

Tender No. HSCC/PMSSY-III/ AWG/2015

Date 02.02.2016

All Bidders

AMENDMENT-3

Subject: Tender for Construction of Super Specialty Block at Government Medical College, Aurangabad (Maharashtra) and their maintenance during Defects Liability Period.

This has reference to the subject works :

The following **AMENDMENT-3** may be noted ,which shall be treated as a part of tender to be submitted online duly signed & stamp along with tender :

- 1. Amended Vol III (Specific Conditions of Contract)**
- 2. The Validity of Bid Security shall be 180 days in place of 6 months.**

Prospective bidders are advised to regularly scan through HSCC e-tender portal <http://www.tenderwizard.com/HSCC> as corrigendum/amendments etc, if any, will be notified on this e- tender portal only and separate advertisement will not be made for this.

Chief General Manager (Projects)
HSCC (India) Limited

**HSCC (India) Limited
As Executing Agency of
MINISTRY OF HEALTH & FAMILY WELFARE,
NEW DELHI**

**TENDER
FOR
Construction of Super Specialty Block at
Government Medical College. Aurangabad
Maharashtra
under
Pradhan Mantri Swasthya Suraksha Yojana
(PMSSY)**

**VOLUME – III
Amended Specific Conditions of Contract**

December 2015

Executing Agency



**HSCC (INDIA) LTD.
(CONSULTANTS & ENGINEERSFORMEGAHOSPITALS& LABORATORIES)
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Tender No. HSCC/PMSSY-III/AWG /2015

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SPECIFIC CONDITIONS OF CONTRACT (SCC)

1. Definitions and Interpretation

In construing these conditions, the specifications, Bill of Quantities and Contract agreement etc the following words and expression shall have the meaning herein assigned to them except where the subject and context otherwise require.

- (a) "Act of Insolvency" shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act or Provincial Insolvency Act or any Act amending such original.
- (b) "Approved" means approved in writing, including subsequent written information of previous verbal approval and "approval" means approval in writing, including as aforesaid.
- (c) "As directed" means the direction given by the Engineer In-Charge/Client/HSCC (I) Ltd as Executing Agency.
- (d) "Bill of Quantities" or "Schedule of items" means the schedule and quantities of items, materials and rates, summaries etc. priced and completed and as finally accepted.
- (e) "Constructional Plant" means all appliances or things of whatsoever nature required in or about the execution or maintenance of the Works but does not include materials or other things intended to form or forming part of the Works.
- (f) "**Executing Agency**" shall mean Executing Agency appointed by the Ministry of Health & Family Welfare (MOHFW), Government of India for the works "Construction of Super Specialty Block at **Government Medical College, Aurangabad (Maharashtra) under Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)** . HSCC (India) Ltd., having its corporate office at E-6(A), Sector 1, Noida UP-201301 has been appointed as Executing Agency for this project. The Executing Agency shall also have its office at the site. The word "Executing Agency" is synonymous with "Project Executing Agency" and "Consultant".
- (g) "Day" means a calendar day of 24 hours (beginning and ending at 00 hrs and 24 hrs respectively) irrespective of number of hours worked or not worked in that day.
- (h) "**Drawings**" means the drawings prepared and issued by the Executing Agency and referred to in the tender and specifications and any

modification of such drawings and such other drawings, calculations and technical information of a like nature as may, from time to time, be issued by the Executing Agency.

- (a) "I. S." means latest revision of 'Indian Standards Specification' issued by Bureau of Indian Standards.
- (b) "Constructional Plant" means all appliances or things of whatsoever nature required in or about the execution or maintenance of the Works but does not include materials or other things intended to form or forming part of the Works.
- (c) "Materials" means the materials, apparatus, equipment, fittings, fixtures and all such other materials, which are incorporated in the work.
- (d) "Month" means calendar month without regard to the number of days worked or not worked in that month.
- (e) "Net Prices": If in arriving at the contract amount or contract sum, the Contractor shall have added or deducted from the total amount of the items in the Tender any sum, either as a percentage or otherwise, then the net price of any item in the tender shall be the sum arrived at by adding to or deducting from the actual figure appearing in the Tender as the price of that item and similar percentage or proportionate sum provided always that in determining the percentage or proportion of the sum so added or deducted by the Contractor, the total amount of any Prime cost items and provisional sums of money shall be deducted from the total amount of the tender. The expression "net rates" or "net prices" when used with reference to the contract or accounts shall be held to mean rates or prices so arrived at.
- (f) "Notice in writing" or "written notice" shall mean notice in written, typed or printed characters, sent (unless delivered personally or otherwise proved to have been received) by registered post to the site office/ last known private or business address or registered office of the addressee and shall be deemed to have been received when in the ordinary course of post it would have been delivered.
- (g) "Permanent Works" means the permanent works to be executed (including Plant) in accordance with the Contract.
- (h) "Specifications" means the specification included and / or referred to in the Tender document and any modification thereof or addition thereto as may from time to time be issued to the Contractor.

- (i) "Temporary Works" means all temporary works of every kind required in or about the execution and completion or maintenance of the Works and the remedying of any defects therein.
- (j) "Urgent Works" means any urgent works which in the opinion of the Client and/or Executing Agency becomes necessary at the time of execution and/or during the progress of work to obviate any risk of accident or failure or to obviate any risk of damage to the structure of services or required to accelerate the progress of the work for which becomes necessary for safety and security or for any other reason the Client and or Executing Agency may find it necessary.
- (k) "Week" means seven calendar days without regard to the number of hours worked or not worked in any day in that week.
- (l) Words imparting the signal only also include the plural and vice versa where the context requires.
- (m) The **Engineer-in-charge** means the Engineer Officer as mentioned in Schedule 'F' of GCC hereunder, authorized by the Department, who shall supervise and be in charge of the work.
- (n) **Client** or **MoH&FW** means Ministry of Health & Family Welfare, Government of India, New Delhi.
- (o) The headings, subheadings and marginal notes (if any) and the catch lines and the Annexure hereto are meant only for convenience of reference and shall not be in any way be taken into account in the interpretation of these presents and the Annexure hereto. The Contractor shall have to carry out and complete the works in every respect in accordance with this contract.

2. Languages, Law & Jurisdiction

The ruling language in which the Contract and related aspects shall be drawn up shall be English only. The contract its meaning and interpretation & relationship between the parties shall be governed by Laws of India and as applicable to site of work. Notwithstanding any other Court/ Courts having jurisdiction to decided the question(s) forming the subject matter of the reference, if the same had been the subject matter of a suit any and all actions and proceeding arising out of or in relation to the Contract (including any arbitration in terms thereof) shall lie only in the Court of Competent Civil Jurisdiction at Delhi and only the said Court(s) shall have

jurisdiction of entertain and try any such action(s) and / or proceeding(s) to the exclusion of all other Courts.

3. Errors, Omissions and Discrepancies.

- (a) In case of errors, omissions and /or disagreement between written and scaled dimensions on the drawings or between the drawings and specifications, etc. the following order of precedence shall apply:
- i. Between scaled and written dimension (or description) on drawing, written dimension shall be adopted.
 - ii. Between the written or shown description or dimensions in the drawings and the corresponding one in the specification, the former shall be taken as correct.
 - iii. Between the written description of the item in the specifications and descriptions in the Bill of Quantities of the same item, the latter shall be adopted.
- (b) The several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguity or discrepancies in conditions or specifications the same shall be explained and adjusted by Engineer-in-charge. In case the Contractor does not agree with the explanation given by the Engineer-in-charge, then the matter, on his written notice, will be referred to the Client and his decision shall be final and binding to the contractor.
- (c) In all cases of omissions and /or doubts or discrepancies in any of the items or specifications, a reference shall be made to the Engineer-in-Charge. Elucidation, elaboration or decision of the Engineer-in-charge shall be considered as authentic. The Contractor shall be held responsible for any error that may occur in the work through lack of such reference and precaution.

4. Scope of Contract

“Construction of Super Specialty Block at Government Medical College, Aurangabad (Maharashtra) under PMSSY-III including electrical, HVAC, fire-fighting, fire detection, external developments works etc. and their Maintenance during Defect Liability Period etc.

The scope of work comprises of Construction of Super Specialty Block at Government Medical College, Aurangabad (Maharashtra) under PMSSY-III including electrical, HVAC, fire-fighting, fire detection, external developments works roads works, drainages, Landscaping, Horticulture Services, Signages, etc. and their Maintenance during Defect Liability Period etc. **Prior approval of all specialized agencies for specialized works to be obtained from executing agency before start of work.**

The Contract comprises the Construction, completion, remedying the defects of the works and except insofar as the Contract otherwise stipulates, the provision of all labour, materials, constructional plant, machinery, temporary works and everything, whether of a temporary nature required in and for such construction, completion and maintenance so far as necessary for providing the same as specified in or reasonably to be inferred from the Contract.

1. Detailed architectural RFC Drawings for Architecture and Structure shall be provided by Executing Agency to the contractor. The Contractor will prepare, shop drawings based on the drawings given by Executing Agency for all services eg. Electrical, Plumbing, etc based on the schematic drawings given by the Executing Agency, as required. The contractor shall make all necessary co-ordination.
2. The surveyed site plan and Master plan along with the report of geotechnical investigation are available and will be made available to finally selected Contractor.
3. The activities to be carried out for the completion of the Project shall include the following and any additional activities incidental to these:
 - a. Buildings as specified.
 - b. Internal and external services as per drawings
 - c. Getting all approvals / permissions / planning permits of the statutory / local / governmental agencies as required incidental to construction/ completion.
 - d. Submission of the completion (i.e. 'as-built') drawings and other related documents, both a hard copy and the soft copy in Auto CAD or any other IT application used for the purpose.
 - e. Preparation of specifications and vender list (in case not already provided) for all equipment wherever necessary and called upon to do so and getting these approved from client.
 - f. Obtaining occupancy certificate and related NOC's from statutory/ local/governmental agencies. Statutory payment on this account will be reimbursed by the client at actual.
 - g. Executing the work in a befitting manner to obtain GRIHA Certification (minimum 3 Star) for the building including engaging a Consultant to assist the Contractor in obtaining the rating. Licence/Application fee, if any, shall be reimbursed by the Executing Agency to the Contractor on actuals.

4.1.1 Approvals Required

The Contractor shall obtain all pre & post construction clearances/approvals from Municipal and other relevant statutory authorities/local bodies including Water supply agencies concerned, Electric Supply and inspectorate. Agencies concerned, such as, but not limited to, Police and Security Agencies, Chief Controller of Explosives, Fire Department, Civil Aviation Department, concerned in accordance to prevailing rules, Building Bye-Laws, tree cutting etc., as the case may be with related to/ required for Construction/Completion. All expenditure on this account will be borne by the contractor. The applications for

pre-construction clearances submitted/applied to local authorities shall be provided to the contractor for obtaining clearances/approvals.

The approvals shall include the following in addition to any other approval which may be required for the project.

