NATIONAL INSTITUTE OF MALERIA RESEARCH (NIMR), Dwarka, New Delhi

TENDER

FOR

Construction of Auditorium, Guest House, Hostel, Electric Substation , AC Plant Room , Under Ground water Tank etc at NIMR, Sector-8, Dwarka New Delhi-110077

VOLUME – III

Specific Conditions of Contract

October' 2016

HSCC (INDIA) LTD.
(CONSULTANTS & ENGINEERS FOR MEGA HOSPITALS & LABORATORIES)
E-6(A), sector-1, NOIDA(U.P) 201301 (India)

Phone : 0120-2542436-40 Fax : 0120-2542447

Tender No. HSCC/NIMR/Phase-II2015

INDEX

Clause No.	Descriptions
1	Definitions and Interpretation
2	Languages & Law
3	Errors, Omissions and Discrepancies
4	Scope of Contract
5	Drawings
6	Disruption of Progress
7	Further Drawings and Instructions
8	Programme of Work and Progress Report
9	Contractor's General Responsibilities
10	Watching & Lighting
11	Care of Works
12	Expected Risks & Force Majeure
13	Contractor's Superintendence
14	Compliance with Statutes, Regulations, Etc.
15	Setting out
16	Quality of Materials, Workmanship and Test
17	Absence of Specifications
18	Obtaining Information's related to Execution of work
19	Access for Inspection
20	Examination of Work before covering up
21	Assignment
22	Claims
23	Variations
24 (a)	Inspection & Testing during manufacture
24 (b)	Dates for Inspection & Testing
24 (c)	Facilities for Testing at Manufacturer's Works
24 (d)	Certificate of Testing
24 (e)	Rejection
24 (f)	Delivery of Materials and Equipment
24 (g)	Inspection & Testing and Re-inspection & Retesting
24 (h)	Inspection Reports
25	Virtual Completion Certificate
26	Defect after completion
27	Approval and acceptance
28	Works by Other Agencies
29	Insurance Policies
29.1.1	Employer's Risks
29.1.2	Insurance of Works and Contractor's Equipment
29.1.3	Scope of Cover
29.1.4	Responsibility for Amounts not Recovered

Clause No.	Descriptions
29.1.5	Exclusions
29.2.1	Damage to Persons and Property
29.2.2	Exceptions
29.2.3	Indemnity by Employer
29.3.1	Third Party Insurance (Including Employer's Property)
29.3.2	Minimum Amount of Insurance
29.3.3	Cross Liabilities
29.4.1	Accident or Injury to Workmen
29.4.2	Insurance Against Accident to Workmen
29.5.1	Evidence and Terms of Insurance
29.5.2	Adequacy of Insurance
29.5.3	Remedy on Contractor's Failure to Insure
29.5.4	Compliance with Policy Conditions
30	Dues not paid by the Contractor
31	Billing & Certification
32	Payments to Specialized agencies in Composite Contracts
33	Urgent Repairs
34	Boreholes & Exploratory Excavation
35	Fossils, Etc.
36	Plant Temporary Works & Materials
37	Operations and Maintenance Manual
38	Reports by Contractor
39	Every Care…
40	Miscellaneous
41	Co-ordination Meeting
42.1	Site Development
42.2.1	Contractor's Working Area
42.2.2	Contractor's Temporary Structures
42.2.3	Procurement of Various Materials
42.2.4	Water Supply & Power Supply
42.2.5	Site office
42.2.6	Temporary Fencing
42.2.7	Mix Design of Concrete
43	Compliance of Statutory Obligations for obtaining completion Certificates
44	Rates/Prices
45	Comprehensive Maintenance
46	Cash Flow Targets

ADDITIONAL SPECIFIC CONDITIONS OF CONTRACT

Clause No.	Descriptions
(A)	**RELATING TO CIVIL, PLUMBING & FIRE-FIGHTING WORKS**
1.0	General
2.0	Scope of Contract
3.0	Contract Drawings
4.0	Shop Drawings
5.0	Samples and Catalogues
5.2	Approval of Materials
6.0	Materials and Equipments
7.0	Conformity with Statutory Acts, Rules and Standards
8.0	Technical Data
9.0	Manufacturer's Instructions
10.0	Training and Operating Instructions
11.0	Inspection and Testing
12.0	Test Certificates
13.0	Performance Guarantee
14.0	Quiet Operation and Vibration
15.0	Accessibility
16.0	Electrical Installation
17.0	Completion Certificate
18.0	Completion Drawings

Clause No.	Descriptions
19.0	Rates
20.0	Check List
21.0	Repairs
22.0	Control System
23.0	Reference Points
24.0	Licence & Permits
25.0	Cutting and making good
26.0	Operation and Running of entire system
(B)	**RELATING TO ELECTRICAL INSTALLATIONS**
1.0	General
2.0	Regulations and Standards
3.0	Rates
4.0	Completeness of Bid
5.0	Works to be Done by the Contractor
6.0	Tools for Handling & Erection
7.0&7.1	Terminology & Scope
7.2	Measurement
8.0	Drawings
9.0	Conduit/ Trunking Layout
10.0	Shop Drawings
11.0	Manufacturer's Instruction
12.0	Materials & Equipment

Clause No.	Descriptions
13.0	Scale
14.0	Brochures & Data
15.0	Approval of Shop Drawings
16.0	Samples & Catalogues
17.0	Approval of Materials
18.0	Inspection, Testing and Inspection Certificate
19.0	Schedule & Manner of Operation
20.0	Performance Guarantee
21.0	Conformity with Statutory Acts, Rules & Standards
22.0	Completion Drawings (As Built Drawings)
23.0	Confirmation of Quantities
24.0	Terms of Payment
25.0	Training of Personnel
26.0	Completion Certificate
27.0	Check List
28.0	Repairs
29.0	Safe Custody & Storage
30.0	Testing and Commissioning
31.0	Operation and Running of entire system
32.0	Layout of all services , operating and maintenance Instructions. DO's and Don't's etc

(C) SPECIFIC CONDITIONS OF CONTRACT RELATING TO HVAC SYSTEM

Clause No.	Descriptions
1.0	General
2.0	Scope of Contract
3.0	Stores & Materials
4.0	Supply of Equipment
5.0	Working Drawings
6.0	Completion Drawings
7.0	Operation and Service manuals
8.0	Inspection at Contractors premises
9.0	Subcontracting
10.0	Material Submittals
11.0	Sample & Prototype
12.0	Testing & Commissioning
13.0	Provisional taking over
14.0	Operation of Plant
15.0	Guarantee & Defect liability period
16.0	Measurement of Works
17.0	Variation in Quantities
18.0	Maintenance
19.0	Performance Guarantee
20.0	Painting

Clause No.	Descriptions
21.0	Safe custody & Storage
22.0	Terms of Payments
23.0	Training of Personnel
24.0	Handing over Taking over process
25.0	Operation and Running of entire system

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/ Consultant.

