsible for the means, methods, techniques sequence and procedure of construction. The Contractor shall be responsible to see the completed work complies accurately with the Contract requirements. The Contractor shall provide all necessary superintendence during the execution of the Works as per contractual provisions.

(b). Contractor's Representative for Execution & Coordination of Works

The Contractor shall ensure his presence at site all times during working hours throughout the course of the Contract or depute a Competent representative who shall be empowered to receive instructions from the Engineer - in-Charge in respect of all matters likely to arise in connection with the execution & coordination of the works at the site. Contractor's Authorized Representative shall take joint measurements and sign the measurement books/bills. Any direction, explanations, instructions or notices given by the Engineer-in-charge to such representative shall be held to be given to the Contractor. In case of absence of said Representative other alternative representative should also be mentioned having same responsibilities.

The contractor should submit curriculum vitae (CV) of the key personnel proposed to be deployed at site as per Schedule "F" of GCC for supervision and execution of work.

The contractor under normal circumstances would not be allowed to replace the key personnel during the execution of the contract. However, for any reasons, due to unavoidable circumstances if it becomes necessary in the interest of the project to replace any one/ all the above key personnel the contractor must submit the CV of the new personnel (having qualifications and experience as per requirement of the contract) to Engineer-in-Charge for their approval.

A list of all technical and key personal staffs must be submitted to the Engineer-in-Charge with their area of work/ responsibility with verified signature and the link persons to receive the instructions at site (in case the main person was not found at site) during the inspection by representative of Engineer-in-charge. Any staff of contractor found incapable/unsuitable to execute the assigned work shall be replaced by the Contractor if desired by the Engineer-in-Charge.

(c). Contractor's Employees

The Contractor shall employ competent Engineering staff / technical assistants/ technicians who are qualified, skilled and experienced in their respective trades, to ensure proper supervision, quality & output of the work they are required to supervise. No child labour shall be employed on the work. All the skilled semi-skilled and unskilled labour shall work under the sole guidance of the contractor/

his representative.

(d). Removal of Contractor's Employees

The Contractor shall on the direction of the Engineer-in-Charge immediately remove from the work any person employed thereon by him who may, in the opinion of the Engineer-in-Charge has misconducted himself and such person shall not be again employed on the works without the permission of the Engineer-in- charge.

(e). Unauthorized Persons

No unauthorized persons shall be allowed on the site. The contractor shall provide complete security arrangement for the campus during construction to avoid trespassing. The Contractor shall ensure all such persons are kept out and shall take steps to prevent trespassing. However the contractor will make sure to provide free access at any time for Engineer-in-charge to the site and other working places.

6. Compliance with Statutes, Regulations, Etc.

The contractor shall conform to the provisions of all statutes, ordinance, laws, acts of the legislature relating to the works, and to the regulations and by-laws of any local or other duly constituted authority and of any water, electric supply and other companies and/or authorities with whose systems the structure is proposed to be connected. The Contractor shall keep the CLIENT/ HITES indemnified against all fines or penalties or liability of every kind for breach of any such statutory ordinance, law act of the legislation, regulations, and byelaws as aforesaid.

The contractor shall before making any variations from the drawings or specifications that may be necessitated by such regulations, give to the Engineer- in-charge written notice, specifying the variation proposed to be made and the reasons for making it and apply for instructions thereon. The contractor will not execute any work without written permission from the Engineer-in- charge

The contractor shall bring to the attention of the Engineer-in-charge any specific requirement of the local authorities or any notice required for execution by virtue of such acts, regulations or bye-laws of such authority, or public office. All fees that may be chargeable in respect of these works shall be reimbursed by the CLIENT on production of authorized receipts.

7. Setting out

The contractor shall be responsible for the true and proper setting-out of the Works in relation to original points, lines and levels or reference issued by Engineer-in-charge in drawing or in writing and for the correctness, subject as above mentioned, of the position, levels, dimensions and alignment of all parts of works and for the provision of all necessary instruments, appliances and labour in connection therewith. If, at any time during the progress of the works, and during defects liability period, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required to do by the Engineer-in-charge and/

or his authorised representative shall at his own cost, rectify such error to the satisfaction of the Engineer-in-charge. The checking of any setting out or of any line or level by the Engineer-in-charge not in any way relieve the Contractor of his responsibility for the correctness thereof. The Contractor shall carefully protect and preserve the benchmarks; sight-rails, pegs and other things used in setting-out the Works. Any rectification works required should be done by the Contractor at his own cost.

8. Quality of Materials, Workmanship and Test

(a). All the materials used in the work shall be subjected to the mandatory tests as prescribed in the specifications detailed in Schedule F of the General Conditions of Contract and other specifications referred to in the contract and workmanship shall be the best of the respective kinds described in the Contract and in accordance with the Engineer-in- charge's instructions and shall be subjected from time to time to such tests as the Engineer-in-charge may direct at the place of manufacture or fabrication or on the Site or at an approved testing laboratory. The source of supply and / or manufacturing within/ outside India may be inspected by the Engineer-in-charge or any representative as nominated by the CLIENT/ HITES. The expenditure on this account is deemed to be included in the rate quoted.

The contractor shall upon the instruction of the Engineer-in-charge's representative furnish him with documentation to prove that the materials & goods comply with the requirements of contract and for requirement stated above. The Engineer-in-charge may issue instruction in regard to removal of material from site or any work, if these are not in accordance with the contract. The contractor shall provide such assistance, instruments, machinery, labour and materials as are required for examining, measuring, sampling, testing of material or part of work.

The Engineer-in-charge may also carry out **Third Party Quality Assurance /Audit** by an independent agency/ individual/firm/institute at any time. The agency will be permitted and offered all support related to site inspection by the Contractor. Observations/ discrepancies noticed by third party quality assurance/ audit shall be attended by the contractor at his own cost.

(b). Samples

i) All samples of materials and/or items of works in adequate numbers, sizes, shades & pattern as per specifications shall be supplied free of charge by the contractor without any extra charge. All other expenditure required to be incurred like conveyance for taking the samples for testing at the laboratory, packing, etc, shall be borne by the contractor. If the test results do not conform to the specifications and standards laid down, the materials shall be rejected, the contractor shall remove such materials from site. The laboratory for testing of samples shall be decided by the Engineer – in charge, whose decision shall be final and binding.

ii) Contractor shall submit Samples to the Engineer-in-charge for approval. If

certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site, detailed literature / test certificate of the same shall be provided to the satisfaction of the Engineer-in-charge. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalogue numbers and the use for which intended and otherwise as the Engineer-in-charge may require to review the submittals for the limited purposes required by paragraph (d) below. The numbers of each sample to be submitted will be as specified in the Specifications, or as shall be specified by the Engineer-in-charge.

iii) Submittal Procedures

1. Before submitting each Sample, Contractor shall have determined and verified all materials with respect to intended use, fabrication, shipping, handling, storage, assembling and installation pertaining to the performance of the Work and All information relative to Contractor's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programmes incident thereto.
2. Each submittal will bear a specific written indication that Contactor has satisfied Contractor's obligation under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. At the time of each submission, contractor shall give the Engineer-in-charge specific written notice of such variations, if any; that the sample submitted may have from the requirements of the contract document. Such notice shall be separate from the submittal and in addition shall cause a specific notation to be made on each sample submitted for review and approval of each such variation

iv) Review and Approval:

1. Sample shall be reviewed and approved only to determine if the items covered by the submittals will, after installation or incorporation in the work, conform to the information given in the contract documents and be compatible with the design concept of the completed project functioning as a whole as indicated by the contract documents, drawings.
2. Review and approval will not extend to means, methods, techniques, sequences or procedures of construction. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Engineer-in-charge and shall submit as required new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for and by the Engineer-in-charge on previous submittals.
3. Above referred review and approval of Samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Document unless Contractor has in writing called the Engineer-in-charge attention to each such variation at the time of

submission as specified above and received written approval of each such variation by specific written notation thereof incorporated in or accompanying the Sample approval; nor will any approval by Engineer-in-charge relieve Contractor from responsibility for complying with the requirements of contract.