- Construction Permit if required
- NOC from Chief Fire Officer
- NOC from Lift Inspector where lifts are provided
- Occupancy certificate
- GRIHA Certification (Minimum 3 Star)

HSCC/Client may, at the written request of the Contractor, assist him in obtaining the approvals from relevant authorities. However any such request by the Contractor shall not bind the HSCC in any manner.

The contract comprises the construction, completion, remedying the defect of the works operation & maintenance during defect liability period and except in so far as the Contract otherwise stipulates, the provision of all labour, materials, constructional plant, machinery temporary works and everything, whether of a temporary or permanent nature required in and for such construction, completion and maintenance so far as necessary for providing the same as specified in or reasonably to be inferred from the Contract.

5. Drawings

(a) Tender Drawings

The tender drawings are for 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 Executing Agency.

(b) 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 Client/Engineer-in-charge/Executing Agency 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 starting of the works and necessarily updated or revised time to time) 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 to be maintained at site. All drawings shall be properly filed and indexed for ready reference.

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

Detail drawings in all cases shall be worked to in preference to those of a more general nature and figured dimensions were indicated shall be followed in preference to scaled dimensions.

(c) Bar Bending Schedule

Contractor shall prepare bar bending schedules in the prescribed proforma as approved by the Engineer-in-charge for prior approval of the Engineer-in-charge or his authorized representative. However, the approval does not relieve the Contractor from his liability for bending, placing and binding reinforcements as per the approved drawings.

(d) Working drawings/ shop drawings/Design :

The drawings supplied by the Engineer-in-charge have been listed in the tender documents.

These drawings are indicating for the purpose of detailing the intent and requirement of the contracts. The contractor shall take into consideration by 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/ manufactures recommendations.

Structural and Architectural drawings shall be provided by Executing Agency to the contractor. However, to ensure the uninterrupted progress of work, and timely completion, the contractor may be required to do further detailing as per the site requirement on his own. The Contractor will prepare shop drawings based on the drawings given by client/ Executing Agency for all services eg. Electrical, Plumbing, etc.

All drawings shall be signed by Contractor's authorised representative with name, seal and date before submission to Engineer-in-charge.

In case there is delay in any drawings and design viz shop drawings, as made drawings etc. in preparation, design, quality, submission, etc. the Executing Agency may ask the Contractor to change their design consultant immediately or get the same done on risk and cost of the Contractor.

6. Disruption of Progress

- (a) The Contractor shall give adequate but not less than 4 weeks written notice to the Engineer-in-charge whenever planning or progress of the Works is likely to be delayed or disrupted unless any further drawing or order, including a direction, instruction or approval, is required to be issued by the Executing Agency. The notice shall include details of the drawing or order required explaining why and by when it is required and of any delay or disruption likely to be suffered if it is late.
- (b) If by reason of any failure or inability of the Executing Agency to issue within 4 weeks any drawing or instruction for which notice has been given by the Contractor in accordance with Sub-clause 1) and the contractor suffers delay, then the Engineer-in-charge, shall on the request of the Contractor recommend to the Client any extension of time under respective clause. Notwithstanding anything stated above, the Contractor shall not be eligible for any financial compensation arising out of the above.

7. Further Drawings and Instructions

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 Executing Agency. The Executing Agency 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 "Executing Agency'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) Any discrepancy in the drawings or between the bill of quantities and/or drawings and/or specification.

- (c) The removal from the site of any material brought thereon by the contractor and the substitution of any other material therefore.
- (d) The removal and/or re-execution of any works executed by the contractor.
- (e) The dismissal from the works of any persons employed thereupon.
- (f) The opening up for inspection of any work covered up.
- (g) The amending and making good of any defects under clause thereof.

The contractor shall forthwith comply with and duly execute any work comprised such as Executing Agency's instructions provided always that verbal instructions, directions and explanations given to the contractor or his representative upon the works by the Executing Agency, shall, if involving a variation, be confirmed in writing by the Contractor within seven days, and if not dissented from in writing within a further seven days by the Executing Agency, such shall be deemed to be Executing Agency's instructions within the scope of the contract

8. 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 Executing Agency who shall decide which is to be followed

The 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 issued in writing by the Executing Agency.

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 Executing Agency/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 Executing Agency. Wherever different pattern/ Design/ Quality of materials with same specification/ make as specified in the contract, is available in the market, Executing Agency/Engineer-in-Charge will approve the pattern/ Design/ Quality of the material/ item which shall be final and binding on the contractor.

The Executing Agency is empowered to cancel an approval of material if subsequently it is found that approved material once brought at site and tested does not meet the requirement as specified in the contract. In such case the Executing Agency will accord approval of alternate material.

(b) Adequacy, stability and safety:

The Contractor shall take full responsibility for the adequacy, stability and safety of all site operations and methods of construction.

(c) Temporary works and arrangements:

The Contractor shall furnish to the Executing Agency full particulars, drawings, etc. of all temporary works necessary for the execution of the works and shall allow sufficient time for the Executing Agency to consider the same. The Executing Agency reserves the right to comment on the Contractor's proposals if they consider that modifications should be made. The Contractor shall be solely responsible for the stability and safety of all temporary works including obtaining statutory approvals and payment of statutory fees, if any. The Executing Agency will indicate the site(s) for such temporary works and the Contractor will have to restrict his requirements to the same. Should it be necessary to shift the temporary works to some other allotted place during the execution of the works, the Contractor shall do so, when informed by the Executing Agency, at his own cost and without delay or demur. Such shifting of temporary works may be in part or in full.

(d) 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 tress 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 works is fully completed.

(e) 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 Executing Agency. Storage on suspended floors shall not be permitted unless specifically approved in writing by the Executing Agency for specific materials in specific locations and in approved manner. The Executing Agency 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.

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 Executing Agency. Stores elsewhere shall not be eligible for being considered as "Delivered at Site."

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 Contract Sum.

9. Watching & 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 appropriate to the avoidance of danger to such persons and in connection with the Works provide and maintain at his own cost all lights, guards, fencing and watching when and where necessary or required by the Executing Agency, 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 as a consequence of his methods of operation.

10. Care of Works

From the commencement to the certified completion of the whole of works, the contractor shall take full responsibility for the care thereof and of all temporary works and in case 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 as defined in sub-clauses of Clause 12.

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 and conformity to every respect with the requirements of the contract and Engineer-in-charge's instructions. 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 clause 33 hereof. The contractor shall indemnify the Employer from all risks on this account.

11. Expected Risks & Force Majeure

(a) Expected Risks

The "expected risks" are war, hostilities (whether war declared or not), invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, or (unless solely restricted to the Contractor or of his sub-Contractors and arising from the conduct of, their workmen) riot, commotion or disorder or radiation or contamination by radio-activity and other hazardous properties of any explosive, nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radio active toxic explosive, nuclear assembly or nuclear component thereof, pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds, or any such operation of the forces of nature

as an experienced contractor could not foresee, or reasonably make provision for on insure against all of which are herein collectively referred to as “the expected risk”

(b) Force Majeure

- i) 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.
- ii) In the event of the effect of force majeure continuing beyond the period of One hundred and eighty (180) days, the parties shall mutually decide whether or not to terminate this Contract. In the event of termination of contract the contractor shall be paid for the work done and which has been accepted and certified by the Executing Agency and shall not assert any additional claims against the Client.

12. 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 Document.

The Contractor shall give or provide all necessary superintendence during the execution of the Works.

(b) Unauthorized Persons

No unauthorized persons are allowed on the site. The Contractor shall instruct all such persons to keep 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/Client/Executing Agency to the site and other working places.

13. Compliance with Statutes, Regulations, Etc.

The contractor shall conform to the provisions of any statute, ordinance, law, act of the legislature relating to the works, and to the regulations and by-laws of any local or other duly constituted authority and of any water, electric supply and other companies and/or authorities with whose systems the structure is proposed to be connected. The Contractor shall keep the Client/Engineer-in-charge/Executing Agency 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 bylaws as aforesaid.

The contractor shall before making any variations from the drawings or specifications that may be necessitated by so 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/Executing Agency.

The contractor shall bring to the attention of the Engineer-in-charge/Executing Agency all notices required for execution by the said acts, regulations or by-laws to be given to any authority and pay to such authority, or to any public office all fees that may be properly chargeable in respect of the works, and lodge the receipts with the Engineer-in-charge/Executing Agency.

14. 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/Executing Agency 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/Executing Agency and / or Client or his authorised representative shall at his own cost, rectify such error to the satisfaction of the Engineer-in-charge. The checking of any setting out or of any line or level by the Executing Agency shall 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.

15. Quality of Materials, Workmanship and Test

The Client/Engineer-in-charge/Executing Agency 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. Suggestions therein will be carried out without any extra cost.

15.1 Samples

The approval of Samples by the Executing Agency shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Document unless Contractor has in writing called the Executing Agency/Engineer-in-charge's 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 /Executing Agency relieve Contractor from responsibility for complying with the requirements of contract.

Only when the samples are approved in writing by the Executing Agency, the contractor shall proceed with the procurement and installation of the particular material / equipment. The approved samples shall be signed by the Executing Agency 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.

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.

The Executing Agency 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 best qualities from various manufacturers and such other aspects causing delay on the approval of the materials / equipment's etc. shall be to the account of the contractor. In this respect the decision of the Engineer-in-charge shall be the final.

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 Executing Agency and compared with the approved sample and his specific obtained before using the same in the work.

15.2 Testing facilities

The Contractor shall, at his own cost, provide testing facilities as per CPWD scale and IS Codes at site as stipulated in the CPWD Works manual / as per Contract document or as directed by the Executing Agency/Engineer-in-charge.

The laboratory shall be equipped and manned by the Contractor at his own cost with all necessary apparatus to carry out the above mentioned tests in accordance with relevant Indian Standards or equivalent approved Standards.

i) Cement testing:

Tests for fineness, Strength, setting time and soundness in accordance with IS:4031.

ii) Concrete Testing:

Test for workability, proportions, density and strength in accordance with IS:516 and 1199. In particular the cube testing machine shall be cable of exerting a slowly applied force up to 200 tonnes and the platens shall be suitable for crushing both 150mm and 200 mm cubes. A Vibrating table of suitable design shall be provided for compaction of cubes.

iii) Aggregate Testing:

In accordance with IS: 2386 (part I to VIII) for the following tests on both fine and coarse aggregates:

- a. Sieve analysis
- b. Determination of bulk density and voids on fine aggregates only:
- c. Determination of moisture content, specific gravity and absorption on coarse aggregates only:
- d. Determination of specific gravity and absorption

The contractor shall carryout inspection, testing, checks and also shall maintain records of inspection, testing & checks of material, works and activities related to construction works in the ISO 9001 quality system formats, checklists etc. to be given by Executing Agency during execution

period. After getting approval from the Engineer, The contractor shall print at his own cost all forms, tables, formats etc.

The laboratory shall be connected to the main water and electricity Services. It shall also be supplied with portable gas equipment.