(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) "Consultant" shall mean consultant appointed by the Client for implementing the "Construction of Guest House, Auditorium Block, Hostel Block, Substation & AC Plant Room for NIMR, Dwarka New Delhi". HSCC (India) Ltd., having its corporate office at E-6(A), Sector 1, Noida UP-201301 has been appointed as Consultant for this project. The Consultant shall also have its office at the site. The word "Consultant" is synonymous with "Project 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 Consultant 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 Consultant.

(i) "I. S." means latest revision of 'Indian Standards Specification' issued by Bureau of Indian Standards.

(j) "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.

(k) "Materials" means the materials, apparatus, equipment, fittings, fixtures and all such other materials, which are incorporated in the work.

(l) **"**Month" means calendar month without regard to the number of days worked or not worked in that month.

(m)"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.

(n) "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.

(o) "Permanent Works" means the permanent works to be executed (including Plant) in accordance with the Contract.

(p) Deleted

(q) "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.

(r) “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.

(s) “Urgent Works” means any urgent works which in the opinion of the Client and/or Consultant 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 Consultant may find it necessary.

(t) “Week” means seven calendar days without regard to the number of hours worked or not worked in any day in that week.

(u) Words imparting the signal only also include the plural and vice versa where the context requires.

(v) The “**Engineer-in-charge”** or "**Engineer**" **“Engineer in Charge”(EIC)** means the General Manager (Projects), HSCC (India) Ltd. or any officer nominated by Chairman-cum-Managing Director, HSCC (India) Ltd. to act as Engineer-in-Charge from time to time who shall supervise and be in charge of the work.

(w) **Client** shall mean NIMR, Dwarka, New Delhi as defined in Volume – II General Conditions of Contract of the tender documents.

(x) "PRINCIPAL EMPLOYER” OR “EMPLOYER" means NIMR, Dwarka, New Delhi

(y) Third Party Consultant shall mean Third Party Consultant appointed by Client for various quantity and quality control as well as supervision of the project on behalf of client to safeguard the interests of client in respect of the project.

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. <u>Languages & Law</u>

The ruling language in which the Contract and related aspects shall be drawn up shall be English only. Law means- law as applicable to site of work.

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) Deleted

(c) Between the duplicate/subsequent copies of the tender and original tender, the original tender shall be taken as correct.

(d) 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.

(e) 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 Guest House, Auditorium Block, Hostel Block, Substation & AC Plant Room for NIMR, Dwarka New Delhi

The scope of work comprises of electrical, HVAC/ air-conditioning / fire-fighting work, fire detection, sanitary, plumbing works, Lifts, PA, FDA, external development works, roads works, drainages, Landscaping, Horticulture Services, Signage's and other works etc. and their maintenance during defect liability period including & preparation of all detailed shop drawings, obtaining approval from local authorities, electrical inspector, water & sewer line connection, pollution, permission/approval for tree cuttings, permission for borewell, completion certificates, occupancy certificate and all others local Statutory requirements if any, from the concerned authorities.

ii. RFC Drawings for architectural, structural and other details shall be provided by consultant to the contractor. The Contractor will prepare detailed shop drawings based on the drawings given by client/ consultant for all services eg. Electrical, Plumbing, Fire fighting, fire detection, HVAC & Plant layout etc.

iii. 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.

iv. Approvals Required

The Contractor shall obtain all necessary approvals from Municipal and other local bodies including Municipal bodies, Water supply agencies concerned, Electric Supply and inspectorate. Agencies concerned, Police and Security Agencies, Chief Controller of Explosives, Forest Deptt., Fire Department, Civil

Aviation Department, concerned in accordance to prevailing rules, Building Bye-Laws etc., as the case may be with related to Construction/Completion.

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
- Approval of tree cutting from forest department
- NOC from Lift Inspector where lifts are provided
- Occupancy certificate

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 Client.

(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/Consultant 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 will be provided by the Consultant. However, to ensure the uninterrupted progress of work and timely completion, the contractor will do further detailing as per site requirement at his own.

Detailing and shop drawings of all services will have to be done by the contractor based on the schematics and other details provided by the

Consultant or local authorities. The work will be executed by the contractor based on the approved drawings from the concerned authority and accordingly contractor will be responsible for obtaining final NOC/clearance from concerned authority.

The contractor shall submit to the Engineer-in-charge for approval details of all proposed equipments, accessories, equipment characteristics and capacity details of all equipment, accessories and devices etc. as per the specifications and required by the 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 Consultant may ask the Contractor to change their design consultant immediately or get the same done on risk and cost of the Contractor.

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

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

(e) "AS MADE" Drawings

The Contractor shall supply two complete sets of "As Made" Drawings on polyester tracing film 75 micron thick and also on computer pen drive and three prints showing details of all the Works as executed. The drawings and prints shall be delivered to the Engineer within one month of completion of the various Sections of the work or at such other times as directed by the Engineer. The drawings shall be fully dimensioned with the Engineer's standard title block or as approved by the Engineer. The cost of making the "As Made" drawings shall be deemed to be included in the rates quoted in the Bill of Quantities.