4. Only when the samples are approved in writing by the Engineer-in-charge, the contractor shall proceed with the procurement and installation of the particular material/ equipment. The approved samples shall be signed by the Engineer-in-charge for identification and shall be kept on record at site office until the completion and acceptance of the work and shall be available at the site for inspection/ comparison at any time. The contractor shall keep with him a duplicate of such samples to enable him to process the matter.
5. For items of works where the samples are to be made at the site, the same procedure shall be followed. All such samples shall be prepared at a place where it can be left undisturbed until the completion of the project.
6. The Engineer-in-charge shall communicate his comments / approval to the Contractor to the samples at his earliest convenience. Any delay that might occur in approving of the samples for reasons of its not meeting with the specifications or other discrepancies, inadequacy in furnishing samples of appropriate quality from various manufacturers and such other aspects causing delay on the approval of the materials/ equipment's etc., shall be ascribable to the account of the contractor. In this respect the decision of the Engineer-in-charge shall be the final.

v) On delivery of the supplies of materials / equipments for permanent works at the site, the contractor shall specifically arrange to get the supply inspected by the Engineer-in-charge and compared with the approved sample and his specific approval obtained before using the same in the work.

vi) Cost of Tests

The cost of making any test shall be borne by the Contractor as intended by or provided for the Contract or as found necessary by the Engineer-in-charge for ascertaining whether the quality of materials intended to be used by the Contractor in the Works is acceptable, whether any finished or partially finished work is appropriate for the purposes for which it was intended to fulfill.

vii) Testing facilities

The Contractor shall, at his own cost, provide testing facilities as per CPWD specifications and IS Codes at site as stipulated in the General Conditions of Contract (GCC) or as directed by the Engineer-in-charge including staff required for testing. The tests shall be carried out jointly in the presence of Engineer-in-charge or his representative and the contractor or his representative.

The contractor shall also provide suitable weighing and measuring arrangement and testing instruments and machines for testing of materials

and cubes at site as per details given in GCC.

The contractor shall carryout all the mandatory tests and shall maintain records of testing & checks of material, in formats, checklists etc. to be given by Engineer-in-charge. All such records shall be maintained jointly by the contractor and Engineer-in-charge these shall remain under the custody of the Engineer-in-charge.

The laboratory shall be connected to the main potable water, electricity and other Services.

Some of the mandatory tests for each item of work and /or materials shall be carried out in approved outside laboratory as directed by the Engineer-in-charge. The Contractor shall bear the entire cost of testing charges for samples of items of work and/or materials and also the other expenditure towards making samples, packaging, and transport etc.

The materials brought at site of work shall not be used in the work before getting satisfactory test result as per relevant mandatory tests, detailed in the relevant CPWD specifications and BIS codes.

9. Absence of Specifications

If the nomenclature of any item does not contain particulars of materials and works which are necessary for its proper execution, all such materials shall be supplied and item shall be executed by the Contractor without extra charge over the quoted rates and If the Contractor requires any information, he shall request in writing well in advance to commencement of the particular work to the Engineer-in-charge who will clarify the issue within a reasonable time.

10. Obtaining Information's related to Execution of work

No claim by the Contractor for additional payment will be entertained which in consequent upon failure on his part to obtain correct information as to any matter affecting the execution of the works, nor will any misunderstandings or the obtaining of incorrect information or the failure to obtain information relieve him from any risks or from the entire responsibility for the fulfillment of the contract.

11. Access for Inspection

Persons nominated by Engineer-in-charge shall at all reasonable times have free access to work and/ or to the workshops, factories or other places where materials are lying or from which they are being obtained and the Contractor shall extend necessary service to Engineer-in-charge and their representatives every facility necessary for checking measurements, inspection and examination and test of the materials and workmanship.

12. Examination of Work before covering up

(a) No part of the works shall be covered up or put out of view without the written approval of the Engineer-in-charge and the contractor shall give due notice to the Engineer-in-charge whenever any such work or foundation is or ready or about to be ready for examination and the Engineer-in-charge shall, examine and measure any work before it is covered up or put out of view and to examine foundations before further work is placed thereon.

(b) Uncovering and making openings

The contractor shall uncover any part or parts of the works or make openings in or through the same as the Engineer-in-charge may direct from time to time and shall reinstate and make good such part or parts to the satisfaction of the Engineer-in-charge at his own cost.

13. Assignment

The contractor shall not, without the prior consent of the Engineer-in-charge assign the Contract or any part thereof, or any benefit or interest therein or there under, otherwise than by:

i. A change in favour of the Contractor's bankers of any money due or to become due under the Contract, or

ii. Assignment to the Contractor's insurers (in case where the insurers have discharged the Contractor's loss or liability) of the Contractor's right to obtain relief against any other party liable.

The Contractor shall not sub-contract the whole of the Works. Also, the Contractor shall not subcontract any part of the works without the prior consent of the Engineer-in-charge, except where otherwise provided under the Contract. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be fully responsible for the quality of the work executed and acts, omission and commission, defaults and neglects of any Subcontractor, his agents, servants or workmen as if these were the acts, defaults or neglects of the Contractor, his agents, servants or workmen. Such Permission may be granted only for the specialized work etc and the decision of Engineer-in-charge shall be final.

14. (a) **Inspection & Testing during manufacture**

The Engineer-in-charge shall be entitled to inspect, examine and test during manufacture the materials and workmanship and check the progress of manufacture of all fabrication materials to be supplied under the contract on the contractor's premises during working hours, and if part of the said materials is being manufactured on other premises, the contractor shall obtain for the Engineer-in-charge permission to inspect the same at such premises. This inspection, examination or testing shall not relieve the contractor from any obligation under the contract.

(b) **Dates for Inspection & Testing**

The dates of Inspection & Testing, after receipt of written request by the Contractor, shall be mutually agreed by the Engineer-in-charge and the contractor.

(c) **Facilities for Testing at Manufacturer's Works**

Where the contract provides for tests on the premises of the contractor or of any sub-contractor the contractor shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be required and as may be reasonably demanded to carry out such tests.

(d) **Rejection**

If as a result of such inspection, examination or test of the works (other than a Test on Completion the Engineer-in-charge shall decide that such material is defective or not in accordance with the contract he shall notify the contractor accordingly stating in writing his observations and reasons thereof. The contractor shall with due diligence make good the defect and ensure that the material complies with the Contract. Thereafter, if required by the Engineer-in-charge, the tests shall be repeated under the same terms and conditions till satisfactory results are made available.

(e) **Delivery of Materials and Equipment**

The contractor shall be responsible for all materials and equipment brought at site for the purposes of the contract. Unless the Engineer-in-charge directs, no material shall be brought to the site which is not required for execution of the work.

