
SPECIAL CONDITIONS OF CONTRACT

INTRODUCTION

The following clauses of Special Conditions of Contract (SCC) shall be applicable for this contract:

These Special Conditions of Contract shall be read in conjunction with General Conditions of Contract, Technical qualification, Instructions to Tenderers (ITT), Notice Inviting Tenders (NIT), Bill of Quantities (BOQ), Tender Drawings and Pre Specifications & Other Tender Documents.

SET OF CONTRACT DOCUMENTS

The following documents will complete a set of tender documents:

- i) Letter of Award, along with statement of agreed variations and its enclosures, if any.
- ii) Description of Bill of Quantity / Schedule of Quantities.
- iii) Special Condition of Contract (SCC).
- iv) Technical specifications (General, Additional and Technical Specification) as given in Tender documents.
- v) General Conditions of Contract (GCC).
- vi) Drawings.
- vii) MITS/ specifications (as specified in Technical Specification of the Tender) update with correction slips issued up to last date of receipt of tenders.
- viii) Relevant B.I.S. Codes

1. Contractor to arrange for emergency vehicle/staff vehicle .
2. The contractor shall make his own arrangement for obtaining electric connection required for execution of work and make necessary payments directly to the concerned departments and nothing extra shall be payable on this account.
The contractor shall make his own arrangement for water suitable for construction work as well as drinking and other purpose for the labour engaged by him for the execution of the work.
3. The water for construction work shall be got tested quarterly from the laboratory approved by the Engineer-in-charge to ensure its suitability for construction. The charges for these tests and related arrangements shall be borne by the Contractor. In the event of water found unsuitable for construction, the contractor shall make alternative arrangement for suitable water from any other source to the satisfaction of the Engineer-in-charge.