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 Consultant. 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 Consultant 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 Consultant. The Consultant 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 "Consultant'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 Consultant's instructions provided always that verbal instructions, directions and explanations given to the contractor or his representative upon the works by the Consultant, 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 Consultant, such shall be deemed to be Consultant's instructions within the scope of the contract

8. Programme of Work and Progress Report

The Contractor shall submit to the Engineer within two weeks of the Award of the Contract, six copies of detailed Schedule showing in an approved

form the estimated dates of commencement and completion of different parts of the Works including the expected dates for completion of the various Sections of the Works. The detailed Schedule shall be such as it can be updated quarterly or as directed by the Engineer. Six copies of the revised Schedule shall be supplied to the Engineer as and when it is revised. The schedule will be in two parts. The first part will consist of schedule for detailing & preparation & submission of shop drawings and second part of schedule for execution. The schedule will be only detailing of original schedule submitted alongwith tender.

The Contractor shall submit to the Engineer before the second day of every week, a progress report for the preceding week showing the unto date progress and progress during the preceding week on all items of each section of the Works in relation to and in consideration of the detailed Schedule.

9. 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 Consultant who shall decide which is to be followed

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

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

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

The Consultant 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 Consultant 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 Consultant full particulars, drawings, etc. of all temporary works necessary for the execution of the works and shall allow sufficient time for the Consultant to consider the same. The Consultant 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 Consultant 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 Consultant, at his won 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 Consultant. Storage on suspended floors shall not be permitted unless specifically approved in writing by the Consultant for specific materials in specific locations and in approved manner. The Consultant 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 Consultant. 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.

10. 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 Consultant, 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.

11. 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.

12. 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 Consultant and shall not assert any additional claims against the Client.

13. 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) Contractor's Senior Representative for Execution & Coordination of Works

The Contractor shall have on site all times during working hours throughout the course of the Contract or at least one Competent senior representative who shall be empowered to make decisions binding on the Contractor in respect of all matters likely to arise in connection with the execution & coordination of the works at the site and shall keep the Engineer-in-charge/Consultant informed at all times about the name and designation of such representative. Contractor's Senior Representative shall have the power to take joint measurement and sign the measurement books / bills. Any direction, explanations, instructions or notices given by the Consultant/Engineer-in-charge to such representative shall be held to be given to the Contractor. In case of absence of Senior

Representative from the site, other alternative representative must be available at site with same powers.

The curriculum vitae (CV) of the following key personnel proposed to be deployed at site for the entire duration is also required to be submitted.

- Director/Project Coordinator
- Project Managers
- Construction Engineers
- Project Engineers
- Billing Engineers
- Quality Control Engineers
- Planning Engineers
- Safety Engineer

It may please be noted that the contractor under normal circumstances would not be allowed to replace the key personnel during the execution of the contract. However, for any reasons, due to unavoidable circumstances if it becomes necessary in the interest of the project to replace any one / all the above key personnel the contractor must submit the CV of the new personnel (having similar qualification and experience) to Consultant for their approval.

A list of all technical and key personal staffs must be submitted to the Consultant with their area of work / responsibility with verified signature and the link persons to receive the instruction at site (in case the main person was not found at site) during the inspection by representative of Client and/or Consultant and/or Engineer-in-charge. Any staff of contractor found with insufficient suitable capability to execute the assigned work for the project must be replaced by the Contractor.

(c) Contractor's Employees

The Contractor shall provide and employ, after approval from the Consultant/Engineer-in-charge on the site in connection with the execution, completion of works and remedying any defects therein all Engineering staff / technical assistants are qualified, skilled and experienced in their respective trades, foremen and leading hands as are component to give proper supervision, ensuring quality & output to the work they are required to supervise, and also such skilled, semi-skilled and unskilled labour as are necessary for the proper and timely execution, completion of work and remedying and defects in the works. No child labour shall be employed on the work. All the skilled semi-skilled and unskilled labour shall work under the sole guidance of the contractor's senior representative.

(d) Removal of Contractor's Employees

The Contractor shall on the direction of the Consultant/Engineer-in-Charge immediately dismiss from the works any person employed thereon by him who may, in the opinion of the Consultant/ Engineer-in-Charge be incompetent or misconduct himself and such person shall not be again employed on the works without the permission of the Engineer-in-charge/Consultant.

(e) 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/Consultant to the site and other working places.

14. Compliance with Statutes, Regulations, Etc.

The contractor shall conform to the provisions of any statue, ordinance, law, act of the legislature relating to the works, and to the regulations an 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/Consultant indemnified against all fines or penalties or liability of every kind for breach of any such statutory ordinance, law act of the legislation, regulations, and byelaws as aforesaid.

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

The contractor shall bring to the attention of the Engineer-in-charge/Consultant all notices required for execution by the said acts, regulations or bye-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/Consultant.

15. 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/Consultant 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/Consultant 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 Consultant 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.

16. Quality of Materials, Workmanship and Test

(a) All materials and workmanship shall be the best of the respective kinds described in the Contract and in accordance with the Engineer-in-charge/Consultant's instructions and shall be subjected from time to time to such tests as the Consultant may direct at the place of manufacture or fabrication or on the Site or at an approved testing laboratory. The source of supply and / or manufacturing within/ out side India may be inspected by the Engineer-in-charge/Consultant/ any representative as nominated by the client. The expenditure on this account is deemed to be included in the rate quoted.

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

The Engineer-in-charge/Consultant 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.

(b) Samples

i) All samples of adequate numbers, sizes, shades & pattern as per specification shall be supplied by the contractor without any extra charge. Contractor shall submit Samples to the Consultant for approval. If certain items proposed to be used are of such nature that samples cannot be presented or prepared at the site, detailed literature / test certificate of the same shall be provided instead to the satisfaction of the Consultant. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalogue numbers and the use for which intended and otherwise as the Consultant may require to review the submittals for the limited purposes required by paragraph (d) below. The numbers of each sample to be submitted will be as specified in the Specifications, or as shall be specified by the Consultant/ Engineer-in-charge. A sample room will be made and maintained with all the approved samples till the end of warranty period / defect liability period.

ii) Submittal Procedures

(aa) Before submitting each Sample, Contractor shall have determined and verified all materials with respect to intended use, fabrication, shipping, handling, storage, assembling and installation pertaining to the performance of the Work and All information relative to Contractor's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programmes incident thereto.