On completion of the Maintenance period, the laboratory is to be dismantled and removed from Site. The dismantled materials and equipment shall be the property of the Contractor.

In case certain tests are to be carried out in approved outside laboratory, as stipulated in the contract document / as directed by the Executing Agency, the Contractor shall bear the entire cost including samples, taking samples, testing, reports etc.

16. Absence of Specifications

If the specifications do not contain particulars of materials and works which are obviously necessary for the proper completion of the works, and the intention to include, which is inferred, all such materials and works shall be supplied and executed by the Contractor without extra charge. If the Contractor requires additional information, he shall, in pursuance of Clause 2 hereof, so request in writing well in advance to commencement of the particular work to the Executing Agency who will issue such detailed information within a reasonable time.

17. 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.

18. Access for Inspection

Persons nominated by Engineer-in-charge/Executing Agency 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/Executing Agency and their representatives every facility necessary for checking measurements, inspection and examination and test of the materials and workmanship.

19. 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 Executing Agency and the contractor shall afford full opportunity for the Executing Agency to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The contractor shall give due notice to the Executing Agency whenever any such work or foundation is or ready or about to be ready for examination and the Executing Agency shall, without unreasonable delay, unless he considers it necessary and advises the contractor accordingly, attend for purpose of examining and measuring such work or examining such foundation.

(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 Executing Agency may from time to time direct and shall reinstate to make good such part or parts to the satisfaction of the Executing Agency. No extra payment will be paid for this.

20. Variations

(a) The Executing Agency shall make a variation in the form, quality or quantity of the works or any part thereof that may be necessary and for that purpose or if for any other reason it shall, in his opinion be desirable, he shall order the contractor to do and the contractor shall do any of the following:

- i) Increase or decrease the quantity of any work included in the contract
- ii) Change the character or quality or kind of any such work
- iii) Change the levels, lines, positions and dimensions of any part of the works.
- iv) Execute additional work of any kind necessary for the completion of the works.
- v) Change any specified sequence or timing of construction of any part of the work.

No such variation shall in any way vitiate or invalidate the contract, but the cost, if any, of all such variations shall be taken in account for payment to the contractor as an addition or adjustment to the amount of the contract sum. Provided that where the issue of instruction to vary the works is necessitated by some default or breach by the contractor or for which he is responsible, any additional cost attributable to such default or breach shall be borne by the contractor.

(b) The Executing Agency shall omit any component from scope of works that may be necessary and for that purpose or if for any other reason it shall, in his opinion be desirable and shall issue such instructions to the contractor. The contractor shall do the same without in any way vitiate or invalidate the contract. Any cost attributable to above shall be borne by the contractor.

c) Orders for variation to be in writing

The contractor shall make no such variations without an order in writing by the Executing Agency, provided that no order in writing shall be required for increase up to 30% or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause, but is the result of the quantities exceeding or being less than those stated in the schedule of items.

21. Works by Other Agencies

The Client/ Engineer-in-charge/Executing Agency 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 employer. Such work shall be carried out in such manner as not to impede the progress of the works included in the contract and the contractor shall not be responsible for any damage or delay which may happen to or occasioned by such work.

22. Insurance Policies

22.1.1 Employer's Risks

The Employer's risks are:

- (a) (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (ii) rebellion, revolution, insurrection, or military or usurped power, or civil war,
- (iii) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component thereof,
- (iv) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speed,

- (b) loss or damage due to the use or occupation by the **Employer** of any Section or part of the Permanent Works, except as may be provided for in the Contract,
- (c) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible, and
- (d) any operation of the forces of nature (insofar as it occurs on the site) which an experienced contractor:
 - (i) could not have reasonably foreseen, or
 - (ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures:
 - (A) prevent loss or damage to physical property from occurring by taking appropriate measures, or
 - (B) insure against.

22.1.2 Insurance of Works and Contractor's Equipment

The Contractor shall, without limiting his or the HSCC/Employer's obligations and responsibilities under Clause 22.1.1 insure:

- (a) the Works, together with materials and Plant for incorporation therein, to the full replacement cost and it being understood that such insurance shall provide for compensation to be payable to rectify the loss or damage incurred.
- (b) the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

The insurance under clause 22.1.2 shall be issued by an insurance company which has been determined by the contractor to be acceptable to the Executing Agency.

22.1.3 Scope of Cover

The insurance in paragraphs (a) and (b) of Sub-Clause 22.1.2 shall be in the joint names of the Contractor and the HSCC/**Employer** and shall cover:

- (a) HSCC and the Contractor against all loss or damage from whatsoever cause arising (including natural calamities, earthquake,

subsidence, landslide, rock slide, flood, storm, cyclone, fire, theft, burglary, strike, riot, sabotage, terrorism), other than as provided in Sub- Clause 22.1.5, from the commencement date until the date of completion in respect of the Works or any Section or part thereof as the case may be, and

- (b) the Contractor for his liability:
 - (i) during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period, and
 - (ii) for loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations during the Defects Liability Period.

It shall be the responsibility of contractor to notify the Insurance Company of any change in the nature and extent of the works and to ensure the adequacy of the Insurance cover at all times during the period of contract.

The Insurance Policies (CAR & WC) shall be submitted on or before the Date of Commencement.

22.1.4 Responsibility for Amounts not recovered

Any amounts not insured or not recovered from the insurers shall be borne by the **Employer** or the Contractor in accordance with their responsibilities Clause 22.1.1.

22.1.5 Exclusions

There shall be no obligation for the insurance in Sub-Clause 22.1.2 to include loss or damage caused by the risks listed under sub clause 22.1.1 para a (i) to (iv).

If the Contractor receives instructions from the HSCC/**Employer** to insure against War Risk, such insurance if normally available shall be effected, at the cost of the HSCC/**Employer**, with an Insurance Company acceptable to the Executing Agency and shall be in the joint names of the contractor and the HSCC/**Employer**.

22.1.6 Damage to Persons and Property

The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the **Employer** against all losses and claims in respect of:

- (a) death of or injury to any person, or

- (b) loss or damage to any property (other than the Works) :

Which may arise out of or in consequence of the execution and completion of the Works and the remedying of any defects therein, and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, subject to the exceptions defined in Sub-Clause-22.1.2.

22.1.7 Exceptions

The "exceptions" referred to in Sub-Clause 22.1.6 are:

- (a) the permanent use or occupation of land by the Works, or any part thereof,
- (b) the right of the **Employer** to execute the Works, or any part thereof, on, over, under, in or through any land,
- (c) damage to property which is the unavoidable result of the execution and completion of the Works, or the remedying of any defects therein, in accordance with the Contract.
- (d) death of or injury to persons or loss of or damage to property resulting from any action or neglect of the **Employer**, his agents, servants or other contractors, not being employed by the Contractor, or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or, where the injury or damage was contributed to by the Contractor, his servants or agents, such part of the said injury or damage as may be just and equitable having regard to the extent of the responsibility of the **Employer**, his servants or agents or other contractors for the injury or damage.

22.1.8 Indemnity by Employer

The **Employer** shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the exceptions defined in Sub-Clause 22.1.7.

22.1.8 Third Party Insurance (Including Employer's Property)

The Contractor shall, without limiting his or the **Employer's** obligations and responsibilities under Clause 22.1.6 to 22.1.8, insure, in the joint names of the Contractor and the **Employer**, against liabilities for death of or injury to any person (other than as provided in Clause 22.1.11 to 22.1.12 or loss of or damage to any property (other than the Works) arising out of the performance of the Contract other than the exceptions defined in paragraphs (a), (b) and (c) of Sub-Clause 22.1.7.

22.1.9 Minimum Amount of Insurance

Such insurance shall be for at least the amount stated in Clause 22.1.2 above.

22.1.10 Cross Liabilities

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to the **Employer** as separate insured.

22.1.11 Accident or Injury to Workmen

The **Employer** shall not be liable for or in respect of any damages or compensation payable to any workman other than for death or injury resulting from any act or default of the **Employer**, his agents or servants. The Contractor shall indemnify and keep indemnified the **Employer** against all such damages and compensation, other than those for which the **Employer** is liable as aforesaid, and against all claims, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

22.1.12 Insurance Against Accident to Workmen

The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that the **Employer** is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to the Executing Agency, when required, such policy of insurance and the receipt for the payment for current premium.

22.1.13 Evidence and Terms of Insurance

The Contractor shall provide evidence to the Executing Agency as soon as practicable after the respective insurance have been taken out but in any case prior to the start of work at the Site that insurance required under the Contract have been effected and shall, within 84 days of the Commencement Date, provide the insurance policies to the **Employer**. When providing such evidence and such policies to the **Employer**, the Contractor shall notify the **Engineer** of so doing. Such insurance policies shall be consistent with the general terms agreed prior to the issue of the Letter of Acceptance. The Contractor shall effect all insurance for which

he is responsible with insurers and in terms approved by the Executing Agency.

22.1.14 Adequacy of Insurance

The Contractor shall notify the insurers of changes in the nature, extent or programme for the execution of the Works and ensure the adequacy of the insurance at all times in accordance with the terms of the Contract and shall, when required, produce to the Executing Agency the insurance policies in force and the receipts for payment of the current premiums.

22.1.15 Remedy on Contractor's Failure to Insure

If the Contractor fails to effect and keep in force any of the insurance required under the Contract, or fails to provide the policies to Executing Agency within the period required by Sub-Clause 22.1.13, then and in any such case the **Employer** may effect and keep in force any such insurance and pay any premium as may be necessary for that purpose and from time to time deduct the amount so paid from any monies due or to become due to the Contractor, or recover the same as a debt due from the Contractor.

22.1.16 Compliance with Policy Conditions

In the event that the Contractor or the **Employer** fails to comply with conditions imposed by the insurance policies effected pursuant to the Contract, each shall indemnify the other against all losses and claims arising from such failure.

The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to, the insurance referred to in Clauses 22.1.2 to 22.1.5, 22.1.8 to 22.1.11 and 22.1.13 to 22.1.15) with insurers from India.

23. Dues not paid by the Contractor

The contractor shall pay all dues or fees to Statutory authorities and Electric and Water supply authorities etc. within due period and indemnify the Client and the Executing Agency 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 him / and or claims for compensations or penalties etc. are raised by the Statutory authorities, the Client may deposit the required amount for any or all of the above and recover or deduct the same from any money payable to the contractor by the Client or any other means available to the Client such as bank guarantee.

24. Billing & Certification

- a) The Engineer-in-Charge may at any time make any corrections or modifications to any certificate, which shall have been issued by him and shall have power to withhold any certificate if the Works or any parts thereof are not being carried out to his satisfaction.
- b) The responsibility for making the payments or meeting other obligations to the Contractor in respect of all Works as certified by the Engineer-in-charge shall be that of the Client and not of the Executing Agency.
- c) After completion of work and prior to final payment, the contractor shall furnish to the engineer, a release of claim against the Employer arising out of contract, other than claims specifically identified, evaluated and excepted from the operation of the release by contractor.
- d) Contractor has to submit break up of BOQ rate to facilitate approval of interim payment by the Engineer. However final decision on break up of rates/ part rates to be paid in parts will be taken by Engineer.
- e) Contractor shall submit monthly running bills in format approved by the Engineer-in-charge for executed works and materials for which secured advance is desired along with required details and measurements as directed by the Executing Agency. Monthly bill not submitted in approved formats will not be accepted.

