

M/s HLL Infra Tech Services Ltd. (HITES)
(Subsidiary of HLL Lifecare Ltd., A Government of India Enterprise)

Executing Agency of
Ministry of Health & Family Welfare,
Government of India, New Delhi

INVITES
e-TENDER
FOR

Construction for Upgradation of Srirama Chandra
Bhanja Medical College and Hospital, Cuttack (Odisha)

Under

Pradhan Mantri Swasthya Suraksha Yojana, Phase-IV
(PMSSY-IV)

Volume- III

Specific Conditions of Contract



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SPECIFIC CONDITIONS OF CONTRACT (S C C)

SECTION 1- GENERAL

General

The following Specific Conditions of Contract shall be read in conjunction with General Conditions of Contract. If there are any provisions in these Specific Conditions of Contract which are at variance with the provisions in the above mentioned documents, the provisions in these Specific Conditions of Contract shall take precedence.

1. Scope of Contract

The scope of work comprises of construction of multi-storied buildings including water supply, sanitary & plumbing comprehensive Fire Fighting / Protection System, Internal & External Electrification, HVAC Works, Lifts, CCTV and Security System, Solar Panel, PA System, EPABX/ Communication System, Site development works such as Internal road + Path & site leveling, sewer and storm water drainage works etc.

The scope of work also includes preparation of all detailed shop drawings, obtaining approvals at different stages from local authorities, electrical inspector, lifts inspector, water & sewer line connection, pollution, permission/approval for tree cuttings, permission for bore well, completion certificates, occupancy certificate and all other required statutory approvals /clearances from relevant Statutory authorities.

The work is to be executed for Certifications as per GRIHA (Green Rating for Integrated Habitat Assessment) National Green Building Rating System. At least **3 (Three) Star rating under the GRIHA** Green Building Rating System is to be ensured.

2. Drawings

2.1. Tender Drawings

The tender drawings are for e-Tender Purpose only and are intended as a guide to the Bidder/Contractor and give general layout of buildings and general information of the structures and general positions of utilities, services and equipments only. Contractor's quoted rate for any item should not be based on any measurement, quantity and specification from these drawings. Any claim raised by the contractor in this regard shall not be valid in this contract and shall not be accepted by the CLIENT/HITES.

The drawings issued with the Tender are schematic and indicative only showing

the extent and general arrangement of the installation. Drawings shall not be scaled.

2.2. Issue and custody of drawings & specifications

The contractor on the signing of contract shall be furnished free of cost three copies of all drawings and all further drawings issued during the progress of the works. The contractor shall keep one copy of all drawings at the works site and the Engineer-in-charge shall have, at all reasonable times, access to the same.

The drawings shall be provided to the Contractor as per the schedule (prepared at the start of the works and necessarily updated or revised from time to time) as mutually agreed by the Engineer-in-charge and the Contractor. Last major drawings may be provided as per the schedule prior to the stipulated date of completion and the Contractor, if found necessary shall increase his resources and effort so as to complete the works within stipulated time.

From time to time during the course of contract revised drawings may be issued to the Contractor and the Contractor shall ensure that all superseded drawings are removed from site and stored in a lockable cabinet as directed by the Engineer-in-charge and replaced by revised drawings.

The Contractor shall maintain complete up to date Register of drawings issued at site. All drawings shall be properly numbered and indexed for ready reference. Superseded drawings should be properly identified.

The contractor shall ensure that only the valid up to date drawings are used for setting out, construction and preparation of as built drawings etc.

2.3. Working drawings/ Shop drawings/ Design:

The drawings supplied by the Engineer-in-charge have been listed in the tender documents. These drawings are indicative for the purpose of detailing and requirement of the contract. The contractor shall take into consideration space allocated for equipments before ordering them to ensure that the equipment would fit in the space provided with necessary clearances required as per the relevant standard / manufacturer's recommendations. In case of any difficulty it should be brought to the notice of the Engineer – in - Charge.

Detailing for shop drawings of all services will have to be done by the contractor based on the schematics and other details provided by the Engineer-in-charge or local authorities. The work will be executed by the contractor based on the approved shop drawings from the concerned authority and accordingly contractor will be responsible for obtaining all required final NOC/clearance from concerned authorities. These drawings and details shall also contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipments and also details of all related items of work by other discipline.

The contractor shall submit to the Engineer-in-charge for approval details of all

proposed equipments, accessories, equipment characteristics and capacity details of all equipment, accessories and devices etc. as per the specifications and obtain approval of the Engineer-in-charge.

In case there is delay in any drawings and design viz shop drawings, or specialized works drawings etc. to be supplied by the contractor, Engineer - in-Charge may ask the Contractor to make necessary changes, as required. In case of failure on the part of the contractor to carry out the directions of the Engineer - in-Charge action may be taken to get the needful done at the risk and cost of the Contractor. All drawings shall be signed by Contractor or their authorized representative with name, seal and date before submission to Engineer-in-charge.

2.3.1. The Contractor shall carry out and complete the said work in every respect in accordance with this Contract and with the directions of and to the satisfaction of the Engineer-in-charge. The Engineer-in-charge may in his absolute discretion and from time to time further issue drawings and/or written instructions, details, directions and explanations, which are hereafter collectively referred to as "Engineer-in-charge's Instructions" in regard to:

- a. The variation or modification of the design, quality or quantity of items of works or the addition or omissions or substitution of any item.
- b. Soil Investigation and Topographical Survey wherever required, if necessary
- c. Any discrepancy in the drawings or between the bill of quantities and/or drawings and/or specifications.
- d. The removal from the site of any material brought thereon by the contractor and the substitution of any other material thereof.
- e. The removal and/or re-execution of any works executed by the contractor.
- f. The removal of any persons employed by the contractor on the site.
- g. The opening up for inspection of any work covered up.
- h. The amending and making good of any defects noticed during or after execution of the work.

2.3.2. The Contractor shall forthwith comply with and duly execute any work in compliance to above instructions provided always that verbal instructions, directions and explanations given to the contractor or his representative by the Engineer - in-Charge, shall, if involving a variation, be confirmed in writing by the Contractor within seven days, and if not dissented in writing within a further seven days by the Engineer - in-

Charge, these shall be deemed to be Engineer - in- Charge's instructions within the scope of the contract.

2.4. Shop Drawings

- 2.4.1. The Contractor shall furnish for approval of the Engineer-in-charge three sets of detailed sanitary, plumbing, firefighting (external & internal), Pump room, Electricals, HVAC & Shop drawings of all equipments and materials required to complete the work as per specifications well in advance. These drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics, and capacity of all items of equipment, as also the details of all related items of work of other trades. The work will be executed by the contractor based on the approved shop drawings from the concerned authority and accordingly contractor will be responsible for obtaining all required final NOC / clearance from concerned authorities. All shop drawings are to be made in accordance with latest fire safety norms and building codes.
- 2.4.2. All drawings necessary for assembly, erection, maintenance, repair and operation of the equipment shall be furnished and different parts shall be suitably numbered for identification and ordering of spare parts.
- 2.4.3. For any amendments proposed by Engineer-in-charge in the above drawings, the Contractor shall supply fresh sets of drawings with the amendments duly incorporated, along with the drawings on which corrections were indicated.
- 2.4.4. No material or equipment may be brought at Site until the Contractor has the approved Shop drawings for that particular material or equipment.
- 2.4.5. After approval of the drawings by the Engineer-in-charge, the Contractor shall further furnish six sets of Shop drawings for the exclusive use of and retention by the Engineer-in-charge.
- 2.4.6. Approval of drawings by the Engineer-in-charge shall not relieve the Contractor of any obligation to meet all the requirements of the Contract or of the correctness of his drawings. The Engineer-in-charge's approval of specific item shall not mean the approval of the assembly of which it is a component. The Contractor shall be responsible for and is to bear the cost for all alternations of the works due to discrepancies or omission in the drawings or other particulars supplied by him, whether such drawings have been approved by the Engineer-in-charge or not.
- 2.4.7. Where the work of the Contractor has to be installed in close proximity to, or will interfere with the work of other trades, the Contractor shall assist in working out the space conditions to make a satisfactory adjustment. If so directed by the Engineer-in-charge, the Contractor shall prepare composite working drawings and sections to a suitable scale not less than 1:50, clearly showing how his work is to be installed in relation to the work of other

trades. If the Contractor installs his work before coordinating with other trades, and it is cause for any interference with the work of other trades, he shall make all the necessary changes without extra cost.

2.4.8. All shop drawings and detail drawings will be made as per requirements of local authorities and tender drawings incorporating all latest regulations and requirements. No separate drawings will be, issued for making shop drawings.

3. Disruption of Progress

3.1. The Contractor shall give 4 weeks, in advance, written notice to the Engineer-in-charge whenever planning or progress of the Works is likely to be delayed or disrupted due to non-issue of any drawing or order by the Engineer-in-charge. The notice shall give details of the drawings or order required explaining why and by when it is required and if any delay or disruption is likely to be suffered on that account.

3.2. If by reason of any failure or inability of the Engineer-in-charge to issue drawings/ order/ clarifications within 4 weeks of such notice by the Contractor and the contractor suffers delay, then the Engineer-in-charge, shall record the facts for any extension of time under respective clause of the agreement. Notwithstanding anything stated above, the Contractor shall not be eligible for any financial compensation arising due to any delay.

3.3. No compensation whatsoever shall be payable to the contractor for any damage by rains, lightening, wind, storm, floods, tornadoes, earthquakes, or any other natural calamities during execution of work and no claim on this account will be entertained for such damages.

4. Contractor's General Responsibilities

(a). 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.

- (b). The work shall be carried out in conformity with the relevant drawings and the requirement of architectural, electrical, structural, and other specialized 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.

(c). Samples & Approval of Materials

- 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.

(d). 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.

(e). 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.

(f). 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, blasting, demolition, electric connections, scaffolds, ladders, working platforms, gangway, mixing of bituminous materials, electric and gas welding, use of hoisting and construction machinery shall be governed by the Safety code, relevant safety codes and the direction of Engineer-in-Charge.

(g). 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.

(h). 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.

(i). 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.

(j). 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-charge 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.

5. 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.

6. 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 HITES at the risk and cost of the contractor.

7. 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.

8. 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.

9. 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 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 HITES on production of authorised receipts.

10. 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 authorized 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.

11. 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 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 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 sample and testing charges 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 the 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 any Govt. Institution or NABL accredited Lab as approved 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.

12. 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.

13. 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.

14. 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.

15. 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 (Duration) 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.

16. 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:

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

17. Claims

The contractor shall submit to the Engineer-in-charge monthly statement giving full details of claims for any additional payments for extra or additional / substituted work ordered by the Engineer-in-charge which he has executed during the preceding month, to which the contractor may consider himself entitled supported with analysis of rates being claimed failing which the contractor shall be deemed to have waived his right. The Engineer-in-charge may authorize consideration of such claims on merits on production of sought out documents/ vouchers etc.

18. Secured Advance

- I. Secured advance on materials, which are admissible as per Clause 10 (B) (i) of the General Conditions of Contract and brought to site for use in the work, shall be paid only after the Engineer in charge has personally verified that the material brought at site of work for use in the work conforms to the specifications/sample approved by him.
- II. Secured advance shall be recovered according to consumption of material in the work. Contractor shall have to sign an Indenture Bond (on a non-judicial stamp

paper of appropriate value) before release of the advance.

- III. The materials shall virtually stand Hypothecated to HITES but contractor shall be fully responsible for watch & ward/ security of materials for which Secured Advance has been paid by HITES.
- IV. Any infringement and / or breach of the above specifications and conditions etc, shall render the contractor liable to action under various clauses of the contract and such action as stipulated in the conditions therein.