(ab) Each submittal will bear a specific written indication that Contactor has satisfied Contractor's obligation under the Contract Documents with respect to Contractor's review and approval of that submittal..

(ac) At the time of each submission, contractor shall give the Consultant specific written notice of such variations, if any, that the sample submitted may have from the requirements of the contract document. Such notice shall be separate from the submittal and in addition shall cause a specific notation to be made on each sample submitted for review and approval of each such variation

iii) Review and Approval: Sample shall be reviewed and approved only to determine if the items covered by the submittals will, after installation or incorporation in the work, conform to the information given in the contract documents and be compatible with the design concept of the completed project functioning as a whole as indicated by the contract documents, drawings.

iv) Review and approval will not extend to means, methods, techniques, sequences or procedures of construction. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Consultant and shall submit as required new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for and by the Consultant on previous submittals.

v) Above referred review and approval Samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Document unless Contractor has in writing called the Consultant/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 /Consultant relieve Contractor from responsibility for complying with the requirements of contract.

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

vii) 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.

viii) The Consultant 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.

ix) 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 Consultant and compared with the approved sample and his specific obtained before using the same in the work.

(c) Cost of Tests

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

(d) Standards and codes

The Contractor shall at his cost provide one set of approved standards and codes to which the Proposed materials, items and works to be executed shall conform. Such a set shall be handed over to Engineer-in-charge/Consultant for ready reference. All materials, items and works, when submitted for approval shall have reference of Tender Specifications and drawings and of clauses of relevant standard codes for acceptance criteria.

(e) 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 Consultant/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 consultant 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 Consultant, the Contractor shall bear the entire cost including samples, taking samples, testing, reports etc.

17. 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 Consultant who will issue such detailed information within a reasonable time.

18. 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.

19. Access for Inspection

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

20. 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 Consultant and the contractor shall afford full opportunity for the Consultant 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 Consultant whenever any such work or foundation is or ready or about to be ready for examination and the Consultant 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 Consultant may from time to time direct and shall reinstate to make good such part or parts to the satisfaction of the Consultant. No extra payment will be paid for this.

21. Assignment

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

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

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

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

22. Claims

The contractor shall send to the Engineer-in-charge once in a month an account giving particulars as complete and fully detailed as required of all claims for any additional payments, to which the contractor may consider himself entitled and of all extra or additional / substituted work ordered by the Consultant which he has executed during the preceding month subject to provisions under relevant clauses of contract hereof.

23. Variations

(a) The Consultant 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 Consultant 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 Consultant, provided that no order in writing shall be required for increase up to 02% 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.

24. (a) Inspection & Testing during manufacture

The Consultant shall be entitled during manufacture to inspect, examine and test on the contractor's premises during working hours the materials and workmanship and check the progress of manufacture of all fabrication materials to be supplied under the contract, and if part of the said materials is being manufactured on other premises, the contractor shall obtain for the Consultant permission to inspect, examine and test as if the said plant were being manufactured on the contractors premises. Such inspection, examination or testing if made shall not relieve the contractor from any obligation under the contract.

(b) <u>Dates for Inspection & Testing</u>

The contractor shall agree with the Consultant the date and the place at which any plant / works will be ready for testing as provided in the contract and unless the Consultant shall attend at the place so named on the date agreed the contractor may proceed with the test in presence of the Consultant or his authorized representative and shall forthwith forward to the Consultant duly certified copies of the test readings. The Consultant shall give the contractor 24 hours notice in writing of his intention to attend the tests.

(c) <u>Facilities for Testing at Manufacturer's Works</u>

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

(d) Certificate of Testing

As and when fabrication materials shall pass the tests referred in this clause, the Consultant shall furnish to the contractor a certificate in writing to that effect.

(e) Rejection

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

(f) Delivery of Materials and Equipment

Unless the Consultant shall otherwise direct, no material shall be brought to the site.

The contractor shall be responsible for the reception on site of all materials and contractor's equipment brought at site for the purposes of the contract.

(g) Inspection & Testing and Re-inspection & Retesting

All deficiencies revealed by testing and inspection shall be rectified by the contractor at his own expense and to the satisfaction and approval of the Consultant. Rectified components shall be subject to re-testing and re-inspection.

(h) Inspection Reports

The contractor shall provide the Consultant with five copies of reports of all inspection and tests.

25. Virtual Completion Certificate

When the whole of the Works have been substantially and virtually completed and have satisfactorily passed any final test that may be prescribed by the Contract:-

(a) The Contractor shall give a notice to that effect to the Consultant accompanied by an undertaking to finish any outstanding work during the Defects Liability Period. Such notice and undertaking shall be in writing and shall be deemed to be a request by the Contractor.

(b) The Consultant shall review whether the works are completed in such a condition so as to be put to its proper or other intended final use and / or occupied without any short comings and no major or minor items of works are remaining which in the opinion of the Consultant will cause undue difficulties in satisfactory use/ occupation of the Works

26. <u>Defect after completion</u>

(a) **General**

Any defect, shrinkage, settlement or other faults which any appear within the "Defects Liability Period" arising in the opinion of the Engineer-in-charge/Consultant from materials or workmanship not in accordance with the contract, shall upon the direction in writing of the Engineer-in-charge/Consultant / Authorized representative of the Client, and within such reasonable time as shall be specified therein, be amended and made good by the contractor, at his own cost and incase of default, the Engineer-in-charge/Consultant/Client may employ and pay other persons to amend and make good such defects, shrinkage, settlements or other faults and all damages, loss and expenses consequent thereon or incidental thereto shall be make good and borne by the contractor and such damage, loss and expenses shall be recoverable from the bills due or may be deducted from any money due to that may become due to the contractor, or the may in lieu of such amending and making good by the contractor deduct from any monies due to the contractor, a sum, to be determined by the Engineer-in-charge. If no amount is available with the Department, the Department may recover from the dues of another government department

(b) Execution of work of repair etc.

Any defects, shrinkage, settlement or other faults which may appear or be noticed within the defect liability period, and arising in the opinion of the Engineer-in-charge/Consultant from materials or workmanship not having in accordance with the contract, shall upon the direction in writing of the Engineer-in-charge's/Consultant's representative and within such

reasonable time as shall be specified therein and without any delay, be amended and made good or replaced by the contractor at his own cost.