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4. The contractor shall provide, at his own cost instruments for surveying, weighing and measuring purpose at the site of work as may be necessary for execution of the work.
 5. The contractor shall take care of all safety Precautions pertaining to construction of work, such as excavation, trenching, demolition, provision of scaffolding, ladder, working platforms, gangways, mixing asphaltic materials, electric arc/ gas welding, use of hoist and construction machinery. He shall be governed by relevant provisions of safety code and as directed by the Engineer-in-charge and nothing extra shall be payable on this account.
 6. On account of security consideration, some restrictions may be imposed by the security staff on the working and/ movement of men and materials etc. The contractor shall be bound to follow all such restrictions/ instructions and he shall organize his work accordingly. No claim on this account, whatsoever, shall be payable.
 7. The contractor shall take all Precautions to avoid accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused to existing/ new work due to negligence on his part. No hindrance shall be caused to traffic during the execution of the work.
 8. The contractor shall be responsible for the watch and ward of the building safety of all fittings and fixtures including sanitary and water supply fittings and fixtures against pilferage and breakage during the period of installation and thereafter till the building is physically handed over to the department.
 9. The contractor shall take all Preventive measures against any damage caused by rain, snowfall, floods or any other natural calamity, whatsoever during the execution of the work. The contractor shall be fully responsible for any damage to the Owners property and to the work for which the payment has been advanced to him under the contract. However, the contractor shall maintain an `Contractor All risk policy' from any unit of General Insurance Co., for the amount equal to contract value and have to revise accordingly if additional cost is approved, at his own cost. This will also cover the defect liability period. This shall be favoring the MPWD/CLIENT. Nothing extra on this account shall be payable to the contractor for maintaining such Insurance Policy.
 10. The work will be carried out in the manner complying, in all respects, with the requirements of relevant bye-laws of the local body under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-Charge and nothing extra shall be paid on this account.
 11. The work of water supply, internal sanitary installations and drainage work etc. shall be carried out as per local Municipal Corporation or such local body bye-laws and the contractor shall produce necessary completion certificates, wherever required, from such authorities after completion of work.
 12. Water tanks, taps, pipes, fittings and accessories shall conform to bye-laws and specifications of the Municipal body/ corporation. The contractor should engage licensed plumbers for the work and get the materials, (fixtures and fittings) tested by the
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- Municipal Authorities, wherever required, at his own cost and nothing extra shall be payable.
13. The contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rules and regulations and pay all fees and charges which may be liable. And cost of same will reimbursed after production of receipt.
 14. All the pre-construction approvals are to be obtained by the Architects. If any approvals are pending at the time of award of work Contractor will assist in getting clearance done from appropriate authorities. All approvals during construction stage and commissioning phase are to be obtained by the contractor. The fee for such clearances shall be borne by the Employer.
 15. The contractor shall give due notices to Municipal, Police and/ or other authorities that may be required under the law/ rules under force in the area and obtain all requisite licenses for temporary obstructions / enclosures and pay all charges which may be leviable on account of his execution of work under the agreement. And cost of same will reimbursed after production of receipt.
 16. All materials to be incorporated in the work shall be arranged by the contractor and shall be in accordance with the specifications laid down.
 17. The tenderer shall use materials bearing ISI Certification Mark/provided in LOM unless otherwise specified or allowed in writing by the Engineer-in-Charge. Any material banned by the department shall not be used in the work.
 18. The contractor shall submit to the Engineer-in-charge samples of all materials for approval. Such samples of materials which affect aesthetics of the work shall also be got approved from the Engineer-in-charge/ Architect of the project before procuring bulk supplies. These approved samples shall be Preserved and retained in the custody of the Engineer-in-charge as standards of materials till the completion of the work. The cost of such samples shall be borne by the Contractor and nothing shall be payable on this account over the Agreement rates.
 19. The contractor shall be required to get all the necessary mandatory and other tests as per the specifications/ IS codes, carried out on materials/ work from an approved laboratory as per the direction of the Engineer-in-charge. The testing charges and conveyance from the site shall be borne by the contractor.
 20. In case any material / work is found sub-standard the same shall be rejected by the Engineer-in-charge/ Architect and the same shall be removed from the site of work within 48 hours, failing which the same shall be got removed by the Engineer-in-charge at the risk and cost of the contractor without giving any further notice and time.
 21. In order to ensure quality of work during its execution, the Engineer-in-charge/ Architect may require samples for mandatory or routine testing of materials. All costs of these
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- samples, their packaging, conveyance from the site to the testing laboratory and return, shall be borne by the contractor.
22. Even ISI marked materials may be subjected to quality test at the discretion of the Engineer-in-charge. Whenever ISI marked materials are brought to the site of work the contractor shall, if required by the Engineer-in-charge, furnish manufacturer's test certificate or test certificate from approved testing laboratory to establish that the materials procured by the contractor, satisfy the provisions of relevant ISI codes. The testing charges shall be borne by the contractor. However cement/ steel will be necessarily tested before start of work and also during the execution of work as per the requirements of specifications, and will not be used till test certificates are obtained and approved by Engineer-in-Charge.
 23. Cement bags shall be stored in separate godowns to be constructed by contractor at his own cost as per sketch approved by Engineer-in-charge with weatherproof roofs and walls. Each godown shall be provided with a single door with double lock arrangement. The keys of one lock shall always remain with authorized representative of Engineer-in-charge of work and that of the other lock with the authorised agent of the contractor at site of work so that the cement from the godown is removed according to daily requirement with the knowledge of both the parties and proper account of issue of cement is maintained in the Prescribed proforma.
 24. The cement godown of the capacity to store a minimum of 15000 bags of cement shall be constructed by the contractor at site of work for which no extra payment shall be made. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-charge at any time.
 25. The actual issue and consumption of cement on work shall be regulated and proper accounts maintained. The theoretical consumption of cement shall be worked out as per procedure.
 26. The steel reinforcement shall be stored by the contractor at site of work in such a way as to Prevent distortion and corrosion and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking at any time as and when desired by the Engineer-in-charge.
 27. The actual issue and consumption of steel on work site shall be calculated and proper accounts maintained. The theoretical consumption of steel shall be worked out as per procedure.
 28. The work shall be executed and measured in metric system. The metric dimensions given in the schedule of quantities and drawing etc. shall be followed. (The dimension in FPS units wherever indicated, is for guidance only). The figures in the drawings shall be followed.
 29. For measurement purpose the floor level shall mean the top surface of main structural RCC slabs of that floor and not the top of sunken floor of toilets or any other depressed floor.
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30. In respect of projected balconies or slabs at any level, RCC work and related centering shuttering shall be measured under the normal RCC/ Shuttering work at that level.
 31. The contractor shall be responsible for completing the work and for satisfying all terms and conditions of the Contract without any extra payment over his quoted rates unless otherwise specified. The contractor shall quote his rates for various items of work accordingly and no claim whatsoever shall be entertained for any incidental or extra work involved in the execution of the work as per nomenclature of the item and the specifications indicated in the tender documents.
 32. Subject to the nomenclature of the item as per schedule of quantities, the specification indicated in the tender documents, the rates shall include cost of all materials including royalty and taxes if any, labour, sundry inputs, execution of work at all heights, levels, pattern and design for all leads, lifts and depths including overhead charges and contractor's profit. Nothing extra shall be paid on this account..The cost of unloading cement and steel from the trucks & its carriage to store/site of work shall be borne by the contractor. In case cement is supplied by MPWD/CLIENT and in bags the empty bags shall be the property of the contractor for which nothing shall be charged from the contractor.
 33. The rate shall be inclusive of making design, pattern and execution of work as per Architectural and structural drawings, at all levels and heights.
 34. The rates shall be inclusive of making any holes in walls/ RCC work for fixing any fixture/ frame work and making good the structure to its original shape and finish.
 35. The rate of items of flooring shall be inclusive of work for sunken or depressed floors.
 36. The rate shall be inclusive of working under water and adverse or foul conditions and including pumping out or bailing out water, unless otherwise specified in the nomenclature. This will include water encountered from any source such as rains, floods and any other cause whatsoever and including sub-soil water.
 37. Other agencies doing works related with this project will also simultaneously execute the works and the contractor shall afford necessary co-ordination for un-hindered completion of these sub-works
 38. The contractor shall leave necessary holes, openings or core cutting as required etc as may be directed by the Engineer-in-charge for laying, burying or fixing, conduits, pipes, boxes, hooks, fans, plumbing pipes, fire fighting pipes etc.without any extra cost implication.
 39. Conduits for electrical wiring/ cables will be laid in a way that they leave enough space for concreting and do not adversely affect structural members.
 40. The contractor shall give a satisfactory performance test of installations individually and as a whole to ensure their proper functioning before the work is finally declared completed and accepted.
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41. The contractor shall continue to maintain watch and ward to safeguard the Owner's property in his possession until the same is formally handed over as per directions of the Engineer-in-charge. Nothing extra over agreement rates shall be paid on this account.
 42. All tools, plants and measuring or weighing equipment shall be arranged by the contractor himself and nothing extra shall be paid to the contractor on this account.
 43. The quantities of various items incorporated in the tender are approximate. However, the payments shall be made to the contractors on the basis of actual measurements taken at site.
 44. The contractor shall protect the adjoining buildings or works and the work under execution from fire and shall make adequate arrangements for fire protection and fire fighting and if any property is damaged, by fire due to the negligence of the contractor, the same shall be made good by the contractor at his own cost, to the entire satisfaction of Engineer-in-charge.
 45. The contractor shall provide adequate lighting arrangements as approved by the Engineer-in-charge for carrying out the work during night time, if so required and also provide all other facilities for the labour employed to carry out the work as per direction of Engineer-in-Charge.
 46. In order to achieve the targeted date of completion the contractor may have to work in multiple shifts, round the clock and nothing extra shall be paid on this account.
 47. The contractor shall get the samples of all the materials to be used, in the work approved from Engineer-in-Charge / Architect before going for bulk procurement. Bulk procurement shall be taken up only after obtaining approval from the Architect/ Engineer-in-charge. Any delay in getting the samples approved shall be contractor's responsibility.
 48. All materials, articles and workmanship shall be of respective best quality and kind for the class described in the schedule of quantities and specifications. All materials, so used in different items of work shall be subject to the approval of the Engineer-in-charge / Architect.
 49. The contractor shall be responsible for all statutory provisions and deductions towards ESI, PF or any other, as the case may be or any other levies and taxes shall be borne by the contractor. The TDS and Contract Tax or any other statutory levies/ taxes incorporated from time to time shall be deducted progressively from the running account bills, as applicable at the time of payment. No claim in this regard shall be entertained.
 50. The contractor is supposed to abide the minimum wages act, and shall produce all records to the Engineer-in-charge or any other statutory authority as and when called for. The Engineer-in-Charge does not hold any responsibility, on account of any lapses in this regard.
 51. For any clarification/ doubt, the MPWD/CLIENT may organize regular meetings with Contractor & Architect. The contractor shall attend such meetings invariably as and when required.
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52. In respect of the work of other agencies, where the commencement or progress of such work of any other agency is dependent upon the completion of particular portions of the contractor's work or generally upon the contractor maintaining progress in accordance with the approved coordinated construction programme, it shall be the responsibility of the Contractor to complete such portions and maintain such progress.
 53. Should any difference arise between the contractor and the other agencies, these shall immediately be brought to the attention of the Engineer-in-Charge who after reviewing the matters causing the differences will give their decision which shall be final and binding on the contractor.
 54. The contractor shall have to do all drilling of holes and cutting of walls, chases or other elements of the building for the complete and proper installation of the pipe lines/ ducts and other equipments by using electrically operated tools such as drills/ chase cutting machine/core cutter etc. Manual drilling or chiseling or cutting shall be permitted on special request only.
 55. No chiseling or cutting or drilling of RCC columns, beams, girders and other principal structural members shall be done unless prior permission has been granted by the Engineer-in charge in writing.
 56. All chases and openings made by the contractor for his pipe lines shall be filled/ covered over with cement plaster/filling compound micro concrete etc. in reasonable manner. Before rough plastering on the pipe surfaces the concealed pipes shall be secured to the wall by using proper supports/ clamps.
 57. The contractor shall Prepare and produce instruction, operation and maintenance manuals in English for the use, operation and the maintenance of the supplied equipment and installations, and submit to the Engineer-in-Charge in (5) copies at the time of handing over. The manual shall generally consist of the following:
 - a) Description of the project
 - b) Operating instructions
 - c) Maintenance instructions including procedures for Preventive maintenance
 - d) Manufacturers catalogues
 - e) Spare parts list
 - f) Trouble shooting charts
 - g) Drawings
 - h) Type and routine test certificates of major items.
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i) One (1) set of reproducible 'as built' drawings on polyester film.

58. The Contractor shall employ competent fully licensed/ qualified, plumber for the work of PLUMBING/ SANITARY installations in accordance with the drawings and specifications. The licensed plumber shall be available at all times at site to receive instructions from the Engineer-in-Charge in the day to day activities throughout the duration of execution of plumbing/ sanitary work.