19. (a) Inspection & Testing during manufacturing of Equipment

The Engineer-in-charge shall be entitled to inspect, examine and test during manufacturing of the materials and workmanship and check the progress of manufacturing 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 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. Inspection Call for any equipment (as desired by E-I-C) shall be given 15 days in advance from the actual date of Inspection.

- 19.1.** 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.

The Engineer-in-charge or his authorized 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. The cost incurred towards boarding, lodging etc. (inland/abroad) of inspection engineer/engineers deputed by Client/HITES shall be fully borne by the contractor & all such costs shall be deemed to be included in the Bid. Nothing extra shall be paid on this account whatsoever.

- 19.2.** 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 authorized representative, results recorded and test certificates issued.

- 19.3.** 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.

19.4. 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 authorized by him.

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

20. Dates for Inspection & Testing

20.1 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.

20.2 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.

20.3 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 ensures 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.

20.4 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.

20.5 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.

20.6 Inspection Reports

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

21. Completion Certificate

21.1. Provisional Completion Certificate

For the purpose of issuing Provisional Completion Certificate on substantial completion of the work as provided in Clause 1(v) of GCC, Volume-II, the work shall be deemed to have been substantially completed after fulfillment of all the following by the Contractor:-

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

21.2. Final Completion Certificate

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 are completed in all respect to his complete satisfaction as per contract and remedying / rectifying all the defects/ snags to the along with the submission of relevant permits / clearance from statutory bodies. 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. The Defect Liability Period (DLP) for all components shall start with effect from the date of issue of Final Completion Certificate.

22. 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.
23. 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.

24. Guarantees

Notwithstanding provisions in the General Condition of the Contract and elsewhere in these Specific Conditions of Contract, the contractor shall furnish the guarantees in the prescribed form appended herewith. These guarantees shall be provided at the stage of virtual completion of work and shall be effective from the completion of work, to be reckoned from the date after the expiry of the maintenance period prescribed in the contract. In case a specialised agency has been approved for execution of a work/system, the Contractor shall ensure that the Guarantees shall be through such agencies (Obligators/Guarantor). The guarantees shall be provided in respect of following works (as per formats appended to this document) and any additional works, as provided for in the contract.

- i. For removal of defects after completion in respect of Water Supply and Sanitary Installations.
- ii. For Water Proofing Treatment for Basements
- iii. For Water Proofing Treatment for Roof
- iv. For Water Proofing Treatment (Under floors)
- v. For Anti-Termite Works
- vi. For Aluminium Works
- vii. For Structural Glazing / Curtain Wall System /works
- viii. For Mechanical/ Seismic Expansion Joint/ Works

25. 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.

All preventive/routine & breakdown maintenance related to all works executed under this Contract shall be in the scope of Contractor & cost incurred to this effect shall be deemed to be included in the Bid. Nothing extra will be paid on this account whatsoever.

(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.

26. 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.

27. 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 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 HITES 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 HITES or any other means available to the HITES such as bank guarantee.

28. 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.

29. Boreholes & Exploratory Excavation

If, at any time during the execution of the Works, the Engineer-in-charge shall require the Contractor to make boreholes or to carry out exploratory excavation, such requirement shall be ordered in writing and shall be deemed to be an additional ordered under the provisions unless a provisional sum in respect of such anticipated work shall have been included in the schedule of items.

30. Fossils, Etc.

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site of the works shall be the property of the Government.

31. 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 before issue of the final completion certificate of the work.

32. 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 4th day 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.
- 33.** 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.

34. 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 substantial completion.

35. 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 Operation & 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 above mentioned documents are received and approved by the Engineer-in-charge, Contract shall not be considered as complete and payment will be withheld until such documents 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 Bid.

36. 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 m 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 authorized representative of the contractor. For this purpose the contractor should authorize 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. HITES will provide necessary support in the matter.

- j.** The contractor shall have adequate generators of required capacity as per site requirement as standby 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.

37. Co-ordination Meetings

The Contractor shall be required to attend co-ordination meetings with the Engineer-in-charge / HITES and the other Contractors during the period of Contract as intimated by the Engineer-in-charge/ HITES. 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 on this account.

38. Site Management:

a. Contractor's Working Area

Suitable working space will be provided by the Engineer-in-charge /HITES 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.

b. Contractor's Temporary Structures

The Contractor may, at his own expense and subject to the approval of the Engineer-in-charge / HITES 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/HITES 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.

c. 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 / HITES.

Proper ID Cards shall be got approved /authorized by the contractor from the Engineer-in-charge/ HITES to authorize the Contractor's staff and workers to enter the Site.

d. 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.

e. 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 150 Sqm (approx.) having, a sample room, A.C meeting room, staff rooms along with toilets & pantry with file storage facility, Almiras (2 Nos), 3 computers/ 1 Laptop (4 Nos.), Broad band (2 Nos.) and 1 No coloured MFP printer and 1 No monochrome laser printer with their consumables, a landline telephone with broad band connection with wifi Modem/router, licensed version Modern Software techniques such as MS Excel, MS Project, Primavera or equivalent as per instructions of Engineer-in-charge, Auto-CAD etc. There shall be video conferencing facilities with adequate Bandwidth to accommodate video conference call with 3 participants at different locations.

IP based Video Surveillance System shall be provided for surveillance of different locations of project site & site office. In the surveillance system, the cameras shall be provided at different locations of the project site so that the output is available at the Corporate/Regional office of HITES. The system shall be able to work on both wired as well as wireless network. The recording shall be preferably stored for at least 30 days. Along with video surveillance system, video conference facility, complete in all respects with necessary required equipment and software shall be provided at site office for frequent/periodical interaction between project site office and Corporate/Regional office of HITES.

Besides these, vehicle/Car of good running condition inclusive of all services like driver, consumables and maintenance etc. at all times to be provided for the exclusive use of Engineer-in-charge and his site staff/ HITES round the clock during the currency of the Contract till the defect liability period to HITES as per requirements given by the Engineer-in-charge.

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

f. Temporary Barricading

The Contractor shall at his own expense, erect and maintain in good condition temporary barricades all around the working area as per directions of the

Engineer-in-charge.

g. 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 HITES, & Engineer-in-charge.
- v. Diversion of underground services with the approval of Engineer-in-charge.

h. 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 MoHFW/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 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.

39. 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 including, Water supply agencies, Electric Supply and inspectorate agencies, Police and Security Agencies, Chief Controller of Explosives, Fire Department, Civil Aviation Department, in accordance to prevailing rules, Building Bye-Laws etc., as the case may be with related to Construction/ Completion. The responsibility of the Contractor shall include obtaining approval from local electrical inspector, Lifts authority & water & Sewer line connection, 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, completion & Occupancy certificates from respective local bodies and other statutory authorities, such as:

- i) Construction Permit, if required
- ii) Pollution control Board,
- iii) Environment clearances,
- iv) NOC from fire department,
- v) Lift license i/c NOC,
- vi) Chief Electrical Inspector CEA,
- vii) Local Municipal authority.
- viii) Airport Authority,
- ix) Forest Department for Tree cutting etc.,
- x) Explosive department,
- xi) Local Municipal authority for water and sewer connection,

Mining department Any other statutory requirement for execution of work and to occupy the buildings and run the services in all respects. Contractor shall organise all inspections of concerned authorities & obtain the NOC's within the time for completion. The Engineer-in-charge / HITES 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 / HITES 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 / HITES 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.

40. 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.

41. Training and Operating Instructions

41.1. If required by the Engineer-in-charge, the Contractor shall at his cost, train members of the maintenance staff of HITES 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.

41.2. Upon completion of all work and all tests, the Contractor shall furnish the necessary skilled/unskilled/semi skilled personnel for operating the entire installation for a period of thirty (30) 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.

41.3. 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 six (6) complete bound sets of operating and maintenance schedules along with manufacturers printed literature/catalogues

42. 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.

43. 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.

44. 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.

45. Licenses and Permits

- i. The Contractor or the approved specialized agency engaged by them shall hold a valid license for services like plumbing, electrical, Lifts etc. & wherever required in addition, issued by the Competent Authority under whose jurisdiction the work falls.
- 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 works for HVAC, Lifts, Electrical, Anti Termite Treatment, Water proofing, Fire Fighting, Fire Alarm system, PA system, EPABX System, Horticulture Works etc., & additional works wherever required the contractor must take approval of specialized agencies proposed to be engaged by him from Engineer-in-charge.

46. Quality Assurance

46.1 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 HITES Purchaser after discussions before the award of Contract. A quality assurance programme of the contractor shall generally cover the following:

- i. His organization structure for the management and implementation of the proposed quality assurance programme.
- ii. Documentation control system.
- iii. Qualification data for bidder's key personnel.
- iv. 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.
- v. System for shop manufacturing and site erection controls including process controls and fabrication and assembly control.
- vi. Control of non-conforming items and system for corrective actions.
- vii. Inspection and test procedure both for manufacture and field activities.
- viii. Control of calibration and testing of measuring instruments and field activities.
- ix. System for indication and appraisal of inspection status.
- x. System for quality audits.

- xi. System for authorizing release of manufactured product to the Purchaser.
- xii. System for maintenance of records.
- xiii. System for handling storage and delivery.
- xiv. 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 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.

46.2 Quality Assurance Documents

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

- i. All Non-Destructive Examination procedures, stress relief and weld repair procedure actually used during fabrication and reports including radiography interpretation reports.
- ii. Welder and welding operator qualification certificates.
- iii. Welder's identification list, listing welders and welding operator's qualification procedure and welding identification symbols.
- iv. Raw material test reports on components as specified by the specification and/or agreed to in the quality plan.
- v. Stress relief time temperature charts/oil impregnation time temperature charts.
- vi. Factory test results for testing required as per applicable codes/mutually agreed quality plan/standards referred in the technical specification.
- vii. 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.

46. 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, (in prescribed format) for all water proofing treatment and Anti termite treatment etc. 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 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 : - 6 (six) sets for Architectural, Structural, Plumbing, Electrical, HVAC system, Specialized services and other required drawings as approved by Engineer-in-charge shall be submitted by the main contractor before handing over & taking over process.
- d. All services/equipment 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 equipment/materials before handing over & taking over process.

48. Rates: -

- 48.1. 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 (**including GST**) 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.
- 48.2. 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 **applicable taxes**.
- 48.3. 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.
- 48.4. The rates for items of work wherein cement is used are inclusive of cost for curing.
- 48.5. 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

49. Contract Price and Payments

The successful bidder shall submit within 15 days from the date of Letter of Award, the breakup (in terms of Base rate + GST) of total quoted amount of each item of Financial Bid.