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

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

(d) Contractor's personnel to be at site

During the defects liability period the contractor shall retain at least one of his authorized representative at site along with required tradesmen.

27. Approval and acceptance

(a) Provisional Acceptance

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

i). Submitting As-Built Drawings, Catalogues, Brochures, and Data Sheets, manuals in the form as directed by Engineer in Charge
ii). Obtaining Certificate of Completion from the Engineer-in-charge
iii). Obtaining approvals from the local authorities as required for occupation and use of the works and handing over such certificates to the Engineer-in-charge/Consultant. Contractor is required to take approval from respective authorities for his own work.

(b) Certificate of Final Completion

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

The Engineer-in-charge shall give the Certificate for Final Completion:

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

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

- As soon thereafter as any works ordered during such period shall have been completed to the satisfaction of the Client.

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

28. Works by Other Agencies

The Client/ Engineer-in-charge/Consultant 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.

29. Insurance Policies

29.1.1 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.

29.1.2 Insurance of Works and Contractor's Equipment

The Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 29.1.1 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) an additional sum of 15 percent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature, and it being understood that such insurance shall provide for compensation to be payable to rectify the loss or damage incurred.

(c) 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 29.1.2 shall be issued by an insurance company which has been determined by the contractor to be acceptable to the Consultant.

29.1.3 Scope of Cover

The insurance in paragraphs (a) and (b) of Sub-Clause 29.1.2 shall be in the joint names of the Contractor and the **Employer** and shall cover:

(a) the **Employer** 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 29.1.5, from the commencement date until the date of issue of the relevant Taking-Over Certificate 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 under Clauses 26 aforesaid.

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.

29.1.4 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 29.1.1.

29.1.5 Exclusions

There shall be no obligation for the insurance in Sub-Clause 29.1.2 to include loss or damage caused by the risks listed under sub clause 29.1.1 para a (i) to (iv).

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

29.2.1 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-29.2.2.

29.2.2 Exceptions

The "exceptions" referred to in Sub-Clause 29.2.1 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 of 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.

29.2.3 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 29.2.2.

29.3.1 Third Party Insurance (Including Employer's Property)

The Contractor shall, without limiting his or the **Employer's** obligations and responsibilities under Clause 29.2.1 to 29.2.3, 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 29.4.1 to 29.4.2 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 29.2.2.

29.3.2 Minimum Amount of Insurance

Such insurance shall be for at least the amount stated in Clause 29.1.2 above.

29.3.3 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.

29.4.1 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.

29.4.2 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 Consultant, when required, such policy of insurance and the receipt for the payment for current premium.

29.5.1 Evidence and Terms of Insurance

The Contractor shall provide evidence to the Consultant 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 Consultant.

29.5.2 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 Consultant the insurance policies in force and the receipts for payment of the current premiums.

29.5.3 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 Consultant within the period required by Sub-Clause 29.5.1, 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.

29.5.4 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 29.1.2 to 29.1.5, 29.3.1 to 29.3.3 and 29.4.1 to 29.4.2) with insurers from India.

30. <u>Dues not paid by the Contractor</u>

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 Consultant 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.

31. Billing & Certification

a) The Contractor shall submit to the Engineer after the end of each month a detailed statement including measurements showing the estimated contract value of the Permanent Works executed up to the end of the month together with particulars of other amounts to which he is entitled under the Contract.

b) The statement shall be submitted on a printed proforma (Prepared at the cost of the Contractor) approved by the Engineer along with soft copy of the same in a CD/Pen drive.

c) The Contractor shall be paid monthly, on the certification of the Engineer, the amount due to him which shall be the sum of the following amounts :

   i) Subject to and in accordance with Specific Conditions, the estimated value of the Permanent Works executed upto the end of the previous month less retention money named in the Bid, and

   ii) 75% of the value of materials expected to be consumed within 3 months of its delivery at Site for Permanent Works on the Site provided the Engineer is satisfied that the amounts for such materials are reasonable bearing in mind the requirements of Works.

d) Payment against each monthly R/A bills upon each of the Engineer's certificates shall be made by the HSCC (I) Ltd. acting for and on behalf of Employer or by the Employer directly within 30 working days after such certificate has been issued by the Engineer.

   However, 75% of the estimated amount as determined by the Engineer of the payment due against the monthly running bill shall be paid within 10 (Ten) working days after certification by the Engineer in the approved format and complete in all respects.

e) Retention Money

   Within 30 days of award of work, The contractor shall furnish a bank Guarantee from any nationalised/Scheduled bank for an amount of 2.5% (Two & half) of the contract price in the form approved by the Engineer and having validity upto completion period with a claim period of three months as per format attached at

Annexure-F and shall be released after taking over of the work by the Employer.

Further retention money @ 5% (Five) shall be Deducted from each interim certificate from First RA bill subject to a maximum of 2.5 % (Two & half) of the contract price and shall be released after successful completion of defect liability period.

Alternatively/or

Retention money at the rate of 10% (ten percent) shall be deducted from each interim certificate subject to the maximum of 5%(Five percent) of the contract price after approval by engineer. (50% of retention money shall be released after taking over of work by the Employer and balance 50% shall be released after successful completion of defect liability period.

f) The Engineer 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.

g) The responsibility for making the payments or meeting other obligations to the Contractor in respect of all Works as certified by the Engineer shall be that of the Employer and not of the Engineer.

h) 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.

i) 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.

j) Monthly bill not submitted in approved formats will not be accepted.

32. Payments to Specialized agencies in Composite Contracts

In case of composite tenders, running payment for all the works shall be made by Engineer to the contractor.

In case contractor fails to make the payment to the specialized agency(s) associated by him within 15 days of receipt of each running account payment, then on the written complaint of the specialized agency associated for such specialized work, Engineer shall serve the show cause to the contractor and if reply of contractor either not received or found unsatisfactory, Engineer may make the payment directly to the specialized agency(s) associated for specialized work as per the terms and conditions of the agreement drawn between contractor and specialized agency(s) approved by Engineer. Such payment made to the specialized agency(s) shall be recovered by Engineer from the next R/A/ final bill due to contractor as the case may be.