25. 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/Executing Agency/Client be urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work or repair, the Engineer-in-charge/Executing Agency 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/Executing Agency 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/Executing Agency, or may be deducted by the Engineer-in-charge/Executing Agency from any monies due or which may become due to Contractor.

Boreholes & Exploratory Excavation

If, at any time during the execution of the Works, the Executing Agency 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 order under the provisions unless a provisional sum in respect of such anticipated work shall have been included in the schedule of items.

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.

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 Executing Agency, which shall not be unreasonably withheld.

(b) Removal of Plant etc.

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

29. Reports by Contractor

(a) 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 Executing Agency and his signature obtained.

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

(c) 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 Executing Agency & shall be reviewed in Weekly Co-ordination Meetings.

(d) The Contractor shall submit Monthly Progress Report as per format approved by Engineer-in-charge/Executing Agency along with monthly bills.

(e) The Contractor as directed by the Engineer-in-charge/Executing Agency shall prepare further Progress Charts and Schedules.

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

31. Miscellaneous

1. Monthly Progress Photographs

The Contractor shall arrange at his own cost to maintain a progress record of the works by taking 5x7 inch size colour photographs (preferably digitized photographs) minimum 6 Nos. photographs or more per week alongwith soft copy of photographs in CD or as directed by the Executing Agency during the constructions stages and after completion and shall supply one set to the Client and one set to the Executing Agency at no extra cost. These photographs shall also be submitted as part of the Contractors R.A. Bills. 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/Executing Agency.

2. By-Laws of Statutory Authorities

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

3. Tax Deduction at Source

Taxes and surcharge as applicable, shall be deducted from the amount paid to the Contractor towards the value of the work done. The amount so deducted at source, shall be deposited into Government Treasury and a certificate thereof shall be issued to the Contractor.

4. Definition of "and", "or", "and/or"

The terms "and", "or", "and/or" used in the context with the description or enumeration of two or more items or components of work or

documentation or anything similar shall mean as is relevant and applicable to the text.

5. 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.

6. Technical Examination

The Client 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 Client/ Engineer-in-charge/Executing Agency 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 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 Client shall be final. Payment on this account will be recovered from the contractor.

In the case of Technical Audit, consequent on which there is a recovery from the contractor, recovery should be made with orders of the Client whose decision shall be final. All action under this clause should be initiated and intimated to the contractor within the period of twelve months from the date of completion.

7. Site instruction book

For the purpose of quick communication between Engineer-in-charge/Executing Agency 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 records in the site instruction book. Such a communication from Executing Agency to the Contractor shall be deemed to have been adequately served in terms of the contract. Such site instruction book shall have machine numbered pages in triplicate and shall be carefully maintained and preserved by the Contractor and shall be made available to Engineer-in-charge/Executing Agency and Client as and when demanded. Any instruction which Engineer-in-charge/Executing Agency may like to issue to the Contractor may be recorded by the Engineer-in-charge/Executing Agency in site instruction book and two copies thereof taken by the Executing Agency for his record.

8. Signage

With prior approval of the Executing Agency, the Contractor shall provide at his own cost, a sign board at directed location of overall size 2 meters by 4 meters indicating name of the project, and a three-D view of the project, as approved by the Executing Agency. The signboard will be illuminated during night.

9. Cutting of Trees

Permission of cutting of trees if required will be obtained by Contractor.

10. other Miscellaneous:-

- (i) All concrete work shall be strictly done by weigh batcher/RMC. However, no extra payment shall be made for use of Ready Mix Concrete (RMC) for the works. Modern concrete pump and vibration machines, constructions lift, tower crane, etc, as required are also required to be provided at site as and when required.
- (ii) All shuttering material to be used at site will be new/just like new and only ply & steel plate will be allowed to be used as directed by Engineer-in-charge/Executing Agency. Only steel props will be used at site and no wooden balli etc will be permitted.
- (iii) The contractor shall have adequate generators of required capacity as per site requirement as stand by arrangement.
- (iv) The temporary connection for electric line and water line from local authorities shall be taken by the contractor who will bear the expenditures
- (v) Any dispute arising due to typing mistakes/ omissions in the document the decision of the Client will be final

- (vi) Deleted
- (vii) Unless otherwise mentioned in the bill of quantities the measurements of works shall be done as per given specifications (as specified in Technical Specification of the Tender) and if the same is not given in the specification, the same shall be measured as per CPWD Specifications or latest relevant BIS codes in force.
- (viii) 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.
- (ix) Contractor shall mobilize and employ sufficient resources for completion of all the works as indicated in the agreed 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/Executing Agency.
- (x) Steel conforming to BIS specifications (latest edition) shall be procured from as per approved list by the client by the contractor directly from manufacturers. 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 directions of the Engineer-in-charge/Executing Agency. 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 tests to be got carried out from the authorized laboratory as per the directions of Executing Agency, before incorporating the materials in the work.
- (xi) Water proof plywood only or steel plates of minimum thickness as approved by Executing Agency shall be used for formwork. The shuttering plates shall be cleaned and oiled after every repetition and shall be used only after obtaining approval of Executing Agency's Engineers at site. The number of repetitions allowed for plywood and steel shuttering shall be at the discretion of Engineer-

in-charge/Executing Agency depending upon the condition of shuttering surface after each use and the decision of Engineer-in-charge/Executing Agency in this regard shall be final and binding on the contractor. No claim whatsoever on this account shall be admissible.

(xii) RECORDS OF CONSUMPTION OF CEMENT & STEEL - 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 Executing Agency, showing columns like quantity received and used in work and balance in hand etc. The contractor's representative shall sign this register daily.

(xiii) The register of cement & steel shall be kept at site in the safe custody of Executing Agency during progress of the work. This provision will not, however, absolve the contractor from the quality of the final product.

(xiv) To ensure that the services under the scope of this contract are in accordance with the specifications, the Contractor shall adopt Quality Assurance Programme to control such activities at the necessary points. The contractor shall prepare and finalize such Quality Assurance Programme within 15 days from letter of intent. Executing Agency shall also carryout quality audit and quality surveillance of systems and procedures of Contractor's quality control activities. A Quality Assurance Programme of Contractor shall generally cover the following:

- a) Procedure for selection and approval of material sources.
- b) Type, frequency, sampling and procedure of tests at site and laboratories.
- c) Work instruction for various stages of work.
- d) Formats for carrying out various tests.
- e) Checklist for Construction Practices.

The instruction, approvals are given by the Executing Agency to contractor shall hold good till the same not objected by client. In case instructions and approvals are given by client, the same shall supersede the instruction of Executing Agency. In all case decision of Client shall be final and binding for contractor.

(xviii) The contractor shall co-operate with other agencies working in the same project, compare plans, specifications and the time schedules and so arrange his work that there will be no interference. The

Contractor shall forward to the Executing Agency all correspondences and drawings exchanged. Failure to check plans for conditions will render the Contractor responsible for bearing the cost of any subsequent change found necessary or damages done.

However, the Contractor shall afford necessary facilities to execute the work simultaneously with other agencies executing the works for the same project. The Client/ Engineer-in-charge/Executing Agency shall entertain no claim on this account.

32.0 Co-ordination Meeting

The Contractor shall be required to attend co-ordination meetings with the Engineer, the Executing Agency and the other Contractors during the period of Contract as instructed by the Engineer. All costs incidental to such interaction shall be to the Contractor's account and no claim will be entertained by the Employer/Engineer on this account.

32.1 Site Development

- a) Proper arrangement of security, safety, transportation, manpower, lighting arrangement to be maintained during execution of works at night.
- c) For rapid execution of work, contractor has to arrange their own batching plant and others machinery, tools and tackles needed for the work as given in the submitted PQ document.
- d) For diversion of under ground services proper arrangement to be made by the contractor with the approval of Engineer.

32.2 Contractor's Working Area

Suitable working area will be provided by the Engineer to the Contractor. The Contractor may have to carry out some cutting / filling work for making his working area. The cost of all such Works shall be deemed to have been included in the rates and prices quoted for the Works and no extra payment shall be made on this account.

32.3 Contractor's Temporary Structures

The Contractor may, at his own expense and subject to the approval of the Engineer and statutory authorities, construct offices, stores, Workshop

in the area allocated to him and remove the same as per the orders of the Engineer on completion of Works. The Contractor shall furnish such details of his Temporary Works as may be called for by the Engineer and the Contractor shall satisfy the Engineer as to their safety and efficiency. Engineer may direct those Temporary work which he considers unsafe or inefficient be removed and replaced in a satisfactory manner. The Contractor shall immediately follow Engineer's directions/ instructions.

The Contractor shall make his own arrangement at his own expense for labour camp / accommodation of his labour and staff and their conveyance to Site as no workers/ staff shall unless with the specific approval of the Engineer be allowed to stay within the Site. Gate passes shall be issued by the Engineer to authorise the Contractor's staff and workers to enter the Site.

32.4 Procurement of Various Materials

The Employer will not supply any construction materials required for the Works under this Contract. The Contractor must, therefore, make his own arrangements for timely procurement of various materials including steel and cement. Prior approval of each and every material including steel cement, aggregate, bricks etc or any other fittings & fixtures to be taken from engineer before its procurement to site. However in case of excessive delay in procurement of various materials, the engineer may also take decision of procurement of material directly and the cost will be recovered from the contractor.

32.5 Water Supply & Power Supply

The Contractor shall make his own arrangement for water supply at Site for drinking as well as construction purposes at his own cost. The Contractor shall also make his own arrangements for power supply at Site for construction, testing & commissioning of all services and general use 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. The contractor will provide water & electricity to the Engineer's office free of cost for the required quantity by the engineer's site office.

32.6 Site office and Infrastructure

A reasonably furnished site office and transit accommodation having a sample room, A.C. meeting room, A.C. staff rooms with file storage facility along with computers & printers and its consumables, a telephone with

STD facility, Fax Machine, internet and toilets & pantry shall be provided for Executing agency/HSCC by the Contractor at his own cost..

Electricity & drinking water for the site office will have to be provided by the contractor at his own cost for the site office.

In case suitable existing building/accommodation is available at site, the same may be furnished as above with the consent of the Executing Agency.

32.7 Temporary Fencing

The Contractor shall at his own expense, erect and maintain in good condition temporary fences all around the working premises as per approved specifications by Engineer. After the successful completion of work all the temporary fencing will be dismantled/removed by contractor and all the dismantled/removed material from here shall be the property of the contractor. The Contractor shall also erect and maintain suitable metal frame fencing around the slab openings, cut-outs/lift wells/stairwells/shaft etc.