50. Payment Terms

The terms of payments, in general, shall be governed by the provisions contained in General Conditions of Contract and relevant CPWD Specifications. However, the specific provisions are described as under:-

A. **HVAC equipment & installation:-** The following percentage of Contract rates shall be payable against the stages of work shown herein:

Stage	Stage of Work	Machinery & Equipment	All other items
I	After initial inspection (wherever specified) and delivery at site in good condition on pro-rata basis	75%	70%
II	After completion of pro-rata installation	10%	15%
III	On commissioning & completion of successful running tests and provisional taking over	10%	10%
IV	On completion of major seasonal test and taking over by the MoHFW/ HITES	5%	5%

B. **Firefighting System:-** The following percentage of Contract rates shall be payable against the stages of work shown herein:-

Stage	Work Description	Machinery/ Equipment	All other items
I	After initial inspection (wherever specified) and delivery at site in good condition on pro-rata basis	75%	70%
II	After completion of pro-rata installation	15%	20%
III	On Testing, Commissioning and Completion of Successful running in period and taking over by the MoHFW/HITES	10%	10%

C. **For DG Sets:-** The following percentages of contract rates shall be payable against the stages of work shown herein:

Stage	Stage of Work	Engine-Alternator Set & AMF Panel	All other items
I	After initial inspection (wherever specified) and delivery at site in good condition on pro-rata basis	80%	75%
II	After completion of pro-rata installation	10%	15%
III	On commissioning and completion of successful running in period and taking over of DG Sets by the MoHFW/ HITES	10%	10%

D. **For Sub Station:-** The following percentages of contract rates shall be payable against the stages of work shown herein:

- i. 80% after initial inspection and delivery at site in good condition on pro-rata basis.
- ii. 10% after completion of installation in all respects.
- iii. Balance 10% will be paid after testing, commissioning and handing over to the MoHFW/ HITES for beneficial use.

E. **For Lifts:-** The following percentages of contract rates shall be payable against the stages of work shown herein:

- i. 80% after initial inspection and delivery at site in good condition on pro-rata basis.
- ii. 10% after completion of installation in all respects.
- iii. Balance 10% will be paid after testing, commissioning, trial run and handing over to the MoHFW/ HITES for beneficial use.

F. **Internal Electrification- Point Wiring:-** The following percentage of Contract rates shall be payable against the stages of work shown herein:-

- i. Supplying & Laying of Conduit:- 35%
- ii. Supplying and drawing of Wire in Conduits:- 35%
- iii. Supplying and fixing of Switches & Sockets etc. :- 20%
- iv. Testing & Commissioning:- Balance 10%

G. **For all other specialized works** i.e; solar water heaters, solar power system, LV works, RO, HWG, Heat pump, BMS & other tailor made equipment, panels, fixture, faucets etc.:- The following percentages of

contract rates (on pro rata basis) shall be payable against the stages of work shown herein:

- i. 75% after initial inspection and delivery at site in good condition on pro-rata basis.
- ii. 10% after completion of installation in all respects.
- iii. 10% after testing, commissioning equipment.
- iv. Balance 5% on completion of work & handing over to the MoHFW/HITES for beneficial use.

SECTION 2- CIVIL WORKS

1.0 General

1.1 The following Specifications of Contract shall be read in conjunction with General Conditions of Contract and Specific Conditions of Contract-General. If there are any provisions in these Additional Specifications of Contract which are at variance with the provisions in the above mentioned documents, the provisions in these Additional Conditions & Specifications of Contract shall take precedence.

2.0 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.

3.0 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 43 grade Ordinary Portland cement conforming to IS 8112 / Portland Pozzolona Cement conforming to IS 1489 (Part I) 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 authorized 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 Fe415/ Fe415D/ Fe500/ Fe550/ Fe550D grade (the grade as per BOQ) from manufacturers as per list of approved makes.
- iii) The grade of the steel such as Fe 415/Fe 415D/Fe 500/Fe500 D/Fe 550 / Fe 550 D 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 thereof	One sample for each 40 tonnes or part thereof
10mm to 16mm dia bars	One sample for each 35 tonnes or part thereof	One sample for each 45 tonnes or part thereof
Over 16mm dia bars	One sample for each 45 tonnes or part thereof	One sample for each 50 tonnes or part thereof

- 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 HITES 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.

6 Bar Bending Schedule

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

7 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.

8 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.

9 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.

10 Marine plywood only or steel plates of minimum thickness as approved by Engineer-in-charge shall be used for formwork. All shuttering material to be used at site will be new / just like new as approved by Engineer-in-charge. The shuttering plates shall be cleaned and oiled after every repetition and shall be used only after obtaining approval of Engineer-in-charge's representative at site. The number of

repetitions allowed for plywood and steel shuttering shall be at the discretion of Engineer-in-charge depending upon the condition of shuttering surface after each use and the decision of Engineer-in-charge in this regard shall be final and binding on the contractor. No claim whatsoever on this account shall be admissible.

11 Anti-termite treatment & waterproofing treatment:-

- a. The treatment for water-proofing of basement, roofs, water retaining areas and termite infestation shall be of type and specifications as given in the schedule of quantities and remain fully effective for a period for 10 (Ten) years to be reckoned from the date of expiring of the Defect Liability period, prescribed in the contract. At any time during the said guarantee period if the CLIENT/HITES/ Engineer-in-charge or his representative finds any defects in the said treatment or any evidence of re-infestation, dampness, leakage in any part of buildings or structure and notifies the contractor of the same, the contractor shall be liable to rectify the defect or give re-treatment and shall commence the work or such rectification or re-treatment within seven days from the date of issue of such letter to him. If the contractor fails to commence such work within the stipulated period, the CLIENT/ HITES/ Engineer-in-charge or his representative may get the same done by another agency at the

Contractor's cost and risk and the decision of the CLIENT/ HITES/ Engineer-in-charge for the cost payable by the contractor shall be final and binding upon him. Re-treatment if required shall be attended to and carried out by the Contractor within seven days of the notice from the CLIENT/ HITES or his representative.

- b. Water proofing and anti-termite treatment shall be got done through approved specialized agencies only with prior approval of the Engineer-in-charge or his representative. During the execution of work, if any damage shall occur to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of the CLIENT/ HITES or his representative by the contractor at his costs and risks.

The contractor shall submit a guarantee bond for the water proofing and anti-termite work executed under the contract in the specified format.

SECTION 3- ELECTRICAL SERVICES

(a). General

- i. The electrical installations shall be in total conformity with the control wiring drawings prepared by the Contractor and approved by the Engineer-in-charge & shall be connected and tested in the presence of an authorized representative of the Contractor and of the Engineer - in- Charge.
- ii. The responsibility for the sufficiency, adequacy and conformity to the Contract requirements of the electrical installation work lies solely with the Contractor.
- iii. The design and workmanship shall be in accordance with the best engineering practices, to ensure satisfactory performance and service life. The requirement offered by the contractor shall be complete in all respects. Any materials or accessories which may not have been specifically mentioned, but which are usual and necessary for the satisfactory and trouble free operation and maintenance of the equipment shall be provided without any extra cost of the purchaser. This shall also include spares for commissioning of the equipment.
- iv. The contractor shall obtain all statutory approvals (electrical loads, approval of drawing/ ESS/ D.G. / approval of meter room etc.) from the concerned statutory authorities and permits required for the HT/LT electrical installation work. All statutory fee payable in this regard will be reimbursed against production of receipts/documentary evidence. On completion of work, the contractor shall obtain NOC from SEB & Director of Safety of the concerned state; a copy of the same shall be delivered to HITES. Contractor shall be responsible for dealing with SEB/ Power Distribution Company and other statutory authorities till project commissioning/ handing over and getting electricity in the complex.
- v. The HITES shall have full power for getting the materials or work tested by independent agency at the electrical contractor's expenses in order to prove their soundness and adequacy. The contractor will rectify the defects/suggestions pointed out by HITES/ independent agency at his own expenses.

(b). Regulations and Standards

- i. The installation shall comply in all respects with the requirements of Indian Electricity Act 1910, Indian Electricity Rules (IER) 1956 and other related Laws and Regulations as amended up to date, there under and special requirements, if any, of the State Electricity Boards/ Power Distribution Company etc. The bidder is liable to furnish the list of authorized licensed persons/ employed/deputed to carry out the works/perform the assigned duties to fulfill the requirement of Rule No.3 of IER 1956 as amended up to

date.

- ii. Wherever these Specific Conditions call for a higher standard of material and/or workmanship than those required by any of the above regulations, then these Specific Conditions shall take precedence over the said Regulation and Standards. External works & fire detection & alarm system works to be done as per CPWD specifications & relevant BIS codes.

(c). Conformity with Statutory Acts, Rules and Standards

- i. All installations shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities applicable. But if the specifications and drawings call for a higher standard of material and/or workmanship than those required by any of the above Regulations and Standards, then the specifications and drawings provided in the contract shall take precedence over the said regulations and standards as per the directions of the Engineer-in-charge.
- ii. However, if the drawings or specifications required something which violates the Bye-laws and Regulations, then the Bye-laws and Regulations shall govern the requirement of this installation as per the directions of the Engineer-in-charge.
- iii. Indian Electricity Act and Rules: All electrical works in connection with installations of the system shall be carried out in accordance with the provision of the Indian Electricity Act, 1910 and the Indian Electricity Rules 1956, both amended up to date.
- iv. CPWD Specifications: as at Schedule "F" of GCC.
- v. Indian Standards: The system / components shall conform to relevant BIS wherever they exist and to the National Building Code-2005 with latest amendments / addendums.
- vi. Nothing in these specifications shall be construed to relieve the Contractor of his responsibility for the design, manufacture and installation of the equipment with all its accessories in accordance with applicable Statutory Regulations and safety codes in force.

(d). Completeness of Bid

All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the Bid rates and prices, whether such items are specifically mentioned in the Bid documents or not.

(e). Works to be done by the Contractor :-

Unless and otherwise mentioned in the Bid documents, the following works shall be done by the Contractor, and their cost shall be deemed to be included in the contract price:

- i. Foundations for equipment and components where required, including foundation bolts
- ii. Cutting and making good all damages caused during installation and restoring the same to their original finish
- iii. Sealing of all floor openings provided for pipes and cables, from fire safety point of view, after laying of the same
- iv. Painting at site of all exposed metal surfaces of the installation other than pre-painted items like fittings, fans, switchgear/ distribution gear items, cubicle switch board etc. damages during erection, shall however be rectified by the contractor.
- v. Testing and commissioning of complete installation.

(f). Interrelationship of Services

The Contractor shall keep a check at all stages and supervise at the point of connection the associated civil, HVAC, electrical and plumbing works like underground and overhead tanks, power supply and installation of makeup water connection, drain connection in the firefighting tanks and vicinity of plant room etc. In case of any discrepancy the same should be brought into the knowledge of Engineer-in-charge in writing, all rectifications etc, required in future as a result of failure on the part of the contractor to do so, shall be carried out by the Contractor at his own expenses.

(g). Schedule & Manner of Operation

Time being the essence of this Contract, Contractor shall arrange for all required labour & material in sufficient quantities and at appropriate time, execute as per schedule for execution of work to meet the contract period requirement and so manage the operations that the work shall be completed in time as provided in the contract.

(h). Checking of BOQ Quantities

All quantities indicated in BOQ are tentative which may vary as per site conditions. Contractor has to verify quantities before procuring the materials. No payment shall be payable for quantity brought to site but not used.

(i). Cutting of structural members

No structural member shall be chased or cut without the written permission of the Engineer-in- Charge.

(j). Tools for Handling and Erection

All tools and tackles required for handling of equipments and materials at Site of work as well as for their assembly and erection and also necessary test instruments shall be the responsibility of the Contractor.

(k). Drawings

The drawings indicate the extent and general arrangements of the fixtures, controlling switches, wiring system etc. and are essentially diagrammatic explanation. The drawings indicate the points of termination of conduit runs and broadly suggest the routes to be followed. The Contractor shall submit six sets of working electrical drawings based on tender drawing including reflected ceiling plan coordinating other essential building services for the Engineer-in-charge 's approval. Contractor has to make necessary changes if any as per comments given by Engineer-in-charge before execution. The work shall be executed as indicated in the approved drawings, however any minor changes found essential to co-ordinate the installation of this work with the other trades shall be made in consultation with the Engineer-in-charge.