33. 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/Consultant/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/Consultant 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/Consultant 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/Consultant, or may be deducted by the Engineer-in-charge/Consultant from any monies due or which may become due to Contractor.

34. Boreholes & Exploratory Excavation

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

35. 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.

36. 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 Consultant, 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.

37. Operations and Maintenance Manual

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

SECTION A: Index

SECTION B: Full set of Indexed Photographs showing all salient features of the Project.

SECTION C: Description and details of materials, items and fittings and fixtures used for the project along with Catalogues & Addresses of the Suppliers.

SECTION D: Planned maintenance instruction and dates for order replacements.

SECTION E: List of recommended Spare parts of consumables.

SECTION F: List of “As-Built” Drawings (related to Working/Shop drawings)

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

38. 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 Consultant and his signature obtained.

(b) The Contractor shall file daily category-wise labour report to the Engineer-in-charge/Consultant. 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 Consultant & shall be reviewed in Weekly Co-ordination Meetings.

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

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

39. 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.

40. Miscellaneous

(a) 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 200 Nos. or more per month or fortnight as directed by the Consultant during the constructions stages and after completion and shall supply one set to the Client and one set to the Consultant 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/Consultant.

(b) Safety Regulations

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

(c) Labour Laws

The Contractor shall strictly adhere to all labour laws prevailing in the region. The contractor shall make timely payment of wages of his labour and the wages paid to the labour shall be equal to or more than the minimum wage prevailing at the time of payment. The Contractor shall comply with all applicable labour legislation.

(d) By-Laws of Statutory Authorities

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

(e) 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.

(f) General Lighting and Securities

The Contractor shall, throughout the execution, completion and remedying of the defects, provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when and where necessary or recommended by the Engineer-in-charge/Consultant or by any duly constituted authority for the protection, of the works or for the safety and convenience of the public or others.

(g) 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.

(h) 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.

(i) Deleted

(j) 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/Consultant 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.

(k) Site instruction book

For the purpose of quick communication between Engineer-in-charge/Consultant 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 Consultant 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/Consultant and Client as and when demanded. Any instruction which Engineer-in-charge/Consultant may like to issue to the Contractor may be recorded by the Engineer-in-charge/Consultant in site instruction book and two copies thereof taken by the Consultant for his record.

(l) Signage

With prior approval of the Consultant, 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 Consultant. The signboard will be illuminated during night.

(m) Cutting of Trees

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

(p) Miscellaneous:-

(i) The contractor shall provide complete security arrangement for the campus during construction to avoid trespassing.

(ii) All concrete work will be strictly done by automatic computerized batching plant installed at site. No concrete work will be permitted without automatic batching plant. Moderns concrete pump and vibration machines, constructions lift are also required to be provided at site as and when required.

(iii) 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/Consultant. Only steel props will be used at site and no wooden balli etc will be permitted.

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

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

(vi) Any dispute arising due to typing mistakes/ omissions in the document the decision of the Client will be final

(vii) Deleted

(viii) 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 latest relevant BIS codes in force or CPWD Specifications. The quantity of steel reinforcement and the structural steel sections incorporated in the work shall be measured & paid on the basis of standard coefficients of sections as per BIS Codes of practice.

(ix) 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.

(x) 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/Consultant.

(xi) Steel confirming 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/Consultant. 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 Consultant, before incorporating the materials in the work.

(xii) Pre-construction treatment shall be carried out in co-ordination with the building work and shall be executed in such a manner that the civil works are not hampered or delayed by the anti-termite treatment. The treatment shall be carried out as detailed in BIS: 6313 (Part-II) latest revision. The waterproof treatment shall be of type and specifications as given in the schedule of quantities. The treatment against water-proofing of basement, roofs, water retaining areas and termite infestation shall be and remain fully effective for a period of not less than 10(Ten) years to be reckoned from the date of expiring of the Defect Liability period, prescribed in the contract. At any time during the said guarantee period if the client or his representative finds any defects in the said treatment or any evidence of re-infestation, dampness, leakage in any part of buildings or structure and notifies the contractor of the same, the contractor shall be liable to rectify the defect or give re-treatment and shall commence the work or such rectification or re-treatment within seven days from the date of issue of such letter to him. If the contractor fails to commence such work within the stipulated period, the Client or his representative may get the same done by another agency at the Contractor's cost and risk and the decision of the Engineer-in-charge/Consultant for the cost payable by the contractor shall be final and binding upon him. Re-treatment if required shall be attended to and carried out by the Contractor within seven days of the notice from the client or his representative. Water proofing and anti-termite treatment shall be got done through approved / specialized agencies only with prior approval of the client or his representative. During the execution of work, if any damage shall occur to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of the client or his representative by the contractor at his costs and risks.

(xiii) Water proof plywood only or steel plates of minimum thickness as approved by Consultant 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 Consultant's Engineers at site. The number of repetitions allowed for plywood and steel shuttering shall be at the discretion of Engineer-in-charge/Consultant depending upon the condition of shuttering surface after each use and the decision of Engineer-in-charge/Consultant in this regard shall be final and binding on the contractor. No claim whatsoever on this account shall be admissible.

(xiv) 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 Consultant, showing columns like quantity received and used in work and balance in hand etc. The contractor's representative shall sign this register daily.

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

(xvi) In case cement or steel quantity consumed is lesser as compared to the theoretical requirement of the same as per CPWD (as the case may be) specifications/ norms, the work will be devalued and/ or a penal rate (i.e. double the rate at which cement/ steel purchased last) recovery for lesser consumption of cement/ steel shall be made in the item rates of the work done subject to the condition that the tests results fall within the acceptable criteria as per CPWD (as the case may be) specifications otherwise the work shall have to be dismantled and redone by the contractor at no extra cost. In case of cement, if actual consumption is less than 98% of the theoretical consumption, a recovery shall be affected from the contractor's dues at the penal rate for the actual quantity which is lower than 98% of theoretical consumption.