32.8 Mix Design of Concrete

The contractor shall carry out the mix design for the relevant item of concrete from a reputed institution/laboratories as approved by Engineer at his own expenses within 15 days from notification of award. Prior approval of engineer is to be taken before the samples (Cement, Coarse & fine aggregates) sent to the Institution for Mix design. The decision of engineer shall be final and binding for above. The design mix required may with or without admixtures.

33.0 Compliance of Statutory Obligations for obtaining completion Certificates:

The Contractor shall comply all the statutory obligations and obtain all required clearances to implement the project without any financial repercussions to Executing Agency /Employer and ensure all follow up actions with the local authorities in this respect for smooth completion of the project. All statutory charges to get any NOC, clearances from local authorities to be obtained by the contractor and the charges towards the NOC shall be reimbursed after submitting the bills/documentary evidences along with RA bills/final bill. The contractor is required to obtain all NOC, completion & Occupancy certificates from the respective local bodies as applicable:

34.0 Rates/Prices

The quoted rates/prices for the items shall be complete in all respect including all labour, material, plant and machinery, tools and tackles, batching plant for RCC work including water & electricity, all taxes (excluding Service Tax), duties, levies, octroi, statutory levies applicable from time to time and others as specified in SCC etc. The contractors attention is invited towards different floor finish and their respective finish levels as indicated in architectural drawings, and nothing extra will be payable for additional mortar bed required to achieve uniform finished levels. The Contractor should quote his rates/prices accordingly for the complete items in all respects.

35.0 Cash Flow targets

The contractor shall provide in writing one month in advance the detailed arrangements of funds to meet the financial targets for the next months.

36.0 Arbitration

The venue/ seat of Arbitration shall be at Delhi.

During the arbitration the contractor shall not stop the work & shall continue to work in terms of the contact.

The entire works will be liable to be inspected by Chief Technical Examiner i.e. CTE /CVC and ISO auditors. The Contractor will provide all necessary help required for in this connection. The Contractor will have to comply with the procedures/observations/ suggestions of the CTE/ISO in respect of quality, specifications, and workmanship in his scope of work, if any. No extra payment will be made on this account. However, any recovery arising out of the CTE's observation will be borne by the Contractor.

37. Separate bank Account

The contractor shall open a bank account specifically for this contract. The mobilization advance given to the contractor shall be deposited in this account only. The details of this account shall be made available to the Executing agency. The contractor shall draw from this account the expenses for the purpose of procurement of materials, machineries, tools & plants and shuttering required for the said work only.

ADDITIONAL SPECIFIC CONDITONS OF CONTRACT

AND

SPECIFICATIONS

(A) RELATING TO CIVIL, PLUMBING & FIRE FIGHTING WORKS

1.0 General

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

1.2 These additional specific conditions and specification shall be considered as an extension and not as a limitation of obligation of the preference.

* The CPWD General Specification for Electrical works: Part V Down Comer System for fire fighting-latest issue. Termination used in the bid shall also be accordance with CPWD.

* For items not covered in CPWD Specification, the work shall be done as per the latest relevant IS Code of practice.

* For item not covered by any of the above the installation shall be done as directed by the Engineer and as per sound engineering practices.

2.0 The Contractor shall make provision of hangers, sleeves, structural openings and other requirements well in advance to hold up progress of the construction schedule.

2.4 The said Contract comprises of furnishing of all materials, equipment, labour & transportation etc. necessary to render the installation fully operational as per the intent of specification and drawings, including any necessary adjustment or corrections. The installation shall be all in conformity with local laws covering such installation.

3.0 Contract Drawings

- 3.1 The drawings issued with the Bid are diagrammatic only and indicate the extent and general arrangement of the installation. Drawings shall not be scaled.
- 3.2 The Contractor shall follow the Bid drawings for preparation of his detailed sanitary, plumbing & Shop drawings and for subsequent installation work. He shall check the drawings of other services to verify spaces in which his work will be installed. The Contractor shall examine all Architectural, Structural, Plumbing and other services drawings before starting the work and report to the Engineer any discrepancies and obtain clarification. Any changes found essential to coordinate installation of this work with other services, shall be made with prior approval of the Engineer.
- 4.0** 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.
- 5.0** **Inspection and Testing**
- 5.1 The Engineer reserves the right to request inspection and testing at manufacturer's Works at all reasonable times during manufacture of items for this Contract.
- 5.2 The Engineer or his authorised representative shall have full power to inspect the materials and workmanship at the Contractor's Works or at any place from which the materials or equipment is obtained. Acceptance by the Engineer of any material or equipment shall in no way relieve the Contractor of his responsibility for meeting the requirements of the specifications. All incident expenditure like travelling, boarding and lodging etc shall be born by the contractor.
- 5.3 Routine and typical tests for the various items of equipment shall be performed at the Contractor's Works and test certificates furnished.
- If required by the Engineer, the Contractor shall permit the authorised representative of the Engineer to be present during any of the tests.
- 5.4 After installation has been virtually completed, the Contractor shall carry out under the direction and in the presence of the representative of the Engineer such tests and inspections as have been specified, or as the representative shall consider necessary to determine whether or not the full intent of the requirements of the drawings and specifications have been fulfilled. In case the work does not meet the full intent of the

drawings and specifications and further tests are considered necessary, the Contractor shall carry them out and bear the expenses thereof.

- 5.5 The Contractor shall provide all necessary instruments such as Theodolite, Dumpy level, steel tapes, weighing machine, plumb bobs, spirit levels, hammers, micrometers, thermometers, hydraulic testing machine, smoke test machine and labour for testing. The Contractor shall make adequate records of the test procedures and readings, shall repeat any tests requested by the Engineer and shall provide test certificates signed by an properly authorised person. Such test certificates shall cover all Works. All such equipments shall be tested for calibration at any approved laboratory.
- 5.6 If test 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 shall be regarded as final as to what constitutes a satisfactory test.
- 5.7 The above general requirements as to testing shall be read in conjunction with any particular requirements specified elsewhere.

6.0 Test Certificates

The contractor shall submit test certificates for all the materials / systems. These shall be issued by a government recognized inspection office certifying that all Equipment, Materials, Construction and function are in agreement with the requirements of these specification and accepted standards.

7.0 Performance Guarantee

- 7.1 It is clearly understood that the specifications, drawings, schedule of quantities for fire fighting system are for bidder's guidance only. The bidder shall carry out necessary calculation and provide alternative equipment required to achieve the specified level of fire fighting required for human safety. Complete sets of Architectural Drawings are available at site in the Engineer's office and reference may be made to these drawings as required for calculations or for other details. The contractor shall also guarantee that performance of various equipments, individually, shall not be less than, the quoted ratings.

8.0 Quiet Operation and Vibration

- 8.1 All equipment shall operate under all conditions of load without any sound or vibration, which is objectionable in the opinion of the Engineer. In case

of rotating machinery, sound or vibration noticeable outside the room in which it is installed or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Contractor at his own expense.

9.0 Accessibility

9.1 The Contractor shall locate all equipment, which must be serviced, operated or maintained 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 well in time, to be provided in the normal course of work, failing this, the Contractor shall make all the necessary repairs and changes at his own expense.

10.0 Electrical Installation

10.1 The electrical installation shall be in total conformity with the control wiring drawings prepared by the Contractor and approved by the Engineer & shall be connected and tested in the presence of an authorised representative of the Contractor and of the Engineer.

10.2 It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the Contract requirements of the electrical installation work lies solely with the Contractor.

11.0 Completion Drawings

11.1 At the completion of the work in all respects, the Contractor shall at his own cost submit to the Engineer 4 (four) sets of layout drawings drawn at the approved scale indicating the installation. 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 frame under glass, in the plant room all consolidated control diagrams and all piping diagrams.

12.0 Reference Points

12.1 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of Works.

12.2 All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings.

13.0 License and Permits

13.1 Contractor shall hold a valid plumbing/electrical/HVAC license issued by the Municipal Authority or other competent authority under whose jurisdiction the work falls.

14.0 Cutting and Making Good

14.1 No structural member shall be chased or cut without the written permission of the Engineer.

B) RELATING TO ELECTRICAL INSTALLATIONS

1.0 General

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

2.0 Regulations and Standards

2.1 The installations shall conform in all respects to Indian Standard Code of Practice for Electrical Wiring Installation IS : 732-1989 and as per latest CPWD General Specification for Electrical Works (Part I, II & IV). It shall also be in conformity with the current Indian Electricity Rules and regulations in so far as these are applicable to the installations. Wherever these Additional Specific Conditions calls for a higher standard of material and/or workmanship than those required by any of the above regulations, then this Additional Specific Conditions shall take precedence over the said Regulation and Standards. External works & fire detection & alarm system works to be done as per CPWD specification & relevant IS codes.

3.0 Rates

3.1 The rates bided shall be for complete items of work inclusive of all taxes, statutory charges and all other charges for items contingent to the work, such as, packing, forwarding, insurance, freight and delivery at Site for the materials to be supplied by the Contractor, watch and ward of all materials for the Internal & external, Electrical Installation testing & commissioning work including water & power for successful installation, testing & commissioning work at Site etc.

4.0 Completeness of Bid

4.1 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.

5.0 Works to be done by the Contractor

5.1 Unless and otherwise mentioned in the Bid documents, the following works shall be done by the Contractor, and therefore their cost shall be deemed to be included in their rates and prices:

- i. Foundations for equipments 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 by him 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. and erection, shall however be rectified to the satisfaction of the Engineer
- v. Testing and commissioning of complete installation

6.0 Tools for Handling and Erection

6.1 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.

7.0 Terminology & Scope

7.1 Terminology & scope for this project shall be as per CPWD Specification for Electrical Works (Part I - Internal) - latest & External Works - Part II - latest.

7.2 Measurement

Measurement shall be as per CPWD specifications Part – I (Internal) & Part - II (External) unless otherwise specified in the technical specifications / BOQ.

8.0 Drawings

8.1 The drawings indicate the extent and general arrangements of the fixtures, controlling switches, wiring system etc. and are essentially diagrammatic. 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 Executing Agency's approval. Contractor has to make necessary changes if any as per comments given by Executing Agency 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 without any additional cost of owner. 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 and report to the Engineer any discrepancies, which in his opinion appear on them and get it clarified. Contractor shall not be entitled to any extras for omissions or defects in electrical drawings or when they conflict with other services work.

9.0 Conduit/ Trunking Layout

9.1 Prior to the laying of the conduits and trunking, the Contractor shall examine/ study drawings and report to Engineer in case he desires to make any changes from Executing Agency proposed conduit layout plan and shall get the same approved from Executing Agency.

10.0 Shop Drawings

10.1 The Contractor shall prepare and submit to the Engineer for his approval detail shop drawings of Main & Sub Distribution Boards, Distribution Boards, special pull boxes, light & fan switch boards, telephone distribution boards, FDA system and lightning protection system and other equipment to be procured/ fabrication by the Contractor within 15 days of signing of the above items required to complete the electrical installation in all respect.