The drawings are for guidance of the contractor and exact locations, distance and levels shall be governed by the building. The Contractor shall examine all architectural, structural, plumbing and sanitary & electrical drawings before starting the work. Any discrepancies noticed shall be reported to the Engineer-in-charge for clarification. In case of failure to do so Contractor shall not be entitled to any cost for omissions or defects in electrical drawings due to any conflict with other services work.

Any information/data shown/not shown in these drawings shall not relieve the contractor of his responsibility to carry out the work as per the specifications. Additional information required by the bidder/tenderer for successfully completing the work shall be obtained by him.

(l). Position of HT/LT Switch Boards/Transformer & D.G.'S

The recommended position of the switch boards, transformer & D.G.'s as shown on the layout drawings will be adhered to as far as practicable.

The contractor shall submit 2 sets of samples of each type of accessories and apparatus, proposed to be used in the installation at site for HITES's/Engineer-in-Charge's approval (drawings or samples) as required, shall be submitted by contractor. For all non-specified items, approval of the HITES shall be obtained prior to procurement of the same. HITES shall in no way be liable for rejection of the any material due to poor quality, poor workmanship, poor material etc.

(m).Conduit/ Trunking Layout

Prior to the laying of the conduits and trunking, the Contractor shall examine/ study drawings and report to Engineer-in-charge. If the Contractor desires to

make any changes, then he shall submit proposed conduit layout plan to Engineer-in-charge and before execution, he shall get the same approved from Engineer-in-charge.

(n). Shop Drawings

The Contractor shall prepare and submit to the Engineer-in-charge for his approval detail shop drawings for Main & Sub Panels / Distribution Boards, special pull boxes, light & fan switch boards, telephone distribution boards, FDA system and lightning protection system and other equipment to be procured/fabricated by the Contractor.

The contractor shall prepare detailed coordinated electrical shop drawing indicating lighting/lighting fixtures, convenience outlets, D.G.'s, H.T., Transformer, M.V. Panel Boards/Relay Panel, PCC, DB's, Rising Mains, Cable Schedule with other relevant services and submit to the HITES for approval or the Engineer-in-Charge before commencing the work. The shop drawings shall indicate all setting out details and physical dimensions of all components with wiring and cable details including system operating write up in the system i.e. 33/ 11 KV Panel Board, Control and Relay Panel Package Substation, D.G.'s, PCC's, MCC's, cable schedule and routes, manhole trap and fixing details as well as for conduit indicating run and size of wire/cables, outlet/pull/junction boxes etc. with fixing details etc. for the above mentioned work. All work shall be carried out on the approval of these drawings. However, approval of these drawings do not relieve the contractor of his responsibility for providing maintenance free and fool proof system including any missing component/accessories to meet with the intent of the specifications. Contractor will submit 2 prints for preliminary approval and finally six prints for distribution.

The Contractor shall submit and other get approved the drawings at least 15 days before placing of the orders with manufacturers/suppliers.

(o). Scale

All drawings shall be prepared to the scale as required for proper explanation and shall indicate the size and location of all equipments and accessories therein. The Contractor shall follow all dimensions of approved architectural drawings for the work or part concerned and check proposed drawings for any interference with the building structure or other equipment or services.

(p). Materials & Equipment

All the materials and equipment shall be of the approved make and design.

Unless otherwise called for any approval by HITES's Engineer-in-Charge, only the best quality materials and equipment shall be used.

All materials and equipment shall be ISI marked and shall be of the make and design approved by the Engineer-in-charge. Unless otherwise called for, only the

best Grade of materials and equipment shall be used. The Contractor shall be responsible for the safe custody of all materials and equipments till these are taken over by CLIENT/HITES and shall insure them against theft, damage by fire, earth quake etc. A list of items of materials and equipment, together with a sample of each shall be submitted to the Engineer-in-charge for his approval and shall be kept in the sample box.

The contractor shall fill in the data sheet for capital equipment as attached elsewhere in this document. The Material/Equipment shall be rejected due to not giving / filling in the details of the said equipment.

(q). Manufacturer's Instruction

Where manufacturers have furnished specific instructions, relating to the material/equipment to be used on this job, covering points not specifically mentioned in this document, manufacturers' instructions should be followed with the approval of the Engineer-in-charge.

(r). Samples, Catalogues, Brochures and Data

Contractor shall submit the samples & catalogue of the material, which are proposed to be used at Site as per the approved makes for obtaining approval of the Engineer-in-charge.

The Contractor shall submit the number of copies, as required, of all brochures / manufacturer's description data, operation manuals with internal complete circuit diagrams and other similar literature while obtaining the approval of product from Engineer-in-charge.

(s). Design Improvements/ Deviations

The bidder shall note that the equipment offered by him in the bid only shall be accepted for supply. If for any reason, Contractor wishes to deviate from specification, prior permission from HITES will be sought.

The Contractor shall be responsible for the selection and design of appropriate equipments to provide the best coordinated performance of the entire system. The basic design requirements are detailed out in this Specification. The design of various components, sub-assemblies and assemblies shall be so done that it facilitates easy field assembly and maintenance.

If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the Contractor proceeds with the change. Following such agreement, the provision thereof, shall be deemed to have been amended accordingly in the specification.

(t). Approval of Materials

All materials used on the Works shall be new and of the approved quality, conforming to the relevant specifications. Prior approval shall be obtained in writing from the Engineer-in-charge for all materials proposed and when approved, sample shall be duly identified and labeled, it shall be deposited with the by Engineer-in-charge/ and shall be kept in the sample room at Site.

(u). Approval of Shop Drawings etc.

The approval of shop drawings, schedule, brochures etc. by Engineer-in-charge /shall be an approval of general details and arrangements only and shall not relieve the Contractor from responsibility for any deviation from drawings or specifications unless he has in writing informed by Engineer-in-charge of such deviations at the time of submission of the drawings nor shall it relieve the Contractor from any responsibility for errors or omissions of any kind in the shop drawings.

(v). Inspection, Testing and Inspection Certificate

- a. The HITES or duly authorized representative shall have at all reasonable times free access to the Contractor/ Manufacturer's premises or works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the works during its manufacture or erection, if part of the works is being manufactured or assembled at other premises or works, the Contractor shall obtain permission to inspect as if the works were manufactured or assembled on the Contractor's own premises or works. Inspection may be made at any stage of manufacture, dispatch or at site at the option of the Purchaser and the equipment if found unsatisfactory due to bad workmanship or quality, material is liable to be rejected.
- b. All equipment being supplied shall conform to type tests and shall be subject to routine tests in accordance with requirements stipulated under respective sections. Bidder shall submit the type tests reports for approval.
- c. Notice for such inspection/ presence for testing shall be given to the HITES/ Engineer-in-charge by the Contractor at least 15 days in advance together with the routine test certificates of the equipments/ materials given by the manufacturer. If for any item type test is pending payment would be made on successful completion of type/routine test(s) actually carried out as per HITES instructions.
- d. The Contractor shall give the HITES 15 days written notice of any material being ready for testing. Such tests shall be to the Contractor's account. The HITES, unless witnessing of the tests is virtually waived off, will attend such tests within 15 days of the date of which the equipment is notified as being ready for test/inspection, failing which the Contractor may proceed with the test which shall be deemed to have been made in the presence of HITES and he shall forthwith forward to the HITES duly certified copies of tests in

triplicate.

- e. The HITES shall, within fifteen (15) days from the date of inspection or as defined, inform in writing to the Contractor of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the Contract. The Contractor shall give due consideration to such objections and make the necessary modifications accordingly.
- f. When the factory tests have been completed at the Contractor's or Sub-contractor's works, the HITES shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the HITES, the certificate shall be issued within fifteen (15) days of receipt of the Contractor's Test certificate by the HITES. Failure of the issue such a certificate shall not prevent the Contractor from proceeding with the works. The completion of these tests or the issue of the certificate shall not bind the HITES to accept the equipment should, it, on further tests after erection, is found not to comply with the Specification. The equipment shall be dispatched to site only after approval of test reports and issuance of clearance by the HITES.
- g. The contractor shall arrange all necessary instruments, tools, tackles and testing facilities free of cost for inspection including travel (Air/Rail/Road etc.), lodging and boarding expenses etc. free of cost for the Engineer deputed by HITES .
- h. For tests whether at the premises or at the works of the Contractor or of any Sub-Contractor, the Contractor except where otherwise specified shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be required by HITES or this authorized representative to carry out effectively such tests of the equipment in accordance with the Specification.
- i. The inspection by HITES and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed quality assurance programme forming a part of the Contract.
- j. The HITES will have the right of having at his own expenses any other tests(s) of reasonable nature carried out at Contractor's premises or at site or in any other place in addition of aforesaid type and routine tests to satisfy that the material comply with the specifications.
- k. The HITES reserves the right for getting any field tests not specified in respective sections of the technical specification conducted on the completely assembled equipment at site. The testing equipment for these tests shall be provided by the Contractor.
- l. Notwithstanding approval of tests or equipment by the by Engineer-in-charge, the Contractor shall be required to perform site tests and prove the correctness of ratings and performance of equipment / machinery and

materials supplied and installed by the Contractor as per the Contract specifications and conditions. The Engineer-in-charge shall also have the power to order the material or work to be tested by an independent agency at the Contractor's expense in order to prove soundness & adequacy.

(w). Testing and Commissioning

The Contractor shall pay for and arrange without any cost to the Engineer-in-charge, all necessary balancing and testing equipment, instruments, materials, accessories, power, water, fuel and the requisite labour for testing. Any defects in materials and/ or in workmanship detected in the course of testing shall be rectified by the Contractor entirely at his own cost, to the satisfaction of the Engineer-in-charge. The installation shall be retested after rectification of defects and shall be commissioned only after approval by the Engineer-in-charge. All tests shall be carried out in the presence of the Engineer-in-charge or his representative.

(x). PACKAGING

All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. While packing all the materials, the limitation from the point of view of availability of Railway wagon/truck/trailer sizes in India should be taken account of the Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor. HITES takes no responsibility of the availability of any special packaging/transporting arrangement.

(y). TESTS

i. Charging

On completion of erection of the equipment and before charging, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the HITES and the Contractor for correctness and completeness of installation and acceptability for charging, leading to initial pre-commissioning tests at Site. The pre-commissioning tests to be performed as per relevant I.S. given and shall be included in the Contractor's quality assurance programme.

ii. Commissioning Tests

The available instrumentation and control equipment will be used during such tests and the Contractor will calibrate all such measuring equipment and devices as far as practicable. However, unmeasurable parameters shall be taken into account in a reasonable manner by the Contractor for

the requirement of these tests. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The Contractor will apply proper corrections in calculation, to take into account conditions, which do not correspond to the specified conditions.

All instruments, tools and tackles required for the successful completion of the Commissioning Tests shall be provided by the Contractor, free of cost.

Pre-commissioning test shall be carried out as per relevant IS and/or as specified in the relevant clause.

The Contractor shall be responsible for obtaining statutory clearances from the concerned authorities for commissioning of the equipment. However necessary fee shall be reimbursed by CLIENT on production of requisite documents.

(z). Completion Certificate by the licensed supervisor

On completion of the installation, a certificate shall be submitted to the Engineer-in-charge by the Contractor which shall be countersigned by the licensed supervisor/ agency under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority. On the basis of this certificate, the Contractor shall arrange for inspection of installation by the concerned local authorities.

The Contractor shall be responsible at his own cost for getting the installation duly approved by the authorities concerned.