59. The contractor shall be provided adequate area for construction of storage/ office space for his use. The space has to be maintained/ constructed by the contractor as per his usage requirements.

All spaces allotted to the contractor, as described above shall be vacated and all structures removed from site at any time as and when required and directed by the Engineer-in-charge, unconditionally and without any reservation. The Engineer-in-charge will not be obliged to give any reason for such removal. Upon receiving instructions to vacate the space, the contractor shall immediately remove all his structures, materials, etc. from the sources and clear and clean-up the site to the satisfaction of the Engineer-in-charge.

It shall be the responsibility of the Contractor to safeguard the site and ensure that no illegal encroachments are made by outside elements within the area allotted to the contractor. Upon completion of the work or earlier as required by Engineer-in-Charge, the contractor shall vacate the land totally without any reservation.

60. The contractor will arrange to erect, at his own cost, barricading as per norms of MPWD/NGT/CLIENT around the infrastructure site, with entry/ exit gates at suitable points. The contractor shall, at his own cost, provide and erect suitable fencing around the spaces allotted to him at the infrastructure sites to ensure the security of his men, materials and equipment within the sites and in relation to other contractors who will also be allotted spaces at above sites.

The security of workmen, materials, equipment stores etc, within the area allotted to the contractor shall be the responsibility of the contractor.

61. The contractor has to get executed the works from specialized agencies for the specialized nature of works such as aluminum works, wood works, false ceiling works, flooring works, finishing items, Horticulture, electrical works, Fire fighting works , Interior work , Structural steel work and any other specified work as decided by Engineer In charge. The contractor has to obtain the approval from Engineer In charge for execution of specified nature of work.

62. The rate for Centering and shuttering shall be for all heights and levels. Nothing extra shall be paid for additional height of centering & shuttering wherever required with adequate

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- bracing, propping etc. including its de-shuttering and de-centering at all levels even if the floor height is over 4 Mtr.
63. Nothing extra shall be paid for the additional thickness of cement mortar bed wherever required over and above thickness mentioned in the nomenclature of various items of flooring for providing the slope and / or matching the floor levels of various type of floor finishes like ceramic/ vitrified tiles/ Kota /marble/Granite /Perquet /wooden and cement concrete flooring etc.
64. The face of gang saw cut (diamond cut) granite stone, white sand stone(Dholpur Stone) in contact with bed of cement mortar used for the items of wall lining etc. (veneering work) shall be roughened adequately to have proper bonding with backing and nothing extra shall be paid for the same.
65. The Contractor, at his own cost, shall obtain initial municipal approvals for starting the work in Shillong as per norms, NOC from CFO & completion certificate of the building from the local body for occupation of the building. The Architect and Owner will render all assistance. Similarly, the Contractor, at his own cost, shall be responsible for getting the water and sewer connection sanctioned from the concerned Local Authority. For obtaining the above completions/ clearances/ connections, the contractor shall collect necessary drawings/ documents/ load calculations from the architect/ owner and submit the same to the concerned authorities along with Prescribed receipted fee (which shall be paid by the Owner or reimbursed to contractor by the Owner) and do all running about/ persuasion for issue of the completion certificate / clearances/ connections at the earliest. The security deposit of the contractor shall be released only after the completions/ clearances/ connection as above are obtained or the period Prescribed for release of Security Deposit in the tender documents whichever is later.
66. The Contractor shall be responsible to co-ordinate with service provider/ concerned authorities for cutting of trees, shifting of utilities and removal of encroachments etc. and making the site unencumbered from the project construction area required for completion of work. This shall include initial and frequent follow up meetings/ actions/ discussions with each involved service provider/ concerned authorities. The contractor shall not be entitled for any additional compensation for delay in cutting of trees, shifting of utilities and removal of encroachments by the service provider/ concerned authorities.
67. The work in general shall be carried out as per the latest MPWD Schedule, MPWD specifications / CPWD specifications with up to date correction slips, unless otherwise specified in the nomenclature of the individual item or as per specifications provided with this tender. In case any item is not covered in any of these documents, the same shall be carried out as per the latest BIS Code in practice or as per approval of Engineer in Charge.
68. **SITE DOCUMENTS**
The following site documents shall mainly be maintained by the contractor at site:
- Copy of contract documents and drawings.
 - Computerized bill format.
 - Site Order Book.
 - Material testing registers/ Quality Inspection Reports.
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- Measurement books on computerized format.
- Progress bar chart.
- Sample approval register.
- Visitors register.
- Any other detail and specific requirement as deemed necessary.
- Hindrance Register
- Work Diary,
- Stage passing Register

In case the above are not provided at site within 10 days of placement of LOI, MPWD/CLIENT shall provide the same and necessary expenditure shall be deducted from the bills for documents.

69. **PLANTS & MACHINERY:** All plant and machinery required for execution of work shall have to be arranged by the contractor adequately at his own cost. However, the contractor shall have to provide the following machinery at site in coordination with EIC. Mutually that can be increased or decreased as per requirement and need of site.

Sl. No.	Description of items	Qty
1	Hyd. Mixer with Diesel Engine/Electrically Operated with Digital inbuilt weigh Batching	2 No
2	Batching plant electrically operated with automatic load cell weigh batching system (30 cum capacity per hour)	1 No
3	Mobile crane (wheel mounted) capacity 20 tonnes	1 No.
4	Tower Hoist with winch machine (750kg gross load and height Up to 110 ft)	2 No
5	Excavator cum loader (JCB 3D model or equivalent)	1 No
6	Compressor Machine with Jack Hammer	1 No.
7	DG Sets of adequate capacity	As per requirement
8	Any other Machinery as required for completion of the work	Actual
9	Mini batching plant (5 Cub.m./Hr.)	01 No.
10	Transit Mixer	03 No.
11	Concrete Pump (30 Cum/Hr. min capacity & lift 50M)	01 No.
12	Vibrators	10 No.
13	Dumper	4 No.
14	Reinforcement banding machine	3 No.
15	Reinforcement cutting machine	3 No.
16	Power driven earth rammer	2 No.
17	Total station	01 No.
18	Auto Level & staff	01 No.
19	Transit Concrete mixers	2 nos
20	Tractor with trolley	02 No.
21	Water Tanker	01 No

70. EQUIPMENTS FOR TESTING OF MATERIALS & CONCRETE AT SITE LABORATORY (however as per requirement it can be increased)

All necessary equipment for conducting all necessary tests shall be provided at the site laboratory by the contractor at his own cost. The following minimum laboratory equipments shall be set up at site office laboratory:

- (i) Cube testing machine----- 1 Nos.
- (ii) Slump Cone -----1 Nos.
- (iii) Tensile Briquette testing machine----- 1 Nos.
- (iv) Vicats apparatus with Desk Pot-----1 Nos.
- (v) Megger & earth resistance tester----- 1 Nos.
- (vi) Pumps and Pressure gauges for hydraulic testing of pipes----- 2 Nos.
- (vii) Weighing scale platform type 100 Kg capacity----- 2 Nos.
- (viii) Graduated glass cylinder----- As per requirement
- (ix) Sets of sieves for coarse aggregate [40; 20;10;4.75mm]----- 4Nos.
- (x) Sets of sieves for fine aggregate [4.75;2.36;1.18;600;300 & 150 micron-----4Nos.
- (xi) Core cutter for soil compaction with accessories-----2 Nos.
- (xii) Cube moulds size 70mm X70mmX 70mm ----- 18 Nos.
- (xiii) Cube moulds size150mmX150mmX150mm ----- 60 Nos.
- (xiv) Moisture Content Rapid moisture meter standard,----- 04 nos.
- (xv) Hot Air Oven Temp. Range 50°C to 300°C----- 02 Nos.
- (xvi) Electronic balance 600g x 0.01g. 10kg and 50kg----- 03 Nos.
- (xvii) Physical balance weight upto 5 kg -----01 No.
- (xviii) Digital Thermometer upto 150°C ----- 02 Nos.
- (xv) Poker Thermometer (Concrete Road) 0°C to 50°C &150°C-----:02 Nos. Each
- (xvi) Measuring Jars 100ml,200ml,500ml -----02Nos. set of each size
- (xvii) Gauging trowels 100mm & 200mm with wooden handle--- -----04 Nos.
- (xviii) Spatula 100mm & 200mm with long blade wooden handle--- -----02 Nos. each size
- (xix) Vernire callipers 12” and 6” sizes-----02 Nos. each
- (xx) Digital PH motor least count .01mm ----- 01 No.
- (xxi) Digital Micrometer least count .01mm----- 01 No.
- (xxii) Digital paint thickness meter for steel 500 micron range----- 02 Nos.
- (xxiii) GI tray 600 x450x50mm., 450x300x40mm, 300x250x40mm-----02 Nos. each
- (xxiv) Electric Morter mixer 0.25 CUM capacity----- 01 Nos.
- (xxv) Rebound hammer test Digital rebound hammer----- 01 Nos.
- (xxvi) Screw Gauge 0.1mm-10mm, least count 0.05-----02 No.
- (xxvii) Water testing Kit -----02 Nos.
- (xxviii)Aggregate impact value testing machine with blow counter-- ----- As per Requirement
- (xxix) Crushing value apparatus ----- As per Requirement
- (xxx) Thickness gauge for measuring flakiness index----- As per Requirement

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- (xxxix) Elongation gauge ----- As per Requirement
(xxxvii) Measuring Cylinder 3,5,10 & 15 Liter cylinder -----As per Requirement
(xxxviii)Pycnometer----- 02 Nos.
(xxxix)Motorized Sieve shaker ----- 02 Nos.
(xxxv) Any other equipment for site tests as outlined in BIS and as directed by the Engineer-in-charge.

Three qualified laboratory engineer shall be posted at site by the contractor for collecting samples and conducting regular testing at his own cost.

All relevant I S codes, CPWD manual, specifications, schedule of rates, etc in hard as well as soft copy shall be made available at site by the contractor at his own cost.

71. Design mix concrete shall only be used for all RCC works, Produced through Batching plant.

Design Mix: The Contractor shall conduct the design mix of requisite grade for reinforced cement concrete work in accordance with the relevant latest IS Code at his cost from any reputed engineering institution/ IIT through the Engineer-in-charge. The Contractor shall conduct and submit minimum 03 design mix test / reports from different sources of materials to the Engineer-in-charge for approval. Nothing extra shall be paid for the same. Design of concrete mix is to be repeated / redone afresh as and when directed by the Engineer-In-charge of MPWD/CLIENT / Local Bodies / State Government / Central Government. Cost of admixtures to be also inclusive.

72. Only PPC/OPC as specified by EIC shall be used and no blending of fly ash /secondary cementing material shall be permitted.
73. The acceptance letter as mentioned in Instructions to tenderers in general Conditions of Contract is to be given on the letter head of the company / organization and the same is to be signed by an authorized representative of the company / organization who is empowered to sign the documents.
74. The contractor shall ensure that before energizing the E&M installation the inspection of the Electrical Inspector / Inspector of Electrical Machinery have carried out Pre-commissioning test and shall be responsible for all safety / security aspects as per I E and other rules.
75. The Contractor shall be responsible for smoke test for sewage and manhole system, hydraulic Pressure test for pipe line system, slope test for drain and sewage and other relevant tests applicable at different stages.
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76. The Contractor shall submit the test report of water to be used from a reputed Lab for his quality/suitability for construction and curing before use in the work and this test is to be conducted at least quarterly or as an when directed by Engineer-Incharge.
77. Manufacturer's Warranties: The Contractor shall:
- a) Ensure that all the manufacturer's warranties are made available to the Employer/MPWD/CLIENT / Local Bodies/Owner and the legal documentation between the Contractor and the Supplier must have a transparent pass through of the warranty benefits to the Local Bodies/ Owner/ MPWD/CLIENT as the user/maintenance Body of the Asset for the entire duration of each available warranty.
 - b) warranty that the material is new and free from all defects and faults in workmanship and manufacture and shall be of the highest grade and consistent with the established and generally accepted standards for materials of the type ordered and shall perform in full conformity with the specifications and drawings.
 - c) The contractor shall be responsible for any defects that may develop under proper use but arising from faulty materials, design or workmanship and shall remedy such defects at its own cost, or get them remedied from the supplier, when called upon to do so by the Local Bodies/MPWD/CLIENT/Owner, who shall state in writing in what respect the material is faulty. **This warranty shall** survive inspection and acceptance of material but shall expire **12 months** after the issue of Performance Certificate, except in respect of complaints notified prior to such date.
 - d) If it becomes necessary for the Contractor, or on its behalf by the supplier, to replace or renew any defective portion/portions of the material/equipment supplied in the work, the provisions above would also apply to the portion/portions of materials so replaced or renewed until the end of the aforesaid period of 12 months, whichever may be later. If any defect is not remedied within a reasonable time, the Employer/MPWD/CLIENT/ the Local Bodies/Owner may proceed to do the work at the Contractor's risk and cost but without Prejudice to any other rights which the Employer may have against the Contractor in respect of such defects. However, for such components, which require immediate replacement, MPWD/CLIENT/the Local Bodies/State Government/Central Government or the Employer shall take action and the Contractor shall be required to reimburse the cost.
78. **Witnessing of Tests by the Engineer-in-Charge:** The Contractor shall make under the direction and in the Presence of Engineer-in-charge, such tests and inspections as have been specified or as the engineer-in-charge shall consider necessary to determine whether or not the full intent of requirements of the specifications and the other related contract documents have been fulfilled. In case the work does not meet the full intent of the specifications and the other related contract documents it shall be rectified by the Contractor at no extra cost and the Contractor shall bear all the expenses for any further tests considered necessary.
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79. **Inspection of materials & Equipments:-** The Contractor before supplying of any materials/ equipment shall give a inspection notice well in advance for inspection & testing of the same at the manufacturing units/ shop. The expenditure on account of TA/ DA of inspecting officials of MPWD/CLIENT & Representatives of Ministry & Consultants for the inspection of the said items shall be borne by the contractor. However, inspection report issued by the inspecting officials MPWD/CLIENT does not waiver of quality /performance of equipment & due quality/performance & successful commissioning of equipment is the responsibility of contractor.
80. The final bill will be submitted by the Contractor within 90 days from the date of acceptance of completion of work accompanied by the following documents:-
- Completion certificate issued by the Engineer In-Charge / Local Bodies/State Government/Central Government/ Owner specifying the handing over of the work.
 - Computerized Measurement Books.
 - No claim certificate by the Contractor.
 - ‘As built’ drawings.
 - Periodical services and measurement books.
 - Road Register.
 - Plant Record books.
 - History Sheet of Machines.
 - Drawings for lay out of underground cables and details showing location of sluice valve etc.
 - All operation and maintenance manuals.
 - All statutory approval from various state / central Govt. / local bodies /Owner if required for completion & handover of work.
 - All test certificates of manufacturers and test conducted at site as well as outside agencies.
81. During post construction phase the contractor shall be responsible for carrying out the following activities but not limited to the following:
- (i) Rectification of the defects promptly as pointed out by Engineer In-Charge /Owner’s representative(s) during the defects liability period.
 - (ii) Preparation & submission of “As Built Drawings”, Road register, Plant record book, History sheet of machines, drawings for layout of underground cables, pipelines showing locations of sluice valves etc. The formats in respect of above documents shall be got arranged by Engineer In-Charge from the Local Bodies/State Government/Central Government/ Owner.
 - (iii) Submission of all operation & maintenance manuals.