11.0 Manufacturer's Instruction

11.1 Where manufacturers' have furnished specific instructions, relating to the materials used in this job, covering points not specifically mentioned in these documents, these instructions shall be followed in all cases.

12.0 Materials & Equipment

12.1 All materials and equipment shall be ISI marked and shall be of the approved make and design. Unless otherwise called for, only the best quality of materials and equipment shall be used. The Contractor shall be responsible for the safe custody of all materials till these are taken over by

client and shall insure as 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 Site office.

13.0 Scale

13.1 Drawings shall be prepared to the scale as required for proper explanation and shall indicate the size and location of all equipments and accessories herein. The Contractor shall obtain all dimensions preferably at the building (Site of work) and check those plans for interference with the building structure and other equipment.

14.0 Brochures and Data

14.1 The Contractor shall submit four copies of all brochures / manufacturer's description data and similar literature.

15.0 Approval of Shop Drawings

15.1 The Engineer's approval of shop drawings, schedule, brochures etc. shall be an approval of general details and arrangements only and shall not relieve the Contractor from responsibility for deviation from drawings or specifications unless he has in writing called Engineer to such deviations at the time of submission nor shall it relieve the Contractor from responsibility for errors or omissions of any kind in the shop drawings when approved.

16.0 Samples & Catalogues

16.1 For Executing Agency's approval, Contractor shall submit the samples & catalogue of the material, which are used at Site as per the approved makes.

17.0 Approval of Materials

17.1 All materials used on the Works shall be new and of the best quality available, conforming to the relevant specifications and as per good Engineering practice. Prior approval shall be obtained in writing from the Engineer for all materials proposed and when necessary, approved sample duly identified and labelled shall be deposited with the Engineer and shall be kept at Site. List of approved make indicates make/ manufacturer generally acceptable. Contractor shall submit the detail drawings for Executing Agency's approval.

18.0 Inspection, Testing and Inspection Certificate

- 18.1 Executing Agency and authorised representative of Executing Agency shall have at all Reasonable times access to the Contractor's premises or Works and shall have the power at all reasonable time to inspect and examine the materials and workmanship during its manufacture or erection or if the part of works is being manufactured or assembled at other premises or works.
- 18.2 The Contractor shall arrange all the materials and labour required for inspection of equipment or for any testing to be carried out at his/ manufacturer's works or at Site. Notice for such inspection/ presence for testing shall be given to the Engineer by the Contractor at least fifteen (15) days in advance together with the routine test certificates of the equipments/ materials given by the manufacturer.
- 18.3 Notwithstanding approval of tests or equipment by the Engineer, 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. Engineer shall have full power to order the material or work to be tested by an independent agency at the electrical Contractor's expense in order to prove soundness & adequacy.

19.0 Schedule & Manner of Operation

- 19.1 Time being the essence of this Contract, Contractor shall be expected to furnish all labour & material in sufficient quantities at appropriate time, expedite and schedule the work to meet the Engineer's requirement and so manage the operations that the work shall be completed in time as stated else where. In case of shut down of power supply, Contractor shall coordinate with Engineer and shall carry out essential works during the shut down period allowed by the Engineer. In case Engineer allows for such period during night or early morning hours, Contractor shall make all provisions to avail such account. Contractor shall not be entitled for any extra claims on such account. Contractor shall programme his work in such a way that items of work requiring presence of Engineer are carried out between 9 A.M. & 5 P.M. on working days.

20.0 Performance Guarantee

- 20.1 All equipment shall be guaranteed for a minimum period of 12 (Twelve) months from the date of handing over of installation to the Engineer against unsatisfactory performance and/or break down. 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 Engineer. The normal guarantee and or

warrantee provided by the manufacturer will have to be submitted along with all the test certificates from manufacturer.

21.0 Conformity with Statutory Acts, Rules and Standards

- 21.1 The installation shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities applicable to the installations. But if the specifications and drawings call for a higher standard of material and/or workmanship than those required by any of the above Regulations and Standards, then the specifications and drawings shall take precedence over the said regulations and standards.
- 21.2 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.
- 21.3 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 upto date.
- 21.4 CPWD Specification :The Electrical installation work shall conform to CPWD General specifications for Electrical Works Part I (Internal) I and Part II (External) latest issues , both amended upto date.
- 21.5 Indian Standard : The system / components shall conform to relevant Indian Standards wherever they exist and to the latest National Building Code-2005.
- 21.6 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.

22.0 Completion Drawings (As Built Drawings)

- 22.1 On completion of the work and before issue of certificate of virtual completion, the Contractor shall submit to the Engineer completion plan drawn to a scale in tracing cloth with ink indicating the following, along with three blue print copies of the same:
- a. Run and size of conduits, inspection boxes, junction boxes and pulls boxes
 - b. Number of size of conductors in each conduit

- c. Location and rating of sockets and switches controlling the light and power outlets
- 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 drawings 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
- n. Layout and details of lightning protection system
- o. Insulation tests and earth test results
- u. External lighting drawing with road layout

23.0 Confirmation of Quantities

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

24.0 Terms of Payment (Only for items of major electrical equipments)

For purposes of estimating the contract value of work executed for certificate of payment under clause 32(d) of section II the following norms shall be followed.

- a. 70% of BOQ rate on receipt of equipment against receipt of complete material at site & test certificates.
- b. 15% of BOQ rate on erection and installation of equipment.
- c. 10% after successful completion of all works including all testing, commissioning & taking over.
- d. 5% after taking over of all works.

25.0 Training of Personnel – Deleted

26.0 Completion Certificate

26.1 On completion of the installation, a certificate shall be furnished to the Engineer, by the Contractor, countersigned by the licensed supervisor 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.

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

27. Testing and Commissioning

The Contractor shall pay for and arrange without any extra 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. The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Engineer. All tests shall be carried out in the presence of the Engineer or the Engineer's representative.

(C) SPECIFIC CONDITIONS OF CONTRACT RELATING TO HVAC SYSTEM

1.0 General

1.1 The following Additional Specific Conditions shall be read in conjunction with General Conditions of Contract and Specific Conditions of Contract. If there are any provisions in these Additional Specific Conditions which are

at variance with the provisions in the above mentioned documents, the provisions in these Additional Specific Conditions shall take precedence.

2.0 Scope of Contract

2.1 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.

3.0 Stores and Materials

3.1 The contractor shall provide every thing 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 specification, the more stringent shall be followed. The decision of the Engineer in this regard will be final and complied with.

4.0 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.

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

4.2 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 despatch.

5.0 Working Drawings etc.

5.1 The Contractor shall within 60 days of signing of the Contract, prepare and submit to the Engineer 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 and as required by the Engineer.

5.2 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.

- 5.3 If the Engineer 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, the Contractor shall submit a further six sets of shop drawings for the exclusive use of and retention by the Engineer.
- 5.4 The shop drawings shall be submitted for approval sufficiently in advance of planned delivery and installation of any material, to allow Engineer ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to failure to produce shop drawings in time.
- 5.5 Approval rendered on shop drawings shall not be consider as a guarantee of measurement or of building condition. Where drawings are approved, said approval does not mean that drawings have been checked in detail nor does it in any way relieve the contractor from his responsibility of furnishing materials or performing work as required by the contract.

6.0 Completion Drawings

- 6.1 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 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

The drawings shall be cross checked and approved by the Engineer before acceptance.

7.0 Operation and Service Manuals

7.1 The Contractor shall submit 3 (three) sets of operation and service manuals in respect of the air-conditioning plant including salient details of plant.

Following minimum details shall be furnished:

- i) Detailed equipment data as approved by the Engineer
- ii) Manufacturer's maintenance and operating instruction
- iii) Approved test readings

The Contractor shall also submit 4 (four) 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.

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.

8.0 Inspection at Contractor's Premises

8.1 The Engineer and his representatives shall at all reasonable time have free access to the Contractor's premises/works. The Contractor shall give every facility to the Engineer and his representative and necessary help for inspection and examinations and test of the materials and workmanship.

8.2 The Engineer's representative 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 obtained. Acceptance of any material or equipment shall in no way, relieve the Contractor of his responsibility for meeting the requirement of the specifications.

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

9.0 Subcontracting

The Contractor may subcontract part of the works with the written approval of the Engineer to any of the approved subcontractors given in the list of approved subcontractors, makes and manufacturers. A single subcontractor shall be appointed for carrying out the entire work of

supplying, installation, testing and commissioning of all the equipment covered under the package. However, the overall responsibility of the Contractor for compliance with the Contract terms does not alter by subcontracting.

10.0 Material Submittals

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

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

11.0 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 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. Such samples and prototypes after approval shall be retained by the Engineer and shall serve as the standards to be achieved in final construction.

12.0 Testing and Commissioning

12.1 Tests on equipment as called for in the specifications shall be carried out by the Contractor in accordance with the specifications, the relevant Indian Standard Specifications and the relevant Indian and International Standards.

12.2 The initial tests shall include but not be limited to the following:

- a. 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.
- b. To operate and check the proper functioning of all electrical panels, switch gears, safety and other controls

- c. To adjust and balance air, water, steam and gas quantities to provide the designed flow rates by adjusting valves, dampers, diverters etc.
- d. To check the systems against leaks in different circuits, alignment of motor, `V' Belt adjustments etc.
- e. To check the vibration and noise levels of the equipment
- f. Setting of all control and all such other tests which are essential for smooth functioning of the plant

12.3 The Contractor shall pay for and arrange without any extra 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. The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Engineer. All tests shall be carried out in the presence of the Engineer or the Engineer's representative.

13.0 Provisional Taking Over

13.1 After completion of the installation system, the same shall be put to a continuous running test for a period of 2 (two) days. All adjustments should be made prior to this test so that proper conditions/working are achieved during this testing. The test readings shall include items as noted in the Testing Schedules.

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.

13.2 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:

- a. Peak summer/ monsoon test during the period from 15th May to 31st July. The installations should be able to maintain the specified inside conditions within the tolerance limits permitted in the Contract.
- b. Peak winter test during the period from 1st December to 15th February. The installations should be able to maintain the specified inside conditions within the tolerance limits permitted in the Contract.

All the arrangements required to make the entire system operational /running ,for the performance test as above, including cost of electricity, manpower, and fuel etc will have to be arranged & paid by the contractor.

14.0 Operation of Plant

14.1 After provisional taking over of the plant user/owner 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, whichever ends later.

14.2 The user shall have the right to operate all equipments, if in operating condition, whether or not such equipments, have been accepted as complete and satisfactory. Repairs and alterations shall be made at such time as directed by the Engineer. In special circumstances user may have to use the plant to Air condition some areas even before the completion of whole work. The Contractor shall co-operate fully under such circumstances.