(a). Performance Guarantee Certificates for Equipment

All equipment shall be guaranteed against unsatisfactory performance and/or break down for a minimum period of 12 (Twelve) months from the date of handing over of complete work to the CLIENT/ HITES/ Engineer-in-charge. The equipment or component or any other part of installation so found defective within the guarantee period shall be replaced / repaired by the Contractor free of cost to the satisfaction of the CLIENT / HITES/ Engineer-in-charge. The above guarantee and/ or warrantee provided by the manufacturer will be submitted along with all the test certificates from manufacturer to Engineer-in-charge.

(b). Completion Drawings (As Built Drawings)

On completion of the work and before issue of provisional certificate of completion, the Contractor shall at his own cost submit to the Engineer-in-charge 4 (four) sets of layout drawings drawn at the approved scale indicating the installations. These drawings shall clearly indicate the complete plant layouts, and piping layouts, location wiring, exact location of all the concealed piping,

valves, controls, wiring and other services. The Contractor shall also submit 4 (four) sets of consolidated control diagrams, technical literature on all automatic controls and complete technical literature on all equipment and materials. The Contractor shall mount a set of all consolidated control diagrams and all piping diagrams/Single Line diagrams in a frame with glass, and display in the plant room.

Also, the contractor shall submit soft copy of 'As Built' drawings (in AutoCAD & PDF format) of the work including write up (troubleshooting, installation, operation and maintenance manual with instructions) incorporating all such changes and modifications during engineering and execution along with warrantee & guarantee certificates from manufacturers. These drawing must provide

- a. Run and size of conduit, inspection and pull boxes including routing and locations.
- b. Number and size of conductor in each conduit.
- c. Locations and rating of sockets and switches controlling the light and power outlet.
- d. Location and details of main & sub distribution boards, distribution boards indicating the circuit number controlled by them
- e. Type of fitting viz. fluorescent, pendants, brackets, bulkhead etc., including their rating & type of lamp, fans and exhaust fans
- f. A complete wiring diagram as installed and schematic drawing showing all connections for the complete electrical system
- g. Location of telephone outlets, junction boxes and sizes of various conduits and number & sizes of wire drawn
- h. Layout of telephone cables
- i. Location of all earthing stations, route and size of all earthing conductors, manholes etc.
- j. Layout and particulars of cables & sub mains.
- k. Schematic drawing for telephone system
- l. Layout of conduits for computer outlet points
- m. Layout and details of lightning protection system.
- n. Insulation tests and earth test results
- o. PA System drawings
- p. Dish Antenna drawings
- q. Equipment drawings
- r. Cable route layout of HT, LT & other cables

- s. External lighting drawing with road layout
- t. Any other drawings/details as per requirements and directions of Engineer-in-charge

(c). Control System

During the Defect Liability Period/ Maintenance Period, the Contractor shall monthly check all controls in various areas to ensure that these are functioning satisfactorily. This shall apply to all pressure switches and pressure gauges, contacts, relays, controller switches, high and low pressure cut-outs etc.

(d). Check List

The Contractor shall provide to the HITES/ Engineer-in-charge, 4 (four) copies of a comprehensive maintenance checklist and shall place a copy of it in the Substations & Plant Room. The checklist shall be a list of each piece of equipment in this Contract, and shall provide a space for each of the next fifty-two weeks to record the maintenance results and status of various equipments during the maintenance period. This list shall be updated every month at the time of inspection. The Contractor shall certify on this check list that he has examined each piece of equipment and that; it is operating as intended in the contract/ by the manufacturer, and that all necessary tests have been performed.

(e). Repairs

All equipment that requires repairing shall be immediately serviced and repaired during the maintenance period. All spares/parts and labours shall be furnished by the contractor free of cost.

(f). Training of Personnel

The Contractor shall arrange for training of the CLIENT's personnel prior to provisional takeover of the project for the following:

- a. Substation Equipment
- b. Telephone Exchange
- c. All other Equipment like pumps, panels etc.
- d. Adjustment of setting for controls and protective devices
- e. Preventive maintenance
- f. Operation of all electrical panels including their interconnectivity and interlocking scheme
- g. Hot Water Boiler
- h. Any other specialized system as executed under this contract

(g). Safe Custody and Storage

Safe custody of all machinery and equipment dismantled, shifted & supplied by the Contractor shall be his own responsibility till the final taking over by the CLIENT/HITES/ Engineer-in-charge. The Contractor should, therefore, employ sufficient staff for watch and ward at his own expenses. CLIENT/HITES/ Engineer-in-charge may, however, allow the Contractor to use the building space for temporary storage of such equipment, if such space is available.

(h). Handling, Storing and Installation

- i. In accordance with the specific installation instructions as shown on manufacturer's drawings or as directed by the Purchaser or his representative, the Contractor shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented.
- ii. Contractor shall follow the unloading and transporting procedure at site, as well as storing, testing and commissioning of the various equipment being procured by him separately. Contractor shall unload, transport, store, erect, test and commission the equipment as per instructions of the manufacturer's
- iii. Engineer(s) and shall extend full co-operation to them.
- iv. In case of any doubt/ misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the HITES. Contractor shall be held responsible for any damage to the equipment consequent for not following manufacturer's drawings/instructions correctly.
- v. Where assemblies are supplied in more than the one section, Contractor shall make all necessary connections between sections. All components shall be protected against damage during unloading, transportation, storage, installation, testing and commissioning. Any equipment damaged due to negligence or carelessness or otherwise shall be replaced by the Contractor at his own expense.
- vi. The Contractor shall submit to the HITES every week, a report detailing all the receipts during the weeks. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection of the equipment at Site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor.
- vii. The Contractor shall be fully responsible for the equipment/material until the same is handed over to the HITES in an operating condition after commissioning. Contractor shall be responsible for the maintenance of the equipment/material while in storage as well as after erection until taken over by HITES, as well as protection of the same against theft, element of nature, corrosion, damages etc.
- viii. The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipment, which require indoor storage.
- ix. The words 'erection' and 'installation' used in the specification are

synonymous.

- x. Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes.
- xi. The minimum phase to earth, phase to phase and section clearance along with other technical parameters for the various voltage levels shall be maintained as per relevant IS.

(i). Operation and Running of entire system

- i. The contractor shall pay for and arrange for operation & running of entire electrical system and other equipment for a minimum period of one month after satisfactory completion of work as desired by Engineer-in-charge. Cost of operation & running of entire system including required material e.g. Water, electricity consumables, tools & tackles, requisite manpower etc. shall be deemed to be included in the contract price and nothing extra shall be paid.
- ii. Layout of all services, operating and maintenance instructions. DO's and Don't's etc. for all the plant rooms, pump room, control panels etc. must be equipped with colored layout of services for the each floor. Operation and maintenance manual of the respective services, Do's and don'ts's for all the plants, machinery & services to be installed with every individual units.

SECTION 4 -HVAC SYSTEM

1. Scope of Contract

The scope and general character of works to be carried out under this section comprises of Supply, Installation, Testing and Commissioning of Heating, Ventilation and Air-conditioning installations as illustrated in drawings, specifications, technical data and Bill of Quantities.

2. Stores and Materials

The contractor shall provide everything necessary for the proper execution of the work according to the intent and meaning of the drawings, Bill of quantities and specifications taken together whether the same may or may not be particularly shown or described therein provided that the same can be reasonably inferred there from. In case of any discrepancy in the drawings or between the drawings, Bill of quantities and specifications, decision of the Engineer-in-charge/ will be final and binding.

3. Supply of Equipment

Equipment shall be strictly as per the list of approved makes/ manufacturers given in the Bid documents. However, final choice of make shall lie with the Engineer-in-charge.

3.1 The Contractor shall submit manufacturer's test certificates of equipment supplied.

3.2 The Contractor shall submit the original "Excise Paid Certificates", and exit Gate passes form manufacturer's factory/works clearly bearing the batch numbers and date of dispatch.

4. Shop / Working Drawings etc.

4.1 The Contractor shall prepare and submit to the Engineer-in-charge for approval, 2 sets of detailed shop drawings of equipment, equipment characteristics and capacity details of all equipment, accessories and devices etc. as per specifications well in advance or as required by the Engineer-in-charge. The structure works should not be affected due to delay on this account. The shop drawings shall be submitted within 15 days of issue of instructions by Engineer - in- Charge. No claims for extension of time shall be entertained because of any delay in the work due to failure on part of the contractor to produce shop drawings in time.

4.2 These drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics, and capacity of all items of equipment, as also details of all related items of work by other disciplines.

4.3 If the Engineer-in-charge makes any amendment in the above drawings, the Contractor shall supply two fresh sets of drawings with the amendments duly incorporated, along with the drawings on which corrections were made. After final approval has been obtained from the Engineer - in- Charge, the Contractor shall submit a further six sets of shop drawings for the exclusive

use of and retention by the Engineer-in-charge.

- 4.4 Approval of shop drawings shall not be considered as a guarantee of measurement or of building condition. It will in no way relieve the contractor from his responsibility of furnishing materials or performing work as required by the contract.

5. Completion Drawings(As Built Drawings):-

Following "AS BUILT" drawings shall be submitted by the Contractor on completion of the work:

- a. Plant installation drawings giving complete details of the entire equipment including AHU's and their foundations.
- b. Ducting drawings showing all sizes, damper locations and sizes of all air outlets and intakes, for all floors
- c. Electrical drawings showing cable sizes, equipment capacities, control components and control wiring.
- d. Schematic control drawings giving detailed sequence of operation and notes to explain the operation of the control circuit.
- e. Piping drawings showing all pipe sizes, valves and fittings
- f. Any other drawings to be supplied as per instructions of the Engineer-in-charge.

6. Operation and Service Manuals

- 6.1. The Contractor shall submit 6 (six) sets of operation and service manuals in respect of the air-conditioning plant including salient details of plant including internal circuit diagrams. Following minimum details shall be furnished:
- i. Detailed equipment data as approved by the Engineer-in-charge/
 - ii. Manufacturer's maintenance and operating instruction
 - iii. Approved test readings
- 6.2. The Contractor shall also submit 6(six) sets of technical literature on all automatic controls and complete technical literature on all equipment and materials. The Contractor shall frame under glass, in the Air conditioning plant room all consolidated control diagrams and all piping diagrams.
- 6.3. Coloured Layouts of all electrical lines in A-1 size properly laminated to be fixed at various locations at the time of handing over of building.

7. Inspection at Work / Contractor's Premises

- 7.1. The CLIENT/ HITES/Engineer-in-charge or their representatives shall at all reasonable time have free access to the Contractor's premises/works. The Contractor shall give every facility to them and necessary help for inspection and examinations and test of the materials and workmanship.

7.2. These representatives shall have full powers to inspect drawings of any portion of the work or examine the materials and workmanship of the plant at the Contractor's works or at any other place from where the material or equipment is to be obtained. Acceptance of any material or equipment shall in no way, relieve the Contractor of his responsibility for meeting the requirement of the specifications.

7.3. For Imported screw type water chilling machine manufacturer's factory test certificate would be acceptable in lieu of inspection at manufacturer works.

8. Sub-contracting

The Contractor may sub-contract part of the works with the written approval of the Engineer-in-charge. A single sub-contractor as approved by the Engineer - in-Charge shall be appointed for carrying out the entire work of supplying, installation, testing and commissioning of all the equipment covered under this package. However, the overall responsibility for compliance of the Contract lies with the Contractor. The agency/ sub-contractor so chosen shall be got approved from the Engineer-in-charge.