Submission of “FINAL REPORT” of the completed project containing all Pre & other related details

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82. **HANDING OVER OF PROJECT:** The contractor within 15 days from virtual completion of Project including services shall Prepare a list of all inventory i/c fitting & fixture and submit to Engineer In-Charge and the contractor shall be liable to maintain the building up to defect liabilities period. If the project is not taken over by the Local Bodies/ Engineer In-Charge / Owner due to any reason the contractor shall provide necessary watch & ward at his own cost which will be reimbursed beyond DLP period till the project is handed over to the Local Bodies/ Engineer In-Charge / Owner.
83. The contractor may have to carry out work under water/liquid or slush as per bill of quantities and rate quoted by him shall be deemed to be included pumping out water or Dewatering etc. Also proper disposal of concrete spoil Malba/Solid Waste shall be responsibility of the contractor.
84. Along with monthly computerized running bill / final bill, the contractor shall submit a monthly progress report showing various details, photographs of works etc as per direction of the Engineer-in-charge in four hard copies and six soft copies. The contractor shall also submit video-grapy of the site showing progress of work monthly. Please note that the running / final bill payment shall only be released after submission as aforesaid.
85. Tender drawings enclosed with the tender documents are indicatives only. However, the work shall be executed based on the good for construction drawings issued at site from time to time and nothing extra shall be paid or no claim will be entertained if any GFC drawing varies from tender drawings.
86. **MINOR DETAILS OF CONSTRUCTION:**
The rates quoted by the Contractor shall be deemed to cover for all the minor details / requirement of construction which may not have been specifically shown on the drawings or given in particular specifications, BOQ, but are required as per established engineering practice.
87. **DISCREPANCY IN DRAWINGS:**The Contractor shall be responsible to ensure correlation in Structural drawings Architectural Drawings and Bill of Quantities, before quoting for the work and also before commencement and execution of work. In case of discrepancy, the Contractor shall bring it to the notice of the Engineer-in-Charge for clarifications within 28 days of the issue of Letter of Acceptance. In the event of such discrepancy arising during the course of the work for which drawings are given after the date of issue of Letter of Acceptance, the Contractor shall seek clarifications within 14 days of receipt of such drawings. The Contractor shall take into consideration such contingencies in the completion schedule the programme of work is finalized and the Contractor shall not be eligible for any extension of time for such occurrences. The decision of the Engineer-in-Charge shall be final and binding in this case. The bidder is also advised to visit the site and seek clarifications before submitting his bid.
88. **DOCUMENTS FOR SUPPLY ITEMS**
For supply items in BOQ the Supplier shall submit the following documents to Engineer-in-Charge
- a) Warranty Cards.
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- b) Manufacturer's test certificate.
 - c) Any other test certificate from an external laboratory to determine the Pre Specification.
 - d) Catalogues
 - e) Pollution Control Certificate.
 - f) Documents required for registration of vehicle with the local transport Authority and other inter state movement of vehicle.
 - g) List of recommended spares with specification and costs thereof.
 - h) Operation & Maintenance manuals.

89. SURVEYOR

Contractor shall provide a team of skilled Surveyors for marking layout of buildings and making permanent survey pillars/burgies for individual buildings at the beginning of the work, which shall be Preserved till completion of the Project. One theodolite and sufficient nos. of levelling machines shall be made available at site till completion for day to day work.

90. Some of the common safety rules to be followed during working are as follows :-

- No body is allowed to enter at construction site without Safety Shoe.
 - Never enter work area without Safety helmet & chin strap in place.
 - No climbing/working allowed without proper safety belt above 2 m. height.
 - Do not exceed the speed limit 25 Kmph within Premises.
 - No debris obstacles allowed on the roads & passages.
 - Do not walk on pipelines or false ceiling.
 - Maintain good Housekeeping at work site.
 - No photography/ Videography allowed without permission
 - All Site supervisors & engineers (including subcontractor's) must be imparted structured training on construction safety before start of the job & record to be maintained.
 - Availability of qualified & trained Site Engineer at site during all working hours.
 - Site Safety training to be imparted to all workers & plan to be made to cover every worker.
 - Tools box talk (5-15 minutes) by supervisor prior to commencement of any job.
 - All accident / incidents(Near Miss) to be reported & investigated.(formats & procedure should be finalised)
 - Daily Safety Checking by Each Site Engineer along with Safety engineer.
 - Weekly co-ordination meeting of all Safety engineers with MPWD/CLIENT safety officer.
 - Monthly safety meeting with Site In-charges.
 - All Safety equipment must be ISI marked & checked by Safety officer before use.
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- Tag system for erection & use of scaffoldings.
- Bamboo/wooden Scaffolding material not allowed.
- LPG cylinders not allowed for gas cutting.
- Good Housekeeping. Separate waste bins to be used for flammable & non flammable material.
- Safety awareness programs for workers by display of boards, posters, competitions, talks etc.
- Deployment of Safety Supervisors for every 250 workers and part thereof at work site.
- Display of List of First Aid trained persons.
- Testing certificates for lifting tools & tackle.
- Provision & maintenance of fire extinguishers at construction site & material stores.
- Display of emergency telephone numbers at various locations.
- For work in confined space use 24 V lamp fitting & use tools with air motors or electric tools with max. 24 V.
- For confined space entry Gas test must be done before & at regular intervals.
- Checking & tag of equipment like grinding machine, welding machine, gas cutting set etc. by supervisors before use.

91. **Contractor shall ensure following:**

1. Contractor has to maintain contact with local hospital having scanning & other ultra modern medical facilities required during emergency including Ambulance.
 2. Contractor has to ensure Pre employment medical check for all staff & workers.
 3. Contractor has to ensure that adequate First Aid facilities with trained nurse & ambulance are available at work site for emergency purpose. This emergency set-up should include, but not limited to, following Male nurse (in shifts)
 - Oxygen set up
 - Breathing apparatus
 - Eye wash facility
 - Stretcher
 - Trauma blanket
 - Medicines.
92. Any rates of items in Boq & conditions either in GCC or in SCC appeared more than one location decision of Engineer In-Charge on those rates / conditions final and binding on Contractors.
93. The scope of work covered in this tender shall be as per the Bill of Quantities, specifications, drawings, instructions, orders issued to the contractor from time to time during the pendency of work. The drawings for this work, which may be referred for tendering, provide general idea only about the work to be performed under the scope of this contract. These may not be the final drawings and may not indicate the full range of the work under the scope of this contract. the work will be executed according to the drawings prepared by contractor as **“GOOD FOR CONSTRUCTION”** from time to time by the Engineer-in-charge and according to any additions/ modifications/ alterations/ deletions made from time to time, as required by any other drawings that would be issued to the

contractor progressively during execution of work. It shall be the responsibility of the contractor to incorporate the changes that may be in this scope of work, envisaged at the time of tendering and as actually required to be executed.