(f) **Inspection & Testing and Re-inspection**

All deficiencies revealed by testing and inspection shall be rectified by the contractor at his own expense and to the satisfaction and approval of the Engineer-in-charge. Rectified components shall be subject to re-testing till desired results are obtained.

(g) **Inspection Reports**

The contractor shall provide the Engineer - in- Charge with five copies of reports of all inspection and tests.

15. Physical and Virtual Completion of Work

When the whole of the Work is physically and virtually complete and has satisfactorily passed required tests that may be prescribed under the Contract:-

a) The contractor shall give a written notice to this effect within 10 days of completion along with an undertaking to rectify any defects that may be found during inspection. The Engineer - in- Charge shall jointly inspect the work with the contractor within 30 days of receipt of such notice.

b) The Engineer-in-charge shall inspect the works completed to see if they are in such a condition so as to be put to its proper or other intended final use and/ or occupied without any short comings and no major or minor items of works are remaining which in the opinion of the Engineer-in-charge will cause undue difficulties in satisfactory use/ occupation of the works.

16. Provisional Acceptance and Certificate of completion

16.1. Provisional Acceptance and Issue of Certificate of Physical Completion of work

The work shall be deemed to have been physically completed and provisionally accepted after fulfillment of all the following by the Contractor.

i) Physical completion of all works and obtaining all required approvals from the statutory authorities as required for occupation and use of the works and handing over such certificates to the Engineer-in-charge

ii) Submitting As-Built Drawings, Catalogues, Brochures, and Data Sheets, manuals in the form as directed by Engineer in Charge

iii) Issue of Certificate of Physical Completion by the Engineer-in-charge.

16.2. Certificate of Final Completion

The contract shall not be considered as completed until a Certificate of Final Completion has been issued by the Engineer-in-charge stating that the Works have been completed to his satisfaction and remedying / rectifying of defects have been satisfactorily completed.

The composite work shall be treated as complete when all the components of the work are complete. The Certificate for Final Completion of the Composite work shall be recorded by the Engineer-in-charge after obtaining/ recording of completion certificate of all the components.

Provided always that the issue of the Certificate of Final Completion shall be a condition precedent to payment or return to the Contractor the security deposit and / or Performance security in accordance with the conditions set out in the contract.

16.3. Certificate of Overall Completion

The Engineer-in-charge shall give the Certificate for Overall Completion as per the following, whichever is later:

- Twenty-eight days after the expiration of the Defects Liability Period

OR

- If different Defect Liability Periods shall become applicable to different sections or parts of the Works, the expiration of the last such period

OR

- As soon as thereafter any works ordered during such period and have been completed to the satisfaction of the CLIENT/HITES.

17. The contractor shall give performance test of the entire work as per standards specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the tests.

18. The contractor shall maintain in perfect condition all works executed till the completion of the entire work allotted to him. Where phased handing over of

completed portion of the work is required by the Engineer – in – charge, the provisions mentioned for completion of entire work will apply to each phase.

19. Defect after completion

(a). General

Any defect, shrinkage, settlement or other faults that may appear within the "Defects Liability Period" which in the opinion of the Engineer-in- charge are due to materials or workmanship not in accordance with the contract, shall be rectified as per the directions in writing of the Engineer-in- charge to the Authorized representative of the contractor within such reasonable time as shall be specified therein by the contractor, at his own cost. In case of default, the Engineer-in-charge may employ any person's to amend and make good such defects, shrinkage, settlements or other faults and all expenses consequent thereon or incidental thereto shall be borne by the contractor.

(b). Execution of work of repair etc.

Any defects, shrinkage, settlement or other faults which may appear or be noticed within the defect liability period, and arising in the opinion of the Engineer-in-charge from materials or workmanship not having in accordance with the contract, shall upon the direction in writing of the Engineer-in-charge's representative and within such reasonable time as shall be specified therein and without any delay, be amended and made good or replaced by the contractor at his own cost.

(c). Cost of Execution of Work of Repair, Etc.

All such works shall be carried out by the Contractor at his own expense if the necessity thereof shall, in the opinion of the Engineer-in- charge, be due to the use of materials or workmanship not in accordance with the Contract, or due to neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

(d). Contractor's personnel to be at site

During the defects liability period the contractor shall depute at least one of his authorized representative at site along with required tradesmen to attend the defects to the satisfaction of Engineer-in-charge.

20. Works by Other Agencies

The Engineer-in-charge reserves the right to use premises and any portion of the site for the execution of any work not included in this contract which it may desire to have carried out by other persons simultaneously, and the contractor shall allow the reasonable facilities for the execution of such work, but shall not be required to provide any plant or material for the execution of such work except by special arrangement with the other agency. Such work shall be carried out in a manner so as not to impede the progress of the works included in the contract, the contractor shall not be responsible for any damage or delay which may happen to or occasioned by such work.

The contractor shall co-operate with other agencies working in the same project, and coordinate his plans and time schedules so that there will be no interference. The Contractor shall forward to the Engineer-in-charge all correspondences and drawings exchanged. Failure to check plans for conditions will render the Contractor responsible for bearing the cost of any subsequent changes found necessary or damages done.

The Engineer-in-charge shall not entertain any claim on account of the Contractor affording necessary facilities to execute the work simultaneously with other agencies executing the works for the same project.

21. Dues not paid by the Contractor

The contractor shall pay all dues or fees to Statutory authorities and Electric and Water supply authorities & Lift licensing authority etc. within due period and indemnify the CLIENT/ HITES and the Engineer-in-charge from any claims or compensations or penalties or damages arising out of non-payment of any such dues or fees. However, in case some dues or fees are not paid by contractor and or claims for compensations or penalties etc. are raised by the Statutory authorities, the CLIENT may deposit the required amount or any or all of the above and recover or deduct the same from any money payable to the contractor by the CLIENT or any other means available to the CLIENT such as bank guarantee.

22. Urgent Repairs

If, by reason of any accident, or failure, or other event occurring to or in connection with the works, or any part thereof, either during the execution of the works, or during period of Defects Liability any remedial or other work or repair, shall, in the opinion of the Engineer-in-charge be urgently necessary for the safety of the Works and the Contractor is unable or unwilling to do such work or repair despite notice, the Engineer-in-charge may employ and pay other persons to carry out such work or repair as the case may be and may consider necessary. If the work or repair so done by the other agency is the work which, in the opinion of the Engineer-in-charge the Contractor was liable to do at his own expense under the Contract, all expenses incurred by Other agency in so doing shall be recoverable from the Contractor by the Engineer-in-charge, or shall be deducted by the Engineer-in- charge from any monies due or which may become due to Contractor.

23. Plant Temporary Works & Materials

(a.) Plant, etc. Exclusive use for the Works

All Constructional Plant, Temporary Works and materials provided by the Contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the Works and the Contractor shall not remove the same or any part thereof except for the purpose of moving it from one part of the Site to another, without the consent, in writing of the Engineer-in-charge, which shall not be unreasonably withheld.

(b.) Removal of Plant etc.

Upon completion of the Works, the Contractor shall remove from the Site all the said Constructional Plant and Temporary Works remaining thereon and any unused materials provided by the Contractor, within 10 days of obtaining the completion certificate/ Virtual completion of the work.