9. Material Submittals

The Contractor shall submit materials for all equipment and machinery for the written approval of the Engineer-in-charge before placing orders. The material submittals shall comprise of at least the following:

- i. Manufacturer's technical catalogues and brochures giving technical data about performance and other parameters
- ii. Manufacturers drawings / sketches showing construction, dimensional and installation details
- iii. Rating charts and performance curves clarifying rating of equipment proposed.

10. Samples and Prototypes

The Contractor shall submit samples of items such as grilles/ diffusers, valves, controls and/ or any other parts or equipment as required by the Engineer-in-charge for prior approval in writing before placing the order. The Contractor shall also construct prototype or samples of work as laid down in the Contract or as instructed by the Engineer-in-charge. Such samples and prototypes after approval shall be retained by the Engineer-in-charge and shall serve as the standards to be achieved in final construction.

11. Testing and Commissioning

- 11.1. Tests on equipment as called for in the specifications shall be carried out by the Contractor in accordance with the specifications, the relevant Bureau of Indian Standard Codes (BIS) and International Standards.
- 11.2. The initial tests shall include but not be limited to the following:
- i. To operate and check the proper functioning of all electrically operated components viz., compressor motor, pumps, blowers, air handling units, rotating machine, fans, boilers, etc.
 - ii. To operate and check the proper functioning of all electrical panels, switch gears, safety and other controls
 - iii. To adjust and balance air, water, steam and gas quantities to provide the designed flow rates by adjusting valves, dampers, diverters etc.
 - iv. To check the systems against leaks in different circuits, alignment of motor, 'V' Belt adjustments etc.
 - v. To check the vibration and noise levels of the equipment
 - vi. Setting of all control and all such other tests which are essential for smooth functioning of the plant.
- 11.3. The Contractor shall pay for and arrange without any cost, all necessary balancing and testing equipment, instruments, materials, accessories, power, water, fuel and the requisite labour for testing. Any defects in materials and/or in workmanship detected in the course of testing shall be rectified by the Contractor entirely at his own cost, to the satisfaction of the Engineer-in-charge. The installation shall be tested again after removal of defects if any and shall be commissioned only after approval by the Engineer-in-charge. All tests shall be carried out in the presence of the Engineer-in-charge or his representative.

12. Provisional Taking Over

After completion of the HVAC system, the same shall be put to a continuous running test for a period of 72 (Seventy Two) hours. All adjustments should be made prior to this test so that proper conditions / working are achieved during this testing. The Contractor shall pay for and arrange at his own cost for materials, accessories, power, water, fuel and the requisite labour for this testing the test readings shall be noted in the Testing format approved by the Engineer-in-charge.

The plant will be provisionally taken over after successful completion of the above test and the defects liability period shall commence after provisional taking over of the system.

13. Final Performance and Capacity Test

In addition to the above testing, final performance and capacity tests shall be carried out on the equipment as per the "Testing Schedules" during the defects liability period as follows:

- i. Peak summer / monsoon test during the period from 15th May to 31st July on the dates decided by Engineer - in- Charge /HITES/ CLIENT. The installations should be able to maintain the specified inside temperature/conditions within the tolerance limits prescribed in the Contract and the duration of the test shall be 72 hours.
- ii. Peak winter test during the period from 1st December to 15th February on the dates decided by Engineer - in- Charge / HITES/ CLIENT. The installations should be able to maintain the specified inside temperature within the tolerance limits permitted in the Contract. The duration of the test shall be 72 hours.

All the arrangements required for making the entire system operational /running, for the performance test as above, including cost of manpower, and fuel (Gas etc) will be borne by the Contractor.

14. General

- 14.1. After provisional taking over of the plant, CLIENT shall provide staff for operation. Staff will work under the supervision of the Contractor for proper operation of the plant. This responsibility of the Contractor shall continue till completion of test liabilities with respect to the plant or the maintenance period (twelve months), whichever is later.
- 14.2. The user shall have the right to operate all equipment, if these are in the operating condition if such equipment, have been accepted as complete and satisfactory. Repairs and alterations if required shall be carried out as and when directed by the CLIENT/ HITES/ Engineer-in-charge. In special circumstances CLIENT/ HITES/ Engineer-in-charge may request Air conditioning of some areas even before the completion of whole of HVAC work. The Contractor shall co-operate fully under such circumstances.

15. Guarantee and Defect Liability Period

The guarantee of HVAC works shall be valid for a period of 12 (Twelve) months from the date of completion of the project as accepted by CLIENT/HITES/Engineer-in-charge/. In case the contractor is not able to carry out the seasonal tests (summer/ monsoon & winter) within the stipulated period as mentioned above, the same can be carried out even after defects liability

period. The Defect Liability period for HVAC shall be deemed to be extended till satisfactory completion of seasonal tests.

16. Adherence to Performance Parameters for HVAC Works:-

The Contractor shall adhere to specified performance parameters, & shall ensure that the system shall maintain the desired parameters within + /- 5 % of the specified parameters or as required as per relevant norms.

17. Measurement of Works

All works shall be measured in accordance with the mode of measurement given in the specific sections of the specifications. In case the method of measurement for any item is not clarified in the specifications, the same shall be measured in accordance with the relevant IS standards and CPWD norms.

18. Maintenance

The Contractor shall provide free maintenance (routine/preventive/breakdown) for a period of twelve **months** after testing and commissioning of the installation of HVAC works or from the date of completion accepted by CLIENT / HITES/ Engineer-in-charge whichever is later. The Contractor shall carry out all routine and special maintenance of the plant and attend to any defects that may arise in operation of the plant.

19. Validation:-

Validation of Classified Areas shall be in the scope of HVAC contractor & nothing extra will be paid in this regard.

It shall include as follows:-

- Documentation for DQ/IQ/OQ with certificates of all brought items
- Duct leakage testing during duct installation as & when required.
- Air flow velocity test
- Air borne particulate test
- Temperature & RH monitoring test
- Area recovery test
- Room pressure balancing & any other test as required.

20. Painting

All equipment and ancillary items such as pipes, supports etc., will be painted in an approved manner, using standard paints as approved by HITES/ Engineer-in-charge

21. Safe Custody and Storage

The contractor shall be responsible for safe custody of all machinery and equipment supplied and installed till the final taking over by the CLIENT/ HITES/ Engineer-in-charge.

22. Training of Personnel

The Contractor shall arrange to train the CLIENT's personnel on the following aspects prior to provisional takeover of the plant:

- a) Operation of plant
- b) Gas charging and pumping down of the system
- c) Adjustments of settings for controls and protective devices
- d) Preventive maintenance
- e) Disassembling and assembling of compressor including identification and replacement.

23. Operation and Running of entire system

The contractor shall pay for and arrange for operation & running of entire HVAC system for a minimum period of one month after satisfactory completion of work as desired by Engineer-in-charge. Cost of operation & running of entire system including required material e.g. consumables, tools & tackles, requisite manpower etc. shall be deemed to be included in the contract price and nothing extra shall be paid on this account. Only water and electricity shall be provided by the CLIENT.

SECTION 5 - GRIHA RATING SYSTEM

1. This Project is to be executed for Certifications of Three (3) as per GRIHA (Green Rating for Integrated Habitat Assessment) National Green Building Rating System for Hospital Building. Accordingly, the contractor is required to adhere to the various environment friendly and GRIHA compliance aspects of construction as well as documentation with respect to use of Materials, Manpower, Machinery and other relevant mandatory requirements. Nothing extra shall be payable over and above the quoted rates as per the financial bid to comply with such requirements.
2. To achieve the above, the contractor shall specifically, adhere to the following during construction :

Soil excavation, soil erosion and sedimentation control etc.:- Proper site management strategies shall be followed on the site to ensure proper material staging, soil spill prevention, soil erosion and sedimentation control. The following strategies are listed below:

- a. Temporary sedimentation basins shall be made on the lowest possible elevation on site during construction to manage all the storm water generated during rains at the site. Photographs of the sedimentation tank shall be submitted to the Engineer-in-charge.
- b. Spill prevention and control: Spill prevention and control plans to ensure so as to stop the source of the spill and dispose the contaminated material and hazardous wastes. Hazardous wastes include pesticides, paints, cleaners, and petroleum products.
- c. Proper construction material staging shall be executed on the site.
- d. Trenches shall be laid along the periphery of the site to carry the storm water from the various locations on the site to the sedimentation basins.
- e. During the earth excavation, top soil of 0.20m shall be stacked separately on or near by the site at a maximum height of 0.40m.
- f. Vegetation / mulching of the areas shall be done where the excavated top soil is stacked.
- g. The soil excavation, particularly during rainy season, shall be done in such a way to minimize site disturbance such as soil pollution due to spillage of construction material and mixing with rainwater.
- h. The existing vegetation shall be protected by preventing disturbance or damage to specified areas during construction. This will minimize the amount of bare soil exposed to erosive forces. All existing vegetation shall be barricaded on site and marked on a site survey

plan.

- i. Stacked top soil shall be mulched and protected by barricading as stated above and re-laid over pre-designated landscape areas post construction.
 - j. The contractor shall not store /dump construction material or debris on metaled road.
 - k. The contractor shall get prior approval from Engineer-in-Charge for the area where the construction material or debris can be stored beyond the metaled road. This area shall not cause any obstruction to the free flow of traffic/inconvenience to the pedestrians. It should be ensured by the contractor that no accidents occur on account of such permissible.
- 2.2. Proper site management strategies shall be followed on the site to ensure labour safety and sanitation. Some of these are listed below:
- a) Display warning and safety signs all across the site. Also ensure that safety nets and harnesses are provided for construction workers working on higher floors. The walking boards and formwork shall also be stable. Workers shall be provided with safety equipment like safety helmets, jackets, boots and gloves.
 - b) Provide fire extinguishers and barrels of water with bucket tans on the site and sufficient light for workers to work safely at night.
 - c) The Contractor shall provide adequate level of sanitation and safety facilities for construction workers.
 - d) Provide accommodation and amenities for all staff and labours, employed for the purpose of, or in connection with the contract including fencing, water (both for drinking and other uses), electricity, furniture and other such requirements. Such accommodation and amenities shall be provided by the contractor at a location specifically demarcated by the UNMICRC, in case such space is made available by the employer. In case the contractor makes his own arrangement, all such facilities shall be provided in such accommodation. On completion of the contract, such accommodation shall be removed and the site shall be cleared.
 - e) The contractor shall employ an officer on the site concerned solely with the safety and protection of all staff and labour against accidents. The officer shall be qualified and shall have authority to issue instructions and take protective measures to prevent accidents. Or the contractor may setup a working arrangement with a local practitioner to handle injury in an emergency situation.

- f) The contractor shall provide mask to every worker working on the construction site and involved loading, unloading and carriage of construction material and construction debris to prevent inhalation of dust particles.
- g) The contractor shall provide all medical help, investigation and treatment to the workers involved in the construction of building and carry of construction material and debris relating to dust emission
- h) The contractor shall establish a fully equipped first aid centre on site to deal with accidental injuries and workers health. The first aid box shall be marked with a red cross on a white background.
- i) The contractor shall not allow an individual to work on site while his ability or alertness is impaired by fatigue, illness or some other cause which might expose him to injury.