(xvii) 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. Consultant 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 Consultant 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 Consultant. 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 Consultant 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/Consultant shall entertain no claim on this account.

41.0 Co-ordination Meeting

The Contractor shall be required to attend co-ordination meetings with the Engineer, the Consultant 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.

42.1 Site Development

a) Proper pumping arrangement should be maintained at site for removing water from the basement at no extra cost.

c) Proper arrangement of security, safety, transportation, manpower, lighting arrangement to be maintained during execution of works at night.

d) For rapid execution of work, contractor has to arrange their own tower crane, batching plant and others machinery, tools and tackles needed for the work as given in the submitted PQ document.

e) As directed by Engineer Proper barricading to be made so that surrounding area free from disturbances. The specifications of barricading to be got approved by Engineer. External face of barricading to be nicely painted and written the name of Employer, consultant & project only. NO sign board of contractor is allowed unless permitted by engineer in writing.

f) For diversion of under ground services proper arrangement to be made by the contractor with the approval of Engineer.

b) Statutory Requirements

Contractor is responsible for obtaining approval from local electrical inspector & water & Sewer line connection, tree cuttings, permission for borewell and others local Statutory requirements if any from local Authorities and any structure made / to be made of work, which is not in the approved plan, by the local authority. All the statutory expenditure incurred towards payment to the local body for getting local Electric inspector, sewer line and water supply connection for Employer will be reimbursed on the production of proof of payment. The contractor will be promptly extended all assistance in this connection.

42.2.1 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.

42.2.2 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.

42.2.3 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.

42.2.4 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.

42.2.5 Site office

A reasonably furnished site office accommodation (About 50-60 sqm construction area may be required for site office) having a sample room, A.C. meeting room, A.C. staff rooms along with toilets & pantry with file storage facility along with computers & printers (latest Version) and its consumables, a telephone with STD, facility, Fax Machine, internet & one Vehicles (equivalent to Indica) not more than three (03) year old including Driver, fuel and its consumable to be made available at site and further additional vehicle as per requirements given by the Engineer. Electricity & drinking water 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 Consultant.

42.2.6 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.

42.2.7 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.

43.0 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 **Consultant /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 respective local bodies as under:

i) Pollution control Board, ii) Environment clearances, iii) NOC form fire department, iv) Lift licence, v) Chief Electrical Inspector CEA, vi) Municipal authority/Local Municipal Corporation vii) Airport Authority, viii) Tree cutting, ix) Explosive department, x) Jal Board/Municipal authority for water and sewer connection, xi) And any other statutory requirement to occupy the building and run the services in all respect. Contractor shall organise all inspections of concerned authorities & obtain the NOC's within the time for completion.

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

44.0 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, 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.

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 Scope of Contract

2.1 The scope of work covers the supply, erection, testing and commissioning of the Civil, Plumbing, Fire Fighting & Electrical Systems, Air- conditioning & Landscaping works which also includes design & preparation of structural and all other detailed shop drawings, testing and commissioning of components and accessories.

* Civil works, plumbing & Fire Fighting works, Fire Alarm System.
* Electrical works.

2.2 The work shall be carried out in conformity with the plumbing drawings and the requirement of architectural, electrical, structural, and other specialised service drawings by the agency approved by Engineer.

2.3 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 & fire fighting & 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 Shop Drawings

4.1 With in two weeks after Award of the Contract, the Contractor shall furnish for approval of the Engineer, three sets of detailed sanitary, plumbing, fire fighting (external & internal), Pump room & Shop drawings of all equipment and materials required to complete the work as per specifications. These drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics, and capacity of all items of equipment, as also the details of all related items of work of other trades. All shop drawings to be made in accordance with latest fire safety norms & to be got approved by the authorities before it is finally approved by Engineer before start of work.

4.2 All drawings necessary for assembly, erection, maintenance, repair and operation of the equipment shall be furnished and different parts shall be suitably numbered for identification and ordering of spare parts.

4.3 When the Engineer makes any amendments in the above drawings, the Contractor shall supply fresh sets of drawings with the amendments duly incorporated, along with the drawings on which corrections were indicated.

4.4 No material or equipment may be delivered or installed at the job Site until the Contractor has in his possession, the approved Shop drawings for that particular material or equipment.

4.5 After approval of the drawings by the Engineer, the Contractor shall further furnish six sets of Shop drawings for the exclusive use of and retention by the Engineer.

4.6 Approval of drawings by the Engineer shall not relieve the Contractor of any part of his obligation to meet all the requirements of the Contract or of the correctness of his drawings. The Engineer's approval of specific item shall not mean the approval of the assembly of which it is a component. The Contractor shall be responsible for and is to bear the cost for all alternations of the works due to discrepancies or omission in the drawings or other particulars supplied by him, whether such drawings have been approved by the Engineer or not.

4.7. Where the work of the Contractor has to be installed in close proximity to, or will interfere with the work of other trades, the Contractor shall assist in working out the space conditions to make a satisfactory adjustment. If so directed by the Engineer**,** the Contractor shall prepare composite working drawings and sections to a suitable scale not less than 1:50, clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordinating with other trades, or so as to cause any interference with the work of other trades, he shall make all the necessary changes without extra cost.

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

5.0 Samples and Catalogues

5.1 Prior to ordering any equipment/ material/ system, the Contractor shall submit to the Engineer, the catalogues, along with samples from approved list of manufacturers. No material shall be procured prior to the approval by the Engineer.

5.2 **Approval of Materials**

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 but final choice of make / manufacturer of material & models shall be with the Engineer**.**

6.0 Material and Equipment

6.1 All material and equipment shall conform to the relevant Indian Standards.

6.2 Where interfacing occurs, equipment shall be mutually compatible in all respects.

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

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

7.0 Conformity with Statutory Acts, Rules and Standards

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

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

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

7.4 Nothing in these Specification shall be constructed to relieve the contract of his responsibility for the design. Manufacture and installation of equipment with all its accessories in accordance with applicable statutory regulations and safety codes in force.

8.0 Technical Data

8.1 Deleted

9.0 Manufacturer's Instructions

9.1 Where manufacturers have furnished specific instructions relating to the materials and equipment used, covering points not specifically mentioned in these documents, manufacture's instructions shall be followed.