24. Reports by Contractor

(a.) The Contractor shall submit CPM – PERT Chart and activity wise bar charts, indicating the duration of various subheads of the work, for the complete work within 15 days of award of work or as per Clause 5 of the GCC, whichever is earlier, for approval by the Engineer - in- Charge. On the basis of approved bar charts contractor shall submit Progress Charts by the 4thday of every month. Soft copy of PERT chart shall be supplied whenever demanded by the Engineer-in-charge.

(b.) The Contractor shall submit Monthly Progress Report in triplicate in format approved by Engineer-in-charge. Failure to submit reports may result in holding up or delay in Payment of bills.

(c.) Monthly Progress Photographs:- The Contractor shall arrange at his own cost to maintain a progress record of the works by taking postcard size colour photographs (preferably digitized photographs) 6 Nos. or more per month per block as directed by the Engineer-in-charge during the construction stages and after completion shall supply three sets at no extra cost. The Contractor will be required to submit monthly reports on the progress of his work as per the format approved by the Engineer-in-charge.

(d.) The Contractor shall prepare Weekly Reports of planned and actual progress of work and subsequent week's scheduled work. These will also include material procurement status. These reports shall be submitted to the Engineer-in-charge & shall be reviewed in Weekly Co-ordination Meetings.

(e.) The Contractor shall file daily category-wise labour report to the Engineer-in-charge. The report shall indicate scheduled requirement against actual strength.

(f.) The contractor shall maintain daily weather record. Daily maximum and minimum temperature and corresponding, humidity shall be recorded and charted. Rainy days shall be recorded when the rain lasting more than one hour hampers the work. Any other inclemency in weather shall be recorded. The records shall be regularly shown to the Engineer-in-charge and his signature obtained.

25. Every care has been made to include all the aspects/ terms and condition in these documents. However, during execution, if any issue arises, which has not been included in these documents then standard norms / rules & regulations/ terms & conditions as prevalent in CPWD shall be followed which shall be binding on both the parties.

26. Audit and Technical Examination

The HITES/ Engineer-In-Charge shall have the right to cause Audit and Technical Examination of the works and the final bills of the contractor including all supporting

vouchers, abstracts, etc. to be made as per payments of the final bill and if as a result of such Audit and Technical Examination the sum is found to have been overpaid in respect of any work done by the contractor under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over payment and it shall be lawful for the HITES/ Engineer-in-charge to recover the same from the Security Deposit or Performance Security of the contractor or from any dues payable to the contractor. If it is found that the contractor was paid less than what was due to him under the contractor in respect of any work executed by him under it, the amount of such under payment shall be duly paid. The work comes under the purview of CVC and as such all orders and instructions issued by CVC are applicable to this work.

In the case of any audit examination and recovery consequent on the same the contractor shall be given an opportunity to explain his case and the decision of the HITES/ Engineer-in-charge shall be final. Payment on this account will be recovered from the contractor.

In the case of Technical Audit, consequent upon which there is a recovery from the contractor, recovery shall be made with orders of the HITES/ Engineer-in-charge whose decision shall be final. All action under this clause shall be initiated and intimated to the contractor within the period of twelve months from the date of final completion.

27. Operations and Maintenance Manual

The Contractor shall provide and submit to the Engineer-in-charge with three copies of the Operation and Maintenance Instruction Manuals, as may be applicable, for the works in a durable plastic case. The arrangement of these manuals shall be as follows:

SECTION A:	Index
SECTION B:	Full set of Indexed Photographs showing all salient features of the Project.
SECTION C:	Description and details of materials, items and fittings and fixtures used for the project along with Catalogues & Addresses of the Suppliers including operation & maintenance Manuals etc.
SECTION D:	Planned maintenance instructions and dates for order replacements.
SECTION E:	List of recommended Spare parts of consumables.
SECTION F:	List of "As-Built" Drawings (related to Working/ Shop drawings)

Until the Record Drawings, prints, transparencies and manuals referred to above have been received and approved by the Engineer-in-charge, Contract shall not be considered as complete and payment of monies will be withheld until such drawings, etc. have been submitted to and approved by the Engineer-in-charge. The cost of providing such records including proper submission thereof is deemed to be included in the Contract Sum quoted by the Contractor.

28. Miscellaneous

(a.) Safety Regulations

Contractor shall be fully responsible for the safety of his Employees / Visitors / Contract Labour/ Sub-Contractors Labour. The Contractor shall provide first-aid box readily available at site. The Contractor shall provide all safety measures as per labour safety rules applicable.

(b.) Labour Laws

The Contractor shall strictly adhere to all labour laws prevailing in the region. The contractor shall make timely payment of wages of his labour and the wages paid to the labour shall be equal to or more than the minimum wage prevailing at the time of payment. The Contractor shall comply with all applicable labour legislation, maintain labour records including payment made to the workers and obtain licence for engaging workers for the work as required under the labour laws.

(c.) By-Laws of Statutory Authorities

The Contractor and his labour shall not violate municipal /sanitation /health or any other byelaws.

(d.) Tax Deduction at Source

All Taxes and surcharge as applicable on date shall be deducted from the amount due to the Contractor towards the value of the work done. TDS certificate thereof shall be issued to the Contractor.

(e.) General Lighting and Securities

The Contractor shall, throughout the execution, completion and remedying of the defects, provide and maintain at his own cost all lights, guards, fencing, barricading (up to 3 ms. Height approx.), warning signs and watch post, when and where necessary or directed by the Engineer-in-charge or by any duly constituted authority for the protection, safety and convenience of the workers / public / or others.

(f.) Delay in starting the work

No compensation shall be allowed for any delay caused in the starting of the work on account of acquisition of land, encroachment or in the case of clearance of works, on account of any delay in according sanction to estimates in issue of drawings, decisions etc. However, the extension of time shall be granted as per relevant conditions of Contract.

(g.) Site instruction book

For the purpose of quick communication between Engineer-in- charge and the Contractor or his representative, site instruction book shall be maintained at site as described below:

Any communication, relating the works may be conveyed through instructions in the site instruction book. Such a communication from Engineer-in-charge to

the Contractor shall be deemed to have been adequately served in terms of the contract once the entries are made and signed by the authorised representative of the contractor. For this purpose the contractor should authorise one of his employees on the site itself. Site instruction book shall have machine numbered pages and shall be carefully maintained and remain under custody of Engineer-in-charge. The contractor can also avail of the site instructions book for urgent communication with Engineer-in-charge. Any instruction which Engineer-in-charge may like to issue to the Contractor may be recorded by the Engineer-in-charge in site instruction book.

(h.) Signage

The Contractor shall provide at his own cost, a sign board at directed location having overall size 2 metres by 4 metres indicating name of the project, and a three-D view of the project as well as the name of the Contractor and the CLIENT and HITES with addresses, cost of the Project, date of start & completion, as approved by Engineer-In-Charge. The signboard should be illuminated during night.

(i.) **Cutting of Trees: -**Permission for cutting of trees, if required, will be obtained by the Contractor from the concerned authority. CLIENT will provide necessary support in the matter.

(j.) The contractor shall have adequate generators of required capacity as per site requirement as stand by arrangement.

(k.)The temporary connection for electric line and water line from local authorities shall be taken by the contractor who will bear the expenditures

(l.) No idling charges or compensation shall be paid for idling of the contractor's labour, staff or P&M etc. on any ground or due to any reason whatsoever.