2.3. Proper site management strategies shall be adopted on the site such as:

a) Preparation of site :

- i. Clear vegetation only from the areas where work will start right away
- ii. Vegetate/mulch areas where vehicles don't ply
- iii. Apply gravel to the area where mulching/paving is impractical
- iv. Identify roads on site that would be used for vehicular traffic. Add surface gravel to reduce source of dust emission
- v. Limit vehicular speed on site to 10 km/hour

b) During Construction and Demolition(C&D):-

- i. Water shall be sprayed to prevent dust pollution on the following:
 - a. Any dusty materials before transferring, loading and unloading
 - b. Areas where demolition work is being carried out
 - c. Areas where excavation or earth-moving activities are to be carried out
 - d. Arrangements for wheel washing should be made near the entry/exit gates to prevent air pollution
- ii. The contractor shall ensure that C&D waste is transported to the C&D dedicated place within the site earmarked for storing and sorting construction waste side only and due record shall be maintained by the contractor.
- iii. The contractor shall compulsory use of wet jet in grinding and stone cutting

- c) The following activities shall be carried out:
- i. The contractor shall take appropriate protection measures like raising wind breakers of appropriate height on all sides of the plot/area using CGI sheets or plastic and / or other similar material to ensure that no construction material dust fly outside the plot area.
 - ii. The contractor shall ensure that all the trucks or vehicles of any kind which are used for construction purposes / or are carrying construction material like cement, sand and other allied material are fully covered. The contractor shall take every necessary precautions that the vehicles are properly cleaned and dust free to ensure that en-route their destination, the dust, sand or any other particles are not released in air /contaminate air.
 - iii. Covering full stockpile of dusty material with impervious sheeting
 - iv. Transferring, handling/storing dry loose materials like bulk cement, dry pulverized fly ash inside a totally enclosed system
- d) Concrete Curing: - Use of gunny bags, ponding for curing purposes. Adding admixtures to concrete which cause a reduction in the water required for curing as per directions of the Engineer-in-charge. Also construct curing tanks on the site for efficient usage of water.
- e) Efficient use of available water
- f) Plan utilities efficiently and optimize on-site circulation efficiency
- g) Reduce air and noise pollution due to storage / use of materials and machinery
- h) Preservation and protection of landscape during construction.
- i) Reduction in waste of construction materials
- j) Implement recycling programme as far as possible to recycle construction waste materials during construction
- k) Suitable arrangement for preventing dust and debris entering duct work and working areas
- l) Create physical barriers between work and non-work areas.
- m) Protection of materials and equipment against moisture dust etc.
- n) Keeping work area clean and dry as possible
- o) To take safety measures to avoid damage to existing plants and trees
- p) The contractor shall comply with all the preventive and protective environmental steps as stated in the MoEF guidelines, 2010.
- q) The contractor shall carry out on road- Inspection for black smoke generating machinery. The contractor shall use cleaner fuel.

- r) The contractor shall ensure that all DG sets shall comply with emission norms notified by MoEF.
- s) The contractor shall use vehicle having pollution under control certificate. The emissions can be reduced by a large extent by reducing the speed of a vehicle to 20 kmph. Speed bumps shall be used to ensure speed reduction. In cases where speed reduction cannot effectively reduce fugitive dust, the contractor shall divert traffic to nearby paved areas.

2.4. Materials:-

2.4.1. Use of materials which conform to the GRIHA Rating System criteria.

2.4.2. Use of low emitting materials, adhesives and sealants to -

- a) reduce / avoid use of materials, which are irritating and naturally cause health problems to the construction workmen and occupants.
- b) achieve specified Volatile Organic Compounds (VOC) limits as per the requirements given in the **Table-1** & **Table - 2** below :

TABLE - 1

LIST OF ADHESIVES AND SEALANTS :			
SN	Types of Applications	Maximum VOC Limit (g/1)	Suggested vendors
1	Laminate Adhesive	30	Dow Corning/ Cani Merchandizing/ Esson Chemical/ Acqua Mix/ Finolex
2	Wood Flooring Adhesive	100	
3	Ceramic Tile Adhesive	65	
4	Rubber Flooring Adhesive	60	
5	Sub Floor Adhesive	50	
6	Structural Glazing Adhesive	100	
7	Architectural Sealant (<i>Non</i>	250	
8	Indoor Carpet Adhesive	50	

TABLE - 2

LOW EMITTING MATERIALS PAINTS : Interior paints (walls, ceiling, wood polish etc) should conform to the following criteria		
SN	Types of Applications	VOC Limit (g/L)
1	Flats	50
2	Non-flat	150
3	Anti-rust paints	250
4	Varnish	350
5	Lacquer	550
6	Floor Coatings	100
7	Waterproofing sealers	250

3. The Contractor shall maintain proper record of all the materials/ equipment procured with respect to their source & specifications with details of their manufacturing and recycled content etc. and submit along with all supporting documents to the Engineer-In-charge.
4. **Construction Waste Management Plan :**
As already detailed, the broad intent is to avoid materials going to landfills, during construction. It is required to develop a plan to recycle all possible waste generated during construction. Typical items would include land clearing debris, concrete, steel, ductwork, clean dimensional wood, paperboard and plastic used in packing, etc.
5. **Indoor Air Quality (IAQ) Management plan.**
The HVAC works, in general, shall conform to ECBC 2007. The contractor shall be required to take the specific measures during construction with respect to following main areas of concern:
 - a. HVAC System Protection :
 - When performing construction activities that produce dust, such as drywall sanding, concrete cutting, masonry work, wood sawing or adding insulation, seal off the supply diffusers and return air system openings completely for the duration of the task.
 - Shut down and seal off the supply diffusers and return air ducts during any demolition operations
 - Till the HVAC system is put into use, seal-off the supply diffusers and return air system openings to prevent the accumulation of dust and debris in the duct system during construction.

- Do not use the mechanical rooms to store construction or waste materials. Keep rooms clean and neat.
- Provide periodic duct inspections during construction; if the ducts become contaminated due to inadequate protection, clean the ducts as per requirements and directions of Engineer-In-Charge

b. Contaminant Source Control:

- i. Use low VOC products as indicated by the specifications to reduce potential problems
- ii. Restrict traffic volume and avoid idling of motor vehicles as their emissions could be drawn into the building
- iii. Utilize electric or natural gas alternatives for gasoline and diesel run equipment where possible and practical. Use low-sulphur diesel in lieu of regular diesel
- iv. Cycle equipment off when not being used or needed
- v. Exhaust pollution sources to the outside with portable fan systems
- vi. Prevent exhaust from re-circulating back into the building
- vii. Keep containers of wet products closed as much as possible. Cover or seal containers of waste materials that can release odour or dust.
- viii. Protect stored on-site or installed absorptive building materials, for instance, Cement, Gypsum / POP etc. from weather and moisture; wrap with plastic and seal tight to prevent moisture absorption.

c. Pathway Interruption:

- i. Provide dust curtains or temporary enclosures to prevent dust from migrating to other areas including existing Hospital Complex, as applicable.
- ii. Locate pollutant sources as far away as possible from supply ducts and areas occupied by workers when feasible. Supply and exhaust systems may have to be shut down or isolated during such activity.
- iii. During construction, isolate areas of work to prevent contamination of clean or occupied areas. Pressure differentials may be utilized to prevent contaminated air from entering clean areas.

- iv. Depending on weather, ventilation using 100% outside air will be used to exhaust contaminated air directly to the outside during use of VOC emitting materials.
- d. Housekeeping:
- i. Provide regular cleaning concentrating on HVAC equipment and building space to remove contaminants from the building prior to occupancy.
 - ii. All coils, air filters, fans & ducts shall remain clean during installation and, if required, will be cleaned prior to performing the testing, adjusting and balancing of the systems.
 - iii. Suppress and minimize dust with wetting agents or sweeping compounds. Utilize efficient and effective dust collecting methods such as a damp cloth, wet mop, or vacuum with particulate filters, or wet scrubber.
 - iv. Remove accumulations of water inside the building. Protect porous materials such as insulation and ceiling tile from exposure to moisture.
 - v. Thoroughly clean all interior surfaces prior to replacing filters and running HVAC system for system balancing, commissioning and building flush-out.
- e. Scheduling and Construction Activity Sequence:

Schedule high pollution activities that utilize high VOC level products (including paints, sealers, insulation, adhesives, caulking and cleaners) to take place prior to installing highly absorbent materials (such as ceiling tiles, gypsum wall board, fabric furnishings, carpet and insulation, for example)

6. **Green Building (GRIHA) provisions for Electrical works and Materials**

The Electrical works, in general, shall conform to ECBC 2007. Moreover, the contractor shall be required to take the specific measures during construction with respect to following:

1. All items to be quoted as per the Green Building provisions and shall adhere to GRIHA Green Building rating system and other Green building standards. This is irrespective of whether the same have been mentioned in the technical specifications or the Bill of Quantities.
2. The vendor to conform during negotiation meetings and before quoting that the MAKE of MATERIAL specified in the e-Tender conforms to Green Building norms and requirements and in case of any queries would clarify during the negotiation meeting. Since we are aiming for the GRIHA 3 Star rating, it is mandated that all products have to be accordingly compliant and if the contractor has not accounted for it in his cost, he WILL NOT be entitled for any further compensation and will have to provide in the same cost.
3. The contractor shall submit all TECHNICAL SUBMITTALS in a spiral bound

format to the Green Building consultant/ Engineer-in-charge for approval, where all the catalogues of items of the BOQ shall be compiled. This master approval document shall be vetted and duly approved by the Green Building Consultant/ Engineer-in-charge, before ordering and procurement.

4. Minimum allowable luminous efficacy of all the lamps shall be as per the table below:-

Light Source	Minimum allowable luminous efficacy (lm/W)
CFL (Compact Fluorescent Lamp)	50
FL (Fluorescent Lamp)	75
MH (Metal Halide)	75
HPSV (High Pressure Sodium Vapour)	90
LEDs (Light Emitting Diodes)	50

5. Photographs :

During various stages of construction, the photographs shall be taken by contractor and submitted to the Engineer-In-charge, showing details of specific requirements / measures being taken by the contractor towards above for documentary compliance and records.

6. Contractor shall coordinate with suppliers of various materials and equipment to be procured by him for use in works and provide all required details with respect to their manufacturing facilities; raw materials etc. as per requirements of GRIHA Certification guidelines. Preference should be given to GRIHA compliant products/ materials.

FORMATS FOR GUARANTEES

GUARANTEE TO BE EXECUTED BY THE CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER SUPPLY AND SANITARY INSTALLATIONS

(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)

The agreement made this..... Day of Two thousand and
between S/O..... (hereinafter called the GUARANTOR of the one part)
and the ----- (herein after called the Client of the other part).

WHEREAS THIS agreement is supplementary to the contract. (Herein after called the Contract) dated.....and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the work in the said contract recited structurally stable workmanship and use of sound materials.

AND WHEREAS THE GUARANTOR agreed to give a guarantee to the effect that the said work will remain structurally stable and guarantee against faulty workmanship, finishing, manufacturing defects of materials and leakages etc.

NOW THE GUARANTOR hereby guarantee that work executed by him will remain structurally stable, after the expiry of maintenance period prescribed in the contract for the minimum life of ten years, to be reckoned from the date of completion of work, to be reckoned after the expiry of maintenance period prescribed in the contract.

The decision of the Engineer- in- charge with regard to nature and cause of defects shall be final.

During the period of guarantee the guarantor shall make good all defects to the satisfaction of the Engineer- in- charge calling upon him to rectify the defects, failing which the work shall be got done by the Client by some other contractor at the guarantor's cost and risk. The decision of the Engineer -in- charge as to the cost payable by the Guarantor shall be final and binding.

That if the guarantor fails to make goods all the defects, commits breach there-under then the guarantor will indemnify the Principal and his successor against all loss, damage cost expense or otherwise which may be incurred by him by reason of any default on the part of THE GUARANTOR in performance and observance of this supplementary agreement. As to the amount of loss and/or damage and/or cost incurred by the Client the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WEHREOF those presents have been executed by the obligator. And
by for and on behalf of the Client on the day, month and year first above
written. Signed sealed and delivery by OBLIGATOR in the presence of:

- 1.
- 2.