15.0 Guarantee and Defects Liability Period

15.1 The guarantee shall be valid for a period of 12 (Twelve) months from the certified date of completion of the project. In case the contractor is not able to carry out the seasonal tests (summer/monsoon & winter) within the certified date of completion, the same can be carried out during defects liability period. If required, the Defects Liability period shall be extended till satisfactory completion of seasonal rates.

16.0 Measurement of Works

16.1 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.

17.0 Variation in Quantities

17.1 The quantities given in the BOQ are for the guidance of the Bidder. The Contractor shall, however, be paid on the basis of actual quantities of works carried out.

18.0 Maintenance

18.1 The Contractor shall provide free maintenance for a period of twelve months after testing and commissioning of the installation. 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. Consumable items required during the maintenance, loss of which is not attributable to bad material and/or workmanship will be arranged by the Employer without cost to Contractor.

19.0 Performance Guarantee

19.1 The Contractor shall submit a performance guarantee certificate from the approved subcontractor that the system shall maintain the desired parameters within +/- 5 % of the specified parameters who shall also guarantee that the capacity of various components as well as the whole system covered under the scope of work, technical schedules and Bill of Quantities etc. shall not be less than the specified capacities. The guarantee of the specific equipment supplier alone with regard to the performance of the system shall not be acceptable. However, this does not alter the overall responsibility of the Contractor for compliance with the Contract terms and conditions.

20.0 Painting

20.1 All equipment and ancillary items such as pipes, supports etc., will be painted in approved manner, using standard colour scheme as approved by the Engineer.

21.0 Safe Custody and Storage

21.1 Safe custody of all machinery and equipment supplied by the Contractor shall be his own responsibility till the final taking over by the Employer. He should, therefore, employ sufficient staff for watch and ward at his own expenses. The Employer may, however, allow the Contractor to use any part of the building for temporary storage of his equipment, if such spaces are ready and available.

22.0 Terms of Payment

The following norms shall be followed for terms of payment of HVAC equipments & installation:

- A) 70% of BOQ rate shall be paid on receipt of equipment at Site and after inspection and passing on prorata basis
- B) 15% of BOQ rate shall be paid on satisfactory erection and installation of equipment on prorata basis
- C) 10% after successful completion of running tests
- D) 5% after provisional taking over & after final performance -cum-seasonal test to be conducted in summer or monsoon and removal of all defects pointed out during previous tests.

23.0 Training of Personnel

The Contractor shall arrange to train the Employer's personnel on the following aspects prior to provisional take over of the plant :

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

24. Handing over & Taking over process

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

- a) Submission of Guarantees in stamp paper (format approved by Engineer) for all water proofing treatment executed in the works for a period of ten years. If any defects noticed within 10 years from completion of defect liability period the main contractor shall be sole responsible for the defects and same shall be rectified by the main contractor as per information from client within a period of 10 days from the notice.
- b) Rectification of all defects shall be carried out by the main contractor before Handing over/Taking over process.
- c) As built drawings 4 sets for Architectural, Structural, Plumbing, Electrical, HVAC system, Specialised services and others, approved by engineer shall be submitted by the main contractor before handing over & taking over process.
- d) All services/equipments to be run and check before handing over & taking over process as per requirements of employer/principal employer.
- e) Contractor has to arrange water & electricity at their own cost for the purpose of testing of services and equipments. No extra amount shall be payable on account of the same.
- f) Main contractor shall submit catalogues, brochures, operation manual, manufacturer test certificate, Guaranty/Warranty papers, licence etc for all equipments/materials before handing over & taking over process.

(D) Additional Specific Conditions of Contract relating to Environmental Clearance & “GRIHA Rating of Integrated Habitat Assessment (GRIHA Rating System)” -

Environmental Clearance

The following provision for the Environmental clearance will have to be adhere to during execution of the project. Nothing extra will be paid on this account, statutory fee only as applicable which shall be reimbursed to the agency on submission of proof of deposition.

- (i) The Contractor will get registered with the project in the name of client with GRIHA for obtaining minimum GRIHA 3 Star Rating.
- (ii) Contractor will also engage consultant/ Specialize agency who will coordinate, prepare reports etc. for obtaining the GRIHA 3 Star Rating.
- (iii) The Contractor will Obtain GRIHA 3 Star Rating Certificate in the name of client form the concerned statutory bodies.
- (iv) All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase.
- (v) A first Aid room will be provided in the project both during construction and operation of the project.
- (vi) Adequate drinking water and sanitary facilities should be provided for construction workers at the site. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured.
- (vii) Provision should be made for the supply of fuel (kerosene or cooking gas); utensils such as pressure cookers etc. to the labourers during construction phase.
- (viii) All the labourers to be engaged for construction should be screened for health and adequately treated before engaging them to work at the site.
- (ix) All the topsoil excavated during construction activities should be stored for use in horticulture / landscape development within the project site.
- (x) Disposal of muck during construction phase should be not create any adverse effect on the neighbouring communities and be disposed taking the necessary precaution for general safety and healthy aspects of people, only in approved sites with the approval of competent authority.
- (xi) Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites

for such materials must be secured so that they should not leach into the ground water.

- (xii) The diesel generator sets to be used during construction phase should be low sulphur diesel type and should conform to E (P) Rules prescribed for air and noise emission standards.
- (xiii) Vehicles hired for bringing construction materials to the site should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.
- (xiv) Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase.
- (xv) Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on August, 2003.
- (xvi) Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.
- (xvii) Adequate measures to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.
- (xviii) Provisions should be made for housing of construction labour at appropriate locations on the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structure to be removed after the completion of the project.

Griha Rating of Integrated Habitat Assessment (GRIHA)

The building is proposed to be registered for obtaining GRIHA Rating from GRIHA Secretariat under MNRE scheme. The contractor is required to execute the work in a befitting manner to obtain the GRIHA rating.

1. Special conditions for Griha rating:-

- a) The contractor shall prepare scheme for the approval of Engineer-in-charge for obtaining Griha rating in the criterions relevant to the execution of work.
- b) The contractor shall plan and execute the work in a manner to preserve and protect the landscape during construction and shall arrange the materials/equipment and follow the procedure as per criterion 2 of the Griha rating as applicable.

- c) The contractor shall appoint/engage consultant/ consultancies to provide technical guidance and supervise the work for obtaining GRIHA rating pertaining to the criterion related to the execution of work.
- d) The contractor shall preserve the top soil layer for supporting vegetative growth.
- e) The contractor shall comply with NBC norms on construction safety, health and sanitation as per criterion 8.
- f) The construction activity shall be done in a befitting manner and the contractor shall adopt measures to prevent air pollution at site in compliance with criterion 9 of GRIHA rating as applicable.
- g) The contractor shall comply with all the instructions and schemes for execution of green building.
- h) Noting shall be paid extra for fulfilment of all these conditions for obtaining GRIHA 3-star rating certification as per above conditions. The cost involved in above compliances to be inclusive in the quoted rates.

2. Pre-construction Stage

- a) Construction Vehicles, Equipment and Machinery
 - * All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of India Standard (BIS) norms.
 - * Emission from the vehicles must conform to environmental norms.
 - * Dust produced from the vehicular movement and other site activities can be mitigated by sprinkling of water.
 - * Noise limits for construction equipments will not exceed 75 dB(A), measured at one meter from the edge of the equipment in free area, as specified in the Environment Protection Act, 1986, schedule VI part E, as amended on 19th May, 1993. The maximum noise levels near the construction site should be limited to 65 dB (A) Leq (5 min) in project area.

3. Construction Stage

- a) Construction Wastes Disposal
 - * The pre-identified dump locations will be a part of solid waste management plan to be prepared by the Contractor in consultation with Engineer-in-charge.
 - * Contractor will get approved the location of disposal site prior to commencement of the excavation on any section of the project location.
 - * Contractor will ensure that any spoils of material will not be disposed off in any municipality solid waste collection bins.

- b) Procurement of Construction Materials
 - * All vehicles delivering construction materials to the site will be covered to avoid spillage of materials and maintain cleanliness of the roads.
 - * Wheel Types of all vehicles used by of the contractor, or any of his sub contractor or materials supplies will be cleaned and washed clear of all dust/mud before leaving the project premises.
 - * Contractor will arrange for regular water sprinkling at least twice a day (i.e. morning and evening) for dust suppression of the construction sites and unpaved roads used by his construction vehicles.

c) Pollution

i) Water Pollution

* The Contractor will take all precautionary measures to prevent the wastewater during construction to accumulate anywhere.

* The wastewater arising from the project is to be disposed off in the manner that is acceptable to the Engineer-in-charge.

d) Air and Noise Pollution

* Contractor will use dust screens and sprinkle water around the construction site to arrest spreading of dust in the air and surrounding areas.

* Contractor will ensure that all vehicles, equipment and machinery used for construction are regularly maintained and confirm that emission levels comply with environmental emission standards/norms.

* For controlling the noise from Vehicles, Plants and Equipments, the Contractor will confirm the following:

i) All vehicles and equipment used in construction will be fitted with exhaust silencers.

ii) Servicing of all construction vehicles and machinery will be done regularly and during routine servicing operations, the effectiveness of exhaust silencers will be checked and if found defective will be replaced.

iii) Noise emission from compactors (rollers) front loaders, concrete mixers, cranes (movable), vibrators and saws should be less than 75 dB(A).

iv) As per the standards/guidelines for control of Noise Pollution from Stationary Diesel Generator (DG) sets, noise emission in dB(A) from DG Set (15-500 KVA) should be less than $94 + 10 \log_{10} (KVA)$. The standards also suggest construction of acoustic enclosure around the DG Set and provision of proper exhaust muffler with insertion loss of minimum 25 dB(A) as mandatory.

4. The following provisions shall be maintained by the contractor at site:-

4.1 Provide minimum level of sanitation/safety facilities for construction workers to Ensure the health and safety of the workers during construction, with effective provisions for the basic facilities such as sanitation, drinking water and safety equipments or machinery.

- i) All the workers should be wearing helmet and shoes all the time on site.
- ii) Masks and gloves should be worn whenever and wherever required.
- iii) Adequate drinking water facility should be provided at site, adequate number of decentralized latrines and urinals to be provided for construction workers.