94. The quantities of various items as entered in the “BILL OF QUANTITIES” are indicative only and may vary depending upon the actual requirement. The contractor shall be bound to carry out and complete the stipulated work irrespective of the variation in individual items specified in the bill of quantities. The variation of quantities will be governed as per clause of contract.
95. The contractor shall Prepare and submit shop drawings for HVAC, Fire Fighting & Fire Alarm, Structural Steel work, Aluminium Work, Structural Glazing , Electrical Work , Plumbing etc(or as directed by Engineer In charge), to Engineer In charge for approval before execution of work.

ADDITIONAL CONDITONS OF CONTRACT AND SPECIFICATIONS

(A) RELATING TO CIVIL, ELECTRICAL, PLUMBING & FIRE FIGHTING WORKS, HVAC WORKS, LIFTS .

1.0 General

- 1.1 The following Additional 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 Conditions of Contract & specifications which are at variance with the provisions in the above mentioned documents, the provisions in these Additional Conditions of Contract & specifications shall take precedence.
- 1.2 Rates: - The quoted rates shall be for complete items of work i.e. inclusive of material, labour, plant and machinery, tools and tackles, batching plant etc. including water & electricity, overheads charges, all taxes, statutory charges / levies applicable from time to time and others as specified etc, incidental works and all other charges for items contingent to the work, such as, packing, forwarding, insurance, freight and delivery at Site, watch and ward of all materials & successful installation, testing & commissioning at site etc.

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, HVAC -Air- conditioning, Lifts & 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, HVAC works & Lifts.
- 2.2 The work shall be carried out in conformity with the relevant drawings and the requirement of architectural, electrical, structural, and other specialised service drawings approved by Engineer-in-charge/Consultant.
- 2.3 The Contractor shall make provision of hangers, sleeves, structural openings and other requirements during construction to avoid holding up progress of the construction schedule. The Contractor should ensure that the structure is designed for additional loads or cut outs. Subsequent Cutting holes in the RCC structural members /slab shall not be allowed.
- 2.4 The contract items comprises of furnishing of all materials, equipment, labour & transportation etc. necessary to render the installation/ item fully operational as per the intent of specification and drawings, including any necessary adjustment or corrections. Further the installation /item shall be in conformity with local laws and manufacturer instructions applicable.

3 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 and also cross check the drawings of other services to avoid subsequent complications in inter services. Any discrepancies observed should be immediately brought into the notice of Engineer-in-charge/Consultant and clarifications obtained. No changes from approved plans shall be made without prior approval of the Engineer-in-charge.

4 Shop Drawings

- 4.1 The Contractor shall furnish for approval of the Engineer-in-charge/Consultant 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 well in advance. These drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics, and capacity of all items of equipment, as also the details of all related items of work of other trades. All shop drawings to be made in accordance with latest fire safety norms and building codes.
 - 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 For any amendments proposed by Engineer-in-charge /Consultant 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 brought at Site until the Contractor has the approved Shop drawings for that particular material or equipment.
 - 4.5 After approval of the drawings by the Engineer-in-charge/Consultant, the Contractor shall further furnish six sets of Shop drawings for the exclusive use of and retention by the Engineer-in-charge/Consultant /Client.
 - 4.6 Approval of drawings by the Engineer-in-charge/Consultant shall not relieve the Contractor of any obligation to meet all the requirements of the Contract or of the correctness of his drawings. The Engineer's approval of specific item shall not mean the approval of the assembly of which it is a component. The Contractor shall be responsible for and is to bear the cost for all alternations of the works due to discrepancies or omission in the drawings or other particulars supplied by him, whether such drawings have been approved by the Engineer-in-charge/Consultant 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, and it is cause for any interference with the work of other trades, he
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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 Samples and Catalogues

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

5.2 Approval of Materials

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

6 Material and Equipment

- 6.1 All material and equipment shall conform to the relevant Indian Standards and bear IS marking where ever applicable.
- 6.2 Where interfacing is involved, both equipments 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-in-charge/ Consultant, 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.
- 6.5 **Approved makes for materials and vendor list**

The contractor shall procure materials as scarified in the vendor lists enclosed, the particular material shall be got approved from the Engineer - in- Charge before procurement.

7 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.

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- 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 such installation/drawings.
 - 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 Specifications shall be construed to relieve the contractor of his responsibility for the design, Manufacture and installation of equipment with all its accessories in accordance with applicable statutory regulations and safety codes in force.

8 **Manufacturer's Instructions**

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 with the approval of Engineer-in-charge.

9 **Training and Operating Instructions**

- 9.1 If required by the Engineer-in-charge / Consultant, the Contractor shall at his cost, train members of the maintenance staff either at his or the subcontractor's workshop or at such other place or places as may be considered suitable by the Engineer-in-charge / Consultant.
- 9.2 Upon completion of all work and all tests, the Contractor shall furnish the necessary skilled labour and helpers for operating the entire installation for a period of fifteen (15) working days. During this period, the Contractor shall instruct and train the Engineer-in-charge /Consultant/ client representative in operation, adjustments and maintenance of the equipment installed.
- 9.3 The Contractor shall submit to the Engineer-in-charge /Consultant draft comprehensive operating instructions and maintenance schedule for all systems and equipment included in this Contract. This shall be supplemented, not substituted, by manufacturer's operating and maintenance manuals. Upon approval of the draft, the Contractor shall submit to the Engineer-in-charge/Consultant four (4) complete bound sets of operating and maintenance schedules along with manufacturers printed literature.

10 **Inspection and Testing**

- 10.1 The Engineer-in-charge / Consultant reserve the right to request inspection and testing at manufacturer's Works at all reasonable times during manufacture of items for this Contract.
 - 10.2 The Engineer-in-charge / Consultant or his authorised representative shall have full power to inspect the materials and workmanship at the Contractor's Works or at any place from which the materials or equipment is obtained. Approval by the Engineer-in-charge /Consultant 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.
 - 10.3 Routine and typical tests for the various items of equipment shall be performed at the Contractor's Workshop in the presence of Engineer-in-charge/Consultant or his
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authorised representative, results recorded and test certificates issued.

10.4 After installation has been virtually completed, the Contractor shall carry out under the direction and in the presence of the representative of the Engineer-in-charge such tests and inspections as have been specified, or as considered necessary to determine whether or not the requirements of the item, drawings and specifications have been fulfilled. In case the work does not meet the full intent of the drawings and specifications and further tests after making require changes and as considered necessary shall be done again, the Contractor shall carry them out and bear the expenses thereof. If 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.

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

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

11 Test Certificates

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

12 Performance Guarantee

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 shall be available at site in the Engineer-in-charge / Consultant 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 specified ratings.

13 Quiet Operation and Vibration

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

14 Accessibility

The Contractor shall locate all equipment, which require servicing, operation or

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

15 **Handing over & Taking over process**

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

- a. Submission of Guarantees in stamp paper, of appropriate value, (format approved by Engineer-in-charge/Consultant) 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 (four) sets for Architectural, Structural, Plumbing, Electrical, HVAC system, Specialised services and other required drawings as approved by Engineer-in-charge / Consultant 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 Engineer-in-charge/Consultant.
- e. Contractor has to arrange water, electricity, fuel , consumables and manpower at their own cost for the purpose of testing of services and equipments. No amount shall be payable on this account.
- f. 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.