SIGNED FOR AND ON BEHALF OF ----- BY..... in
the present of:

- 1.
- 2.

GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR ANTI TERMITE TREATMENT.

(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the building and structures in the said contract recited completely Anti Termite proof.

AND WHEREAS GUARANTOR hereby guarantee that the effect that the building and structures will remain completely Anti Termite proof for TEN years, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that Anti Termite treatment given by him under agreement Item No. _____, will render the structure completely Anti Termite proof and the minimum life of such Anti Termite treatment given by him will render the structures completely leak proof and the minimum life of such Anti Termite treatment shall be TEN years, to be reckoned from the date of completion of work.

Provided that THE GUARANTOR shall be not responsible for leakage caused by earth quake or structural defects or misuse of Building or alteration and for such purpose:

- a. misuse of Building shall mean any operation which will damage the Anti Termite treatment to the existing Building.
- b. Alteration shall mean construction of any addition or construction adjoining to existing Building whereby Anti Termite treatment is removed/damaged in parts
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found to render the Anti Termite treatment of the building to the satisfaction of the Engineer at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the Anti Termite treatment, or commits breach there-under then the guarantor will indemnify the Principal and his successor against all loss, damage, cost of expenses or otherwise which may be incurred by him by reason of any of any default on the part of the GUARANTOR in performance *and observance* of this supplementary agreement.

As to the amount of loss and/or cost incurred to the Client, the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of ----- on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

1. _____ 2. _____

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR WATER
PROOFING TREATMENT FOR BASEMENTS.
(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)**

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the building and structures in the said contract recited completely water and leak proof.

AND WHEREAS GUARANTOR hereby guarantee that the effect that the building and structures will remain completely water and leak proof for TEN years, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that water proofing treatment given by him under agreement Item No., will render the structure completely leak proof and the minimum life of such water proofing treatment given by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be TEN years, to be reckoned from the date of completion of work.

Provided that THE GUARANTOR shall be not responsible for leakage caused by earth quake or structural defects or misuse of Basement or alteration and for such purpose:

- a. Misuse of basement shall mean any operation which will damage proofing treatment to the basement of the Building.
- b. Alteration shall mean construction of any addition or construction adjoining to existing basement whereby proofing treatment is removed in parts ;
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found render the building water proof to the satisfaction of the Engineer at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the water proofing, or commits breach there-under then the guarantor will indemnify the Principal and his successor against all loss, damage, cost of expenses or otherwise which may be incurred by him by reason of any of any default on the part of the GUARANTOR in performance *and observance* of this supplementary agreement.

As to the amount of loss and/or cost incurred to the Client, the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of ----- on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

1. _____ 2. _____

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR WATER
PROOFING TREATMENT FOR ROOF.
(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)**

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the building and structures in the said contract recited completely water and leak proof.

AND WHEREAS GUARANTOR hereby guarantee that the effect that the building and structures will remain completely water and leak proof for TEN years, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that water proofing treatment given by him under agreement Item No....., will render the structure completely leak proof and the minimum life of such water proofing treatment given by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be TEN years, to be reckoned from the date of completion of work.

Provided that THE GUARANTOR shall be not responsible for leakage caused by earth quake or structural defects or misuse of Basement or alteration and for such purpose:

- a. misuse of roof shall mean any operation which will damage proofing treatment like chopping of fire wood and things of the same nature which might cause damage to the roof of the building.
- b. Alteration shall mean construction of any additional storey or part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts ;
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found to render the building water proof to the satisfaction of the Engineer at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the water proofing, or commits breach there-under then the guarantor will indemnify the Principal and his successor against all loss, damage, cost of expenses or otherwise which may be incurred by him by reason of any of any default on the part of the GUARANTOR in performance *and observance* of this supplementary agreement.

As to the amount of loss and/or cost incurred to the Client, the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of ----- on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

1. _____ 2. _____

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR FOR WATER
PROOFING TREATMENT (UNDER FLOORS).
(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)**

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the toilets, terraces and such related areas of the building in the said contract recited completely water and leak proof.

AND WHEREAS GUARANTOR hereby guarantee that the effect that the said toilets, terraces and such related areas will remain completely water and leak proof for TEN years, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that water proofing treatment under the floors in toilets, terraces and such related areas given by him under the contract, will render the areas completely water and leak proof and the minimum life of such water proofing treatment shall be TEN years, to be reckoned from the date of completion of work i.e. to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

Provided that THE GUARANTOR shall be not responsible for leakage caused by earth quake or structural defects or misuse of floors or alteration and for such purpose:

- a. misuse of such floors shall mean any operation which will damage proofing treatment and things of the same nature which might cause damage to the such floors of the building.
- b. Alteration shall mean construction of any addition or construction adjoining to existing such floors whereby proofing treatment is removed in parts;
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found to render the building water proof to the satisfaction of the Engineer at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the water proofing, or commits breach there-under then the guarantor will indemnify the Principal and his successor against all loss, damage, cost of expenses or otherwise which may be incurred by him by reason of any of any default on the part of the GUARANTOR in performance *and observance* of this supplementary agreement.

As to the amount of loss and/or cost incurred to the Client, the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of ----- on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

1. _____ 2. _____

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR IN RESPECT OF
ALUMINIUM WORKS.**

(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor inter alia, undertook to render the Aluminum Works in the said contract recited safe against water leakage, unsound material and workmanship and defective anodizing etc..

AND Whereas GUARANTOR agreed to give a guarantee to the effect that the Aluminum Work will remain safe against water leakage, unsound material and workmanship and defective anodizing for TEN years from the date of completion of work, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that the Aluminum Works executed by him will remain safe against water leakage, unsound material and workmanship and defective anodizing for TWO years from the date of completion of work, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

Provided that the guarantor shall not be responsible for any damage caused by earth quake or misuse of the Aluminum Work or alteration and for such purpose:

- a. misuse of the Aluminum Work shall mean any operation which will damage the Aluminum Work executed by him;
- b. Alteration shall mean construction of an addition to the Aluminum Work executed by him or part thereof or construction adjoining to the existing Aluminum Work whereby the Aluminum Work is likely to be effected/ damaged;
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee the guarantor shall make good all defects and in case of any defect being found to render the Aluminum Work to the satisfaction of the Engineer at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the works, or commits breach there-under then the

guarantor will indemnify the Principal and his successor against all loss, damage, cost of expenses or otherwise which may be incurred by him by reason of any of any default on the part of the GUARANTOR in performance *and observance* of this supplementary agreement.

As to the amount of loss and/or cost incurred to the Client, the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of ----- on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

1. _____ 2. _____

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR IN RESPECT
OF STRUCTURAL GLAZING/ CURTAIN WALLSYSTEM/WORKS.
(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)**

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the Structural Glazing / Curtain Wall System/ work under agreement Item No _____ safe against water leakage, unsound material and workmanship and defective anodizing etc..

AND Whereas GUARANTOR agreed to give a guarantee to the effect that the Structural Glazing/ Curtain Wall System/Work will remain safe against water leakage, unsound material and workmanship and defective anodizing for FIVE years from the date of completion of work, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that the Structural Glazing/ Curtain Wall System /Work executed by him will remain safe against water leakage, unsound material and workmanship and defective anodizing for FIVE years from the date of completion of work, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

Provided that the guarantor shall not be responsible for any damage caused by earth quake or misuse of the Structural / Curtain Wall System/ Work or alteration and for such purpose:

- a. misuse of the Structural Glazing / Curtain Wall System /Work shall mean any operation which will damage the Structural Glazing / Curtain Wall System /Work executed by him;
- b. Alteration shall mean construction of an addition to the Structural Glazing / Curtain Wall System Work executed by him or part thereof or construction adjoining to the existing Structural Glazing / Curtain Wall System / Work whereby the Structural Glazing / Curtain Wall System/Work is likely to be effected/ damaged;
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found to render the Structural Glazing / Curtain Wall System /Work to the satisfaction of the Engineer-in- Charge at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if Guarantor fails to rectify the Structural Glazing / Curtain Wall System /work or commits breach there under then the Guarantor will indemnify the Principal and his successors against all loss, damage, cost, expense or otherwise which may be incurred by him by reason of any default on the part of the Guarantor in performance and observance of the supplementary agreement. As to the amount of loss and/ or damage and/or cost incurred by Employer, the decision of Engineer will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of ----- on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

1. _____ 2. _____

**GUARANTEE BOND TO BE EXECUTED BY THE CONTRACTOR IN RESPECT OF
SEISMIC/ MECHANICAL JOINT WORKS.
(On a Non- Judicial Stamp Paper of Rs. 100/- (Rupees One hundred Only)**

The agreement made this _____ day of _____ two thousand and _____ between _____ S/o _____ (hereinafter called the GUARANTOR of the one part) and the _____ (hereinafter called the Client of the other part).

WHEREAS this agreement is supplementary to a contract (Herein after called the Contract) dated _____ and made between the GUARANTOR OF THE ONE PART AND the Client of the other part, whereby the contractor interalia, undertook to render the Seismic/ Mechanical Joint System/Work under agreement Item No _____ in the said contract recited safe against water leakage, unsound material and workmanship and defective anodizing etc..

AND Whereas GUARANTOR agreed to give a guarantee to the effect that the Seismic/ Mechanical Joint System/Work will remain safe against water leakage, unsound material and workmanship and defective anodizing for TEN years from the date of completion of work, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

NOW THE GUARANTOR hereby guarantees that the Seismic/ Mechanical Joint System/Works executed by him will remain safe against water leakage, unsound material and workmanship and defective anodizing for TWO years from the date of completion of work, to be reckoned from the date after the expiry of maintenance period prescribed in the contract.

Provided that the guarantor shall not be responsible for any damage caused by earth quake or misuse of the Seismic/ Mechanical Joint System/Work or alteration and for such purpose:

- a. misuse of the Seismic/ Mechanical Joint System/Work mean any operation which will damage the Aluminum Work executed by him;
- b. Alteration shall mean construction of an addition to the Seismic/ Mechanical Joint System/Work executed by him or part thereof or construction adjoining to the existing Seismic/ Mechanical Joint System/Work whereby the Seismic/ Mechanical Joint System/Work is likely to be effected/ damaged;
- c. The decision of the Engineer with regard to nature and cause of defects shall be final.

During this period of guarantee, the guarantor shall make good all defects and in case of any defect being found to render the Seismic/ Mechanical Joint System/Work non-functional to the satisfaction of the Engineer at his cost and shall commence the work for rectification within seven days from the date of issue of the notice from the Engineer

-in-charge calling upon him to rectify the defects failing which the work shall be got done by the Client by some other contractor at the GUARANTORS cost and risk. The decision of the Engineer as to cost, payable by the Guarantor shall be final and binding.

That if the guarantor fails to execute the Seismic/ Mechanical Joint System/Work, or commits breach there-under then the guarantor will indemnify the Principal and his successor against all loss, damage, cost of expenses or otherwise which may be incurred by him by reason of any of any default on the part of the GUARANTOR in performance and observance of this supplementary agreement.

As to the amount of loss and/or cost incurred to the Client the decision of the Engineer in charge will be final and binding on the parties.

IN WITNESS WHEREOF those presents have been executed by the obligator _____ and by _____ by for and on behalf of _____ on the day, month and year first above written.

Signed sealed and delivered by OBLIGATOR in presence of:

1. _____ 2. _____

SIGNED FOR AND ON BEHALF OF ----- BY _____ In presence of:

END OF VOLUME - III