(m.) The Contractor shall mobilize and employ sufficient resources for completion of all the works within the stipulated time period as per agreement and as indicated in the approved Bar Chart/ Network. No additional payment will be made to the contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by Engineer-in-charge.

29. Co-ordination Meetings

The Contractor shall be required to attend co-ordination meetings with the Engineer-in-charge/ HITES/ CLIENT and the other Contractors during the period of Contract as intimated by the Engineer-in-charge/ HITES/ CLIENT. All costs incidental to such interaction shall be to the Contractor's account and no claim will be entertained by the Engineer-in-charge / HITES/ CLIENT on this account.

30. Site Management:

30.1. Contractor's Working Area

Suitable working space will be provided by the Engineer-in-charge /CLIENT to the

Contractor as per site conditions and availability. The Contractor may have to carry out some cutting / filling work for making this area workable. The cost of all such Works shall be deemed to have been included in the contract price quoted for the Works and no payment shall be made on this account.

Before commencement of the work, the Contractor shall obtain approval of the Engineer-in charge the location of cement godown, steel stacking and fabrication yard, site office and shall from time to time take instructions from the Engineer – in- charge regarding collection and stacking of materials at the site.

No excavated earth or building material shall be stacked on areas where other buildings, roads, services or compound wall or any other structure are to be constructed.

30.2. Contractor's Temporary Structures

The Contractor may, at his own expense and subject to the approval of the Engineer-in-charge/ CLIENT and statutory authorities, as required, construct temporary structures for its site office, stores; Workshop etc. in the working area allocated to him as above and remove the same on completion of Works. The Contractor shall furnish such details of his Temporary Works as may be called for by the Engineer-in-charge/ CLIENT and the Contractor shall satisfy the Engineer-in-charge as to their structural safety. Temporary structures, found unsafe or inefficient shall be removed and replaced in a satisfactory manner.

30.3. Contractor's Labour Camp

The Contractor shall make arrangements at his own expense for labour camp / accommodation for labour and staff to be employed for execution of the work and their conveyance to Site. No workers/ staff shall be allowed to stay within the Site except with the specific approval of the Engineer-in-charge/ CLIENT. Proper ID Cards shall be got approved /authorized by the contractor from the Engineer-in-charge/ CLIENT to authorise the Contractor's staff and workers to enter the Site.

30.4. Water Supply & Power Supply

The Contractor shall make his own arrangement for water supply at Site for drinking as well as construction purposes & Power Supply at his own cost. Non-availability of power supply and /or water from whatever source shall not entail any additional claims or extension of Contract period in this account.

30.5. Infrastructure for Project Coordination & Site office

The contractor shall, within 30 days of issue of letter of award, at his own cost, provide a reasonably furnished site office of area 80 Sqm (approx.) having, a sample room, A.C meeting room, staff rooms along with toilets & pantry with file storage facility, computers (2 Nos.), Broad band (1 Nos.) and printers (1 Nos.) with their consumables, a telephone, licensed version MS Project software, Auto-CAD etc.

Electricity & drinking water shall also be provided by the contractor free of cost for such period.

30.6. Temporary Barricading

The Contractor shall at his own expense, erect and maintain in good condition temporary barricades at required locations as per directions of the Engineer-in-charge.

30.7. The contractor shall make, till completion of the project arrangements for/of:

i. Proper pumping for removing water from the basement or elsewhere at site.

ii. Proper security, safety, transportation, manpower, lighting arrangement for execution of works at night.

iii. Tower crane, batching plant and others machinery, tools and tackles required for timely execution of work.

iv. Proper barricading around site so that surrounding area is made free from disturbances. The specifications of barricading shall be got approved by Engineer-in-charge. External face of barricading to display name of CLIENT, HITES& Engineer-in-charge.

v. Diversion of underground services with the approval of Engineer-in- charge.

30.8. Restriction in work areas.

(a). The contractor must see the site of the work, its approaches carefully before tendering, No claim of any sort shall be entertained on account of any site conditions. If any approach from main road is required or existing approach is to be improved and maintained, for cartage and materials by the contractor, the same shall be done by the contractor his own cost.

(b). Some restrictions may be imposed by the CLIENT/HITES's authorities or its security staff etc., on the working and/or movement of labour, materials etc. The contractor shall follow all such restrictions / instructions and nothing shall be payable on this account.

(c). In case the contractor is not permitted to erect the huts for labour at the site of work, the contractor will have to make his own arrangement to provide such accommodation elsewhere and nothing extra shall be paid on this account.

(d). The contractor shall obtain approval of the CLIENT/ HITES to erect the hutments for labour etc. at the site of work; denial of approval shall not affect the construction activities.

(e). The contractor shall take all precautions to avoid accidents by exhibiting necessary caution boards such as day and night boards, speed limit boards, red lights and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part. No hindrance shall be caused to traffic during the execution of the work.

31. Compliance of Statutory Obligations and obtaining Approvals/ Completion Certificates:

The Contractor shall comply all the statutory obligations and obtain all required clearances to implement the project without any financial repercussions to Engineer-in-charge and ensure all follow up actions with the local authorities in

this respect for smooth completion of the project. The Contractor shall obtain all necessary approvals from Municipal bodies and other local bodies related to Construction/ Completion. The responsibility of the Contractor shall include obtaining approval from local electrical inspector, tree cuttings, permission for bore well and for temporary structures etc. from local Authorities.

The contractor shall assist the Engineer-in-charge to obtain all NOC, and completion certificates from respective local bodies and other statutory authorities, such as:

Contractor shall organise all inspections of concerned authorities & obtain the NOC's within the time for completion. The Engineer-in-charge/ CLIENT may, at the written request of the Contractor, assist him in obtaining the approvals from relevant authorities. However any such request by the Contractor shall not bind the Engineer-in-charge / CLIENT in any manner.

All expenditure on these accounts will be borne by the contractor. However the fees paid by the contractor to these statutory authorities only for obtaining the required statutory approvals shall be reimbursed by the Engineer-in-charge / CLIENT on submission of valid payment receipts from these statutory authorities.

The contractor is required to submit the relevant drawings like completion Drawings and any other statutory documentary requirements of local bodies in copies as per requirement to obtain the above etc. at their own cost.

32. Conformity with Statutory Acts, Rules and Standards

32.1. The installation shall be in conformity with the Bye-laws Regulations and Standards of the local authorities applicable to the installations. But if the specifications and drawings call for a higher standard of materials and/or workmanship than those required by any of the above regulations and those required by any of the above regulations and standards, then the specifications and drawings shall take precedence over the said Regulations and Standards.

32.2. However, if the drawings or specifications required something, which violates the Byelaws and Regulations, then the Bye-laws and Regulations shall govern the requirement of such installation/drawings.

32.3. Indian Standards: The System / Components shall conform to relevant Indian standards wherever they exist and to the National Building Code Amended up to date.

32.4. Nothing in these Conditions & Specifications shall be construed to relieve the contractor of his responsibility for the design, Manufacture and installation of equipment with all its accessories in accordance with applicable statutory regulations and safety codes in force.

33. Manufacturer's Instructions

Where manufacturers have furnished specific instructions relating to the materials and equipment used, covering points not specifically mentioned in these documents, manufacturer's instructions shall be followed with the approval of

Engineer-in-charge.