(B) **RELATING TO CIVIL WORKS**

- (i) All concrete work will be strictly done by automatic computerized batching plant of suitable capacity installed at site or RMC as per approval of Engineer-in-Charge /MPWD. No concrete work will be permitted without automatic batching plant unless specifically approved in writing by Engineer-in-Charge /MPWD. Transportation of the mix concrete shall be through transit mixers and concrete pumped through suitable concrete pumps and pipes arrangement and vibrated by vibration machines, materials lifts shall also be provided at site as and where required.
- (ii) **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-in-charge / Consultant at his own expenses within 15 days from notification of award. Samples of materials (i.e. Cement, Coarse & fine aggregates) shall be jointly sealed jointly by Engineer-in-charge /Consultant and contractor before

sending the same for Mix design. The design mix may be with or without admixtures as per specifications /requirements at site.

- (iii) Reinforcement Steel conforming to BIS specifications (latest edition) shall be procured directly from main manufacturers or their authorised dealers as per the approved list provided in the agreement. The manufacturer has to give a certificate that the material supplied is not a re-rolled product. Relevant vouchers & test certificates will be produced by the contractor. Re-rolled sections will not be allowed. Reinforcement steel, structural steel shall be stored and stacked in such manner so as to facilitate easy identification, removal etc. The contractor shall take proper care to prevent direct contact between the steel and the ground/ water for which he shall provide necessary arrangement at his own cost including ensuring proper drainage of area to prevent water logging as per 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 further tests shall be got carried out from the authorized laboratory as per the directions of Engineer-in-charge /Consultant, before incorporating the materials in the work.
- (iv) Marine plywood only or steel plates of minimum thickness as approved by Engineer-in-charge / Consultant shall be used for formwork. All shuttering material to be used at site will be new / just like new as approved by Engineer-in-charge/Consultant The shuttering plates shall be cleaned and oiled after every repetition and shall be used only after obtaining approval of Engineer's representative 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.
- (v) Anti-termite treatment & waterproofing treatment:-
 - a. The treatment against water-proofing of basement, roofs, water retaining areas and termite infestation (**since not available in schedule of quantities deemed to be included in excavation**) shall be of type and specifications as given in the schedule of quantities 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 Engineer-in-charge / Consultant 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 Engineer-in-charge /Consultant or his representative may get the same done by another agency at the Contractor's cost and risk and the decision of the Client/ 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.

- b. Water proofing and anti-termite treatment shall be got done through approved specialized agencies only with prior approval of the Engineer-in-charge / Consultant 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.
- c. The contractor shall submit a guarantee bond for the water proofing and anti-termite work executed under the contract in a format specified in the GCC. Further a security deposit amounting to 10% of the cost of these items as executed shall be retained for a period of 10 years with effect from actual date of actual completion of the work. 50% of the security deposit shall be released on successful completion of 5 years period and the balance shall be released on completion of 10 years.

(vi) Records of Consumption of Cement & Steel –

- a. For the purpose of keeping a record of cement and steel received at site and consumed in works, the contractor shall maintain a properly bound register in the form approved by the Engineer-in-charge / Consultant, showing columns like quantity received and used in work and balance in hand etc. The contractor's representative shall sign this register daily.
- b. The register of cement & steel shall be kept at site in the safe custody of Engineer-in-charge / Consultant during progress of the work. This provision will not, however, absolve the contractor from the quality of the final product.

C) RELATING TO ELECTRICAL WORKS & INSTALLATIONS

1.0 General

- i. The electrical installation shall be in total conformity with the control wiring drawings prepared by the Contractor and approved by the Engineer-in-charge & shall be connected and tested in the presence of an authorised representative of the Contractor and of the Engineer - in- Charge.
- ii. The responsibility for the sufficiency, adequacy and conformity to the Contract requirements of the electrical installation work lies solely with the Contractor.

2.0 Regulations and Standards

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 as mentioned in Schedule "F" of General Conditions of Contract. 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 BIS codes.

3.0 Completeness of Bid

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

4.0 Works to be done by the Contractor :-

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

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

5.0 Completion Certificate by the licensed supervisor

On completion of the installation, a certificate shall be furnished to the Engineer-in-charge, 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.

6.0 Completion Drawings

On completion of the work, the Contractor shall at his own cost submit to the Engineer-in-charge / Consultant 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 mount a set of all consolidated control diagrams and all piping diagrams in a frame with glass, and display in the plant room

7.0 Interrelationship of Services

The Contractor shall keep a check at all stages and supervise at the point of connection the associated civil, HVAC, electrical and plumbing works like underground and overhead tanks, power supply and installation of makeup water connection, drain connection in the fire fighting tanks and vicinity of plant room etc. In case of any discrepancy the same should be brought into the knowledge of Engineer-in-charge / Consultant in writing, all

rectifications etc, required in future as a result of failure on the part of the contractor to do so, shall be carried out by the Contractor at his own expenses.

8.0 Check List

The Contractor shall provide to the Engineer-in-charge / Consultant 4 (four) copies of a comprehensive maintenance checklist and shall place 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 record of maintenance provided and status of various equipment during the maintenance period. This list shall be updated every month at the time of inspection. The Contractor shall certify on this check list that he has examined each piece of equipment and that; it is operating as intended in the contract.

9.0 Repairs

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

10.0 Control System

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

11.0 Reference Points

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

12.0 Licenses and Permits

- i. **Contractor** or the approved specialised agency engaged by them shall hold a valid plumbing, electrical, HVAC, Lifts, license issued by the Competent Authority under whose jurisdiction the work falls.
 - ii. The contractor has to take all the approvals of local bodies for all the addition/deletion over the approved building plans which are to be given by the Engineer-in-charge/Consultant. The documents/drawings to be prepared and submitted in the manner desired by them after the same is approved by Engineer-in-charge /**Consultant**. Contractor has to take approvals of entire/Part works if required before start of works. Contractor will be responsible for any work at site carried out without approval of municipal or local bodies.
 - iii. Contractor shall keep constant liaison with the competent Municipal or other authority and obtain approvals for all drainage and water supply works carried out by him.
 - iv. Contractor shall obtain from the competent Municipal Authority completion certificates with respect to his work as required for occupation of the building.
 - v. Any fees in connection with obtaining the approvals on behalf of the Client from the statutory bodies/Corporations/Government departments, etc. shall be paid by the Contractor and the same shall be reimbursed on production of original vouchers.
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Necessary endorsement / application if required shall be arranged from the Engineer-in-charge/Consultant/Client.

- vi. Before undertaking of works for HVAC, Lifts, Electrical, Anti Termite Treatment, Water proofing, Fire Fighting, Fire alarm system, PA system, EPABX System, Horticulture Works etc., the contractor must take approval of specialised agencies proposed to be engaged by him from Engineer-in-charge/Consultant.

13.0 Cutting of structural members

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

14.0 Operation and Running of entire system

The contractor shall ensure smooth operation & running of entire sanitary, HVAC , Lifts, 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 such operation & running of entire system including required material e.g. fuel, consumables, tools & tackles, requisite manpower etc. shall be borne by the contractor & deemed to be included in the contract price , nothing shall be paid on this account.