- iv) Full time workers residing on site should be provided with clean and adequate temporary hutment. Crèche/Day-care facility should be provided to young children of labourers residing on site. First aid facility should also be provided.
 - v) Overhead lifting of heavy materials should be avoided. Barrow wheel and hand-lift boxes should be used to transport materials onsite. Tobacco and cigarette smoking should be prohibited onsite.
 - vi) All dangerous parts of machinery are well guarded and all precautions for working on machinery are taken.
 - vii) Maintain hoists and lifts, lifting machines, chains, ropes and other lifting tackles in good condition.
 - viii) Use of durable and reusable formwork systems to replace timber formwork and ensure that formwork where used is properly maintained.
 - ix) Ensure that walking surfaces or boards at height are of sound construction and are provided with safety rails and belts. Provide protective equipments such as helmets.
 - x) Provide measure to prevent fire. Fire extinguisher and buckets of sand to be provided in fire-prone area and elsewhere.
 - xi) Provide sufficient and suitable light for working during night.
 - xii) Ensure that measures to protect workers from materials of construction, transportation, storage and other dangers and health hazards are taken.
 - xiii) Ensure that the construction firm/division/company have sound safety policies.
 - xiv) Comply with the safety procedure, norms and guidelines (as applicable) as outlined in NBC 2005 (BIS 2005c).
 - xv) Adopt additional best practices and prescribed norms as in NBC 2005 (BIS 2005).
- 4.2 Identify roads on-site that would be used for vehicular traffic. Update vehicular roads (if these are unpaved) by increasing the surface strength by improving particle size, shape and mineral type that make up the surface base. Add surface gravel to reduce source of dust emission. Limit amount of fine particles (smaller than 0.075mm) to 10-20%. Limit vehicular speed on site 10km/h.
- 4.3 All material storages should be adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust/particulate emissions.
- 4.4 Spills of dirt or dusty materials will be cleaned up promptly so the spilled material does not become a source of fugitive dust and also to prevent of seepage of pollutant laden water into the ground aquifers. When cleaning up the spill, ensure that the clean-up process does not generate additional dust. Similarly, spilled concrete slurries or liquid wastes should be contained/cleaned up immediately before they can infiltrate into the soil/ground or runoff in nearby areas.
- 4.5 Ensure on:
- i) Any dusty material.
 - ii) Areas where demolition work is carried out. Any

- iii) Unpaved main road and.
- iv) Areas where excavation or earth moving activities are to be carried out.

- 4.6 The contractor shall ensure the following:
- i) Cover and enclose the site by providing dust screen, sheeting or netting to scaffold along the perimeter of a building.
 - ii) Covering stockpiles of dusty material with impervious sheeting.
 - iii) Covering dusty load on vehicles by impervious sheeting before they leave the site.
 - iv) Transferring, handling/storing dry loose materials like bulk cement and dry pulverized fly ash inside a totally enclosed system.
 - v) Spills of dirt or dusty materials will be cleaned up promptly so that the spilled material does not become a source of fugitive dust and also to prevent seepage of pollutant laden water into the ground aquifers. When cleaning up the spill, ensure that the clean-up process does not generate additional dust. Similarly, spilled concrete slurries or liquid wastes should be contained/cleaned up immediately before they can infiltrate into the soil/ground or runoff in nearby areas.
 - vi) Clear vegetation only from areas where work will start right away.
 - vii) Vegetate/mulch areas where vehicles do not ply.
 - viii) Apply gravel/landscaping rock to the areas where mulching/paving is impractical
- 4.7 Adopt measures to prevent air pollution in the vicinity of the site due to construction activities.
There is no standard reference for this. The best practices should be followed (as adopted from international best practice documents and codes).
- 4.8 Provide hoardings of not less than 3m height along the site boundary, next to a road or other public area.
- 4.9 The contractor will provide experienced personnel with suitable training to ensure that these methods are implemented. Prior to the commencement of any work, the method of working, plant equipment and air pollution control system to be used on-site should be made available for the inspection and approval of the Engineer-in-Charge to ensure that these are suitable for the project.
- 4.10 Employ measures to segregate the waste on-site into inert, chemical or hazardous wastes. Recycle the unused chemical/hazardous wastes such as oil, paint, batteries and asbestos. The inert waste is to be disposed off to Municipal Corporation/local bodies dump yard and landfill sites.
- 4.11 Preserve and protect landscape during construction Following provisions shall be made at site by the contractor to preserve and protect landscape. Nothing shall be paid on this account unless specifically provided for in the BOQ. To preserve the existing landscape and protect it from degradation during the process of construction. Select proper timing for construction activity to minimize the disturbance such as soil pollution due to spilling of

the construction material and its mixing with rainwater. The construction management plan including soil erosion control management plan shall be prepared accordingly for each month and got approved from the Engineer-in-Charge. The application of erosion control measures includes construction of gravel pits and tyre washing bays of approved size and specification for all vehicular site entry/ exits, protection of slopes greater than 10%. Sedimentation Collection System and run-off diversion systems shall be in place before the commencement of construction activity. Preserve and protect the existing vegetation by not-disturbing or damaging to specified site areas during construction. The trees that are identified to be retained on site are protected during the construction period using the following measures:

- a. The damage to roots is prevented during trenching, placing backfill, driving or parking heavy equipments. The dumping of trash, oil, paint and other material is detrimental to plant health.

These activities should be restricted to the areas outside of the canopy of the trees.

- ii) The trees are not used for support; their trunks should not be damaged by cutting and carving by nailing posters and advertisements or in any other way.
- iii) The lighting of fires or carrying out heat or gas emitting construction activity within the ground covered by canopy of the trees is not permitted.
- iv) The young trees of saplings identified for preservation within the construction site must be protected using tree guards of approved specification.
- v) The grades of soil should be maintained around existing vegetation.

Lowering or raising the levels around the vegetation should not be allowed unless specifically directed by the

Architect/Engineer -in - Charge.

- vi) Maintenance activities should be performed, as and when needed, to ensure that vegetation remain healthy.

- 4.12 Staging is dividing a construction area into two or more sections to minimize the area of soil that will be exposed at any given time. Staging should be done to separate undisturbed land from land disturbed by construction activity and material storage. A CAD plan to be submitted indentifying the areas of sites, which shall be disturbed for the construction activity and apart from these other areas on site should not be disturbed. Measures should be followed for collecting drainage water run-off from construction areas and material storage sites and diverting water flow away from such polluted areas. Temporary drainage channels and perimeter dike/swale should be constructed to carry the pollutant laden water directly to the treatment device

or facility (municipal sewer line). The plan should indicate how the above was accomplished on site well in advance of the commencement of the construction activity.

- i) The Contractor should follow the construction plan as proposed by the architect/landscape consultant to minimize the site disturbance such as soil pollution due to spilling. Use staging and spill prevention and control plan to restrict the spilling of the contaminating material on site. Protect top soil from erosion by collection storage and reapplication of top soil, constructing sediment basin, contour trenching, mulching etc.
- ii) Spill prevention and control plans should clearly state measures to stop the source of the spill. Measures to contain the spill and measures to dispose the contaminated material and hazardous wastes. It should also state the designation of personnel trained to prevent and control spills. Hazardous wastes include pesticides, paints, cleaners and petroleum products.

4.13 A soil Erosion and Sedimentation Control Plan (ESCP) should be prepared prior to construction and should be applied effectively. Measures for prevention of top soil are given below:

- i) Top Soil should be stripped to a depth of 20 cm from the areas proposed for buildings, roads, paved areas and external services. It should be stockpiled to a maximum height of 40 cm in designated areas and reapplied during plantation of the proposed vegetation. The top soil should be separated from the sub soil debris and stones larger than 50 mm in diameter. The stored top soil may be used as finished grade for planting areas post construction or cordoned off undisturbed areas on site. Stockpiled top soil should not be compacted to help process of aeration. It should be stabilized on the top by temporary seeding or plastic sheets to avoid wind and water erosion.
- ii) Sedimentation basin, a temporary dam or basin at the lowest convenient point of the site should be constructed for collecting, trapping and storing sediment produced by the construction activities. A flow detention facility must also be constructed for reducing peak run-off rates. This would also allow most of the sediments to settle before the run-off is directed towards the outfall.
- iii) Contour trenching is to be provided which an earth embankment or ridge- and-channel arrangement constructed parallel to the contours, along the face of the slope, at regular intervals on the lengths and slopes greater than 10% (1:10). They are used for reducing runoff velocity, increasing the distance of overland run-off flow. They are also used to hold moisture and minimize sediment loading of surface run-off.

4.14 Prepare the list of trees to be felled with reference to the tree survey, Compensate the loss of vegetation (trees) due to the construction activity by compensatory plantation. Replant same native and/or non-invasive species, which existed on the site before elimination, in the proportion of 1:3 (as per the suggestion of the landscape consultant).

- 4.15 The contractor shall prepare and submit 'Spill prevention and control plans' before the start of construction, clearly stating measures to stop the source of the spill, to contain the spill, to dispose the contaminated material and hazardous wastes, and stating designation of personnel trained to prevent and control spills. Hazardous wastes include pesticides, paints, cleaners, and petroleum products.
- 4.16 The contractor shall ensure that no construction leach (Ex: cement slurry) is allowed to percolate into the ground. Adequate precautions are to be taken to safeguard against this including reduction of wasteful curing processes, collection, basic filtering and reuse. The contractor shall follow requisite measures for collecting drainage water run-off from construction areas and material storage sites and diverting water flow away from such polluted areas. Temporary drainage channels, perimeter dike/swale, etc. shall be constructed to carry the pollutant-laden water directly to the treatment device or facility (municipal sewer line).
- 4.17 All lighting installed by the contractor around the site and at the labour quarters during construction shall be CFL bulbs of the appropriate illumination levels. This condition is a must, unless specifically prescribed.
- 4.18 All paints, adhesives and sealants should comply with the VOC limits prescribed by

GRIHA, as follows:

Table 1- VOC limits for paints, adhesives and sealants

Paints	VOC limit (g/l)
Non-flat paints	150
Flat (Mat) paints	50
Anti-corrosive/anti-rust paints	250
Varnish	350
Adhesives	VOC limit (g/l)
Wood flooring Adhesive	100
Tile adhesives	65
Indoor carpet adhesives	50
Wood	30

- 4.19 All the building materials and systems used on site must be as per the specifications and approved makes by the consultants.
- 4.20 All required certificates explaining the properties of the building material/system needs to be obtained from the manufacturer/vendor as required by the green building rating authority.
 - i) The final certificates would be produced after the approval of green building consultant with necessary due diligence.

- ii)The purchase orders of all the materials made with the manufacturers/authorized vendors should be maintained and shall be provided for the process with due diligence upon request.
- 4.21 Water saving measures as suggested by the consultants need to be followed on site.
- 4.22 Any other site management measures suggested by the green building consultant shall be followed on site.
- 4.23 The contractor shall submit to the Engineer-in-Charge after construction of the buildings, a detailed as built quantification of the following:
- i)Total materials used,**
 - ii)Total top soil stacked and total reused,**
 - iii)Total earth excavated,**
 - iv)Total waste generated,**
 - v)Total waste reused,**
 - vi)Total water used,**
 - vii)Total electricity consumed, and**
 - viii) Total diesel consumed.**
- 4.24 **The contractor shall submit to the Engineer-in-Charge, before the start of construction, a site plan along with a narrative to demarcate areas on site from which top soil has to be gathered, designate area where it will be stored, measures adopted for top soil preservation and indicate areas where it will be reapplied after construction is complete.**
- 4.25 **Evidence for the implementation of the all the above required measures shall be provided to the green building consultant in the form of photographs and templates (as provided) which is required for the submission to the green building rating authority (GRIHA).**

END OF VOLUME - III