34. Training and Operating Instructions

34.1. If required by the Engineer-in-charge, the Contractor shall at his cost, train members of the maintenance staff either at his or the subcontractor's workshop or at such other place or places as may be considered suitable by the Engineer-in-charge.

34.2. Upon completion of all work and all tests, the Contractor shall furnish the necessary skilled labour and helpers for operating the entire installation for a period of fifteen (15) working days. During this period, the Contractor shall instruct and train the Engineer-in-charge / CLIENT's representative(s) in operation, adjustments and maintenance of the equipment installed.

34.3. The Contractor shall submit to the Engineer-in-charge draft comprehensive operating instructions and maintenance schedule for all systems and equipment included in this Contract. This shall be supplemented, not substituted, by manufacturer's operating and maintenance manuals. Upon approval of the draft, the Contractor shall submit to the Engineer-in-charge four (4) complete bound sets of operating and maintenance schedules along with manufacturers printed literature.

35. Inspection and Testing

35.1. The Engineer-in-charge reserves the right to request inspection and testing at manufacturer's Works at all reasonable times during manufacture of items for this Contract.

35.2. The Engineer-in-charge or his authorised representative shall have full power to inspect the materials and workmanship at the Contractor's Works or at any place from which the materials or equipment is obtained. Approval by the Engineer-in-charge of any material or equipment shall in no way relieve the Contractor of his responsibility for meeting the requirements of the specifications. All incident expenditure like travelling, boarding and lodging etc. shall be borne by the contractor.

35.3. Routine and typical tests for the various items of equipment shall be performed at the Manufacturer's/ Contractor's Workshop in the presence of Engineer-in-charge or his authorised representative, results recorded and test certificates issued.

35.4. After installation has been virtually completed, the Contractor shall carry out under the direction and in the presence of the representative of the Engineer-in-charge such tests and inspections as have been specified, or as considered necessary to determine whether or not the requirements of the item, drawings and specifications have been fulfilled. In case the work does not meet the full intent of the drawings and specifications and further tests after making require changes and as considered necessary shall be done again, the Contractor shall carry them out and bear the expenses thereof. If tests fail to demonstrate the satisfactory nature of the installation or any part thereof, then no claims for the extra cost of modifications, replacement or retesting will be considered. The decision of the Engineer –in-charge shall be regarded as final as to what

constitutes a satisfactory test.

35.5. The Contractor shall provide all necessary instruments such as Theodolite, Dumpy level, steel tapes, weighing machine, plumb bobs, spirit levels, hammers, micro-meters, thermometers, hydraulic cube testing machine, smoke test machine and labour, etc. for conducting tests. All such equipments shall be tested for calibration by an approved laboratory. The Contractor shall make adequate records of the test procedures, readings and results to be maintained by the Engineer-in-charge who shall issue test certificates signed by the person authorised by him.

35.6. The above general requirements as to testing shall be read in conjunction with any particular requirements specified elsewhere

36. Test Certificates

The contractor shall submit test certificates for all the materials/ systems issued by the Engineer-in-Charge approved inspection/ office / manufacturer certifying the Equipment / Materials / installation and its function are in agreement with the requirements of relevant specifications and accepted standards.

37. Quiet Operation and Vibration

All equipments shall operate under all conditions of designed load without any sound or vibration, which is considered objectionable by the Engineer-in-charge. Such conditions shall be corrected by the Contractor at his own expense. Decision of the Engineer-in-charge shall be final in this regard.

38. Accessibility

The Contractor shall locate all equipments, which require servicing, operation or regular maintenance in fully accessible positions. The exact location and size of access panels, required for each valve or other devices requiring attendance, shall be finalised and communicated to Engineer-in-Charge well in time, to facilitate working by other agencies, failing this, the Contractor shall make all the necessary repairs and changes at his own expense.

39. Licenses and Permits

i. The Contractor or the approved specialised agency engaged by them shall hold a valid license issued by the Competent Authority under whose jurisdiction the work falls with respect to his entire scope of works.

ii. The contractor has to take all the approvals of local bodies for all the addition/deletion over the approved building plans which are to be given by the Engineer-in-charge. The documents/drawings to be prepared and submitted in the manner desired by them after the same is approved by Engineer-in-charge. Contractor has to take approvals of entire/Part works if required before start of works. Contractor will be responsible for any work at site carried out without

approval of municipal or local bodies.

iii. Contractor shall keep constant liaison with the competent Municipal or other authority and obtain approvals for all drainage and water supply works carried out by him.

iv. Contractor shall obtain from the competent Municipal Authority completion certificates with respect to his work as required for occupation of the building.

v. Any fees in connection with obtaining the approvals on behalf of the CLIENT from the statutory bodies/Corporations/Government departments, etc. shall be paid by the Contractor and the same shall be reimbursed on production of original vouchers. Necessary endorsement/ application if required shall be arranged from the Engineer-in-charge/CLIENT.

vi. Before undertaking of any specialized works the contractor must take approval of specialised agencies proposed to be engaged by him from Engineer-in-charge.

40. Quality Assurance

40.1. Quality Assurance Programme

To ensure that the equipment and services under the scope of this Contract whether manufactured or performed within the Contractor's works or at his sub-contractor's premises or at the Purchaser's site or at any other place of work are in accordance with the specifications, the Contractor shall adopt suitable quality assurance programme to control such activities at all points necessary. Such programme shall be outlined by the Contractor and shall be finally accepted by the CLIENT/HITES Purchaser after discussions before the award of Contract. A quality assurance programme of the contractor shall generally cover the following:

- His organization structure for the management and implementation of the proposed quality assurance programme.
- Documentation control system.
- Qualification data for bidder's key personnel.
- The procedure for purchases of materials, parts components and selection of sub-contractor's services including vendor analysis, source inspection, incoming raw material inspection, verification of material purchases etc.
- System for shop manufacturing and site erection controls including process controls and fabrication and assembly control.
- Control of non-conforming items and system for corrective actions.
- Inspection and test procedure both for manufacture and field activities.
- Control of calibration and testing of measuring instruments and field activities.
- System for indication and appraisal of inspection status.
- System for quality audits.

- System for authorizing release of manufactured product to the Purchaser.
- System for maintenance of records.
- System for handling storage and delivery.
- A quality plan-detailing out the specific quality control measures and procedures adopted for controlling the quality characteristics relevant to each item of equipment furnished and/or services rendered.

The CLIENT/HITES or his duly authorized representative reserves the right to carry out quality audit and quality surveillance of the system and procedure of the Contractor/his Vendor's quality management and control activities.

40.2. Quality Assurance Documents

The Contractor shall be required to submit the following Quality Assurance Documents within three weeks after dispatch of the equipment.

- All Non-Destructive Examination procedures, stress relief and weld repair procedure actually used during fabrication and reports including radiography interpretation reports.
- Welder and welding operator qualification certificates.
- Welder's identification list, listing welders and welding operator's qualification procedure and welding identification symbols.
- Raw material test reports on components as specified by the specification and/or agreed to in the quality plan.
- Stress relief time temperature charts/oil impregnation time temperature charts.
- Factory test results for testing required as per applicable codes/ mutually agreed quality plan/standards referred in the technical specification.
- The quality plan with verification of various customer inspection points (CIP) as mutually and methods used to verify the inspection and testing points in the quality plan were performed satisfactorily.