15.0 Regulations and Standards

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 as mentioned in Schedule “F” of General Conditions of Contract. 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 BIS codes.

16.0 Tools for Handling and Erection

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

17.0 Drawings

The drawings indicate the extent and general arrangements of the fixtures, controlling switches, wiring system etc. and are essentially diagrammatic explanation. The drawings indicate the points of termination of conduit runs and broadly suggest the routes to be followed. The Contractor shall submit six sets of working electrical drawings based on tender drawing including reflected ceiling plan coordinating other essential building services for the Engineer-in-charge /Consultant’s approval. Contractor has to make necessary changes if any as per comments given by Engineer-in-charge /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 in consultation with the Engineer-in-charge/Consultant.

The drawings are for guidance of the contractor and exact locations, distance and levels

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

18.0 Conduit/ Trunking Layout

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

19.0 Shop Drawings

The Contractor shall prepare and submit to the Engineer-in-charge/Consultant for his approval detail shop drawings for Main & Sub Panels / 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 before 15 days of placing of the orders with manufacturers/suppliers.

20.0 Manufacturer's Instruction

Manufacturer instructions for approved products shall be followed in consultation with Engineer-in-charge/Consultant.

21.0 Materials & Equipment

All materials and equipment shall be ISI marked and shall be of the make and design approved by the Engineer-in-charge/Consultant . Unless otherwise called for, only the best Grade of materials and equipment shall be used. The Contractor shall be responsible for the safe custody of all materials and equipment till these are taken over by client and shall insure them against theft, damage by fire, earth quake etc. A list of items of materials and equipment, together with a sample of each shall be submitted to the Engineer-in-charge/Consultant for his approval and shall be kept in the sample box.

22.0 Scale

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

23.0 Brochures and Data

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

24.0 Approval of Shop Drawings

The approval of shop drawings, schedule, brochures etc. by Engineer-in-charge / Consultant shall be an approval of general details and arrangements only and shall not relieve the Contractor from responsibility for any deviation from drawings or

specifications unless he has in writing informed by Engineer-in-charge/Consultant of such deviations at the time of submission of the drawings nor shall it relieve the Contractor from any responsibility for errors or omissions of any kind in the shop drawings.

25.0 Samples & Catalogues

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

26.0 Approval of Materials

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

27.0 Inspection, Testing and Inspection Certificate

1. The Engineer-in-charge /Consultant and their authorised representative shall have at all reasonable times access to the Contractor's premises or Works and shall be at liberty to inspect and examine the materials and workmanship during its manufacture or erection even when they are being manufactured or assembled at other premises.
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-in-charge / Consultant by the Contractor at least fifteen (15) days in advance together with the routine test certificates of the equipments/ materials given by the manufacturer.
3. Notwithstanding approval of tests or equipment by the by Engineer-in-charge/ Consultant, the Contractor shall be required to perform site tests and prove the correctness of ratings and performance of equipment / machinery and materials supplied and installed by the Contractor as per the Contract specifications and conditions. The Engineer-in-charge / Consultant shall also have the power to order the material or work to be tested by an independent agency at the Contractor's expense in order to prove soundness & adequacy.

28.0 Schedule & Manner of Operation

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

29.0 Performance Guarantee Certificates for Equipment

All equipment shall be guaranteed against unsatisfactory performance and/or break down for a minimum period of 12 (Twelve) months from the date of handing over of complete work to the by Client/ Engineer-in-charge/Consultant. The equipment or component or any other part of installation so found defective within the guarantee period shall be replaced / repaired by the Contractor free of cost to the satisfaction of the Client / Engineer-in-

charge/Consultant. The above guarantee and/ or warrantee provided by the manufacturer will be submitted along with all the test certificates from manufacturer to Engineer-in-charge/Consultant.

30.0 Conformity with Statutory Acts, Rules and Standards

1. All installations shall be in conformity with the Bye-laws, Regulations and Standards of the local authorities applicable them. But if the specifications and drawings call for a higher standard of material and/or workmanship than those required by any of the above Regulations and Standards, then the specifications and drawings provided in the contract shall take precedence over the said regulations and standards.
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.
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 up to date.
4. CPWD Specification: as at Schedule “F” of GCC.
5. Indian Standards: The system / components shall conform to relevant BIS wherever they exist and to the National Building Code-2005 with latest amendments / addendums.
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.

31.0 Completion Drawings (As Built Drawings)

1. On completion of the work and before issue of certificate of virtual completion, the Contractor shall submit to the Client/Engineer-in-charge/Consultant, completion plan drawn to a scale in the manner decided by him including the under mentioned details alongwith one set of computer CD containing the data.
 - a. Run and size of conduits, inspection boxes, junction boxes and pulls boxes
 - b. Number of circuits 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

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- 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 lightning protection system.
 - n. Insulation tests and earth test results
 - o. PA System drawings
 - p. Disc Antenna drawings
 - q. Equipment drawings
 - r. Cable route layout of HT, LT & other cables
 - s. External lighting drawing with road layout

32.0 Checking of BOQ Quantities

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

33.0 Terms of Payment

- A. For items covered by CPWD Specifications (Part-IV -Sub Station -2007 & Part-VII - DG Sets-2006) as given below:
 - i. 85% after initial inspection and delivery at site in good condition on pro-rata basis.
 - ii. 10% after completion of installation in all respects.
 - iii. Balance 5% will be paid after testing, commissioning and handing over to the client/MPWD for beneficial use.
- B. For other items not covered in the above CPWD Specifications, payment shall be made as per GCC.

34.0 Training of Personnel

The Contractor shall arrange for training of the Client's personnel prior to provisional take over of the project for the following:

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

35.0 Completion Certificate

1. On completion of the installation, a certificate shall be submitted to the Engineer-in-charge /Consultant by the Contractor which shall be countersigned by the agency under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority. On the basis of this certificate, the Contractor shall arrange for inspection of installation by the concerned local authorities.
2. The Contractor shall be responsible at his own cost for getting the installation duly approved by the authorities concerned.

36.0 Check List

The Contractor shall provide to the Client/Engineer-in-charge/Consultant , 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 results and status of various equipment each month i.e. 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.

37.0 Repairs

All equipment that requires repairing shall be immediately serviced and repaired during the defect liability period. All parts and labours shall be furnished free of cost to the client.

38.0 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 Client/Engineer-in-charge/ Consultant. The Contractor should, therefore, employ sufficient staff for watch and ward at his own expenses. Client/Engineer-in-charge/Consultant may, however, allow the Contractor to use the building space for temporary storage of such equipment, if such space is available.

39.0 Testing and Commissioning

The Contractor shall pay for and arrange without any cost to the Engineer-in-charge / Consultant, all necessary balancing and testing equipment, instruments, materials, accessories, power, water, fuel and the requisite labour for testing. Any defects in materials and/or in workmanship detected in the course of testing shall be rectified by the Contractor entirely at his own cost, to the satisfaction of the Engineer-in-

charge/Consultant. The installation shall be retested after rectification of defects and shall be commissioned only after approval by the Engineer-in-charge /Consultant. All tests shall be carried out in the presence of the Engineer-in-charge /Consultant or his representative.

40.0 Operation and Running of entire system

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

41.0 Layout of all services, operating and maintenance instructions. DO's and Don'ts's etc for all the plant rooms, pump room, 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'ts's for all the plants, machinery & services to be installed with every individual units.