10.0 Training and Operating Instructions

10.1 If required by the Engineer, the Contractor shall at no extra cost train members of the maintenance staff either at his or the subcontractor's workshop or at such other place or places as may be considered suitable by the Engineer.

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

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

11.0 Inspection and Testing

11.1 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.

11.2 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.

11.3 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.

11.4 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.

11.5 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.

11.6 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.

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

12.0 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.

13.0 Performance Guarantee

13.1 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.

14.0 Quiet Operation and Vibration

14.1 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.

15.0 Accessibility

15.1 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.

16.0 Electrical Installation

16.1 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.

16.2 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.

17.0 Completion Certificate

17.1 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.

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

18.0 Completion Drawings

18.1 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.

19.0 Rates

19.1 Quoted rate includes any materials, equipment, appliances and incidental work not specifically as being furnishing or installed, but which are necessary and customary to make a complete installation.

19.2 The Contractor shall check at all stages and supervise at the point of connection the associated civil, electrical and plumbing works like underground and overhead tanks, power supply and installation of makeup water connection, drain connection in the fire fighting tanks and vicinity of plant room etc. In case of any discrepancy, all rectifications etc, required as a failure to do so, shall be carried out by the Contractor at his own expenses.

20.0 Check List

20.1 The Contractor shall provide to the Engineer 4(four) copies of a comprehensive maintenance checklist and shall post a copy of it in the Plant Room. The checklist shall be a list of each piece of equipment in this Contract, and shall provide a space for each of the next fifty-two weeks to record the maintenance provided to and status of various equipment. Each month at the time of inspection, the Contractor shall certify on this check list that he has examined each piece of equipment and that, in his opinion, it is operating as intended by the manufacturer, and that all necessary intention has been performed.

21.0 Repairs

All equipment that requires repairing shall be immediately serviced and repaired. During the maintenance period, all parts and labours shall be furnished at no extra cost to the Engineer.

22.0 Control System

During the maintenance period, once each month the Contractor shall check all controls in various areas to ensure that these are functioning as designed. This shall apply to all pressure switches and pressure gauges, contactors, relays, controller switches, high and low pressure cut-outs etc.

23.0 Reference Points

23.1 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.

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

24.0 License and Permits

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

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

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

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

24.5 Before start of HVAC, Electrical, ATT, Water proofing, Fire Fighting, Fire alarm system, PA System, EPABX System, Horticulture Works etc.,The contractor must take approval of agencies from engineer.

24.6 Any fees deposited in connection with the work on behalf of the Client in Statutory bodies, Corporations, Government departments, etc. shall be paid by the Contractor and the same shall be reimbursed on production of original vouchers. Necessary endorsement / application if required shall be arranged from the Employer by the Engineer.

25.0 Cutting and Making Good

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

26.0. Operation and Running of entire system

The contractor shall pay for and arrange for operation & running of entire sanitary, plumbing and fire fighting system including pumps and RO plant, solar water heating system etc. for a minimum period of one month after satisfactory completion of work as desired by Engineer. Cost of operation & running of entire system including required material e.g fuel, consumables, tools & tackles, requisite manpower etc. shall be deemed to be included in the contract price and nothing extra shall be paid.

27.0 Contractor with joint signature of specialized agency for water proofing has to submit 10 years guarantee bond for performance of water proofing work carried out by them as per CPWD norms.

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

Consultant's approval. Contractor has to make necessary changes if any as per comments given by **Consultant** 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 Consultant proposed conduit layout plan and shall get the same approved from Consultant.

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 Consultant'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 **Consultant's approval**.

18.0 Inspection, Testing and Inspection Certificate

18.1 Consultant and authorised representative of Consultant 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 Not withstanding 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) l 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

m. Layout and details of fire detection & alarm system consisting of manual call points, fire alarm hooters, smoke & heat detector, FDA control panel including details of conduits and number of wires drawn

n. Layout and details of lightning protection system

o. Insulation tests and earth test results

p. PA System drawings

q. Fire System drawings

r. Disc Antenna drawings

s. Equipment drawings

t. Cable route layout of HT, LT & other cables

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

The Contractor shall arrange to train the **Employer's** personnel prior to provisional take over of the project for the following:

a) Lift

b) Telephone Exchange

c) All other Equipments like DG sets, pumps, panels etc.

d) Adjustment of setting for controls and protective devices

e) Preventive maintenance

f) Operation of all electrical panels including their interconnectivity and interlocking scheme

g) Fire detection system

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.

27.0 Check List

27.1 The Contractor shall provide to the Engineer 4(four) copies of a comprehensive maintenance checklist and shall paste a copy of it in the Substations & Plant Room. The checklist shall be a list of each piece of equipment in this Contract, and shall provide a space for each of the next fifty-two weeks to record the maintenance provided to and status of various equipment. Each month, at the time of inspection, the Contractor shall certify on this check list that he has examined each piece of equipment and that, in his opinion, it is operating as intended by the manufacturer, and that all necessary tests have been performed.

28.0 Repairs

28.1 All equipment that requires repairing shall be immediately serviced and repaired during the maintenance period. All parts and labours shall be furnished at no extra cost to the Engineer.

29.0 Safe Custody and Storage

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

30. 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.

31. Operation and Running of entire system

The contractor shall pay for and arrange for operation & running of entire electrical system including DG sets, lifts and other equipment for a minimum period of one month after satisfactory completion of work as desired by Engineer. Cost of operation & running of entire system including required material e.g fuel, consumables, tools & tackles, requisite manpower etc. shall be deemed to be included in the contract price and nothing extra shall be paid.

32. Layout of all services, operating and maintenance instructions. DO's and Don't's etc

for all the plant rooms, AHU's machine rooms, sub stations, pump room, toilets, control panels etc must be equipped with coloured layout of services for the each floor . Operation and maintenance manual of the respective services, Do's and Don't's for all the plants, machinery & services to be installed with every individual units.

(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 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, which ever 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 fro 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 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.

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.

25. Operation and Running of entire system

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

END OF VOLUME - III