41. Deleted

42. Deleted

43. Handing over & Taking Over Process

For handing over & taking over process, in addition to clauses specified elsewhere, following services / works have to be complied with by the main contractor:

a. Submission of Guarantees in stamp paper, of appropriate value, (format approved by Engineer-in-charge) for all water proofing treatment and Anti termite treatment executed in the works for a period of ten years. If any defects noticed within 10 years from completion of defect liability period the main contractor shall be sole responsible for the defects and same shall be rectified

by the main contractor as per information from CLIENT/HITES within a period of 10 days from the notice.

b. Rectification of all defects shall be carried out by the main contractor before Handing over/ Taking over process.

c. As built drawings : - **4** (four) sets for Architectural, Structural, Electrical, Specialised services and other relevant drawings as approved by Engineer-in-charge shall be submitted by the main contractor before handing over & taking over process.

d. All services/equipments are to be run and checked before handing over & taking over process as per requirements of Engineer-in-charge.

e. Contractor has to arrange water, electricity, fuel , consumables and manpower at their own cost for the purpose of testing of services and equipments. No amount shall be payable on this account.

f. The Contractor shall submit catalogues, brochures, operation manual, manufacturer test certificate, Guaranty/ Warranty papers, licence etc for all equipments /materials before handing over & taking over process.

44. Rates: -

44.1. The quoted rates shall be for complete items of work i.e. inclusive of material, labour, plant and machinery, tools and tackles, batching plant etc. including water & electricity, overhead charges, all taxes, duties, statutory charges / levies applicable from time to time and others as specified etc., incidental works and all other charges for items contingent to the work, such as, packing, forwarding, insurance, freight and delivery at Site, watch and ward of all materials & successful installation, testing & commissioning at site etc.

44.2. The rate of all items of work, shall, unless clearly specified otherwise include cost of all labour, materials and all other inputs required in the execution of the item, including octroi, sales tax and any other taxes.

44.3. Unless otherwise specified in the schedule of quantities, the rate tendered by the contractor shall be all inclusive and shall apply to all heights, lifts, leads and depth of the building and nothing extra shall be payable to him on any account.

44.4. The rates for items of work wherein cement is used are inclusive of cost for curing.

44.5. Royalty at the prevalent rates whenever payable shall have to be borne by the contractor on the boulders, metal, shingle, sand and bajri etc., or any other materials collected by him for the work direct to the revenue authority of the District / State Government concerned and nothing extra shall be payable on this account

SECTION 2- CIVIL WORKS

1 Reference Points

Contractor shall provide permanent bench marks, flag tops and other reference points in consultation with Engineer-in-charge for the proper execution of work and these shall be preserved till the completion of the work.

2 Procurement of Cement and Steel

The procurement of Cement and Reinforcement Steel, and, their issue and consumption shall be governed as per conditions laid down hereunder.

a. Cement

i. The contractor shall procure 53 grade Ordinary Portland cement conforming to IS 12269 as required in the work, from manufacturers as per list of approved makes.

ii. In case the cement is not available from manufacturers as per list of approved makes, the tenderer may submit a list of names of cement manufacturers from which they propose to procure for use in the work or from any other reputed manufacturer having a production capacity not less than one million tonnes per annum as approved by the Engineer-in-charge.

iii. The tender accepting authority reserves right to accept or reject name(s) of cement 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 cement manufacturers, given by the tenderer, fully or partially.

iv. The supply of cement shall be taken in 50 kg bags bearing manufacturer's name and ISI marking. 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 the contractor does not conform to the relevant BIS codes, the same shall stand rejected, and it 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.

v. The Cement shall be brought at site in bulk supply of approximately 50 tonnes or as decided by the Engineer-in-Charge.

vi. The cement godown of the capacity to store about 2000 bags of cement or higher capacity as decided by the 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 other lock shall remain with the contractor. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge at any time.

vii. The contractor shall supply free of charge the cement required for testing including its transportation to testing laboratories. The cost of tests shall

be borne by the contractor.

b. Steel

i. Reinforcement Steel conforming to BIS specifications (latest edition) shall be procured directly from main manufacturers or their authorised dealers as per the approved list provided in the agreement. The manufacturer has to give a certificate that the material supplied is not a re-rolled product. Relevant vouchers & test certificates will be produced by the contractor. Re-rolled sections will not be allowed. Reinforcement steel, structural steel shall be stored and stacked in such manner so as to facilitate easy identification, removal etc. The contractor shall take proper care to prevent direct contact between the steel and the ground/ water for which he shall provide necessary arrangement at his own cost including ensuring proper drainage of area to prevent water logging as per direction of the Engineer-in- charge. Steel shall also be protected, by applying a coat of neat cement slurry over the bars for which no extra payment shall be made. Test certificates for each consignment of steel shall be furnished and further tests shall be got carried out from the authorized laboratory as per the directions of Engineer-in-charge, before incorporating the materials in the work

ii. The contractor shall procure TMT bars of Fe500 grade (the grade as per BOQ) from manufacturers as per list of approved makes.

iii. The grade of the steel such as Fe 500 or other grade (the grade as per BOQ) to be procured is to be specified as per BIS 1786-2008. The TMT bars procured from Primary producers shall conform to manufacturer's specifications.

iv. The contractor shall have to obtain and furnish test certificates to the Engineer-in-charge in respect of all supplies of steel brought by him to the site of work.

v. Samples shall also be taken and got tested by the Engineer-in-Charge as per the provisions in this regard in relevant BIS codes such as IS 1786: 2008. In case the test results indicate that the steel arranged by the contractor does not conform to the specifications as defined above, the same shall stand rejected, and it shall be removed from the site of work by the contractor at his cost within a week time or written orders of the Engineer-in-Charge to do so.

vi. The steel reinforcement bars of each diameter shall be brought to the site in bulk supply of 10 tonnes or more, or as decided by the Engineer-in-charge.

vii. The steel reinforcement bars shall be stored by the contractor at site of work in such a way as to prevent their distortion and corrosion, and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.

viii. For checking nominal mass, tensile strength, bend test, re-bend test etc. specimens of sufficient length shall be cut from each size of the bar at

random, and at frequency not less than that specified below:

Size of bar	For consignment below 100 tonnes	For consignment above 100 tonnes
Under 10mm dia bars	One sample for each 25 tonnes or part there of	One sample for each 40 tonnes or part there of
10mm to 16mm dia bars	One sample for each 35 tonnes or part there of	One sample for each 45 tonnes or part there of
Over 16mm dia bars	One sample for each 45 tonnes or part there of	One sample for each 50 tonnes or part there of

ix. The contractor shall supply free of charge the steel required for testing including its transportation to testing laboratories. The cost of tests shall be borne by the contractor.

x. The actual issue and consumption of steel on work shall be regulated and proper accounts maintained as provided in Clause 10 of the General Conditions of Contract. The theoretical consumption of steel shall be worked out as per procedure prescribed in Clause 42 of the General Conditions of Contract and shall be governed by conditions laid therein. In case the consumption is less than theoretical consumption including permissible variations recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment need to be made.

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

xii. Coefficient of weight i.e. the weight per unit length of the steel procured by the contractor shall be ascertained at site before using it and certified by the Engineer-In-Charge. In case weight per unit length is beyond the rolling margin as laid down in the BIS: 1786, the steel will be rejected and shall be removed from the site of work within; a weeks' time from written order of the Engineer-in-Charge to do so. In case weight per unit length is more than the standard coefficient of weight for the diameter, but is within the rolling margin, then the payment shall be made as per the standard weight per unit length, and, where the weight per unit length is lesser than the standard coefficient of weight for the diameter, but is within the rolling margin, the payment shall be restricted with respect to the actual weight per unit length of the diameter.

xiii. The actual issue and consumption of steel and Cement on the work shall be regulated and proper accounts maintained as provided in the Clause 10 of the General Conditions of Contract. The theoretical consumption of steel and cement shall be worked out as per procedure prescribed in Clause 42 of the General Conditions of Contract and shall be governed by conditions laid therein. In case the consumption is less than theoretical consumption including permissible variations recovery at the rate so prescribed shall be made. In case of excess consumption no adjustment

need to be made

xiv. Steel and Cement brought to site and remaining unused shall not be removed from site without the written permission of the Engineer-In-Charge.

xv. No payment shall be made to the contractor for any damage caused during the execution of work because of cause(s) not covered under Clause 43 of the Contract. The damage to work will be made good by the contractor at his own cost, and no claim on this account shall be entertained.

xvi. The Contractor shall maintain safe custody of materials brought to the site. The Contractor shall also employ necessary watch and ward establishment for the work and other purposes as required at his own cost.

xvii. For Cement and Steel and other materials, as prescribed, the quantities brought at site shall be entered in the respective material at site accounts and shall be treated as issued for maintenance of daily consumption.

xviii. Records of Consumption of Cement & Steel –

a. For the purpose of keeping a record of cement and steel received at site and consumed in works, the contractor shall maintain a properly bound register in the form approved by the Engineer-in-charge, showing columns like quantity received and used in work and balance in hand etc. The contractor's representative shall sign this register daily.

b. The register of cement & steel shall be kept at site in the safe custody of Engineer-in-charge during progress of the work. This provision will not, however, absolve the contractor from the quality of the final product.

3 Receipt and storage of materials:

a. Cement bags shall be stored in Godowns to be constructed by contractor at his own cost as per sketch of CPWD specifications with weather proof roofs and walls. Godown shall be provided with a single door with two locks. The keys of one lock shall remain with the authorized representatives of the Engineer-in-charge and that of the other lock with the authorized agent of the contractor at the site of work so that the cement is removed from the godown according to the daily requirement with the knowledge of both the parties. Samples of fresh cement shall be got tested from lab. Only tested cement shall be allowed in the work, contractor shall bring cement keeping this in view to maintain progress of the work. No request for extension of time on this account shall be entertained.

b. The contractor shall be fully responsible for the safe custody of the materials brought at site even if the materials are under double lock system.

c. The contractor shall construct suitable godowns – yards at the location of the site of work duly approved by the Engineer – in – charge or his authorized

representative for storing all other materials so as to be safe against damage by sun, rain, dampness, theft etc. at his own cost and employ necessary watch and ward establishment at his cost.

d. The contractor shall maintain and render proper account of all material brought by him to the site, consumed by him on the work and balance if any. In respect of steel reinforcement bars, theoretical consumption will be calculated diameter wise.

4 Bar Bending Schedule

Contractor shall prepare bar bending schedules and shall get them approved from the Engineer-in-charge or his authorized representative.

5 Concrete Work

a. All concrete work will be strictly done by automatic computerized batching plant of suitable capacity installed at site or RMC as per approval of HITES/ Engineer-in-Charge. No concrete work will be permitted without automatic batching plant unless specifically approved in writing by HITES/ Engineer-in-Charge. Transportation of the mix concrete shall be done through transit mixers and concrete pumped through suitable concrete pumps and pipes arrangement and vibrated by vibration machines, materials lifts shall also be provided at site as and where required.

b. All operation required for continuing concreting work at the construction joints for better bond are deemed to be included in the rates of the relevant items and nothing extra shall be payable on this account.

6 Mix Design of Concrete

The contractor shall carry out the mix design for the relevant item of concrete from reputed institution / laboratories as approved by Engineer-in-charge at his own expenses within 15 days from notification of award. Samples of materials (i.e. Cement, Coarse, fine aggregates& admixtures) shall be jointly sealed by Engineer-in-charge and contractor before sending the same for Mix design. The design mix may be with or without admixtures as per specifications /requirements at site.

7 Ready Mixed Concrete

a. The rate for the item of Ready Mixed Concrete shall be inclusive of all the ingredients including admixtures if required, labour, machine T&P etc. (except shuttering which will be measured & paid for separately) required for design mix concrete of required strength and workability.

b. The rate quoted by the agency shall be net & nothing extra shall be payable on account of change in quantities of concrete ingredients like cement and aggregates and admixtures etc. in the approved mix design.

List of Approved Makes of Materials

S.No	Details of equipment/ material	Make/Manufacturer
1.	**CIVIL WORKS**	
1.	Anti – Termite Treatment	It should be done by permanent members of IPCA as approved by Engineer-in-Charge.
2.	Batch Mix Concrete (BMC) / Ready Mix Concrete (RMC)	The contractor to install his own computerized batching plant of suitable capacity and arrange for Transit Mixers, pumps etc. as per approval of Engineer – In- Charge. Or The RMC shall be procured from the source as approved by Engineer – in Charge. RMC Producing plants of the main Cement producers shall be preferred
3.	Cement	ACC / Ultra tech / Coromandel / JK Cement / Ambuja
4.	Cement: White	Birla White / JK
5.	Concrete Additive	CICO/ Pidilite / Fosroc / Fairmate / MC Bauchemie / SIKA
6.	Grout: Non-Shrink	Fosroc / Sikka
7.	Grouting Compound	Bal Endura/ Pidilite/ Laticrete/ Unitile
8.	Paints - Cement Based	Snowcem Plus/ Asian / Dulux / Berger (Durocem Extra)/ Nerolac
9.	Paints - Oil Bound Distemper / Acrylic Washable Distemper	ICI Dulux/ Asian (Tractor)/ Berger (Bison)/ Nerolac (Super Acrylic)
10.	Paints - Other Paints / Primer	ICI Dulux/ Asian/ Berger/ Nerolac
11.	Paints - Plastic Emulsion Paint	ICI Dulux/ Asian/ Berger/ Nerolac
12.	Paints - Synthetic Enamel Paints	ICI Dulux (Gloss), Berger (Luxol Gold), Asian (Apcolite), Goodlas Nerolac (Full gloss hard drying)
13.	Paints - Texture paint	Berger / Spectrum / Unilite Heritage /Asian
14.	Reinforcement Steel / Structural Steel	SAIL/ RINL/ TATA Steel Ltd./ Jindal Steel & Power Ltd./ JSW Steel Ltd. / VSP
15.	Epoxy / Polymer	Fosroc / Sika / BASF / MRF
16.	Conertina coil	As per approved make (finalised by Engineer –in-charge)
17.	Super plasticizer	CICO/ Roffe Construction Chemicals/ Pidilite Industries
2.	**ELECTRICAL WORKS**	
S.No	**Details of equipment/ material**	**Make/Manufacturer**
1.	PVC insulated FRLS - Aluminum / Copper 1.1 KV grade flexible wires	Havells/ Polycab / Finolex/ RR Kable/
2.	PVC Conduit & Accessories	Avonplast / Clipsal/ precision/ BEC/ AKG

END OF VOLUME - III